February 27, 2017

Ref: 57201.10

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

Via Electronic Copy Only

RE: Jay Peak Resort
Water Quality Monitoring Plan ("WQMP")
2016 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 2016. The report contains monitoring data and analysis of water quality conditions within the Jay Branch and South Mountain Branch watersheds during the monitoring period.

Results indicate that aquatic life use standards for macroinvertebrates were met at all of the stations within the Jay Branch watershed, including the reference station (JB-T13-0.2), three Jay Branch main stem stations (JB-9.1, JB-8.3, and JB-7.3), and Tributary 9 to Jay Branch (JB-T9-0.1). In the South Mountain Branch watershed, neither the main stem station (SMB-1.2) nor the Tributary 3 station (SMB-T3-0.1) met the aquatic life use standards in 2016. On Tributary 3 to South Mountain Branch, a new station (SMB-T3-0.8) was sampled in order to evaluate water quality conditions of the stream within reaches of the upper mountain. This new station met the aquatic life criteria, indicating that the Resort's efforts to improve water quality in the watershed should generally be focused on the areas downstream from the Stateside Hotel and Base Lodge.

In accordance with the terms of the Settlement Agreement, 2016 is a compliance year for the streams in the Jay Branch watershed and all of these streams met the VWQS biocriteria. No new BMPs are therefore required or proposed in this area, although maintenance of the existing BMPs and monitoring of the sediment source tracking sites will continue. The Settlement Agreement identifies 2016 as an interim target year in the South Mountain Branch watershed because it was identified as impaired more recently than the Jay Branch streams. Per the Settlement Agreement flow chart, Medium-Scale BMPs will be required in this watershed because the Tributary 3 to South Mountain Branch compliance station (SMB-T3-0.1) did not meet the interim target for the second time.

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In order to provide the water quality monitoring information to interested parties as quickly as possible, proposed updates to the WQRP have not been included in this report. Proposed updates to the WQRP will be submitted for review and comment in advance of the Annual Public Meeting so that they can be properly noticed in accordance with the DEC's "Procedure for Water Quality Remediation Plans." These updates will include information such as the "Medium-Scale" BMPs required in the South Mountain Branch watershed and any new sediment offset projects that are proposed for 2017.

The Sediment Source Tracking reporting will also 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.

Best regards,

Robert Wildey, CPESC
Water Resources Consultant

RAW/jkw

Enclosure

cc: Steven Fiske
Jamie Fidel (VNRC)
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Water Quality Monitoring Plan
2016 Performance Report

JAY PEAK RESORT

Jay, Vermont

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

Prepared by **VHB**
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February 27, 2017

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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 ("WQM") data collected during the 2016 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 with materials provided to the Vermont Department of Environmental Conservation ("DEC") on April 29, 2016. These materials included the draft *Post Construction Soil Depth and Quality Plan*[1] that is to be used when implementing Sediment Offset Projects, a series of Sediment Offset Bank Project Calculation Sheets and Sediment Offset Summary Table, and the list of Small- and Medium-Scale Sediment Reduction best management practices ("BMPs") that were proposed to be constructed in 2016. These revisions were posted on the DEC website for public comment from May 12, 2016 to June 17, 2016. No public comments were received during this period and the proposed updates were approved on July 12, 2016. Proposed updates to the WQRP for 2017 will be submitted under separate cover.

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

1. Vermont Agency of Natural Resources. 2015. Vermont Stormwater Management Manual Update, Post-Construction Soil Depth and Quality (v.2.0, 2/26/2015).

adaptive management scenario, with the goal of attainment of Vermont Water Quality Standards ("VWQS") 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. Beginning in 2011, streams in the South Mountain Branch watershed (Tributary 7 to Jay Branch) were also added to the WQRP, as portions of the Resort also drain to this watershed.

Since 2014, the Resort has been operating with 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. Snow storage basins created in 2014 and 2015 were maintained and a new snow storage basin near the Stateside base was completed in 2016.

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 VWQS, or to continue meeting VWQS 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 2016 biomonitoring are discussed in Section 5.6 and the supporting calculations are included in 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. No new sediment offset projects were completed in 2016.

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 Water Quality Monitoring Station Location Map in 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 Water Quality Monitoring Station Location Map in 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, WQM 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 has been continued through 2016 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 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 WQM station locations, sampling activities, and frequency. Sampling activities conducted in 2016 followed the protocols that are outlined in the QAPP. Table 1 summarizes water quality data collected during the 2016 sampling period. In accordance with a recommendation from DEC, the WQM stations have been renamed using a naming convention that includes the stream name and river mile as identifiers. The Water Quality Monitoring Station Location Map in Appendix 1, identifies the locations of these stations.

Table 1: Jay Peak Resort Water Quality 2016 Monitoring Station Locations, Activities, and Frequency

Stream	Water Quality Monitoring Station Name	Water Chemistry						Substrate	Biomonitoring
		Winter Melt*		Baseflow		Event Flow		10/3/16	
		3/18/16	4/8/16	9/7/16	9/20/16	8/22/16	9/11/16		
Tributary 13 to Jay Branch (reference)	JB-T13-0.2	x	x	x	x	x	x	x	x
Jay Branch	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		
Phase II Trib.	JB-T9-P2-0.1	x	x	x	x	x	x		
Tributary 9 to Jay Branch	JB-T9-0.1	x	x	x	x	x	x	x	x
Tributary 3 to South Mountain Branch	SMB-T3-0.5	x	x	x	x	x	x		
	SMB-T3-0.1			x	x	x	x	x	x
	SMB-T3-0.8			x	x	x	x	x	x
South Mountain Branch	SMB-1.8			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 2016 the 12 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 no longer 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 and aquatic biota ("biomonitoring") were monitored at eight of the twelve stations in 2016.

A new station (SMB-T3-0.8) was sampled for aquatic biota on Tributary 3 in 2016. This station is upgradient from the Stateside Hotel and was sampled instead of the station that was previously sampled (SMB-T3-0.5) which is located downstream from the Stateside Hotel but upstream from the culvert beneath VT Route 242. This sampling point was moved to the upstream location in order to characterize water quality and substrate conditions within Tributary 3 before it experiences potential impacts from the Hotel, Maintenance Facilities, and the Stateside Road culvert. If the upstream reach is found to fully meet the VWQS biocriteria, it suggests that the Resort should focus remediation efforts within the Tributary 3 watershed downstream from the Hotel.

The West Bowl sampling 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. No samples have been collected at these stations since 2012. Sampling at these locations will resume once a construction schedule has been determined for the West Bowl development.

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

Tributary 13 to Jay Branch Watershed

- JB-T13-0.2 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 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 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 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 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 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 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-T3-0.8 is located on Tributary 3, upgradient from the so-called "Wedding Bridge" that is approximately 375 feet upgradient from the Stateside Hotel. As described above, this is a new station that was sampled for the first time in 2016. This station corresponds to DEC Station 427807030008
- SMB-T3-0.5 is located on Tributary 3, immediately upgradient 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 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 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 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

The results from the different types of monitoring that were conducted in 2016 are presented below. These include Baseflow, event flow, and winter melt water chemistry analysis, supplemental turbidity monitoring, substrate analysis, and biomonitoring.

5.1 Baseflow Water Chemistry Analysis

Baseflow water chemistry samples were collected on September 7 and September 20, 2016 in the Jay Branch, Tributary 13 to Jay Branch (reference), Phase 1 Tributary, Phase 2 Tributary, Tributary 9 to Jay

Branch, Tributary 3 to South Mountain Branch, and South Mountain Branch. WQM samples were collected from 12 monitoring stations in 2016.

The box and whisker plots below provide a summary of water chemistry parameters at each monitoring station from 2004 to 2016. 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 2016 data points. A complete summary of 2004 through 2016 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 2016, as described in Section 4.0, above.

WQM results were evaluated to determine compliance with relevant narrative and numerical criteria of the VWQS. The USEPA Guidance Value ("EPA–GV") for certain parameters is provided, in the absence of a corresponding VWQS 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 VWQS.

5.1.1 Conductivity & Chloride

WQM samples were field measured for conductivity using a pre-calibrated YSI Pro30 meter. Figure 1 displays the results for conductivity measurements at each respective station.

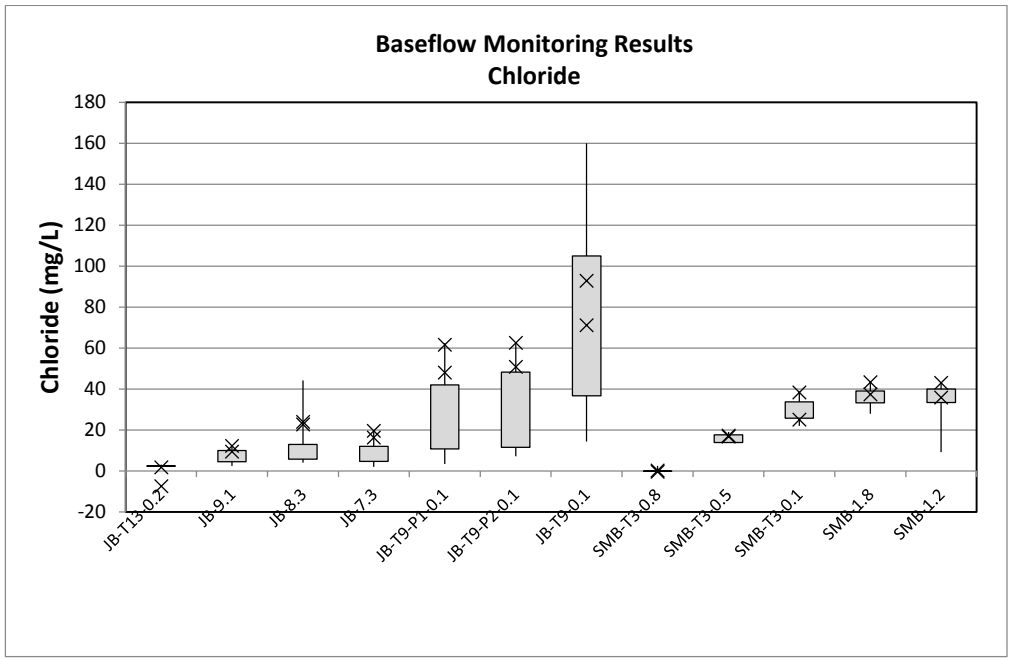

Figure 1: Baseflow Monioring Results for Conductivity

Baseflow conductivity values measured in 2016 were generally high in comparison to the period of record which includes up to 12-years from 2004 to 2016. JB-9.1, JB-7.3, SMB-T3-0.1, SMB-1.8, and SMB 1.2 exhibited maximum conductivity values on September 7, 2016. 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 2016, 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 and SMB-T3-0.8). This is indicative of the effects of roadways and development in the lower portions of this watershed. Station SMB-T3-0.8 was also sampled for the first time in 2016 and exhibited conductivity measurements less than 100 µmho/cm, similar to those observed at the Jay Branch reference station (JB-T13-0.2).

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 VWQS maximum and EPA chronic criteria value of 230 mg/L.

5.1.2 pH

WQM samples were field measured for conductivity using a pre-calibrated Oakton 30 pH-meter. Baseflow pH values in 2016 were within the acceptable VWQS range of 6.5 to 8.5 standard units ("s.u.").

5.1.3 Turbidity

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

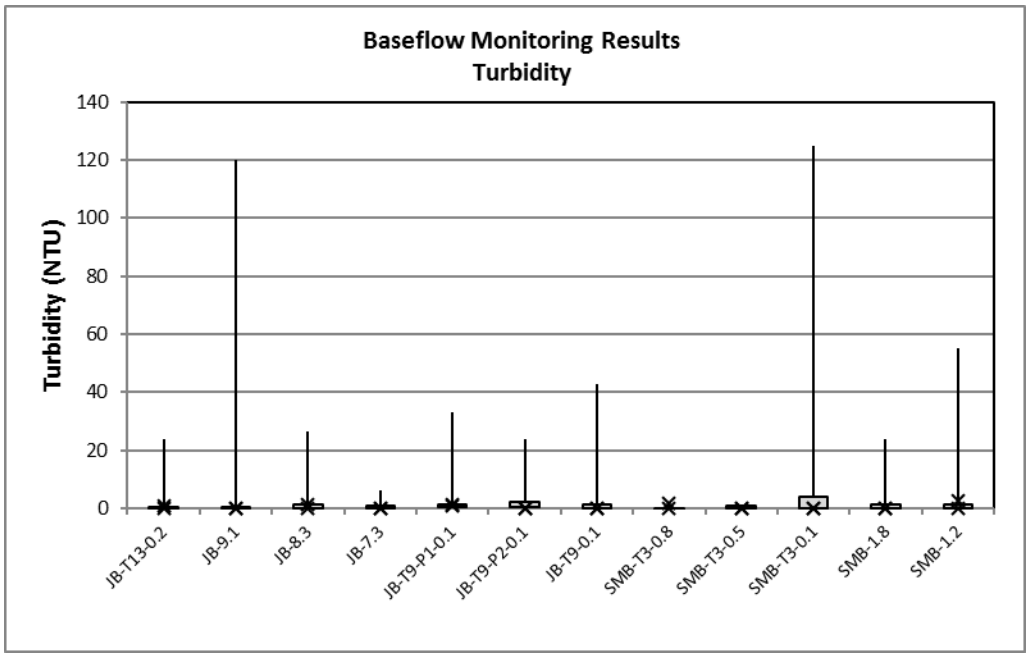

Figure 2: Baseflow Monitoring Results for Turbidity

Baseflow turbidity results for 2016 were within ranges from the period of record for all stations. The maximum sampled value for turbidity from all sampled stations in 2016 was 2.6

nephelometric turbidity units ("NTU"). The minimum possible value of 0.0 NTU was observed at 7 stations during the September 7, 2016 sampling event and at 11 stations during the September 20, 2016 sampling event. This indicates that in 2016, sediment runoff was minimal during Baseflow conditions.

5.1.4 Iron

Iron was in compliance with the VWQS of 1 mg/L at all sampled stations. There is no indication that the iron concentrations reported in 2015 represent an on-going water quality concern in the two reaches (JB-T9-P1-0.1 and SMB-T3-0.1) where elevated concentrations were observed on August 27, 2015.

Baseflow Summary

In 2016 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 values, indicating that these streams receive a higher percentage of their surface runoff from developed areas. In 2016, 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 2016, turbidity values were low and at or approaching 0.0 NTU at all stations and pH values were within the acceptable VWQS range during Baseflow conditions.

Iron was in compliance with the VWQS standard at all stations during both Baseflow samples in 2016. Elevated iron concentrations observed during one sample in 2015 appear to be anomalous and do not appear to be part of a trend of increased iron concentration in the Jay Branch or South Mountain Branch

watersheds.

5.2 Event Flow Water Chemistry Analysis

Event Flow water chemistry samples were collected during rainfall events on August 22 and September 11, 2016, representing conditions in Jay Branch, Tributary 13 to Jay Branch (reference), Phase 1 Tributary, Phase 2 Tributary, Tributary 9, South Mountain Branch, and Tributary 3 to 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 2016. 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 2016 data points. A complete summary of 2005 through 2016 Event Flow water chemistry results for each monitoring station and laboratory reports for each sampling event are included in Appendix 2. WQM samples were collected from the 12 monitoring stations in 2016. Alkalinity, chloride and total suspended solids were not sampled during 2016, as described is Section 4.0, above.

According to the on-site rain gauge, rainfall observed at the Tram Haus base area totaled 1.13 inches during the rainfall event of August 21 to 22, 2016 and 0.84 inches during the September 11, 2016 rainfall event. For the August 22, 2016 Event flow sampling, the on-site rain gage indicated that rainfall began at 6:52PM on August 21 and continued until 10:47PM, with a small amount of rainfall continuing into the morning hours of August 22. The most intense rainfall occurred between 9:00PM and 10:00PM on August 21 (1.08 inches per hour). Samples were collected between 9:20AM and 12:15PM on August 22.

Weather conditions were relatively dry leading up to the September 11, 2016 Event flow sampling. The on-site rain gage indicated there were at least 48 hours of dry weather since the previous rainfall event of 0.32 inches on September 8, 2016. The next most recent antecedent event was 1.15 inches on August 31, 2016. The September 11, 2016 event began in the morning with 0.82 inches falling between 5:17AM and 8;02AM. A final small burst of rain occurred at 10:52AM. Samples were collected between 12:52PM and 4:00PM on September 11, 2016.

5.2.1 Conductivity & Chloride

WQM samples were field measured for conductivity using a pre-calibrated YSI Pro30 meter. Figure 3 displays the results for conductivity measurements at each respective station.

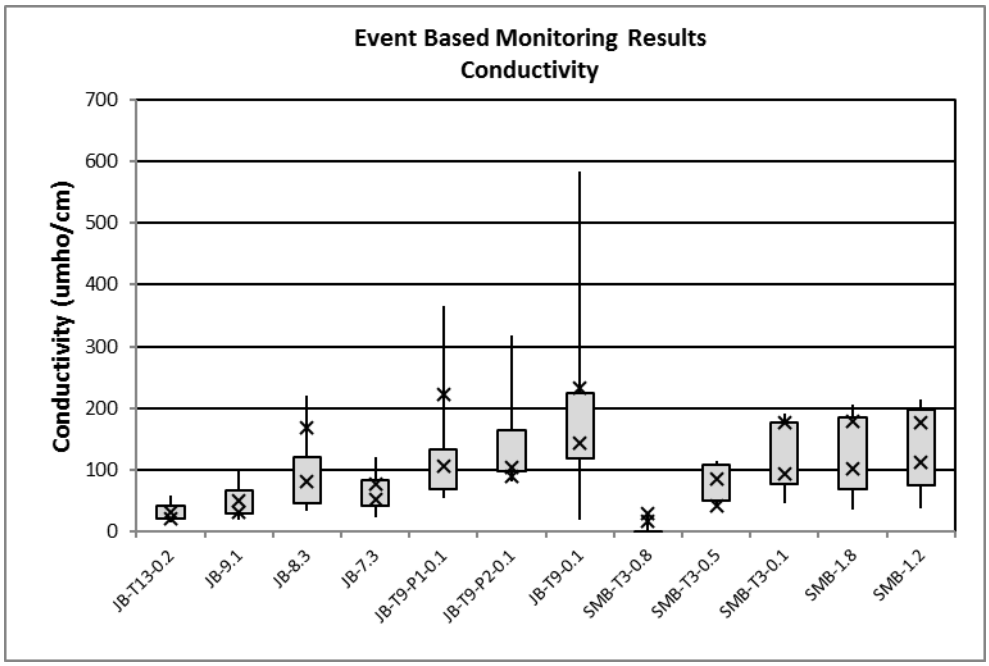

Figure 3: Event Flow Monitoring Results for Conductivity

Event Flow conductivity values measured in 2016 were within ranges from the period of record. In 2016, conductivity values were higher during the September 11 sampling event when 0.84 inches of precipitation was reported when compared to the August 22 sampling event when 1.13 inches of precipitation was reported. This trend is indicative of the effect of dilution within the larger quantity of runoff. Calcium chloride is applied to the gravel roadways during the summer months as a best management practice for dust control and to maintain the roadway surface. The application of this material may be the source of higher conductivity values after summer rainfall events.

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

2016, 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 and SMB-T3-0.8) 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 VWQS maximum and EPA chronic criteria value of 230 mg/L.

5.2.2 pH

WQM samples were field measured for conductivity using a pre-calibrated Oakton 30 pH meter. Event Flow pH values in 2016 were within the acceptable VWQS range of 6.5 to 8.5 s.u.

5.2.3 Turbidity

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

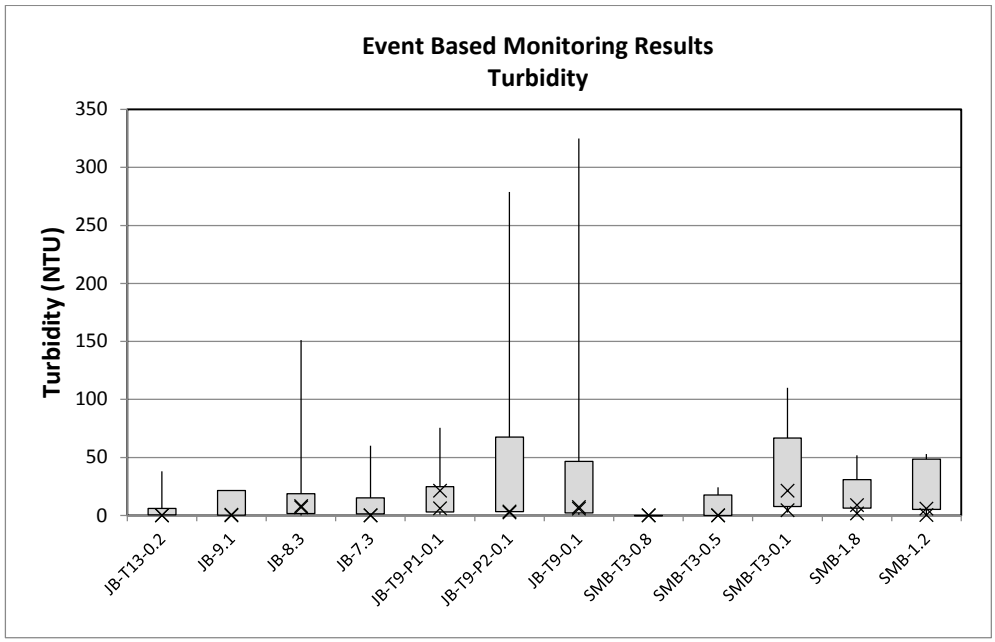

Figure 4: Event Flow Monitoring Results for Turbidity

Event Flow turbidity results for 2016 were within ranges from the period of record. In 2016, turbidity values were generally lower than in previous years, with 4 stations exhibiting minimum values during the August 22, 2016 event and 5 stations exhibiting minimum values during the September 11, 2016 event. No stations reported turbidity values above the 25 NTU construction action level in 2016.

In 2016, stations within the Tributary 9 subwatershed (JB-T9-0.1, JB-T9-P1-0.1, and JB-T9-P2-0.1) exhibited generally higher turbidity values on the respective sampling dates as compared to other stations within the Jay Branch watershed, with the exception of station JB-8.3 (downstream from the confluence of Jay Branch and Tributary 9). Supplemental turbidity measurements at additional stations along the Phase 1 and Phase 2 tributaries are reported in Section 5.4, below.

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 and SMB-T3-0.8) indicating the effects of roadways and development in the lower portions of this watershed.

5.2.4 Iron

Iron was in compliance with the VWQS of 1 mg/L at all sampled stations. There is no indication that the iron concentrations reported in 2015 represent an on-going water quality concern in any of the reaches where elevated concentrations were observed on September 14, 2015.

Event Flow Summary

In 2016 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 2016, 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 2016, pH values were within the acceptable VWQS range during Event Flow conditions.

Iron was in compliance with the VWQS standard at all stations during both Baseflow samples in 2016. Elevated iron concentrations observed during one sample in 2015 appear to be anomalous and do not appear to be part of a trend of increased iron concentration in the Jay Branch or South Mountain Branch watersheds.

5.3 Winter Melt Chemistry Analysis

Winter Melt water chemistry samples were collected on March 18 and April 8, 2016, representing conditions in the Jay Branch, Tributary 13 to 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 WQM stations. The box and whisker plots below provide a summary of water chemistry parameters at each monitoring station from 2008 to 2016. 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 2016 data points. A complete summary of 2008 through 2016 Winter Melt water chemistry results for each monitoring station is included in Appendix 3.

5.3.1 Conductivity

WQM samples were field measured for conductivity using a pre-calibrated YSI Pro30 meter. Figure 5 displays the results for conductivity measurements at each respective station.

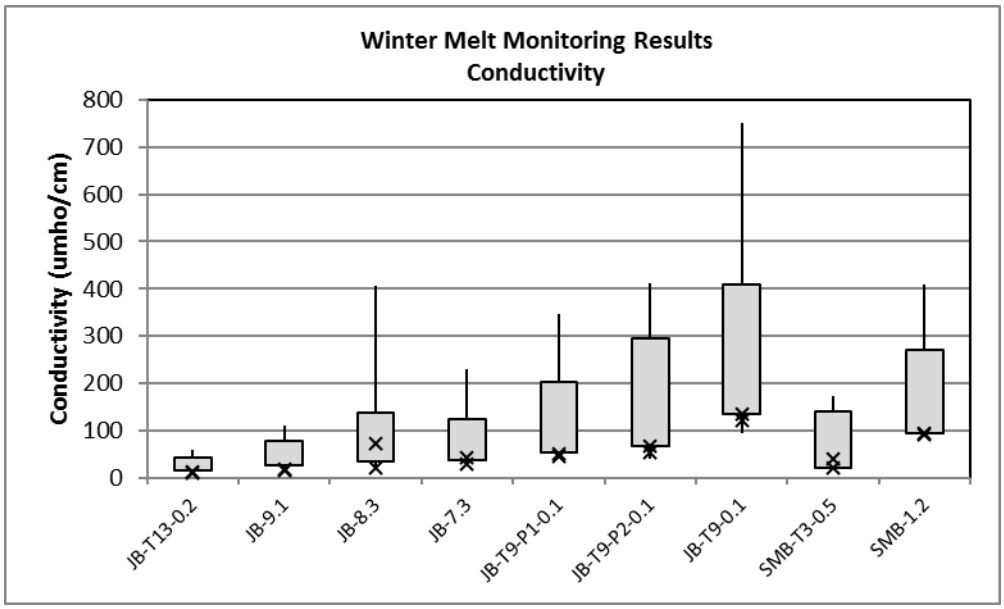

Figure 5: Winter Melt Monitoring Results for Conductivity

Conductivity values during both the March 18, 2016 and April 8, 2016 sampling events were low relative to the historic data. With the exception of SMB-T3-0.5, conductivity was higher on March 18, 2016 than on April 8, 2016.

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

WQM 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 2016 were within the acceptable VWQS range of 6.5 to 8.5 s.u with the exception of JB-8.3 on March 18, 2016, which recorded a pH of 6.2.

5.3.3 Turbidity

WQM 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.

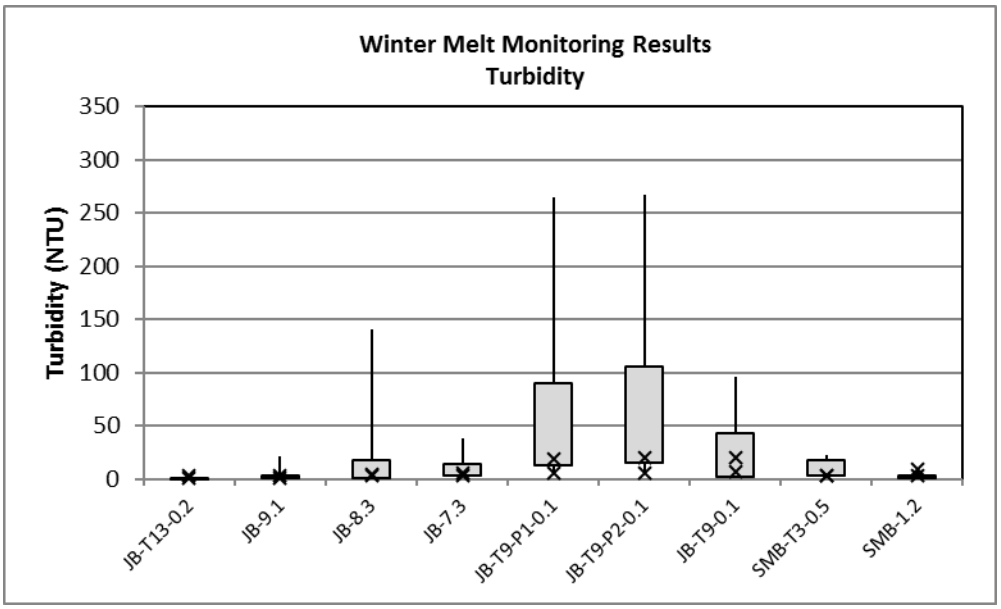

Figure 6: Winter Melt Monitoring Results for Turbidity

Winter melt turbidity results for 2016 were within ranges and relatively low from the period of record. Turbidity values were generally higher on April 8, 2016. 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 comparted to other stations. Two stations on the Jay Branch (JB-T13-0.2 and JB-9.1) recorded the lowest turbidity values during both sampling events)

Winter Melt Summary

In 2016 conductivity values were relatively low when compared to the data on record. Although conductivity was low, the highest readings came from stations within the Jay Branch (JB-8.3), Tributary 9 (JB-T9-P1-0.1 and JB-T9-P2-0.1, and JB-T9-0.1), and South Mountain Branch (SMB-1.2). Turbidity values were also the highest in developed areas of the Tributary 9 subwatershed (JB-T9-P1-0.1 and JB-T9-P2-0.1). These results reflect the effects of roadways and development in this area and indicate that streams within developed areas receive a higher percentage of surface runoff.

In 2016, pH values were within the acceptable VWQS range during Winter Melt conditions with the exception of JB-8.3 on March 18, 2016, which reported a pH of 6.2 standard units. This may be an anomalous result, as the second winter melt sample on April 8, 2016 was within range, as were the same-day results from stations upstream (JB-9.1 and JB-T9-0.1) and downstream (JB-7.3) from this station were within range.

5.4 Supplemental Turbidity Monitoring

Supplemental turbidity monitoring was completed at multiple locations within the target watersheds between July and November of 2016 (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 in Appendix 4 for turbidity station location information.

Seventeen supplemental turbidity monitoring events were completed between July and November 2016 (see event charts included in Appendix 4). Seven of these events occurred with antecedent rainfall depths of less than 0.5 inches, seven of these events occurred with antecedent rainfall depths between 0.5 and 1 inches, two events occurred with antecedent rainfall depths of greater than 1 inch, and one event (8/28/2016) represented dry weather conditions.

Out of a total of 354 turbidity measurements collected during 2016, only 11 were above the construction action level of 25 NTU. Six of these measurements occurred on 8/13/2016, during an extended rainfall event that resulted in a total of 1.87 inches of precipitation. Only one station reported a value above 100 NTU, a single measurement of 245.9 NTU at supplemental monitoring station P1-02. This reading may have been in error, as all other sampling stations on the Phase 1 tributary exhibited turbidity values of less than 5 NTU during this same event. Three stations on the Phase 2 tributary each exceeded the 25 NTU construction action level on two separate occasions. P2-01 on 8/15/2016 and 11/3/2016, and P2-04 and P2-05 on 8/13/2016 and 9/1/2016. Each station's median turbidity for all events was less than 5 NTU.

Events with relatively higher turbidity measurements correlated with higher antecedent rainfall depths, indicating general sediment input from multiple sources rather than continued input from single persistent sediment sources. Monitoring will continue in 2017 as part of the on-going effort to identify sediment sources.

5.5 Substrate Analysis

In 2016, streambed substrate composition analyses were conducted at the reference station on Tributary 13 to Jay Branch (JB-T13-0.2), within Jay Branch (JB-9.1, JB-8.3 and JB-7.3), Tributary 9 to Jay Branch (JB-T9-0.1), South Mountain Branch (SMB-1.2) and Tributary 3 to South Mountain Branch (SMB-T3-0.8 and SMB-T3-0.1). These analyses were completed to evaluate stream bed material composition and a summary of the substrate data for each station is provided in Appendix 5.

Substrate composition analyses were inadvertently not conducted on the Phase 1 Tributary (JB-T9-P1-0.1), Phase II Tributary (JB-T9-P2-0.1), SMB-T3-0.5 or SMB-1.8 in 2016. Analysis of these stations will be resumed in 2017.

5.5.1 Embeddedness

The percentage of substrate embeddedness was observed at the eight monitored stations using quartile estimates and is recorded in accordance with the DEC Lotic Benthos Field Sheet (2015 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 decreased at all eight monitored stations and was reported as very good (5-25 percent) at JB-T13-0.2, JB-9.1, JB-8.3, JB-7.3, SMB-T3-0.8, and SMB-T3-0.1, and as good (25-50 percent) at SMB-T9-0.1 and SMB-T3-0.1.

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 2016. 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 2016 and a comparison to historic averages from 2007 to 2016.

Table 2: 2016 Summary of Channel Materials in Jay Branch and Select Tributaries		
Station	**Percent < 2 mm (sands and fines)**	**D50 Particle Size**
JB-T13-0.2	0	cobble
JB-9.1	5	cobble
JB-8.3	3	cobble
JB-7.3	3	cobble
JB-T9-0.1	5	coarse gravel
SMB-T3-0.8	12	boulder
SMB-T3-0.1	6	cobble
SMB-1.2	11	cobble

Since 2015, the median particle size increased at six of the eight monitored stations, including the reference station (JB-T13-0.2). At JB-T9-0.1 the median particle size did not change and 2016 is the first year SMB-T3-0.8 has been monitored. The median particle size observed in 2016 was cobble (64 to 256 mm) at all of the sampling stations except for JB-T9-0.1 and SMB-T3-0.8, which have median particle sizes of coarse gravel (16 to 64 mm) and boulder (>256 mm), respectively.

Substrate Summary

From the seven stations that were monitored in 2015 and 2016 (SMB-T3-0.8 new as of 2016) the substrate embeddedness decreased at all seven stations and the median particle size increased at six of the stations (JB-T9-0.1 remained the same). In 2016 the most common median particle size for the sampling stations is cobble. At JB-T13-0.2, JB-8.3, and JB-T9-0.1 the percentage of small particles decreased and at JB-9.1, SMB-T3-0.2, and SMB-1.2 the percentage of small particles increased. The percentage of small particles remained the same at JB-7.3 and was the highest at SMB-T3-0.8. These results indicate that relative to 2015 the substrate at most of the WQM stations has coarsened.

5.6 Biomonitoring

On October 3, 2016, aquatic biota sampling and kick net sampling was conducted by VHB in accordance with the DEC protocol (ANR 2004). Biomonitoring occurred at eight locations in 2016: three stations on

Jay Branch (JB-9.1, JB-8.3, and JB-7.3), the reference station on Tributary 13 to 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-T3-0.1 and SMB-T3-0.8). All sampling locations are shown on the Water Quality Monitoring Station Location map in Appendix 1.

Biomonitoring data from 2016 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 (Tributary 13 to Jay Branch)

Station JB-T13-0.2 is the uppermost station and is located away from actively-managed areas of the Resort, thereby representing water quality conditions with an undeveloped reference setting. Table 3 below displays the biometrics for JB-T13-0.2 over time. Charts and graphs of all biometrics 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
2016	873.6	34	21	70	0.72	0.62	0.963	61	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 biometrics 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)

Station JB-9.1 is located on the Jay Branch, upstream of the confluence with Tributaries 9 and 10. Table 4 below displays the biometrics for JB-9.1 over time. Charts and graphs of all biometrics 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	Does Not Meet 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
2016	373	30	21	82	1.16	3.5	1.00	56	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 biometrics during 2016 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.

JB-8.3 (Jay Branch)

JB-8.3 is located on the Jay Branch, downstream of the confluence with Tributaries 9 and 10. Table 5 below displays the biometrics for JB-8.3 over time. Charts and graphs of all biometrics 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
2016	413	34	21.5	81	1.58	9	0.97	73	Meets Class B Criteria

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

Results for all eight biometrics during 2016 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-8.3.

JB-7.3 (Jay Branch)

Station JB-7.3 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 biometrics for JB-7.3 over time. Charts and graphs of all biometrics 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

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**	
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
2016	394	33	25	76	1.06	8	0.98	61	Meets Class B Criteria

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

Results for all eight biocriteria metrics during 2016 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-7.3.

JB-T9-0.1 (Tributary 9 to Jay Branch)

Station JB-T9-0.1 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 biometrics for JB-T9-0.1 over time. Charts and graphs of all biometrics 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

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**	
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
2016	373	30	21	82	1.16	3.5	1.00	56	Meets Class B Criteria

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

Results for all eight biometrics during 2016 were within the established thresholds for meeting Class B criteria indicating an increase in water quality at JB-T9-0.1.

SMB-T3-0.8 (Tributary 3 to South Mountain Branch)

Station SMB-T3-0.8 is located on Tributary 3, upstream of the Stateside Hotel and Base Lodge. This station was sampled instead of Station SMB-T3-0.5 in 2016 in order to isolate the effect of the ski trails from the effect of other development lower in the watershed. Table 8 below displays the biometrics for SMB-T3-0.8 for 2016. Charts and graphs of all biometrics evaluated at SMB-T3-0.8 are provided in

Appendix 6.

Table 8: Biomonitoring Results South Mountain Branch – SMB-T3-0.8									
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**	
2016	415	31	19	59	0.73	5	0.91	**35**	Meets Class B Criteria

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

Station SMB-T3-0.8 met seven of the eight metrics but exhibited a relatively low similarity to the reference stream as measured by the Pinkham-Pearson Coefficient of Similarity - Functional Groups (PPCS-FG) metric. The higher elevation of this site and the October sampling date may be responsible for these differences. Based on the other seven biocriteria results, this station received a very good – good rating from DEC. These results suggest that the area of concern within Tributary 3 to South Mountain Branch is within the developed area between the Stateside Hotel and VT Route 242.

SMB-T3-0.5 (Tributary 3)

This station is located on Tributary 3, upstream of VT Route 242 and downstream of the Stateside Hotel and Base Lodge area of the Resort. This station was sampled in 2014 and 2015 as a diagnostic tool to evaluate Tributary 3 upstream from SMB-T3-0.1. Because SMB-T3-0.5 did not consistently meet the biocriteria, station SMB-T3-0.8 was sampled in 2016 as described above.

SMB-T3-0.1 (Tributary 3)

Station SMB-T3-0.1 is located on Tributary 3, downstream of VT Route 242 and the Stateside Hotel and Base Lodge area of the Resort. Table 8 below displays the biometrics for SMB-T3-0.1 over time. Charts and graphs of all biometrics evaluated at SMB-T3-0.1 are provided in Appendix 6.

Table 8: 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
2016	**206**	**26**	19	58	0.93	**30**	0.97	54	Does Not Meet Class B Criteria, Meets 1 of 4 Interim Targets

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

Station SMB-T3-0.1 met 5 of the 8 Class B biocriteria in 2016, and did not meet the remaining three. Density and percent Oligochaeta decreased since 2015 and richness increased. These results also did not meet 3 of the 4 interim biocriteria targets that were established for this station in the Revised 2014 WQRP. Medium-scale sediment reduction BMPs will be implemented within this watershed during 2017, as outlined in the pre-attainment flow chart (Appendix 4 of the Revised 2014 WQRP). The required sediment reduction BMPs will be included in a proposed WQRP update that will be submitted under separate cover.

SMB-1.2 (South Mountain Branch)

Station SMB-1.2 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 biometrics for SMB-1.2 over time. Charts and graphs of all biometrics 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
2016	307	**26.5**	18	59	0.86	**18**	0.95	49	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 six of the eight Class B biocriteria in 2016 but did not meet richness or the percent Oligochaeta. Percent Oligochaeta has not been met since sampling started in 2012. Because this station is well outside of the Resort boundary and receives inputs from other sources, no interim biocriteria targets 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	'16
Tributary 13 to Jay Branch	JB-T13-0.2	-	-	-	-	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**
Jay Branch	JB-9.1	**-**	F	-	F	**P**	F	**P**	F	F	**P**	F	**P**	**P**
	JB-8.3	**P**	F	F	**P**	F	**P**	**P**	F	F	F	F	I	**P**
	JB-7.3	F	F	F	**P**	**P**	**P**	**P**	F	F	**P**	**P**	I	**P**
Tributary 9	JB-T9-0.1	F	F	F	**P**	**P**	I	F	F	F	F	F	F	**P**
South Mountain Branch	SMB-T3-0.8	-	-	-	**-**	**-**	-	-	-	-	-	-	-	**P**
	SMB-T3-0.5	-	-	-	**-**	**-**	-	-	-	-	-	**P**	F	-
	SMB-T3-0.1	-	-	-	-	-	-	-	-	F	F	F	F	F
	SMB-1.2	-	-	-	**-**	**-**	-	-	-	F	F	I	F	F
P = Pass, I = Indeterminate, F = Fail, - = Not sampled, Shaded Cells = Reference Reach														

In 2016 five of the eight sampled stations, JB-T13-0.2 (reference), JB-9.1, JB-8.3, JB-7.3, and JB-T9-0.1 met the Class B biocriteria. Station SMB-T3-0.8 did not meet the percent PPCS-FG criteria, but based on the other metrics, this station was given an assessment of good-very good by the DEC. Two stations (SMB-T3-0.1 and SMB-1.2) did not meet the Class B biocriteria. Station SMB-1.2 had lower than acceptable richness (number of distinct species). Station SMB-T3-0.1 had lower than acceptable levels of density, richness, EPT, and higher than acceptable levels of percent Oligochaeta.

6.0 Conclusions

In 2016, water quality monitoring at Jay Peak Resort was conducted in accordance with the requirements of the Resort's Water Quality Remediation Plan and associated Quality Assurance Project Plan. The results of this monitoring generally indicate continuing improvement in the water quality of the streams in and around the Resort.

In Baseflow, Event Flow and Winter Melt conditions in 2016 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. Similar trends were exhibited in the conductivity and turbidity values observed at stations on Tributary 3 to South Mountain Branch and on the South Mountain Branch main stem that are downgradient of VT Route 242 (SMB-T3-0.1, SMB 1.8, and SMB-1.2) when compared to observations at stations on Tributary 3 located upgradient of VT Route 242 (SMB-T3-0.8 and SMB-T3-0.5). These findings are consistent with the general observation that these stream segments receive a higher percentage of their surface runoff from developed areas. Chloride concentrations, as estimated using the site-specific conductivity regression equation, were within regulatory limits in 2016. In general, turbidity values were relatively low at all stations in 2016. These measures are good indicators of overall water quality, as high chloride and turbidity values are often associated with untreated stormwater runoff and may result in impaired stream segments.

Substrate analysis indicated that streams in the Jay Branch and Tributary 9 subwatersheds experienced a decrease in substrate embeddedness, a decrease in the percent of fines, and an increase in the median particle size (with the exception of JB-T9-0.1, where median particle size was unchanged). As with the water chemistry observations, these substrate parameters indicate an improvement in water quality and, by extension, in-stream habitat. Streams within the South Mountain Branch and Tributary 3 watershed saw a similar decrease in substrate embeddedness and increase in median particle size, but also saw an increase in the percent of fines. The mixed results indicate that additional measures may be needed to improve water quality and in-stream habitat in these areas.

Based on the results of the October 3, 2016 sampling event, the reference station (JB-T-13-0.2) on Tributary 13 to Jay Branch, stations on the Jay Branch main stem (JB-9.1, JB-8.3, and JB-7.3) and the Tributary 9 to Jay Branch station (JB-T9-0.1) all met the Class B biocriteria. The downstream station on Tributary 3 to South Mountain Branch (SMB-T3-0.1) and the South Mountain Branch main stem station (SMB-1.2) did not meet the Class B biocriteria. Both exhibited lower than acceptable density, richness, EPT, and/or higher than acceptable percent Oligochaeta values. The upstream station on Tributary 3 to South Mountain Branch (SMB-T3-0.8) did not meet the % PPCS-FG biomonitoring criteria, however, this is a high elevation site with a relatively small watershed and was assessed as having very good-good water quality conditions by DEC. The South Mountain Branch Tributary 3 results indicate that additional investigation of sediment sources within the watershed is warranted and that these efforts should focus on the area between the Stateside Base and VT Route 242.

References

ANR. 2014. Vermont Agency of Natural Resources. Vermont Water Quality Standards (Effective October 30, 2014). Watershed Management Division. Montpelier, Vermont. 57 pages plus appendices.

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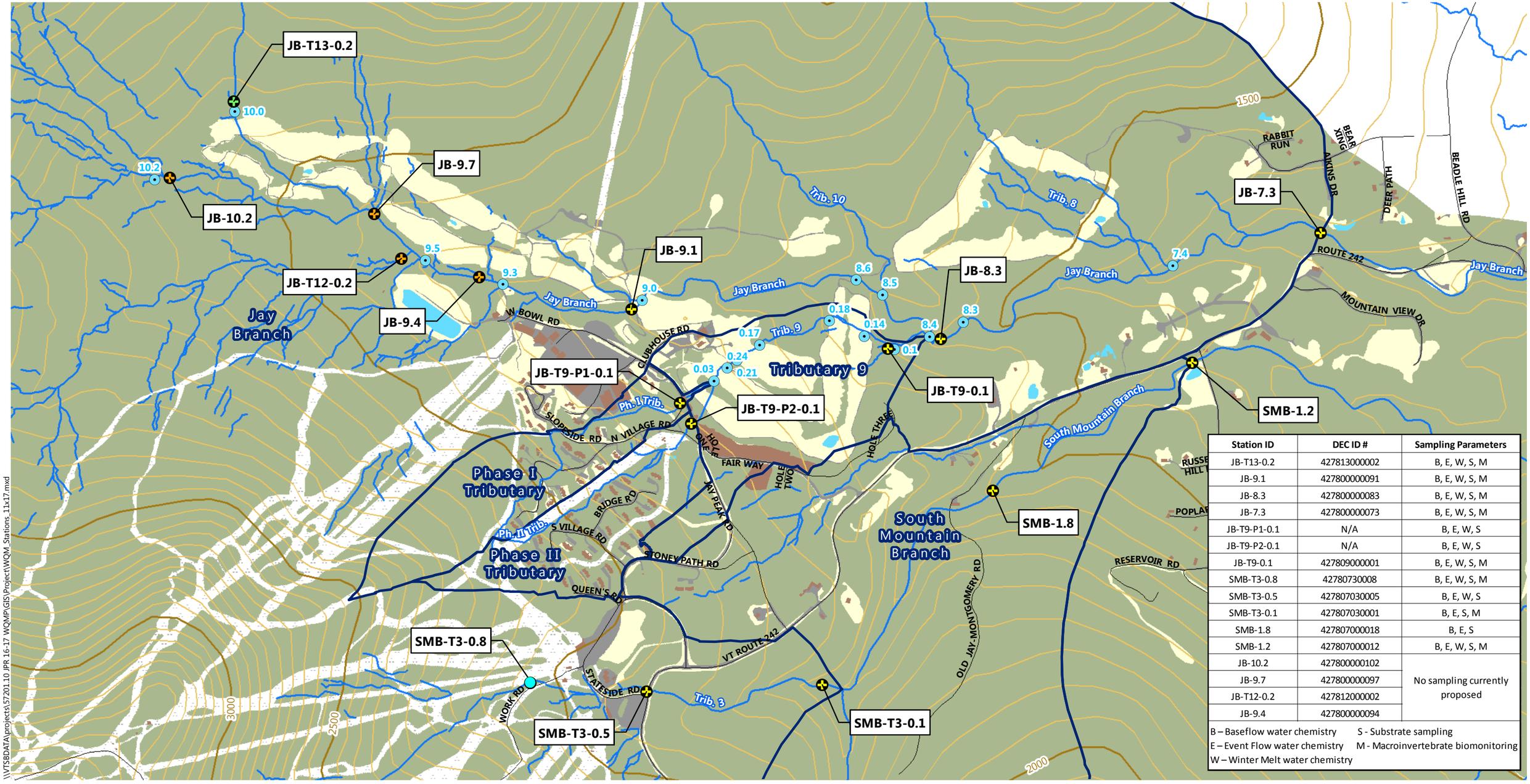
VHB. 2015. Jay Peak Resort, Water Quality Remediation Plan 2014 Update. January 16 2015.

APPENDIX 1

JAY PEAK VERMONT

vhb

January 13, 2017



Station ID	DEC ID #	Sampling Parameters
JB-T13-0.2	427813000002	B, E, W, S, M
JB-9.1	427800000091	B, E, W, S, M
JB-8.3	427800000083	B, E, W, S, M
JB-7.3	427800000073	B, E, W, S, M
JB-T9-P1-0.1	N/A	B, E, W, S
JB-T9-P2-0.1	N/A	B, E, W, S
JB-T9-0.1	427809000001	B, E, W, S, M
SMB-T3-0.8	42780730008	B, E, W, S, M
SMB-T3-0.5	427807030005	B, E, W, S
SMB-T3-0.1	427807030001	B, E, S, M
SMB-1.8	427807000018	B, E, S
SMB-1.2	427807000012	B, E, W, S, M
JB-10.2	427800000102	No sampling currently proposed
JB-9.7	427800000097	
JB-T12-0.2	427812000002	
JB-9.4	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 2016
Baseflow Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch

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	
9/7/2016	10:40 AM	2.3	14.4	80.7		7.80	< 2.50	0.76	0.120	
9/20/2016	10:21 AM	43.2	13.8	77.9		7.76	1.72	0.00	< 0.020	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Baseflow Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch

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)
2016 STATISTICS										
Mean	***	22.8	14.1	79.3		7.78	2.11	0.38	0.07	
Min	***	2.3	13.8	77.9	0.0	7.8	1.72	0.00	0.02	0.00
Max	***	43.2	14.4	80.7	0.0	7.8	2.50	0.76	0.12	0.00
n	***	2	2	2	0	2	2.00	2.00	2.00	0.00
2004 - 2016 STATISTICS										
Mean	***	55.0	11.3	86.8	17.5	7.28	2.50	1.38	0.065	< 1.95
Min	***	2.3	4.16	77.9	2.90	6.81	1.72	0.000	0.020	< 1.00
Max	***	402	18.9	101	56.0	8.60	3.24	24.0	0.340	< 2.50
n	***	27	24	12	22	27	26	29	10	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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Baseflow Water Chemistry Sampling
Station JB-9.1 (DEC Station 427800000091) Jay Branch

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	
9/7/2016	10:55 AM	90.2	15.3	83.6		7.91	12.24	0.00	0.084	
9/20/2016	10:48 AM	77.3	14.7	80.4		7.97	9.36	0.00	0.076	
2016 STATISTICS										
Mean	***	83.8	15.0	82.0		7.94	10.8	0.0	0.1	
2012 - 2016 STATISTICS										
Mean	***	79.9	13.3	87.4	18.5	7.94	7.00	12.1	0.125	1.83
Min	***	49.0	8.00	78.3	2.30	7.49	2.50	0.000	0.047	1.00
Max	***	90.2	15.6	97.3	37.0	8.60	12.24	120	0.410	3.00
n	***	10	10	10	6	10	10	10	10	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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Baseflow Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch

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**	
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	
9/7/2016	10:10 AM	137	15.4	86.9		8.00	22.6	1.42	0.044	
9/20/2016	9:40 AM	143	14.8	77.4		8.20	24.0	0.00	0.043	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Baseflow Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch

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)
2016 STATISTICS										
Mean	***	140	15	82		8.09	23.3	0.7	0.0	
2004 - 2016 STATISTICS										
Mean	***	96.7	11.0	91.0	21.7	7.24	11.04	1.73	0.040	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	***	26	24	12	22	26	26	28	10	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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Baseflow Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch

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**	
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	40.0	7.33	12.0	0.02	0.024	< 2.00
10/9/2012	9:30 AM	72.0	6.70	99	15.0	8.10	5.30	0.42	0.035	< 2.00
8/22/2013	11:00 AM	115	17.1	89	9.00	8.10	12.0	0.13	0.500	5.00
9/5/2013	9:30 AM	104	13.1	91	3.60	8.10	9.30	0.18	0.068	< 2.00
8/29/2014	3:46 PM	123	15.8	83	27.00	8.10	12.0	0.87	0.025	1.00
9/29/2014	12:25PM	121	14.2	81	30.00	8.50	12.0	0.30	< 0.020	< 1.00
8/27/2015	2:15 PM	109	15.8	96		8.00	16.5	0.48	0.130	
9/23/2015	11:53 AM	119	12.2	87		8.30	18.7	1.05	0.029	
9/7/2016	11:28 AM	123	17.8	76		7.89	19.5	0.00	0.025	
9/20/2016	1:32 PM	108	17.1	76		8.37	16.25	0.00	0.074	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Baseflow Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch

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)
2016 STATISTICS										
Mean	***	115	17	76		8.07	18	0	0	
2004 - 2016 STATISTICS										
Mean	***	82.2	12.3	90.7	20.1	7.07	8.47	0.82	0.101	2.23
Min	***	32.0	3.05	75.7	3.60	6.17	2.00	0.000	0.024	1.00
Max	***	123	19.4	115	40.0	8.50	19.5	6.29	0.500	5.00
n	***	26	23	12	21	26	25	28	9	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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Baseflow Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary

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**	
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	
9/7/2016	11:08 AM	310	17.8	64.2		7.69	61.50	1.07	0.026	
9/20/2016	11:29 AM	250	16.8	40.5		7.56	47.98	1.55	0.020	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Baseflow Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary

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)
2016 STATISTICS										
Mean	***	280	17	52		7.62	55	1	0	
2004 - 2016 STATISTICS										
Mean	***	171	12.2	79.5	29.7	7.25	28.0	2.79	0.337	2.17
Min	***	49.0	3.60	40.5	6.80	6.74	3.43	0.110	0.020	2.00
Max	***	315	18.7	100	54.0	8.20	62.6	33.0	1.700	5.00
n	***	22	19	8	17	22	21	24	6	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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Baseflow Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary

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	95.5		8.10	49.4	1.06	0.22	
9/23/2015	2:05 PM	284	17.6	97.5		8.00	55.6	0.64	0.081	
9/7/2016	11:15 AM	314.6	17.8	82.4		8.09	62.49	0.00	0.05	
9/20/2016	11:42 AM	262.3	16.4	81.6		8.11	50.78	0.00	0.039	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Baseflow Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary

Date Sampled in Field	Time Sampled in Field	Conductivity (umho/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)
2016 STATISTICS										
Mean	***	288	17	82		-8.10	57	0	0	
2004 - 2016 STATISTICS										
Mean	***	224	12.6	81.3	54.1	7.76	30.0	2.44	0.064	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	62.5	24.0	0.220	7.00
n	***	21	18	9	16	21	20	23	9	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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Baseflow Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9

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**	
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	
9/7/2016	10:15 AM	449.9	16.7	68.7		8.05	92.78	0.00	0.040	
9/20/2016	10:00 AM	353.1	15.6	69.3		8.24	71.11	0.000	0.082	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Baseflow Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9

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)
2016 STATISTICS										
Mean	***	402	16	69		8.13	82	0	0	
2004 - 2016 STATISTICS										
Mean	***	341	12.0	86.0	37.4	7.40	75.7	2.55	0.084	1.98
Min	***	95.5	3.38	68.7	9.00	6.77	14.4	0.000	0.038	1.00
Max	***	723	18.9	107	65.0	8.50	160	43.0	0.280	3.00
n				12	22	26	26	29	10	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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Baseflow Water Chemistry Sampling
Station SMB-T3-0.8 (DEC Station ID 42780730008), Tributary 3 to South Mountain Branch, upstream from Stateside Hotel

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**	
9/7/2016	1:54 PM	36.1	13.6	82.2		7.64	0.13	1.91	0.026	
9/20/2016	12:19 PM	33.3	13.2	84.7		7.60	< 2.50	0.00	0.045	
2016 STATISTICS										
Mean	***	35	13	83		-7.62	1.3	1.0	0.0	
2016 STATISTICS										
Mean	***	35	13.4	83.4	#DIV/0!	7.62	1.3	0.955	0.036	#DIV/0!
Min	***	33	13.2	82.2	0.0	7.60	0.1	0.000	0.026	0.00
Max	***	36	13.6	84.7	0.0	7.64	2.5	1.910	0.045	0.00
n	***	2	2	2	0	2	2	2	2	0

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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Baseflow Water Chemistry Sampling
Station SMB-T3-0.5 (DEC Station ID 427807030005), Tributary 3 to South Mountain Branch

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	86	23.0	8.40	14.0	0.92	0.044	< 1.00
9/29/2014	1:55 PM	113	12.9	76	20.0	8.20	16.0	0.00	0.053	< 1.00
8/27/2015	1:24 PM	98.0	13.3	95		8.10	14.0	0.10	0.059	
9/23/2015	1:45 PM	121	12.0	90		8.20	19.1	1.14	0.100	
9/7/2016	12:30 PM	112	15.7	83		7.92	17.21	0.00	0.046	
9/20/2016	12:04 PM	110.5	14.30	81		7.85	16.8	0.00	0.058	

2016 STATISTICS										
Mean	***	111	15	82		-7.89	17.0	0.0	0.1	
2014 - 2016 STATISTICS										
Mean	***	110	13.5	84.9	21.5	8.15	16.2	0.360	0.060	1.00
Min	***	98	12.0	75.6	20.0	7.85	14.0	0.000	0.044	1.00
Max	***	121	15.7	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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Baseflow Water Chemistry Sampling
Station SMB-T3-0.1 (DEC Station ID 42780730001), Tributary 3 to South Mountain Branch

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	7.9	8.10	30.0	1.310	< 0.072	< 2.50
9/5/2013	1:55 PM	185	12.00	89.5	4.2	8.00	32.0	11.45	0.59	< 2.00
8/29/2014	2:35 PM	181	13.4	81.0	24.0	8.40	31.0	0.530	< 0.045	< 1.00
9/29/2014	1:38 PM	186	13.10	79.8	28.0	8.30	33.0	0.1	0.021	< 1.00
8/27/2015	1:41 PM	171	14.2	94.7		8.20	30.3	1.210	< 1.200	
9/23/2015	12:55 PM	196	11.70	94.2		8.10	35.9	0.77	0.028	
9/7/2016	11:58 AM	206.5	15.8	80.9		7.96	38.28	0.000	< 0.020	
9/20/2016	12:39 PM	147.3	13.40	85.9		7.89	25.03	0.000	0.025	

2016 STATISTICS										
Mean	***	177	15	83		7.92	31.7	0.0	0.0	
2012 - 2016 STATISTICS										
Mean	***	170	13.2	88.4	18.0	7.59	30.4	14.0	0.205	1.75
Min	***	125	7.20	79.8	4.20	7.61	22.0	0.000	0.020	1.00
Max	***	207	16.1	95.1	31.0	8.40	38.3	125	1.200	2.50
n	***	10	10	10	6	10	10	10	10	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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Baseflow Water Chemistry Sampling
Station SMB-1.8 (DEC Station ID 427807000018), South Mountain Branch

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	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	
9/7/2016	11:43 AM	229	14.2	82.3		7.95	43.28	0.00	0.037	
9/20/2016	1:04 PM	202	13.9	78.9		7.83	37.34	0.00	0.036	
2016 STATISTICS										
Mean	***	216	14	81		7.89	40.3	0.0	0.0	
2012 - 2016 STATISTICS										
Mean	***	196	12.2	87.1	21.4	7.60	36.1	2.95	0.050	1.75
Min	***	148	6.90	76.5	5.30	7.50	28.0	0.000	0.020	1.00
Max	***	229	14.3	96.5	38.0	8.30	43.3	24.0	0.100	2.50
n	***	10	10	10	6	10	10	10	9	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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Baseflow Water Chemistry Sampling
Station SMB-1.2 (DEC Station ID 427807000012), South Mountain Branch

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	3:56 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	7.9	35.0	0.46	< 0.080	< 2.50
9/5/2013	11:55 AM	203	11.20	89.2	4.8	8.20	9.3	1.04	< 0.068	< 2.00
8/29/2014	3:26 PM	217	12.9	83.7	31.0	8.4	38.0	0.16	< 0.047	< 2.00
9/29/2014	12:36 PM	219	12.20	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	36.2	0.63	< 0.058	
9/23/2015	12:25 PM	227	10.80	99.0		8.10	42.9	0.85	< 0.025	
9/7/2016	11:34 AM	228	14.3	85.8		7.93	43.01	2.56	0.028	
9/20/2016	1:20 PM	195	14.20	82.0		7.95	35.78	0.00	0.028	
2016 STATISTICS										
Mean	***	211	14	84		7.94	39.4	1.3	0.0	
2012 - 2016 STATISTICS										
Mean	***	201	12.5	88.9	22.3	7.67	34.4	6.07	0.042	1.92
Min	***	157	6.80	77.2	4.80	7.49	9.30	0.000	0.020	1.00
Max	***	228	14.7	99.0	39.0	8.40	43.0	55.0	0.080	2.50
n	***	10	10	10	6	10	10	10	9	6

Notes:

Blank cells indicates no data available

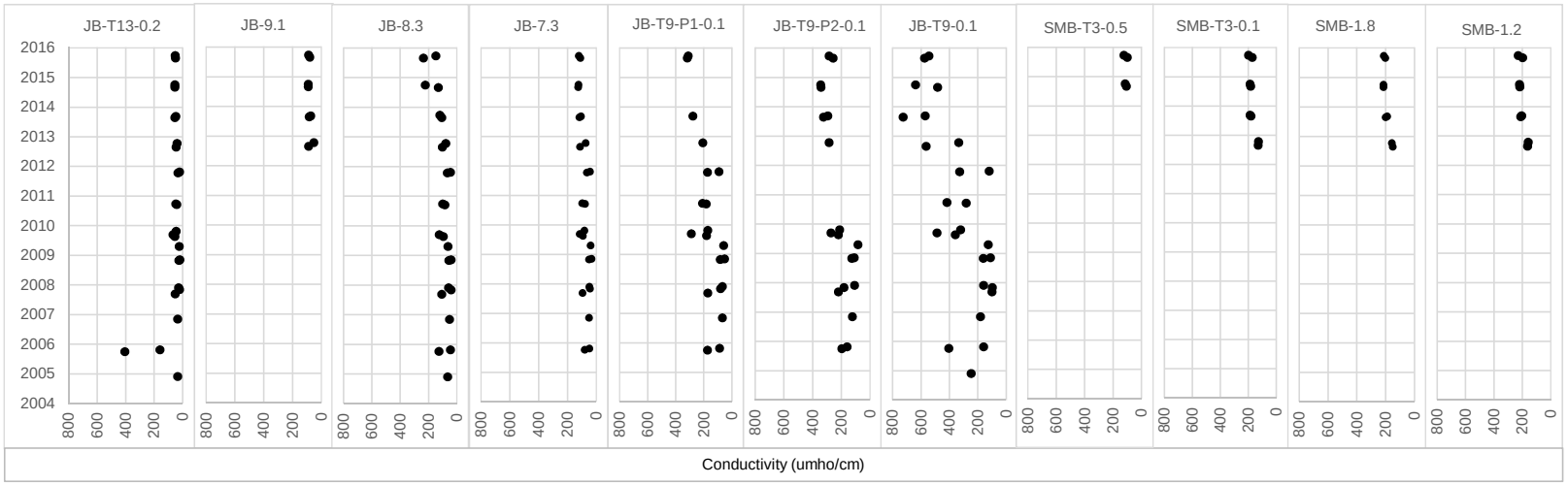
*** indicates not applicable

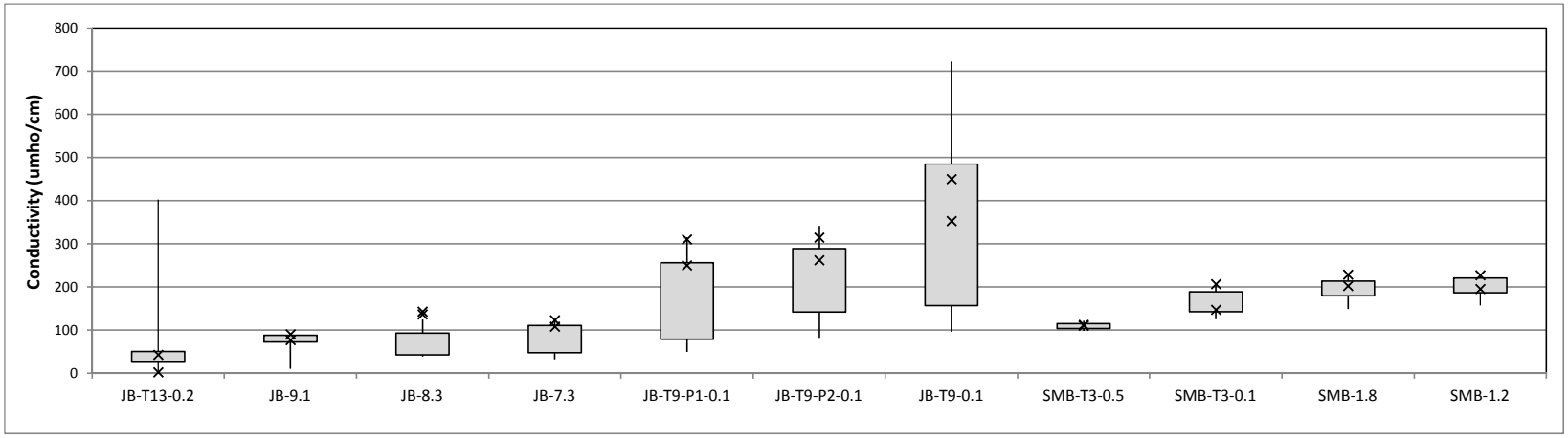
pH statistics based on Hydrogen Ion concentration

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.

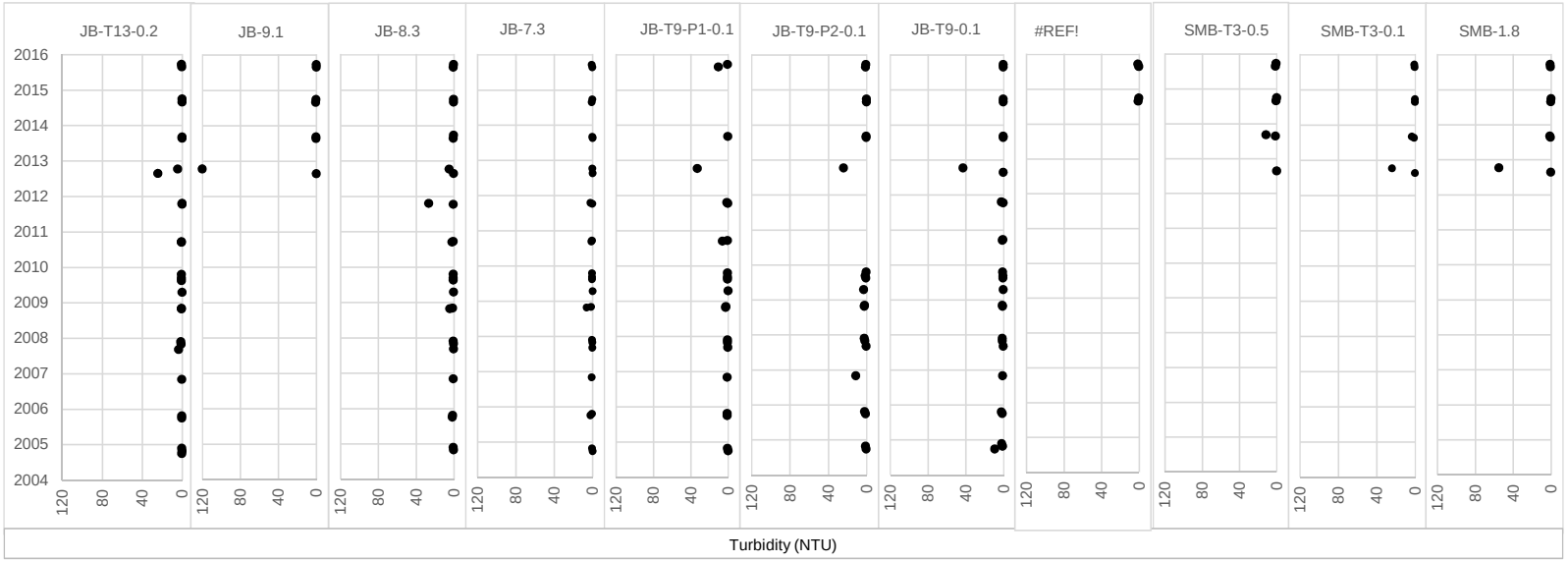
2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

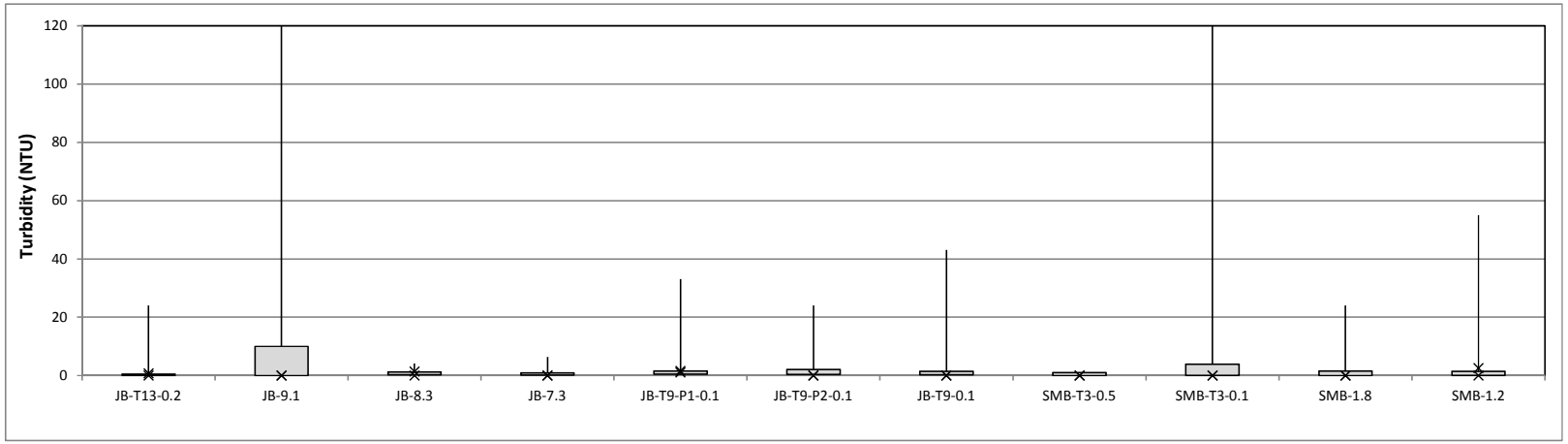
Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Baseflow Water Chemistry
Conductivity (umho/cm)





Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Baseflow Water Chemistry
Turbidity (NTU)





ENDYNE Inc.
Environmental Laboratories

Vanasse Hangen Brustlin, Inc.	
40 IDX Drive	090395
Building 100, Suite 200	
South Burlington, VT 05403	
Atten: Robert Wildey	

PROJECT: Jay Peak WQM 57201.10
WORK ORDER: **1609-20122**
DATE RECEIVED: September 07, 2016
DATE REPORTED: September 23, 2016
SAMPLER: Robert 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: 09/23/2016

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1609-20122**
PROJECT: Jay Peak WQM 57201.10 DATE RECEIVED 09/07/2016

001 Site: JB- 8.3 Date Sampled: 9/7/16 Time: 10:10

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/21/16	W MGT	A	
Iron, Total	0.044	mg/L	EPA 6010C	9/22/16	W MGT	A	

002 Site: JB- T9-0.1 Date Sampled: 9/7/16 Time: 10:15

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/21/16	W MGT	A	
Iron, Total	0.040	mg/L	EPA 6010C	9/22/16	W MGT	A	

003 Site: JB- T13-0.2 Date Sampled: 9/7/16 Time: 10:40

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/21/16	W MGT	A	
Iron, Total	0.12	mg/L	EPA 6010C	9/22/16	W MGT	A	

004 Site: JB- 9.1 Date Sampled: 9/7/16 Time: 10:55

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/21/16	W MGT	A	
Iron, Total	0.084	mg/L	EPA 6010C	9/22/16	W MGT	A	

005 Site: JB- T9-P1-0.1 Date Sampled: 9/7/16 Time: 11:08

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/21/16	W MGT	A	
Iron, Total	0.026	mg/L	EPA 6010C	9/22/16	W MGT	A	

006 Site: JB- T9-P2-0.1 Date Sampled: 9/7/16 Time: 11:15

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/21/16	W MGT	A	
Iron, Total	0.050	mg/L	EPA 6010C	9/22/16	W MGT	A	

007 Site: JB- 7.3 Date Sampled: 9/7/16 Time: 11:28

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/21/16	W MGT	A	
Iron, Total	0.025	mg/L	EPA 6010C	9/22/16	W MGT	A	

008 Site: SMB 1.2 Date Sampled: 9/7/16 Time: 11:34

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/21/16	W MGT	A	
Iron, Total	0.028	mg/L	EPA 6010C	9/22/16	W MGT	A	

009 Site: SMB 1.8 Date Sampled: 9/7/16 Time: 11:43

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/21/16	W MGT	A	

Laboratory Report DATE REPORTED: 09/23/2016

CLIENT: Vanasse Hangen Brustlin, Inc.
PROJECT: Jay Peak WQM 57201.10

WORK ORDER: **1609-20122**
DATE RECEIVED 09/07/2016

009 Site: SMB 1.8 Date Sampled: 9/7/16 Time: 11:43

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.037	mg/L	EPA 6010C	9/22/16	W MGT	A	

010 Site: SMB-T3-0.1 Date Sampled: 9/7/16 Time: 11:58

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/21/16	W MGT	A	
Iron, Total	< 0.020	mg/L	EPA 6010C	9/22/16	W MGT	A	

011 Site: SMB-T3-0.5 Date Sampled: 9/7/16 Time: 12:30

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/21/16	W MGT	A	
Iron, Total	0.046	mg/L	EPA 6010C	9/22/16	W MGT	A	

012 Site: SMB-T3-0.8 Date Sampled: 9/7/16 Time: 13:54

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/21/16	W MGT	A	
Iron, Total	0.026	mg/L	EPA 6010C	9/22/16	W MGT	A	

ENDYNE, INC.
160 James Brown Drive
Williston, Vermont 05495
(802) 879-4333

CHAIN-OF-CUSTODY-RECORD

Special Reporting Instructions/PO#: 57201.10

77249

Project Name: JAY PEAK

State of Origin: VT X NY __ NH __ Other __

Endyne WO #

Client/Contact Name: ROBERT WILDEY

Phone #: (802) 497-6164

Mailing Address: 40 IDX DR. S. BURLINGTON VT 05403

Sampler Name: SAME (VHB)

Phone #:

Billing Address:

Sample Location	Matrix	GRAB	COMP	Date/Time Sampled	Sample Containers No.	Sample Containers Type/Size	Sample Preservation	Analysis Required	Field	Due Date
JB - 8.3	SW	X		9/7/16 10:10	1	8oz PLASTIC	ICE	TOTAL IRON		
JB-T9-0.1				10:15						
JB-T13-0.2				10:40						
JB-9.1				10:55						
JB-T9-P1-0.1				11:08						
JB-T9-P2-0.1				11:15						
JB 7.3				11:28						
SMB 1.2				11:34						
SMB 1.8				11:43						
SMB-T3-0.1				11:58						

1609-20122
1609-20122
Vanasse Hangen Brustlin, Inc.
Jay Peak WQM 57201.10

Relinquished by: [signature] Date/Time 9/7/16 16:05

Received by: Date/Time

Received by: Eileen Toomey Date/Time 9/7/16 @ 1605

1	pH	6	TKN	11	Total Solids	16	Sulfate	21	1664 TPH/FOG	26	8270 PAH Only
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	8015 GRO	27	8081 Pest
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	8015 DRO	28	8082 PCB
4	Nitrite N	9	BOD	14	Turbidity	19	VT PCF	24	8260B	29	PP13 Metals
5	Nitrate N	10	Alkalinity	15	Conductivity	20	VOC Halocarbons	25	8270 B/N or Acid	30	Total RCRA8
31	Metals (Total, Diss.) Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sn, Tl, U, V, Zn										
32	TCLP (volatiles, semi-volatiles, metals, pesticides, herbicides)					33	Other				
34	Corrosivity	35	Ignitability	36	Reactivity	37	Other				
38	Other										

LAB USE ONLY
Delivery: Client
Temp: 2.8
Comment:

(White - Laboratory / Yellow - Client)

ENDYNE, INC.
160 James Brown Drive
Williston, Vermont 05495
(802) 879-4333

CHAIN-OF-CUSTODY-RECORD

Special Reporting Instructions/PO#: 57201.10

77250

Project Name: JAY PEAK	Client/Contact Name: VHB Phone #: (802) 497 6164	Sampler Name: ROBERT WILDEY Phone #:
State of Origin: VT X NY __ NH __ Other __ Endyne WO #	Mailing Address: 40 IDX DR. S. BURLINGTON	Billing Address: VT 05403

Sample Location	Matrix	GRAB	COMP	Date/Time Sampled	Sample Containers No.	Sample Containers Type/Size	Sample Preservation	Analysis Required	FieldResults/Remarks	Due Date
SMB-T3-0.5	SW	X		9/7 12:30	1	8oz PLASTIC	ICE			
SMB-T3-0.8	SW	X		↓ 1:54	1	↓	↓			

Relinquished by:	Date/Time	Received by:	Date/Time	Received by:	Date/Time
[illegible]	9/7/16 16:05			Eileen Tomey	9/7/16 @ 1605

1	pH	6	TKN	11	Total Solids	16	Sulfate	21	1664 TPH/FOG	26	8270 PAH Only
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	8015 GRO	27	8081 Pest
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	8015 DRO	28	8082 PCB
4	Nitrite N	9	BOD	14	Turbidity	19	VT PCF	24	8260B	29	PP13 Metals
5	Nitrate N	10	Alkalinity	15	Conductivity	20	VOC Halocarbons	25	8270 B/N or Acid	30	Total RCRA8
31	Metals (Total, Diss.) Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sn, Tl, U, V, Zn										
32	TCLP (volatiles, semi-volatiles, metals, pesticides, herbicides)					33	Other				
34	Corrosivity	35	Ignitability	36	Reactivity	37	Other				
38	Other										

LAB USE ONLY
Delivery: Client
Temp: 2.8
Comment:

(White - Laboratory / Yellow - Client)

APPENDIX 2

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Event Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch

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**	
10/8/2005	***	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	7.0			6.47	< 2.50	0.500		< 1.00
11/30/2011	10:56 AM	22.0	7.1			6.31	< 2.50	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	< 2.50	7.04	0.62	
8/22/2016	9:55 AM	21.8	12.9			7.66	< 2.50	0.00	0.022	
9/11/2016	1:37 PM	31.9	13.7	83.3		7.75	< 2.50	0.00	0.046	

2016 STATISTICS										
Mean	***	26.9	13.3	83.3		7.7	2.5	0.0	0.0	
2005- 2016 STATISTICS										
Mean	***	31.8	11.2	88.4	11.4	7.07	2.33	5.30	0.108	1.89
Min	***	16.0	5.78	72.2	2.00	6.31	0.33	0.000	0.022	1.00
Max	***	59.3	14.8	99.0	30.0	8.50	2.50	38.0	0.620	3.00
n	***	21	19	9	14	21	22	22	10	18

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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Event Water Chemistry Sampling
Station JB-9.1 (DEC Station 427800000091) Jay Branch

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	
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	
8/22/2016	10:10 AM	32.3	14.1			7.80	< 2.50	0.44	0.096	
9/11/2016	1:44 PM	51.2	14.8	85.69		7.84	< 2.50	0.0	0.25	
2016 STATISTICS										
Mean	***	41.8	14.5	85.7		7.82	3	0	0	
2012 - 2016 STATISTICS										
Mean	***	50.1	13.8	91.3	10.7	7.68	3.82	21.0	0.725	4.40
Min	***	20.5	10.8	78.5	2.00	7.20	1.90	0.000	0.096	2.00
Max	***	103	15.9	102	31.0	8.60	8.50	133	5.500	8.00
n	***	10	10	9	6	9	10	10	10	5

Notes:

Blank cells 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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Event Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch

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		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	
8/22/2016	9:20 AM	82	14.9			8.20	10.36	6.9	0.250	
9/11/2016	12:52 PM	169	16.1	81.3		8.14	29.93	7.9	0.29	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Event Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch

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)
2016 STATISTICS										
Mean	***	126	15.5	81		8.17	20	7	0	
2005 - 2016 STATISTICS										
Mean	***	87.3	12.3	90.5	16.2	7.13	11.00	22.9	0.675	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	***	21	19	9	14	22	20	22	10	18

Notes:

Blank cells 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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Event Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch

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		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	16.0	101	< 2.00	8.00	3.50	7.58	0.660	12.0
9/22/2013	1:10 PM	63	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	17.5	98.0		7.80	13.3	2.120	0.17	
9/14/2015	11:55 AM	55	13.8	99.8		7.80	4.36	44.5	6.100	
8/22/2016	12:15 PM	54	14.9			7.68	4.1	0.000	0.11	
9/11/2016	4:00 PM	78.1	15.4	80.1		7.96	9.53	0.0	0.140	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Event Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch

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)
2016 STATISTICS										
Mean	***	66	15.1	80.1		7.80	7	0	0	
2005 - 2016 STATISTICS										
Mean	***	63	12.8	91.8	15.5	7.22	5.95	11.3	0.926	17.0
Min	***	23	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	***	21	19	9	13	21	19	21	9	17

Notes:

Blank cells 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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Event Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary

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 AM	85.0	17.2	82.0	14.0		15.0	52.0	1.30	21.0
9/19/2012	3:45 AM	92.3	12.5	86.6	27.0	7.47	19.0	26.0	0.680	7.00
9/12/2013	5:50 AM	134	17.0	93.7	2.50	7.90	18.0	12.3	0.480	24.0
9/22/2013	5:45 AM	131	12.4	97.0	25.0	7.70	7.00	11.5	0.300	7.00
8/13/2014	12:58 PM	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 AM	194	17.7	84.9		7.50	35.5	37.50	0.300	
9/14/2015	10:51 AM	87	13.8	94.1		7.60	11.5	75.7	7.300	
8/22/2016	10:35 AM	107	15.6			7.97	16.0	21.05	0.290	
9/11/2016	2:15 PM	222.6	16.4	80.5		8.00	41.89	5.9	0.250	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Event Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary

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)
2016 STATISTICS										
Mean	***	165	16	80		7.98	29	13	0	
2006 - 2016 STATISTICS										
Mean	***	121	13.1	86.6	27.3	7.22	17.8	17.6	1.26	12.3
Min	***	55.3	6.39	74.0	2.50	6.62	2.91	0.810	0.250	2.00
Max	***	365	17.7	97.0	83.0	8.40	53.0	75.7	7.30	46.0
n	***	19	18	8	12	19	18	20	9	15

Notes:

Blank cells 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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Event Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary

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	
8/22/2016	10:40 AM	104.5	15.2			8.05	15.4	2.5	0.120	
9/11/2016	2:23 PM	136.1	16.4	85.1		8.12	22.52	3.1	0.20	
2016 STATISTICS										
Mean	***	120	16	85		8.08	19	3	0	
2006 - 2016 STATISTICS										
Mean	***	149	13.4	86.9	36.7	7.31	19.5	48.4	1.031	67.4
Min	***	81.3	5.56	70.5	3.00	6.32	4.32	2.53	0.029	2.00
Max	***	318	18.5	98.0	70.0	8.40	44.0	279	6.10	673
n	***	16	15	9	11	16	17	17	10	13

Notes:

Blank cells 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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Event Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9

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	15.0	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	
8/22/2016	9:35 AM	143	15.4			8.12	24.1	7.1	0.390	
9/11/2016	1:07 PM	233	16.6	81.8		8.19	44.13	5.6	0.380	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Event Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9

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)
2016 STATISTICS										
Mean	***	188	16.0	82		8.15	34	6.4	0	
2005 - 2016 STATISTICS										
Mean	***	195	13.2	79.4	28.6	7.24	36.9	40.2	2.96	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	***	21	19	9	14	22	20	22	10	18

Notes:

Blank cells 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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Event Water Chemistry Sampling
Station SMB-T3-0.8, Tributary 3 to South Mountain Branch, upstream from Stateside Hotel

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**	
8/22/2016	11:10 AM	16.9	12.2			7.45	< 2.50	0.00	0.081	
9/11/2016	2:48 PM	29	12.9	83.1		7.81	< 2.50	0.0	0.054	

2016 STATISTICS										
Mean	***	23.2	12.6	83.1		7.59	2.5	0.0	0.1	
2016 STATISTICS										
Mean	***	23.2	12.6	83.1		7.59	2.5	0.0	0.068	
Min	***	16.9	12.2	83.1	0.0	7.45	2.50	0.00	0.054	0.00
Max	***	29	12.9	83.1	0.0	7.81	2.5	0.0	0.081	0.00
n	***	2	2	1	0	2	2	2	2	0

Notes:

Blank cells 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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Event Water Chemistry Sampling
Station SMB-T3-0.5, Tributary 3 to South Mountain Branch

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**	
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	12.7	94.5		7.90	5.71	24.2	3.10	
8/22/2016	11:25 AM	42	12.7			7.53	< 2.50	0.00	0.110	
9/11/2016	2:34 PM	86.4	13.7	84.8		7.91	11.39	0.0	0.15	
0.011										
Mean	***	64.0	13.2	84.8		7.68	6.9	0.0	0.1	
2014 - 2016 STATISTICS										
Mean	***	81.0	13.5	89.2	32.0	7.86	10.2	7.5	0.720	7.00
Min	***	41.6	12.7	82.0	32.0	7.53	2.50	0.00	0.092	7.00
Max	***	114	15.4	95.5	32.0	8.60	17.6	24.2	3.100	7.00
n	***	5	5	4	1	5	5	5	5	1

Notes:

Blank cells 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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Event Water Chemistry Sampling
Station SMB-T3-0.1, Tributary 3 to South Mountain Branch

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	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	
8/22/2016	11:30 AM	94.9	13.6			7.54	13.3	21.1	0.270	
9/11/2016	3:11 PM	177	14.6	81.8		7.88	31.59	4.4	0.23	
2016 STATISTICS										
Mean	***	136	14	82		7.68	22.4	12.7	0.3	
2012 - 2016 STATISTICS										
Mean	***	127	13.8	88.2	11.3	7.30	22.1	32.9	0.915	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	***	10	10	9	6	10	10	10	10	6

Notes:

Blank cells 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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Event Water Chemistry Sampling
Station SMB-1.8, South Mountain Branch

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	9:40 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	
8/22/2016	11:50 AM	103	13.1			7.79	15.1	8.68	0.150	
9/11/2016	3:30 PM	178.1	13.5	81.17		7.90	31.92	1.5	0.11	

2016 STATISTICS										
Mean	***	141	13	81		8	23.52	5.08	0.13	
2012 - 2016 STATISTICS										
Mean	***	128	13.2	92.3	13.1	7.36	19.0	17.0	0.887	12.3
Min	***	37.0	10.6	81.2	2.00	6.55	7.20	1.47	0.020	1.00
Max	***	207.0	15.1	100	28.0	8.60	33.0	51.8	4.80	45.0
n	***	10	10	9	6	10	10	10	10	6

Notes:

Blank cells 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.

2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Event Water Chemistry Sampling
Station SMB-1.2, South Mountain Branch

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	
8/22/2016	12:05 PM	112	13.3			7.85	17.1	5.78	0.11	
9/11/2016	3:48 PM	177.6	13.9	81.1		7.93	31.81	0.2	0.20	
2016 STATISTICS										
Mean	***	145	14	81		7.89	24.5	3.0	0.2	
2012 - 2016 STATISTICS										
Mean	***	133	13.6	92.2	14.9	7.44	23.5	20.2	1.09	13.2
Min	***	37.3	10.8	77.4	2.00	6.65	8.60	0.24	< 0.020	1.00
Max	***	214	15.4	103	32.0	8.50	38.0	53.0	6.10	45.0
n	***	10	10	9	6	10	10	10	10	6

Notes:

Blank cells indicates no data available

*** indicates not applicable

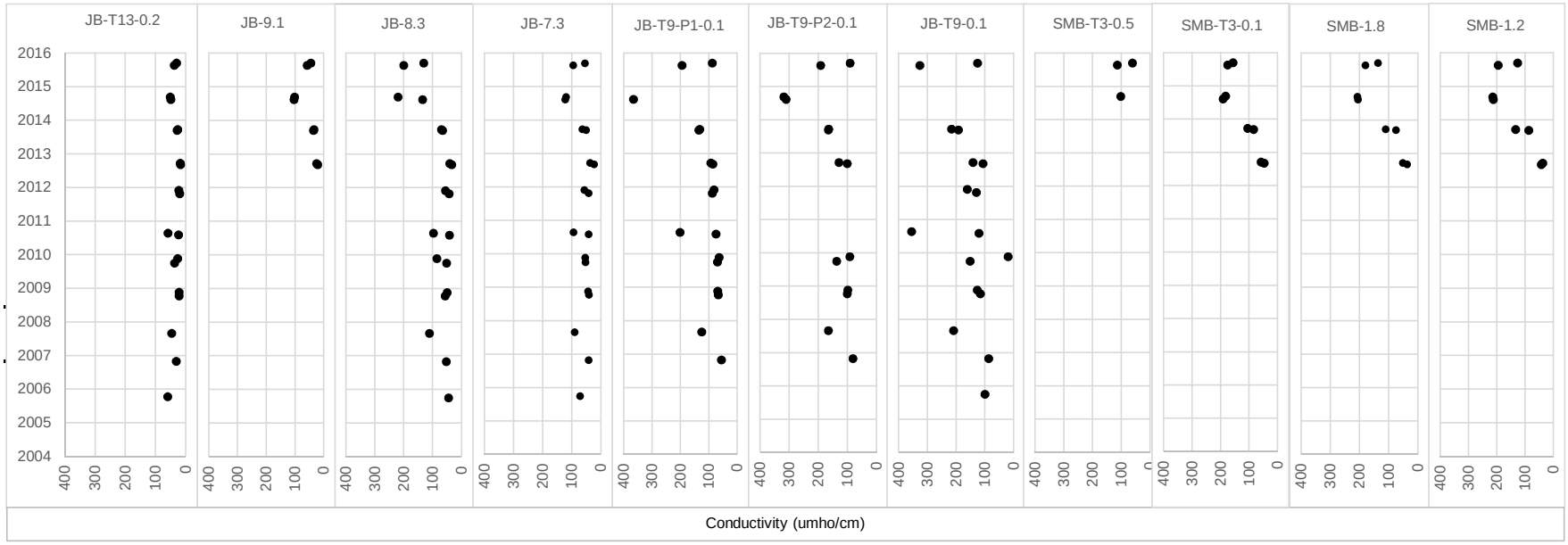
2006 data from ESI

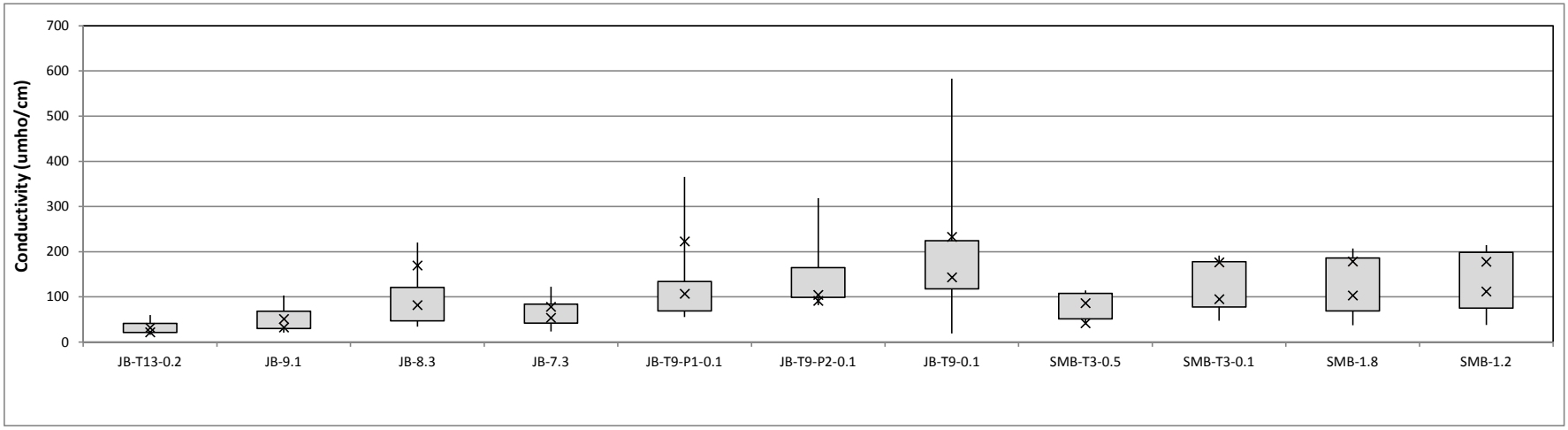
pH statistics based on Hydrogen Ion concentration

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.

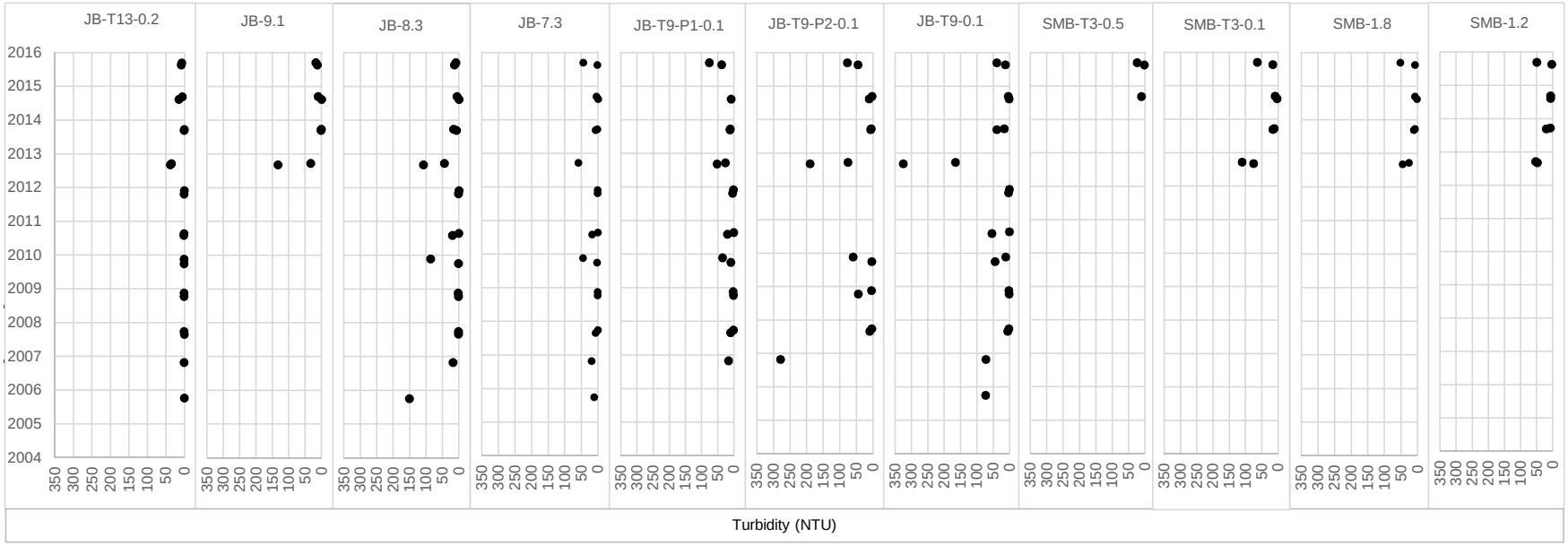
2016 dissolved oxygen data converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

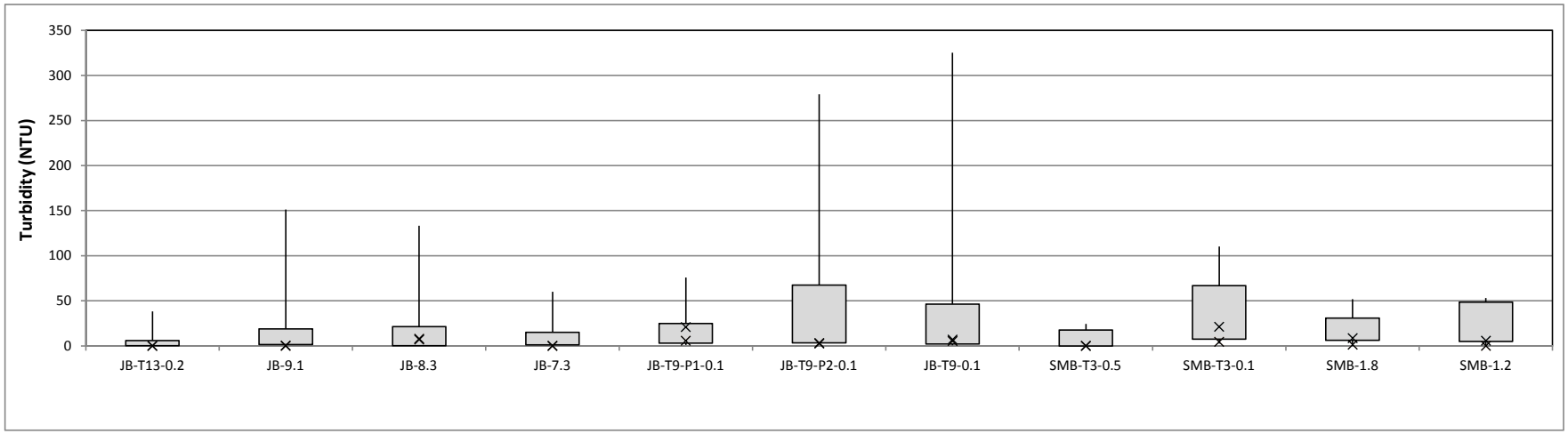
Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Event Flow Water Chemistry
Conductivity (umho/cm)





Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Event Flow Water Chemistry
Turbidity (NTU)





ENDYNE Inc.
Environmental Laboratories

Vanasse Hangen Brustlin, Inc.	
40 IDX Drive	090395
Building 100, Suite 200	
South Burlington, VT 05403	
Atten: Nick Sibley	

PROJECT: Jay Peak 57201.10
WORK ORDER: **1609-20467**
DATE RECEIVED: September 12, 2016
DATE REPORTED: October 04, 2016
SAMPLER: Nick Sibley

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: 10/04/2016

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1609-20467**
PROJECT: Jay Peak 57201.10 DATE RECEIVED 09/12/2016

001 Site: JB-8.3 Date Sampled: 9/11/16 Time: 12:52

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/16	W MGT	A	
Iron, Total	0.29	mg/L	EPA 6010C	9/29/16	W MGT	A	

002 Site: JB-T9-0.1 Date Sampled: 9/11/16 Time: 13:07

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/16	W MGT	A	
Iron, Total	0.38	mg/L	EPA 6010C	9/29/16	W MGT	A	

003 Site: JB-T-13.02 Date Sampled: 9/11/16 Time: 13:37

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/16	W MGT	A	
Iron, Total	0.046	mg/L	EPA 6010C	9/29/16	W MGT	A	

004 Site: JB-9.1 Date Sampled: 9/11/16 Time: 13:44

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/16	W MGT	A	
Iron, Total	0.25	mg/L	EPA 6010C	9/29/16	W MGT	A	

005 Site: JB-T9-P1-0.1 Date Sampled: 9/11/16 Time: 14:15

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/16	W MGT	A	
Iron, Total	0.25	mg/L	EPA 6010C	9/29/16	W MGT	A	

006 Site: JB-T9-P2-0.1 Date Sampled: 9/11/16 Time: 14:23

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/16	W MGT	A	
Iron, Total	0.20	mg/L	EPA 6010C	9/30/16	W MGT	A	

007 Site: SMB-T3-0.3 Date Sampled: 9/11/16 Time: 14:34

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/16	W MGT	A	
Iron, Total	0.15	mg/L	EPA 6010C	9/30/16	W MGT	A	

008 Site: SMB-T3-0.8 Date Sampled: 9/11/16 Time: 14:48

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/16	W MGT	A	
Iron, Total	0.054	mg/L	EPA 6010C	9/30/16	W MGT	A	

009 Site: SMB-T3-0.1 Date Sampled: 9/11/16 Time: 15:11

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/16	W MGT	A	

Laboratory Report DATE REPORTED: 10/04/2016

CLIENT: Vanasse Hangen Brustlin, Inc.
PROJECT: Jay Peak 57201.10

WORK ORDER: **1609-20467**
DATE RECEIVED 09/12/2016

009 Site: SMB-T3-0.1 Date Sampled: 9/11/16 Time: 15:11

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.23	mg/L	EPA 6010C	9/30/16	W MGT	A	

010 Site: SMB-1.8 Date Sampled: 9/11/16 Time: 15:30

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/16	W MGT	A	
Iron, Total	0.11	mg/L	EPA 6010C	9/30/16	W MGT	A	

011 Site: SMB-1.2 Date Sampled: 9/11/16 Time: 15:48

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/16	W MGT	A	
Iron, Total	0.20	mg/L	EPA 6010C	9/30/16	W MGT	A	

012 Site: JB-7.3 Date Sampled: 9/11/16 Time: 16:00

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/16	W MGT	A	
Iron, Total	0.14	mg/L	EPA 6010C	9/30/16	W MGT	A	

ENDYNE, INC.
160 James Brown Drive
Williston, Vermont 05495
(802) 879-4333

CHAIN-OF-CUSTODY-RECORD

Special Reporting Instructions/PO#: 57201.10

78023

Project Name: Jay Peak	Client/Contact Name: VHB	Sampler Name: Nick Sibley
State of Origin: VT __ NY __ NH __ Other __	Phone #:	Phone #:
Endyne WO #	Mailing Address:	Billing Address:

Sample Location	Matrix	GRAB	COMP	Date/Time Sampled 9/11/16	Sample Containers No.	Sample Containers Type/Size	Sample Preservation	Analysis Required	Field	Due Date
JB-8.3	Stream	✓		12:52				31		
JB-T9-0.1		✓		1:07						
JB-T-13.02		✓		1:37						
JB-9.1		✓		1:44						
JB-T9-P1-0.1		✓		2:15						
JB-T9-P2-01		✓		2:23						
SMB-T3-0.3		✓		2:34						
SMB-T3-0.8		✓		2:48						
SMB-T3-0.1		✓		3:11						
SMB-1.8		✓		3:30						

1609-20467
1609-20467
Vanasse Hangen Brustlin, Inc.
Jay Peak 57201.18

Relinquished by:	Date/Time	Received by:	Date/Time	Received by:	Date/Time
[signature]	9/12 @ 11:25			Eden Lamey	9/12 @ 11:25

1	pH	6	TKN	11	Total Solids	16	Sulfate	21	1664 TPH/FOG	26	8270 PAH Only
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	8015 GRO	27	8081 Pest
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	8015 DRO	28	8082 PCB
4	Nitrite N	9	BOD	14	Turbidity	19	VT PCF	24	8260B	29	PP13 Metals
5	Nitrate N	10	Alkalinity	15	Conductivity	20	VOC Halocarbons	25	8270 B/N or Acid	30	Total RCRA8
31	Metals (Total, Diss.) Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sn, Tl, U, V, Zn										
32	TCLP (volatiles, semi-volatiles, metals, pesticides, herbicides)					33	Other				
34	Corrosivity	35	Ignitability	36	Reactivity	37	Other				
38	Other										

LAB USE ONLY
Delivery: Client
Temp: 3.5
Comment:

(White - Laboratory / Yellow - Client)

Page ____ of ____

ENDYNE, INC.
160 James Brown Drive
Williston, Vermont 05495
(802) 879-4333

CHAIN-OF-CUSTODY-RECORD

Special Reporting Instructions/PO#: 57201.10

78024

Project Name: Jay Peak	Client/Contact Name: VHB	Sampler Name: Nick Sibley
State of Origin: VT __ NY __ NH __ Other __	Phone #:	Phone #:
Endyne WO #	Mailing Address:	Billing Address:

Sample Location	Matrix	GRAB	COMP	Date/Time Sampled 9/11/16	Sample Containers No.	Sample Containers Type/Size	Sample Preservation	Analysis Required	FieldResults/Remarks	Due Date
SMB-1.2	stream	✓		3:48				31		
JB-7.3	"	✓		4:00				1		

Relinquished by:	Date/Time	Received by:	Date/Time	Received by:	Date/Time
[illegible]	9/12 @ 11:25			Eileen Forney	9/12 @ 11:25

1	pH	6	TKN	11	Total Solids	16	Sulfate	21	1664 TPH/FOG	26	8270 PAH Only
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	8015 GRO	27	8081 Pest
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	8015 DRO	28	8082 PCB
4	Nitrite N	9	BOD	14	Turbidity	19	VT PCF	24	8260B	29	PP13 Metals
5	Nitrate N	10	Alkalinity	15	Conductivity	20	VOC Halocarbons	25	8270 B/N or Acid	30	Total RCRA8
31	Metals (Total, Diss.) Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sn, Tl, U, V, Zn										
32	TCLP (volatiles, semi-volatiles, metals, pesticides, herbicides)					33	Other				
34	Corrosivity	35	Ignitability	36	Reactivity	37	Other				
38	Other										

LAB USE ONLY
Delivery: Client
Temp: 3.5
Comment:

(White - Laboratory / Yellow - Client)

APPENDIX 3

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Winter Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch

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**		
2/11/2009	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	< 7.95	0.290	
3/18/2016	2:24 PM	13.3	2.30	27.80		7.20		1.02	
4/8/2016	10:30 AM	12.0	0.200	93.5		8.14		2.82	
2016 STATISTICS									
Mean	***	12.7	1.25	60.7		7.45		1.92	
2009-2016 STATISTICS									
Mean	***	30.9	2.73	102	13.8	7.09	2.83	0.546	<2.00
Min	***	12.0	0.200	27.8	9.55	6.55	<2.50	0.000	<2.00
Max	***	61.0	6.40	158	18.0	8.60	3.50	2.820	<2.00
n	***	10	10	8	2	10	3	10	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

2015 Chloride calculated using site-specific regression equation y=0.2239x-7.9519 (R^2 = 0.82)

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Winter Water Chemistry Sampling
Station JB-9.1 (DEC Station 427800000091) Jay Branch

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	< 7.95	1.10	
3/18/2016	3:04 PM	19.8	1.80	28.80		7.20		1.20	
4/8/2016	11:05 AM	16.0	0.400	99.8		7.85		2.49	

2016 Statistics									
Mean	***	17.9	1.10	64.3		7.41		1.85	
2008 - 2016 Statistics									
Mean	***	51.1	2.02	98	25.9	6.94	9.74	3.55	<2.00
Min	***	16.0	0.020	28.8	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	***	15	15	8	7	15	8	15	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

Chloride values after 2015 based on regression using Conductivity data, unless >500 umho/cm measured in the field, then a sample is collected and processed in the laboratory.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Winter Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch

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	8:30 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	10.0	7.680	
3/18/2016	1:38 PM	73.7	2.30	35.00		6.20		4.70	
4/8/2016	12:30 PM	22.7	0.800	96.2		7.99		3.45	

2016 STATISTICS									
Mean	***	48.2	1.55	65.6		6.49		4.08	
2008 - 2016 STATISTICS									
Mean	***	104	2.36	101	20.9	6.85	23.5	15.5	2.00
Min	***	22.7	0.100	35.0	10.0	6.20	2.70	0.00	2.00
Max	***	407	5.70	136	28.0	8.60	77.0	141	2.00
n	***	17	17	8	8	17	11	16	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

Chloride values after 2015 based on regression using Conductivity data, unless >500 umho/cm measured in the field, then a sample is collected and processed in the laboratory.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Winter Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch

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**		
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	< 7.95	5.42	
3/18/2016	3:33 PM	43.8	2.20			7.65		3.64	
4/8/2016	1:15 PM	30.3	1.10	95.2		7.82		4.99	
2016 STATISTICS									
Mean	***	37.1	1.65	95.2		7.73		4.32	
2008 - 2016 STATISTICS									
Mean	***	83.7	2.80	106		7.57		9.60	
Min	***	30.3	0.900	95.2		6.95		2.60	
Max	***	230	5.00	121		8.90		38.3	
n	***	6	6	5		6		6	

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

Chloride values after 2015 based on regression using Conductivity data, unless >500 umho/cm measured in the field, then a sample is collected and processed in the laboratory.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Winter Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary

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	9.5	15.5	
3/18/2016	3:20 PM	50.4	1.60	25.60		7.47		5.12	
4/8/2016	11:30 AM	44.8	0.100	92.4		7.54		18.3	
2016 STATISTICS									
Mean	***	47.6	0.850	59.0		7.50		11.7	
2012-2016 STATISTICS									
Mean	***	134	2.92	93		7.08		57.6	
Min	***	44.8	0.100	25.6		6.37		5.12	
Max	***	347	8.50	141		8.30		265	
n	***	10	10	8		10		10	

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

Chloride values after 2015 based on regression using Conductivity data, unless >500 umho/cm measured in the field, then a sample is collected and processed in the laboratory.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Winter Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary

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	13.2	15.6	
3/18/2016	3:25 PM	68.8	1.50	9.41		7.57		4.98	
4/8/2016	11:48 AM	54.1	0.200	96.3		7.62		20.5	
2016 STATISTICS									
Mean	***	61.5	0.850	52.9		7.59		12.7	
2011 - 2016 STATISTICS									
Mean	***	162	2.78	92		7.10		63.885	
Min	***	40.9	0.010	9.4		6.54		4.98	
Max	***	412	8.80	126		8.40		268	
n	***	11	11	7		11		11	

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

Chloride values after 2015 based on regression using Conductivity data, unless >500 umho/cm measured in the field, then a sample is collected and processed in the laboratory.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Winter Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9

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	22.5	43.1	
3/18/2016	1:45 PM	136	2.30	27.70		7.00		7.20	
4/8/2016	12:10 PM	122	1.10	95.4		7.79		20.3	
2016 Statistics									
Mean	***	129	1.70	61.6		7.24		13.7	
2008-2016 Statistics									
Mean	***	284	2.59	99	26.1	6.93	88.7	23.2	3.00
Min	***	95.4	0.000	27.7	19.0	6.36	22.5	0.590	3.00
Max	***	751	7.90	135	41.0	8.90	200	95.3	3.00
n	***	16	16	0	7	16	10	15	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

Chloride values after 2015 based on regression using Conductivity data, unless >500 umho/cm measured in the field, then a sample is collected and processed in the laboratory.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Winter Water Chemistry Sampling
Station SMB-T3-0.5, Tributary 3 to South Mountain Branch

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**		
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	< 7.95	5.04	
3/18/2016	3:57 PM	20.5	1.72			7.56		3.20	
4/8/2016	2:00 PM	41.5	0.800	96.4		7.85		3.00	
2016 STATISTICS									
Mean	***	31.0	1.26	96.4		7.68		3.1	
2013 - 2016 STATISTICS									
Mean	***	67	2.06	108		7.35		8.4	
Min	***	21	0.80	96.4		6.87		3.00	
Max	***	174	2.90	130		8.40		22.3	
n	***	4	4	3		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

Chloride values after 2015 based on regression using Conductivity data, unless >500 umho/cm measured in the field, then a sample is collected and processed in the laboratory.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2016
Winter Water Chemistry Sampling
Station SMB-1.2, South Mountain Branch

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**		
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	15.9	3.49	
3/18/2016	3:46 PM	94.8	2.50			7.56		3.45	
4/8/2016	1:35 PM	91.6	1.50	97.6		7.68		8.92	
2016 STATISTICS									
Mean	***	93.2	2.00	97.6		7.62		6.19	
2013 - 2016 STATISTICS									
Mean	***	188	3.86	119		7.44		3.13	
Min	***	92	1.50	93.9		6.93		0.930	
Max	***	408	6.70	171		8.80		8.92	
n	***	7	7	6		7		7	

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

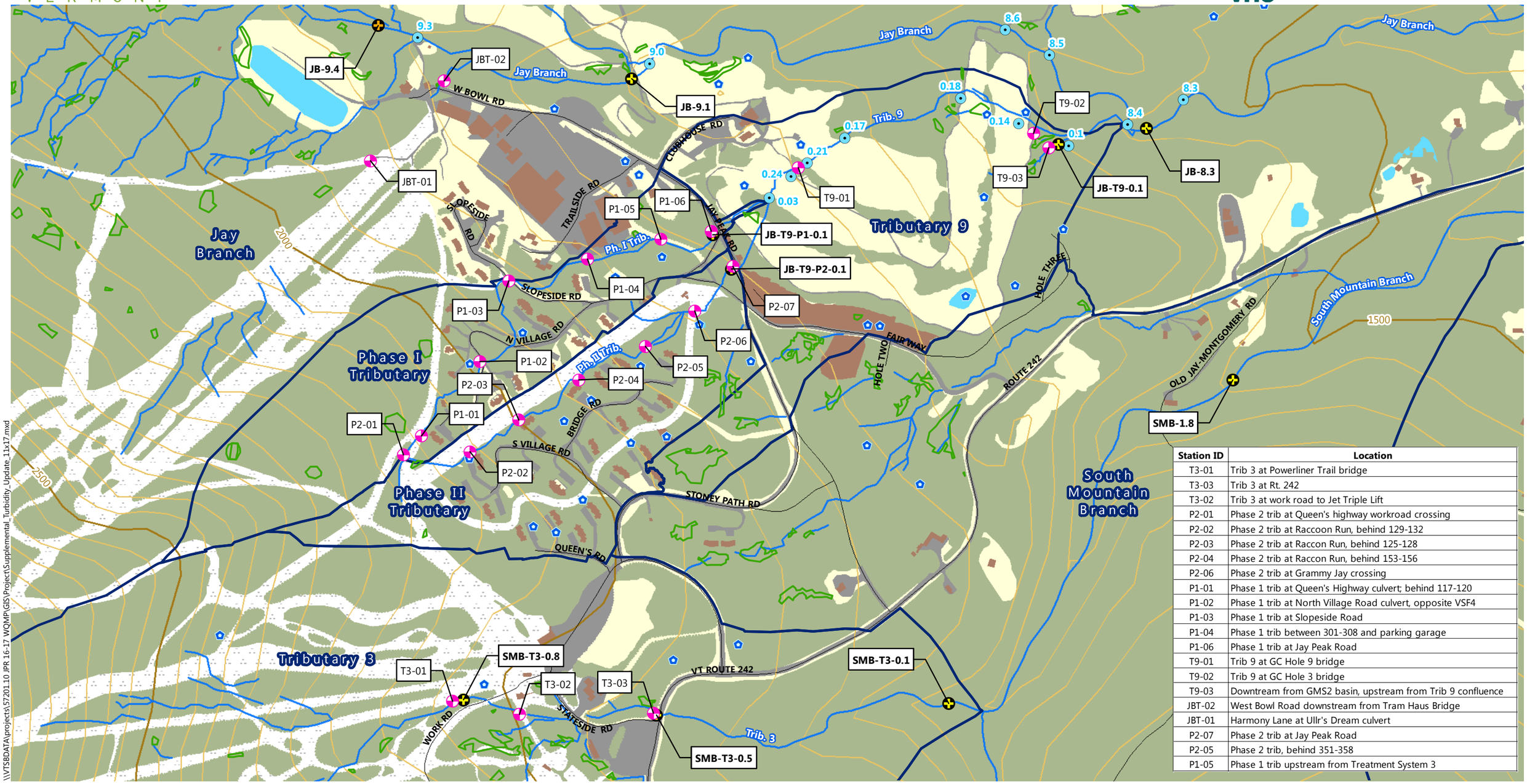
Chloride values after 2015 based on regression using Conductivity data, unless >500 umho/cm measured in the field, then a sample is collected and processed in the laboratory.

APPENDIX 4

JAY PEAK VERMONT

vhb

February 06, 2017



Station ID	Location
T3-01	Trib 3 at Powerliner Trail bridge
T3-03	Trib 3 at Rt. 242
T3-02	Trib 3 at work road to Jet Triple Lift
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
P2-06	Phase 2 trib at Grammy Jay crossing
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
P1-06	Phase 1 trib at Jay Peak Road
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
JBT-02	West Bowl Road downstream from Tram Haus Bridge
JBT-01	Harmony Lane at Ullr's Dream culvert
P2-07	Phase 2 trib at Jay Peak Road
P2-05	Phase 2 trib, behind 351-358
P1-05	Phase 1 trib upstream from Treatment System 3

600 300 0 600 Feet

Turbidity Monitoring Station (VHB)

Water Quality Monitoring Station (VHB)

Water Quality Monitoring Station

Benchmark Station

Reference Station

River Mile (VHB)

Stormwater Feature (VHB)

Wetland (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

Supplemental Turbidity 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 2016
Supplemental Turbidity Monitoring

	Date	Location	7/26/2016	8/1/2016	8/12/2016	8/13/2016	8/15/2016	8/17/2016	8/22/2016	8/28/2016	8/31/2016
	Rainfall Depth (in)		0.08	0.37	1.29	0.58	0.54	0.33	0.35	NR	0.37
	Sampler		KC/TL	KC/TL	TL	TL	KC/NP	TL	TL	TL	TL
	0.02 ntu Standard (start)		0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	10 ntu Standard (start)		10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
	1000 ntu Standard (start)		1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00
	0.02 ntu Standard (end)		0.02	0.02	0.02	0.02	0.14	NR	0.02	0.03	0.07
	10 ntu Standard (end)		10.16	10.00	10.00	10.00	10.10	NR	10.00	10.01	8.40
	1000 ntu Standard (end)		1000.00	1000.00	1000.00	1000.00	994.60	1000.00	1000.00	1003.00	1000.00
Supplemental Turbidity Monitoring Station	JBT-01	Unnamed Tributary to Jay Branch (JBT-01)	0.11	7.45	3.90	5.55	0.81	3.67	1.74	0.01	4.44
	JBT-02	Unnamed Tributary to Jay Branch (JBT-02)	0.00	3.05	2.80	6.53	0.88	3.05	0.88	0.35	7.98
	P1-01	Phase I Tributary (P1-01)	0.31	4.20	1.66	6.24	1.15	2.78	1.91	1.16	3.35
	P1-02	Phase I Tributary (P1-02)	Dry	245.90		5.13	1.31	2.10	0.71	0.21	5.72
	P1-03	Phase I Tributary (P1-03)	0.05	4.66	1.40	1.20	1.45	4.78	0.30	0.25	14.85
	P1-04	Phase I Tributary (P1-04)	0.12	2.46	1.30	21.57	1.60	4.25	0.70	0.44	14.25
	P1-05	Phase I Tributary (P1-05)	1.50	1.05	1.00	17.51	1.50	9.69	1.11	1.55	13.73
	P1-06	Phase I Tributary (P1-06)	1.45	3.05	33.91	10.21	1.85	9.42	0.21	0.30	10.75
	P2-01	Phase II Tributary (P2-01)	0.7	3.5	4.6	8.57	27.75	5.12	2.93	1.00	8.31
	P2-02	Phase II Tributary (P2-02)	0.41	4.70	3.03	64.28	14.94	4.78	2.81	1.21	7.69
	P2-03	Phase II Tributary (P2-03)	0.30	1.76	2.82	41.71	1.45	4.25	1.75	0.98	2.75
	P2-04	Phase II Tributary (P2-04)	1.19	1.60	2.12	30.89	1.30	3.78	0.92	19.78	3.35
	P2-05	Phase II Tributary (P2-05)	1.59	1.17	1.90	29.91	0.85	6.65	0.11	2.79	3.15
	P2-06	Phase II Tributary (P2-06)	0.19	5.20	2.70	8.70	0.69	1.32	6.30	0.68	2.70
	P2-07	Phase II Tributary (P2-07)	0.00	20.00	3.10	12.57	2.41	3.20	Dry	2.76	2.41
	T9-01	Tributary 9 to Jay Branch (T9-01)	1.15	1.50	3.50	1.11	0.60	1.68	1.14	2.58	14.75
	T9-02	Tributary 9 to Jay Branch (T9-02)	2.30	3.10	2.80	27.30	1.45	2.00	6.47	1.70	12.78
	T9-03	Tributary 9 to Jay Branch (T9-03)	5.50	2.20	2.71	25.72	1.31	8.17	6.51	0.70	11.50
	SMB-T3-01	Tributary 3 to South Mountain Branch (T3-01)	0.00	0.12	2.70	15.75	0.05	9.64	0.28	1.28	0.53
	SMB-T3-02	Tributary 3 to South Mountain Branch (T3-02)	0.30	0.09	1.55	20.71	0.45	2.09	0.21	0.52	0.51
	SMB- T3-03	Tributary 3 to South Mountain Branch (T3-03)	0.12	0.07	0.08	18.51	0.75	2.59	0.64	1.71	0.73

Notes:

All values reported as NTU

Highlighted cells indicate dry conditions or greater than 25 NTU

Jay Peak Resort, Jay Vermont
Water Quality Monitoring Plan 2016
Supplemental Turbidity Monitoring

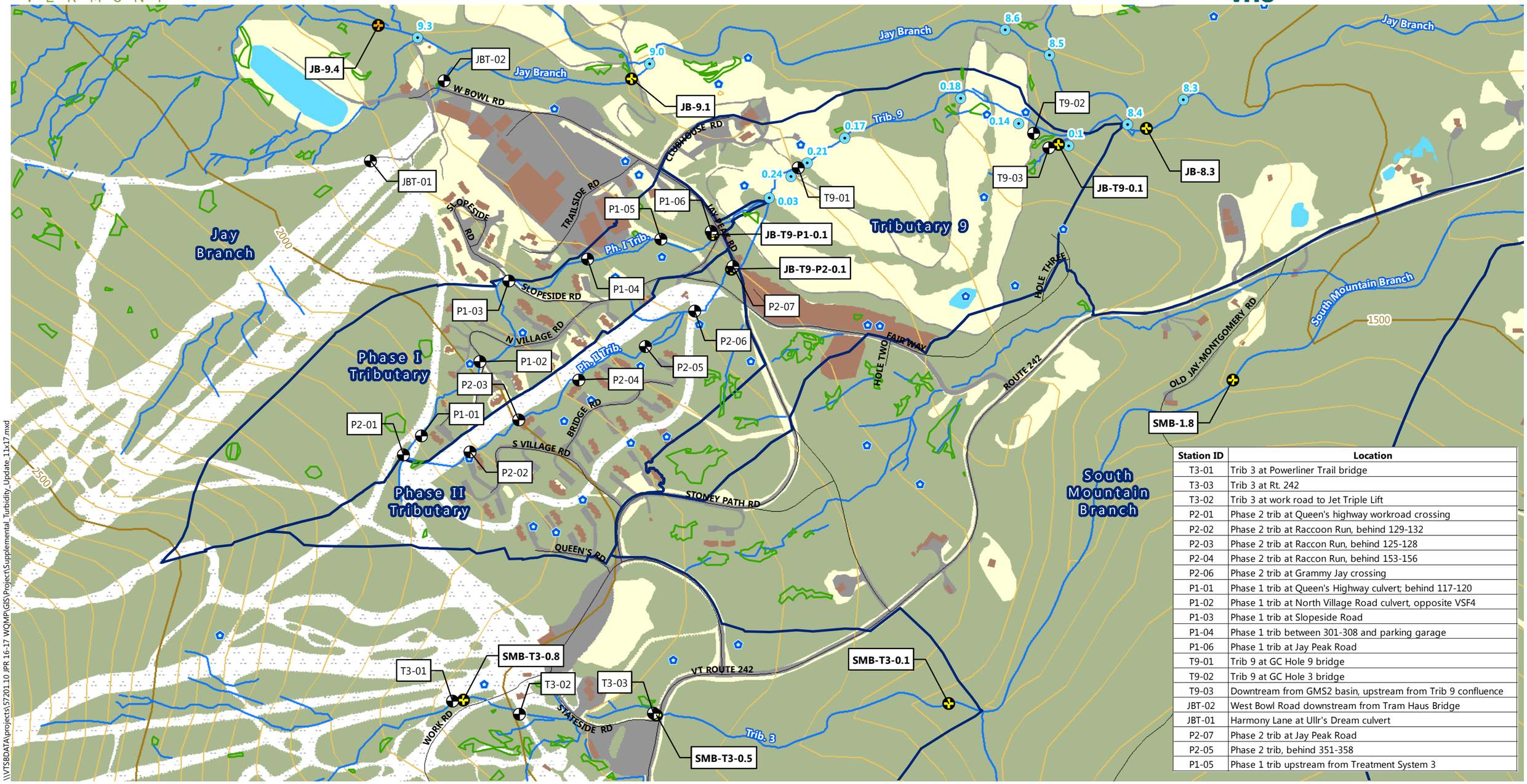
	Date	Location	9/1/2016	9/9/2016	9/19/2016	9/23/2016	10/21/2016	10/31/2016	11/3/2016	11/4/2016
	Rainfall Depth (in)		1.21	0.33	0.72	0.54	0.67	0.55	0.79	0.13
	Sampler		TL	TL	TL	TL	TL	TL	KC/JP	TL
	0.02 ntu Standard (start)		0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	10 ntu Standard (start)		10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
	1000 ntu Standard (start)		1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00
	0.02 ntu Standard (end)		0.09	0.25	0.04	0.07	0.09	0.12	-	0.11
	10 ntu Standard (end)		10.70	9.91	11.20	11.71	11.60	15.10	-	14.51
	1000 ntu Standard (end)		1000.00	988.30	1001.00	1013.00	981.20	1042.00	-	1009.00
Supplemental Turbidity Monitoring Station	JBT-01	Unnamed Tributary to Jay Branch (JBT-01)	1.75	0.76	0.74	4.11	1.53	0.11	14.52	5.50
	JBT-02	Unnamed Tributary to Jay Branch (JBT-02)	1.53	0.79	0.68	3.71	0.91	0.08	11.24	4.25
	P1-01	Phase I Tributary (P1-01)	7.53	0.32	0.86	4.01	2.54	3.70	2.07	6.31
	P1-02	Phase I Tributary (P1-02)	5.55	0.29	0.77	2.50	2.11	2.68	11.50	5.34
	P1-03	Phase I Tributary (P1-03)	1.68	0.11	0.74	9.44	1.79	2.11	11.80	3.39
	P1-04	Phase I Tributary (P1-04)	1.55	0.75	0.55	7.83	1.17	1.71	13.48	2.75
	P1-05	Phase I Tributary (P1-05)	6.31	0.63	0.12	9.09	0.88	1.82	13.75	2.34
	P1-06	Phase I Tributary (P1-06)	4.31	0.07	0.33	10.87	0.63	0.71	15.33	1.78
	P2-01	Phase II Tributary (P2-01)	0.68	1.01	0.75	7.86	1.14	0.17	46.06	2.24
	P2-02	Phase II Tributary (P2-02)	5.34	2.35	1.98	9.57	3.34	3.21	15.32	4.07
	P2-03	Phase II Tributary (P2-03)	3.06	2.11	1.02	5.84	2.71	3.10	11.58	3.93
	P2-04	Phase II Tributary (P2-04)	44.57	1.78	0.75	4.79	1.91	1.71	10.80	4.01
	P2-05	Phase II Tributary (P2-05)	25.75	1.33	0.63	4.18	0.72	0.75	11.75	2.81
	P2-06	Phase II Tributary (P2-06)	10.78	1.53	0.68	15.80	0.61	0.68	11.12	1.78
	P2-07	Phase II Tributary (P2-07)	8.81	1.17	0.57	3.04	0.12	0.17	14.30	0.61
	T9-01	Tributary 9 to Jay Branch (T9-01)	7.51	0.51	0.17	2.28	0.71	0.80	2.93	1.37
	T9-02	Tributary 9 to Jay Branch (T9-02)	4.35	0.27	1.32	3.52	0.22	1.02	8.64	1.51
	T9-03	Tributary 9 to Jay Branch (T9-03)	2.99	0.19	0.91	3.31	0.27	1.07	9.17	0.73
	SMB-T3-01	Tributary 3 to South Mountain Branch (T3-01)	1.36	0.79	0.11	2.61	0.42	0.06	3.71	0.86
	SMB-T3-02	Tributary 3 to South Mountain Branch (T3-02)	0.63	0.53	0.10	2.25	0.44	0.01	2.16	0.81
	SMB- T3-03	Tributary 3 to South Mountain Branch (T3-03)	1.44	0.44	0.22	1.71	0.38	0.07	4.69	0.78

Notes:
All values reported as NTU
Highlighted cells indicate dry conditions or greater than 25 NTU

JAY PEAK VERMONT

vhb

DRAFT: January 26, 2017



Station ID	Location
T3-01	Trib 3 at Powerliner Trail bridge
T3-03	Trib 3 at Rt. 242
T3-02	Trib 3 at work road to Jet Triple Lift
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
P2-06	Phase 2 trib at Grammy Jay crossing
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
P1-06	Phase 1 trib at Jay Peak Road
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
JBT-02	West Bowl Road downstream from Tram Haus Bridge
JBT-01	Harmony Lane at Ullr's Dream culvert
P2-07	Phase 2 trib at Jay Peak Road
P2-05	Phase 2 trib, behind 351-358
P1-05	Phase 1 trib upstream from Treatment System 3

600 300 0 600 Feet

Turbidity Monitoring Station (VHB)

Water Quality Monitoring Station (VHB)

Water Quality Monitoring Station

Benchmark Station

Reference Station

River Mile (VHB)

Stormwater Feature (VHB)

Wetland (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

Supplemental Turbidity 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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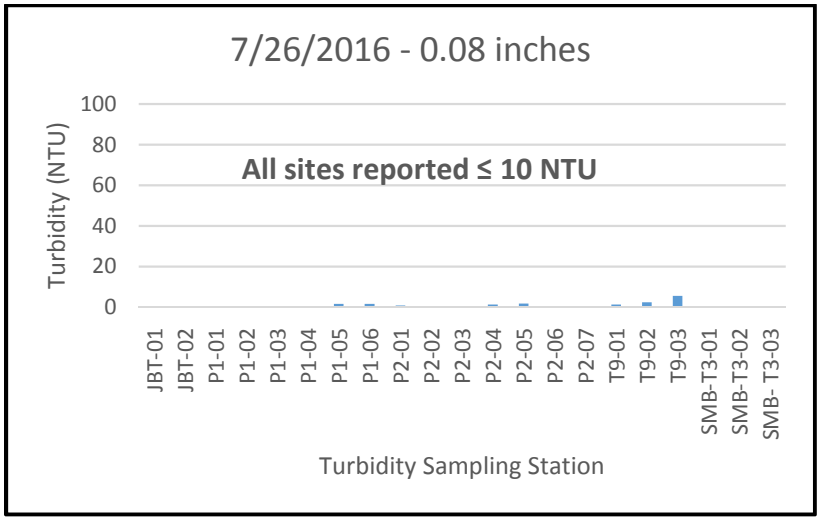
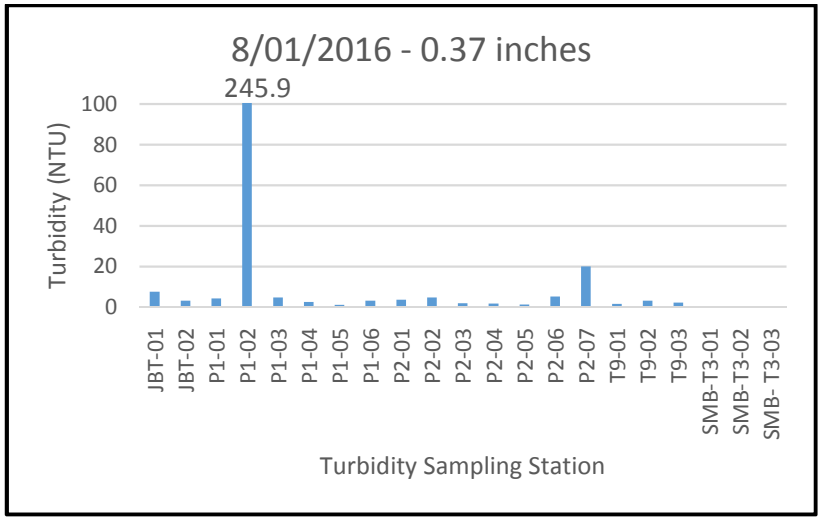
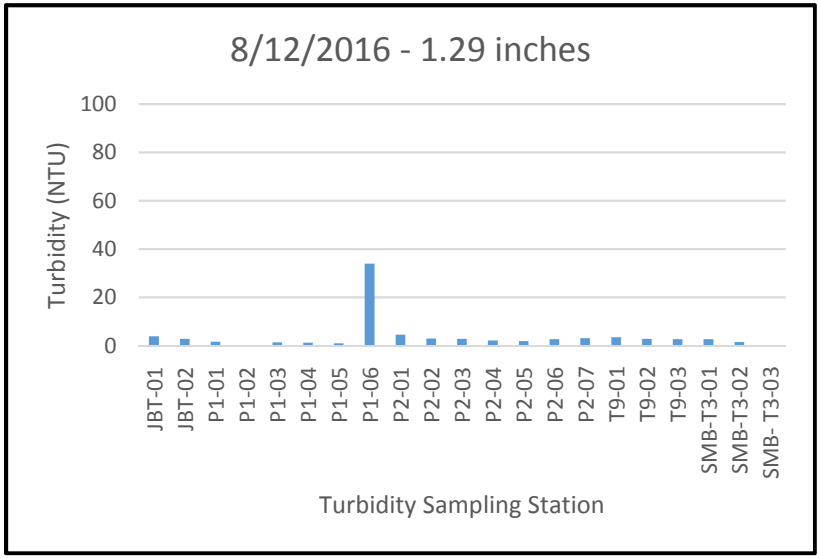
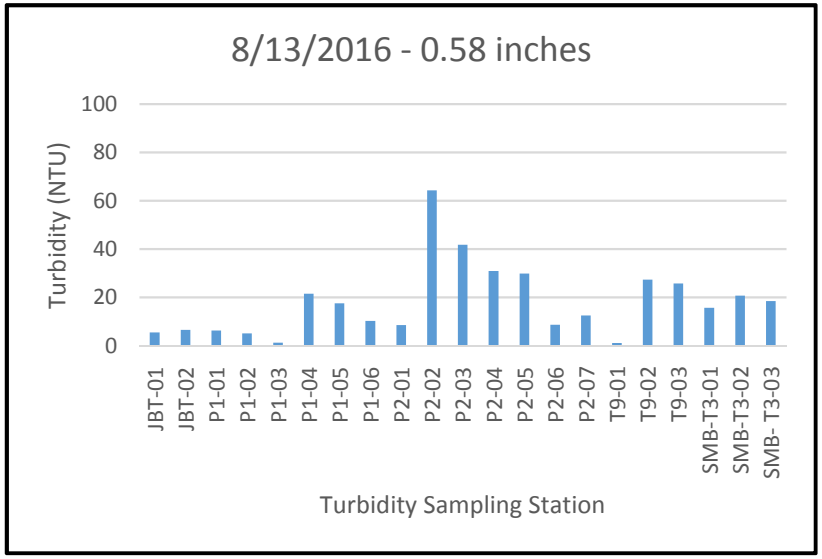
Jay Peak Resort
Supplemental Turbidity Monitoring Results
2016 Rainfall Events

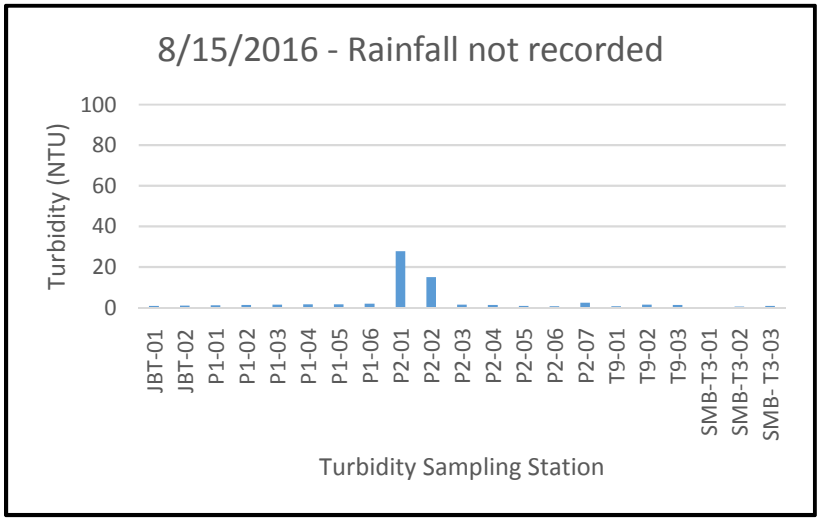


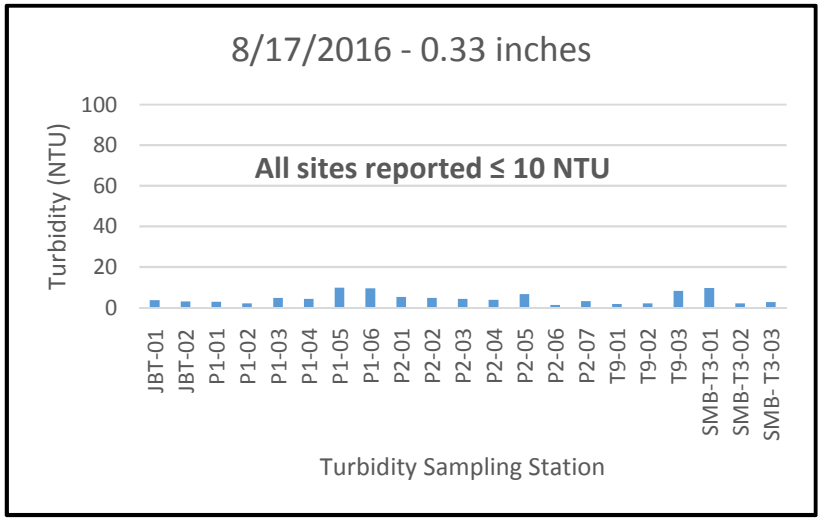


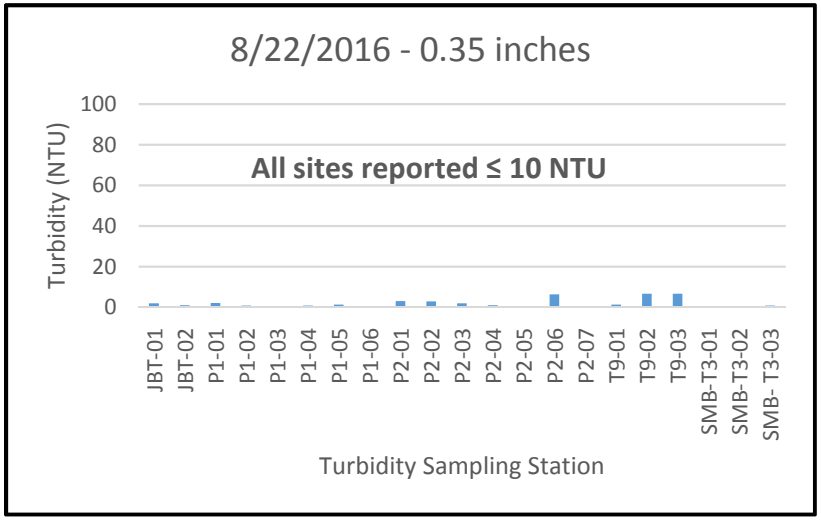


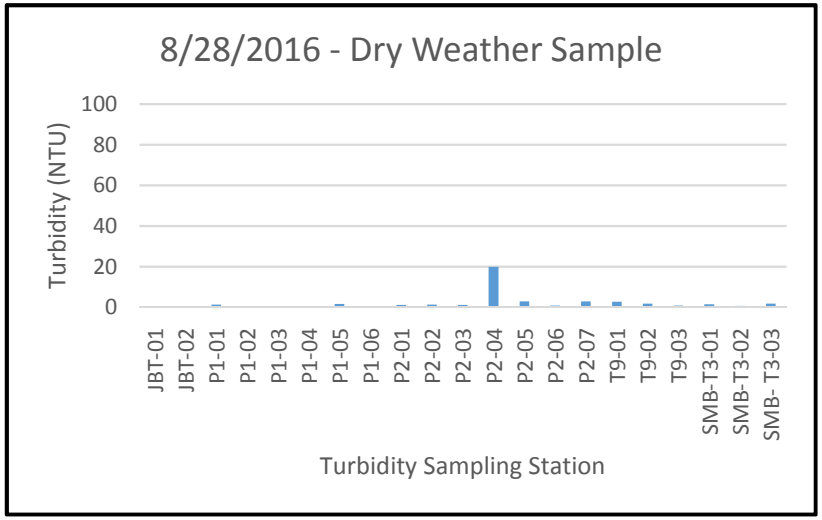


Jay Peak Resort
Supplemental Turbidity Monitoring Results
2016 Rainfall Events

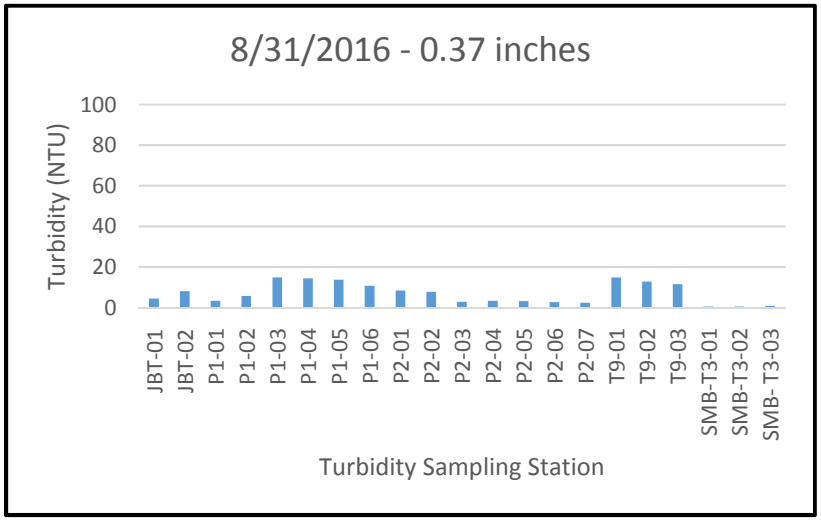


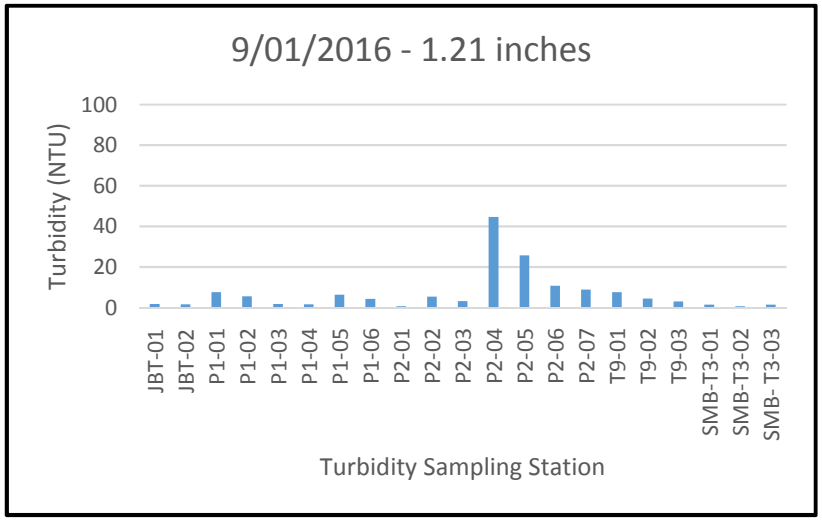


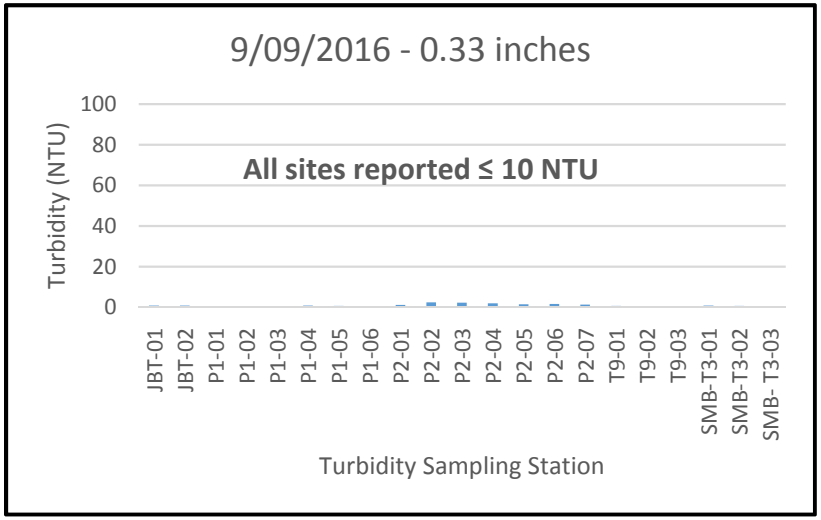


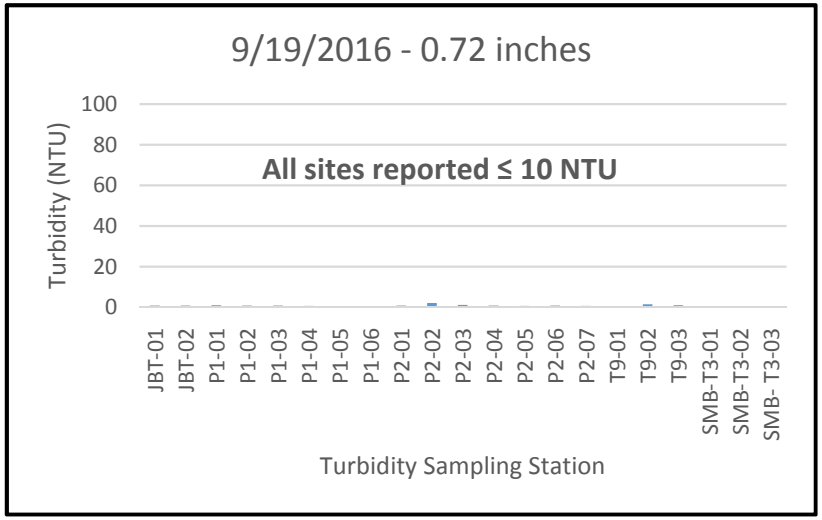


Jay Peak Resort
Supplemental Turbidity Monitoring Results
2016 Rainfall Events

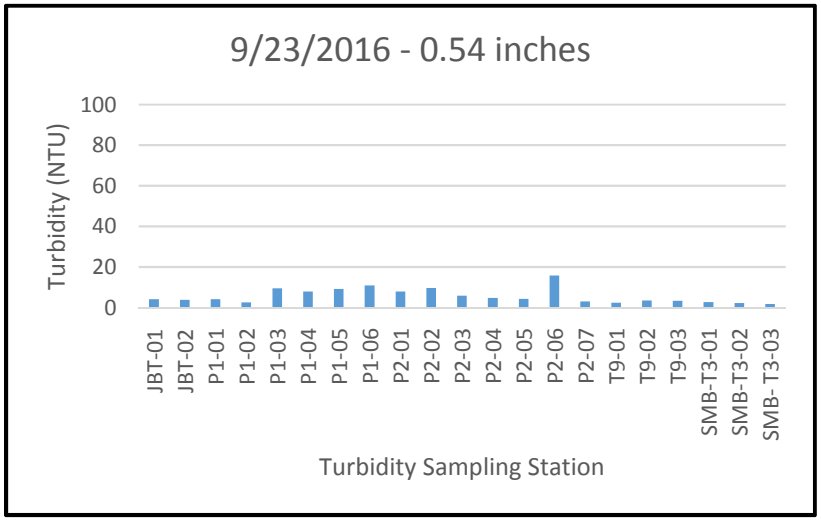


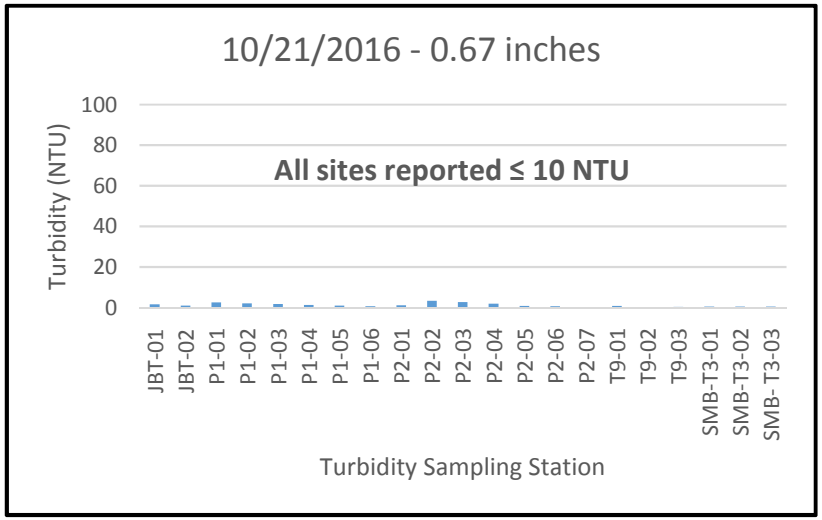


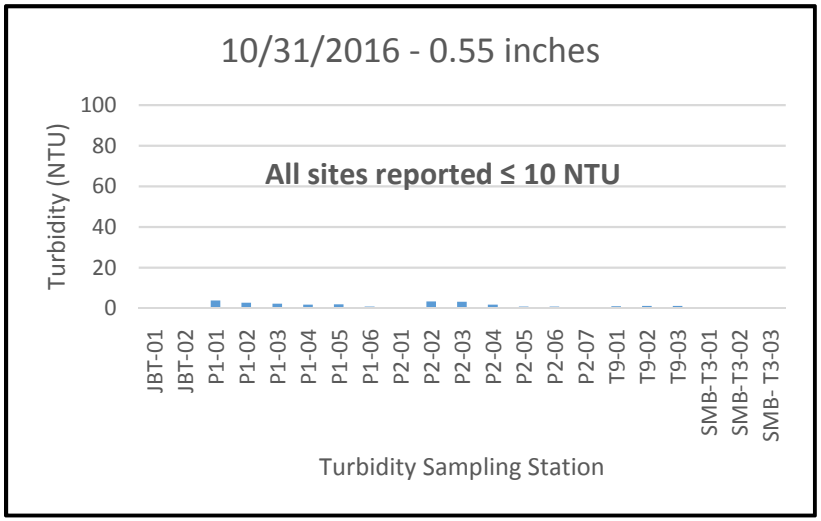


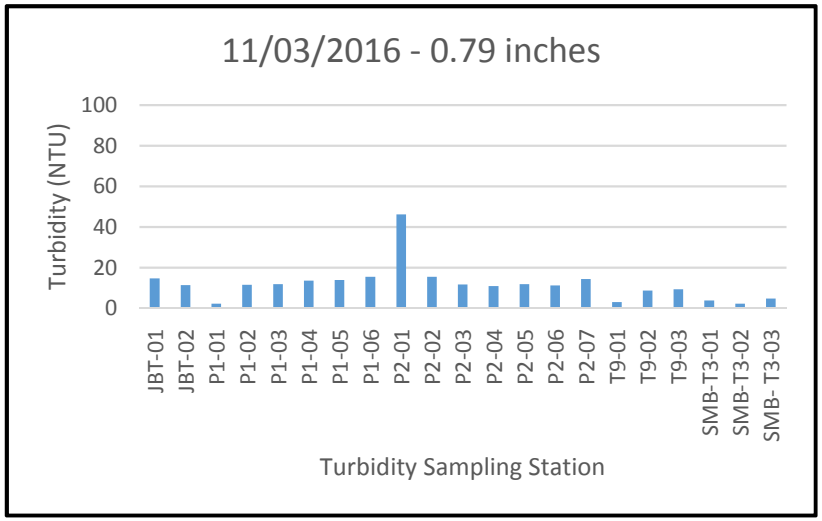


Jay Peak Resort
Supplemental Turbidity Monitoring Results
2016 Rainfall Events

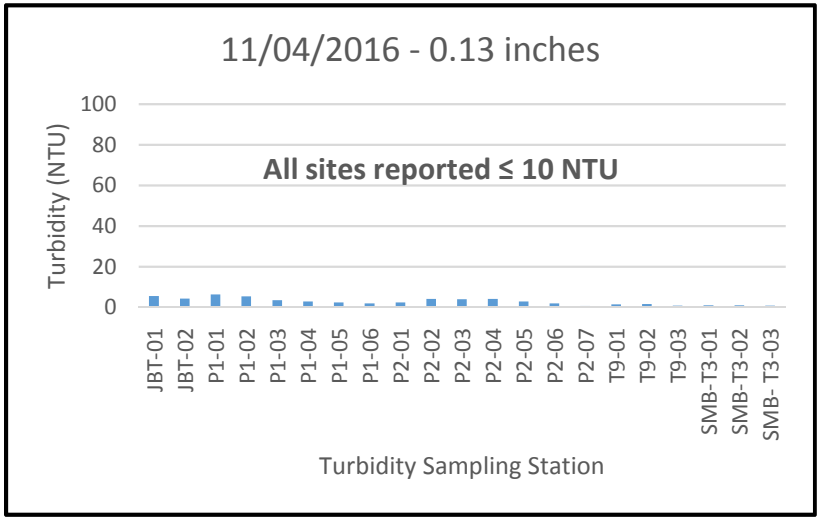








Jay Peak Resort
Supplemental Turbidity Monitoring Results
2016 Rainfall Events



APPENDIX 5

Jay Peak Water Quality Monitoring Plan 2016
Substrate Sampling Summary
VHB

Pebble Count and Sediment Monitoring Observations 2004-2016

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Upper Jay Branch	JB-T13-0.2	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	0-25%	3.0	3.0	64-256
		2014	5-25%	2.0	2.0	64-256
		2015	25-50%	2.0	2.0	16-64
		2016	0-25%	0.0	0.0	64-256

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Jay Branch	JB-9.1	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
		2016	0-25%	5.0	5.0	64-256

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Jay Branch	JB-8.3	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
		2016	0-25%	3.0	3.0	64-256

--- no data available
*** no percentage due to sie class variation
2004 data from Pioneer Environmental Associates LLC.
2005 and 2006 data from ESI
\\VTSBDATA\projects\57201.10 JPR 16-17 WQMP\tech\Biomonitoring\2016 Jay Pebble CountsSUM,1/20/2017

Jay Peak Water Quality Monitoring Plan 2016
Substrate Sampling Summary
VHB

Pebble Count and Sediment Monitoring Observations 2004-2016

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Jay Branch	JB-7.3	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
		2016	0-25%	3	3	64-256

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Phase I Tributary	JB-T9-P1-0.1	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
		2016	No sample collected. Station will be sampled in 2017			

--- no data available
*** no percentage due to sie class variation
2004 data from Pioneer Environmental Associates LLC.
2005 and 2006 data from ESI
\\VTSBDATA\projects\57201.10 JPR 16-17 WQMP\tech\Biomonitoring\2016 Jay Pebble CountsSUM,1/20/2017

Jay Peak Water Quality Monitoring Plan 2016
Substrate Sampling Summary
VHB

Pebble Count and Sediment Monitoring Observations 2004-2016

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Phase II Tributary	JB-T9-P2-0.1	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
		2016	No sample collected. Station will be sampled in 2017			

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Tributary 9	JB-T9-0.1	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
		2016	25-50%	5	5	16-64

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
South Mountain Branch	SMB-T3-0.8	2016	0-25%	12	11	>256

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
South Mountain Branch	SMB-T3-0.5	2014	5-25%	9	9	64-256
		2015	50-75%	6	6	16-64
		2016	No sample collected. Station will be sampled in 2017			

--- no data available
*** no percentage due to sie class variation
2004 data from Pioneer Environmental Associates LLC.
2005 and 2006 data from ESI
\\VTSBDATA\projects\57201.10 JPR 16-17 WQMP\tech\Biomonitoring\2016 Jay Pebble CountsSUM,1/20/2017

Jay Peak Water Quality Monitoring Plan 2016
Substrate Sampling Summary
VHB

Pebble Count and Sediment Monitoring Observations 2004-2016

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
South Mountain Branch	SMB-T3-0.1	2012	---	5	5	16-64
		2013	---	10	10	64-256
		2014	5-25%	8	8	64-256
		2015	50-75%	6	6	16-64
		2016	25-50%	10	10	64-256

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
South Mountain Branch	SMB-1.8	2012	---	8	8	16-64
		2013	---	1	1	64-256
		2014	5-25%	0	0	64-256
		2015	5-25%	0	0	64-256
		2016	No sample collected. Station will be sampled in 2017			

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
South Mountain Branch	SMB-1.2	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
		2016	0-25%	11	11	64-256

--- no data available

*** no percentage due to size class variation

2004 data from Pioneer Environmental Associates LLC.

2005 and 2006 data from ESI

--- no data available
*** no percentage due to sie class variation
2004 data from Pioneer Environmental Associates LLC.
2005 and 2006 data from ESI

Jay Peak Water Quality Monitoring Plan 2016
Substrate Sampling Summary
Sample Location: JB-T13-0.2
Sampling Date: October 3, 2016
Samplers: CS, RW

Station Habitat Observations	Sub-1
Canopy cover:	80%
Embeddedness:	0-25%
Bank stability:	Excellent

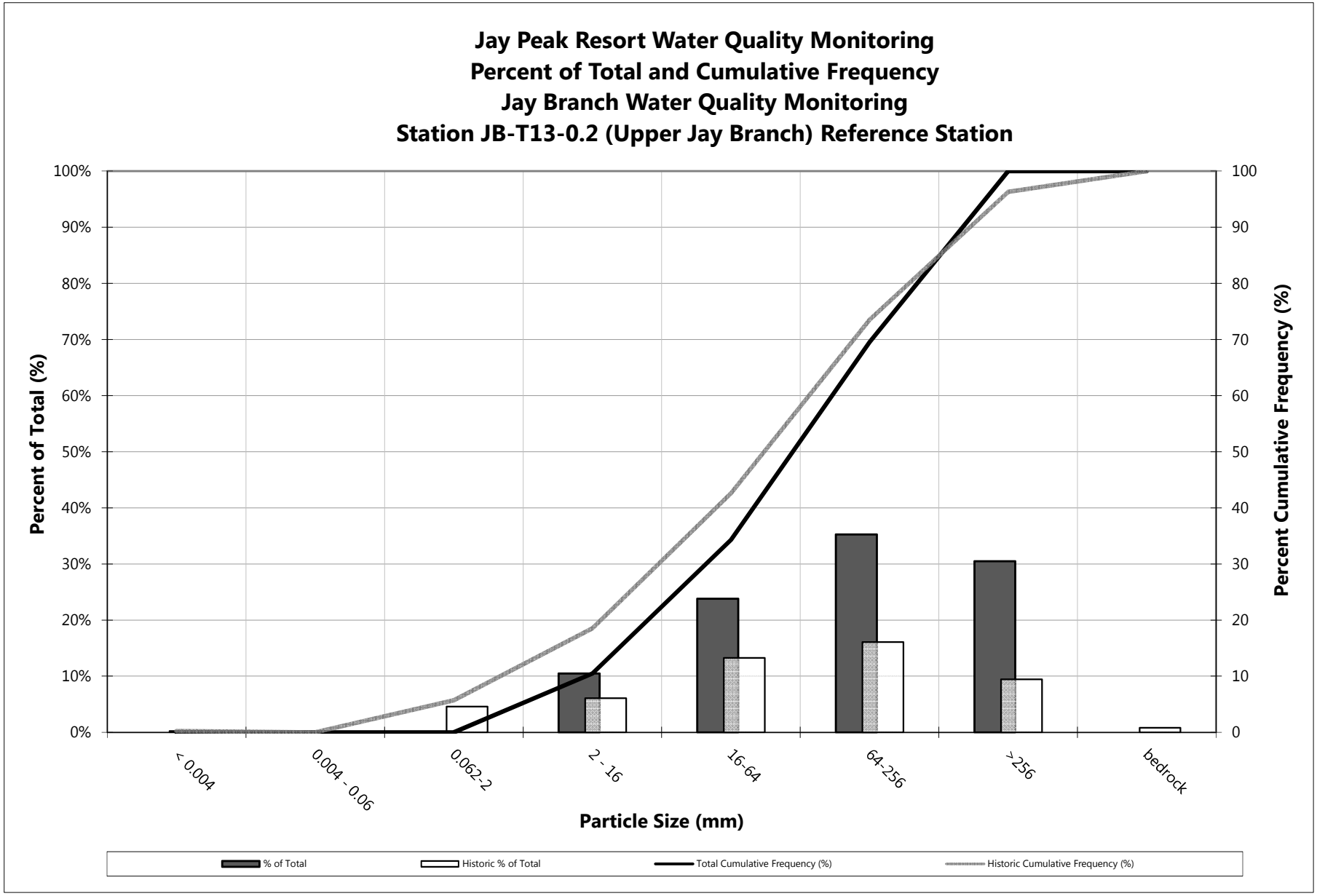
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	0	0%	0	0
Gravel	2 - 16	11	10%	11	10
Coarse gravel	16-64	25	24%	36	34
Cobble	64-256	37	35%	73	70
Boulder	>256	32	30%	105	100
Bedrock	bedrock	0	0%	105	100
	Sample Size (n)	105	100%		
	Longitudinal Distance (ft)	0'-100'			

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

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	36	12	8	13

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

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	10	46	-	-	-	-	-



\\VTSBDATA\projects\57201.10 JPR 16-17 WQMP\tech\Biomonitoring\2016 Jay Pebble CountsJB-T13-0.2 chart,1/20/2017

Jay Peak Water Quality Monitoring Plan 2016
Substrate Sampling Summary
Sample Location: JB-9.1
Sampling Date: October 3, 2016
Samplers: CS, RW

Station Habitat Observations	Sub-1
Canopy cover:	50%
Embeddedness:	0-25%
Bank stability:	Very Good

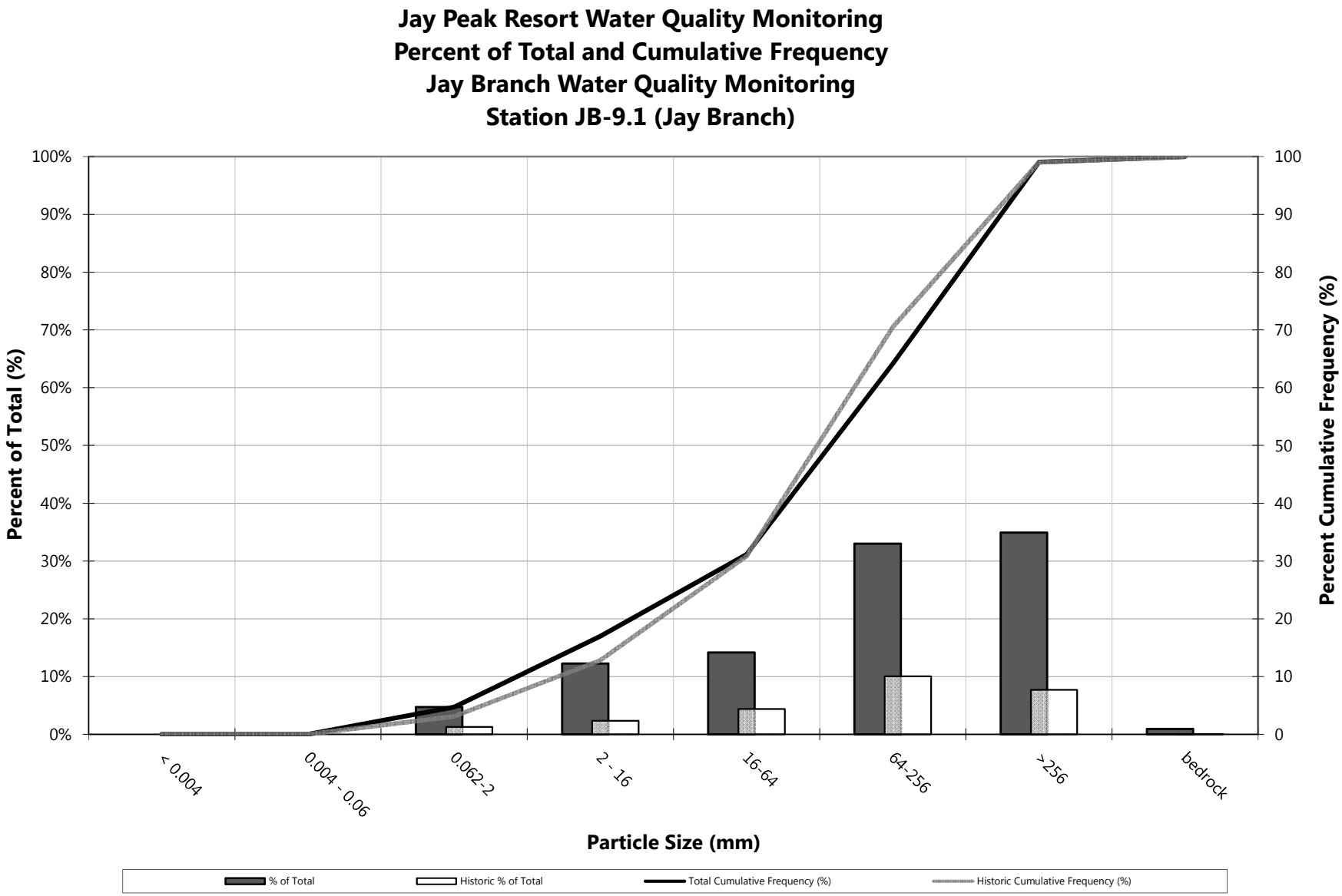
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	5	5%	5	5
Gravel	2 - 16	13	12%	18	17
Coarse gravel	16-64	15	14%	33	31
Cobble	64-256	35	33%	68	64
Boulder	>256	37	35%	105	99
Bedrock	bedrock	1	1%	106	100
	Sample Size (n)	106			
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Cobble
Dominant Size Class	Boulder
% Fines	5%
% Particles < 2 mm	5%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	46	13	3	6

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	58	1	2	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	10	48	6	-	-	-	-



\\VTSBDATA\projects\57201.10 JPR 16-17 WQMP\tech\Biomonitoring\2016 Jay Pebble CountsJB-9.1 chart,1/20/2017

Jay Peak Water Quality Monitoring Plan 2016
Substrate Sampling Summary
Sample Location: JB-8.3
Sampling Date: October 3, 2016
Samplers: CS

Station Habitat Observations	Sub-1
Canopy cover:	50%
Embeddedness:	0-25%
Bank stability:	Very Good

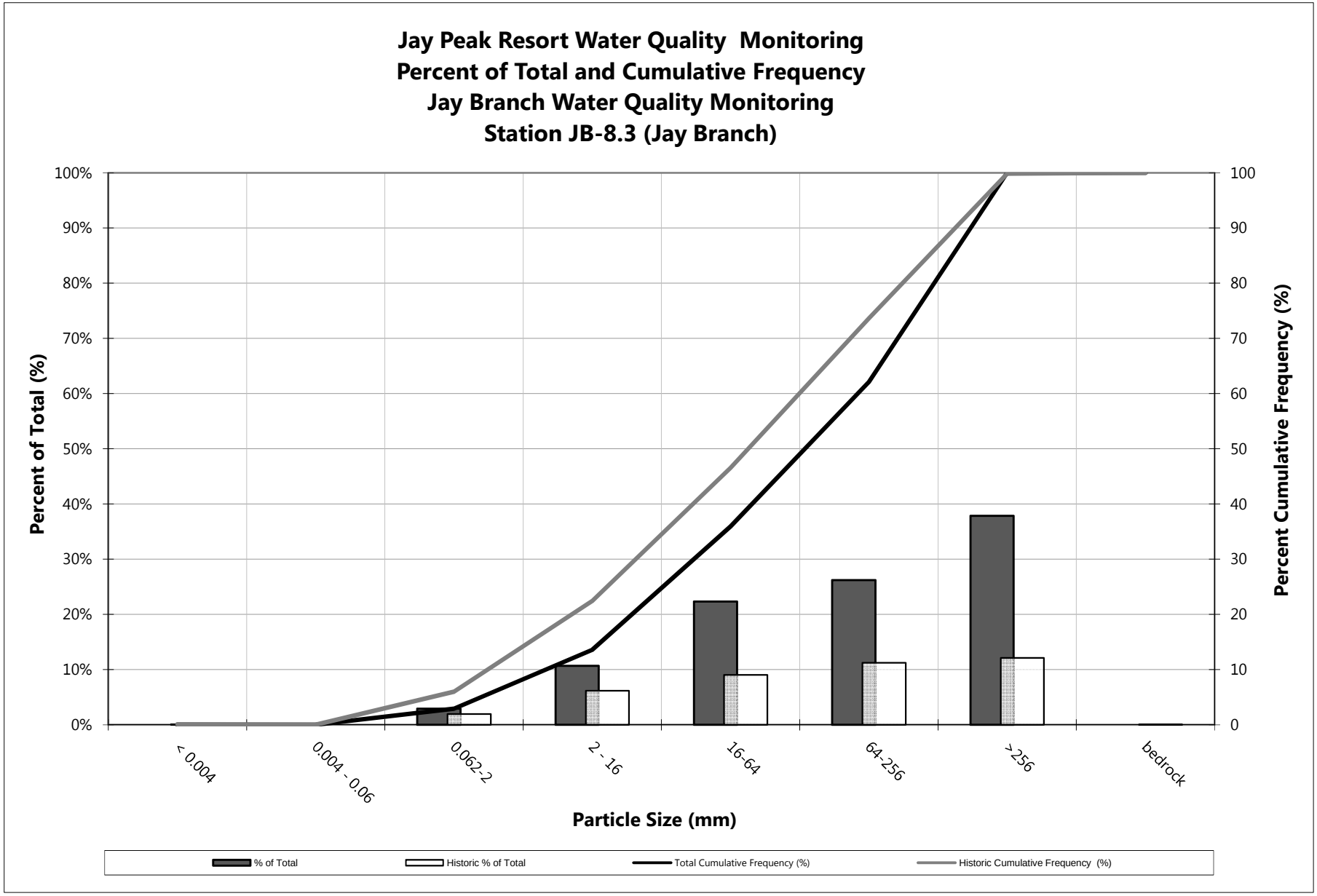
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	3	3%	3	3
Gravel	2 - 16	11	11%	14	14
Coarse gravel	16-64	23	22%	37	36
Cobble	64-256	27	26%	64	62
Boulder	>256	39	38%	103	100
Bedrock	bedrock	0	0%	103	100
	Sample Size (n)	103			
	Longitudinal Distance (ft)	0'-100'			

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

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	22	17	7	5

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

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	1	54	-	-	-	-	-



\\VTSBDATA\projects\57201.10 JPR 16-17 WQMP\tech\Biomonitoring\2016 Jay Pebble CountsJB-8.3 chart,1/20/2017

Jay Peak Water Quality Monitoring Plan 2016
Substrate Sampling Summary
Sample Location: JB-7.3
Sampling Date: October 3, 2016
Samplers: CS

Station Habitat Observations	Sub-1
Canopy cover:	90%
Embeddedness:	0-25%
Bank stability:	Very Good

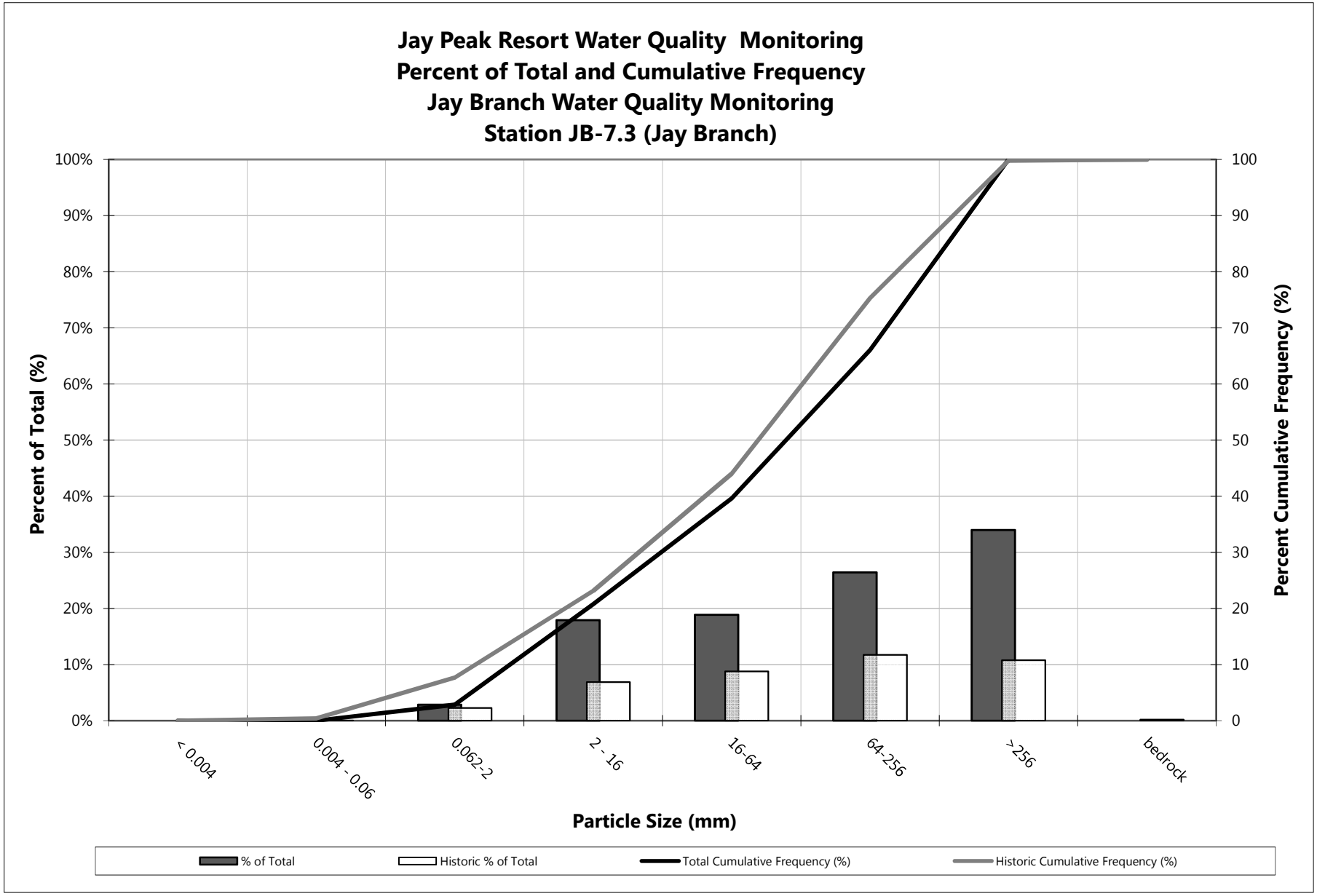
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	3	3%	3	3
Gravel	2 - 16	19	18%	22	21
Coarse gravel	16-64	20	19%	42	40
Cobble	64-256	28	26%	70	66
Boulder	>256	36	34%	106	100
Bedrock	bedrock	0	0%	106	100
	Sample Size (n)	106	100%		
	Longitudinal Distance (ft)	0'-100'			

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

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	47	9	8	4

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

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	8	44	-	-	-	-	-



\\VTSBDATA\projects\57201.10 JPR 16-17 WQMP\tech\Biomonitoring\2016 Jay Pebble CountsJB-7.3 chart,1/20/2017

Jay Peak Water Quality Monitoring Plan 2016
Substrate Sampling Summary
Sample Location: JB-T9-0.1
Sampling Date: October 3, 2016
Samplers: CS, RW

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

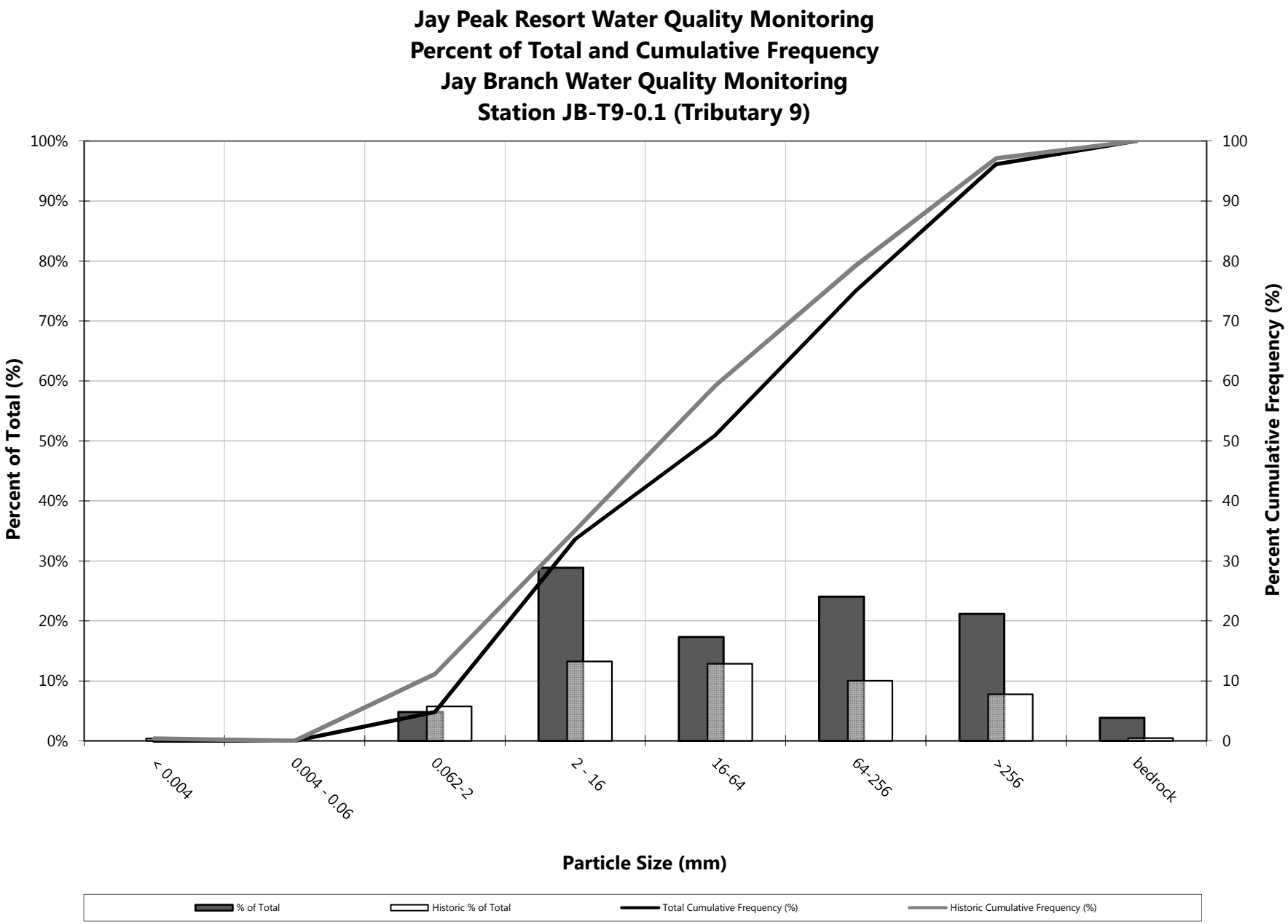
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	5	5%	5	5
Gravel	2 - 16	30	29%	35	34
Coarse gravel	16-64	18	17%	53	51
Cobble	64-256	25	24%	78	75
Boulder	>256	22	21%	100	96
Bedrock	bedrock	4	4%	104	100
	Sample Size (n)	104	100		
	Longitudinal Distance (ft)	0'-100'			

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

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

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

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	25	33	-	-	-	-	-


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 2016
Substrate Sampling Summary
Sample Location: SMB-T3-0.8
Sampling Date: October 3, 2016
Samplers: CS, RW

Station Habitat Observations	Sub-1
Canopy cover:	90%
Embeddedness:	0-25%
Bank stability:	Very Good

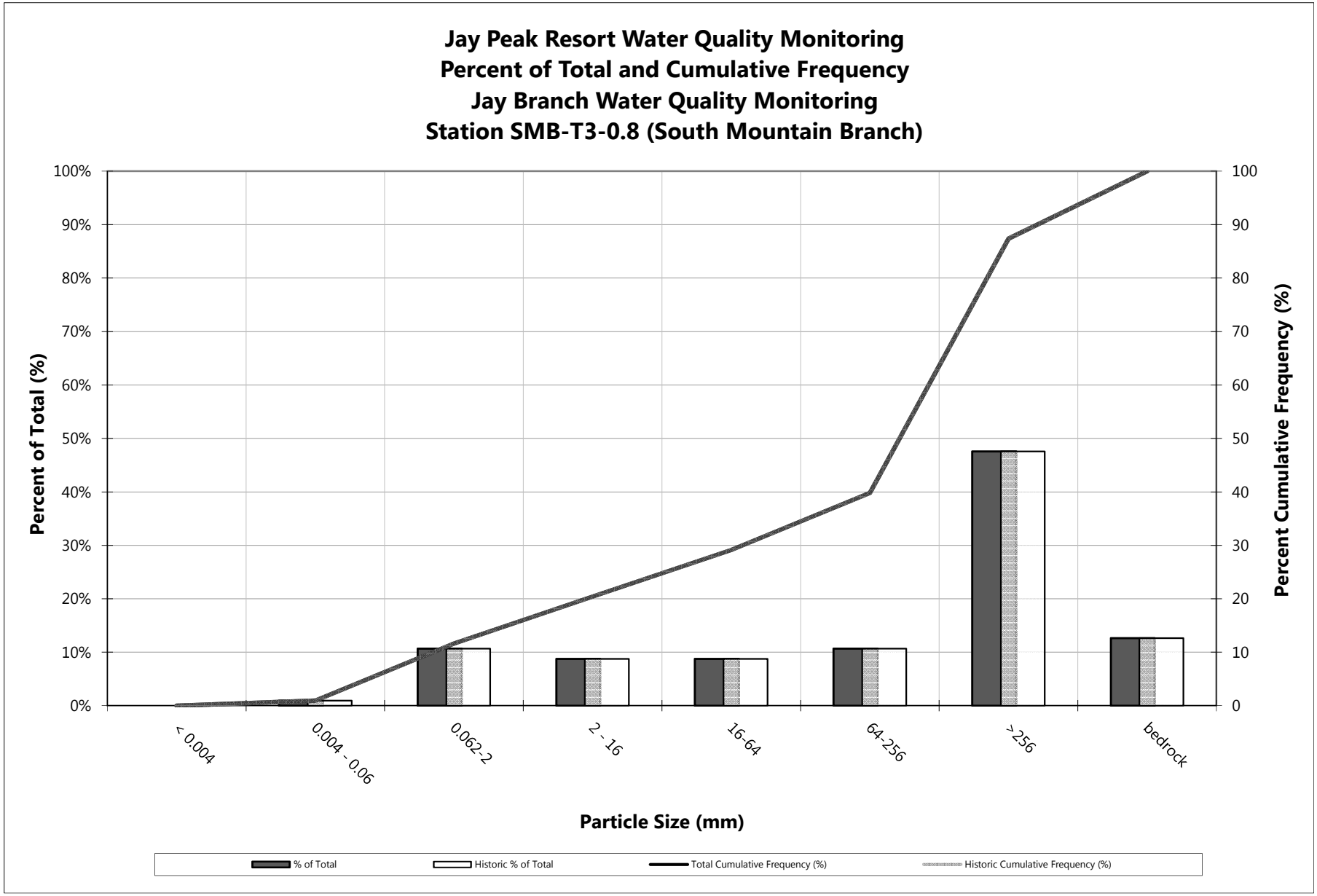
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	1	1%	1	1
Sand (fines)	0.062-2	11	11%	12	12
Gravel	2 - 16	9	9%	21	20
Coarse gravel	16-64	9	9%	30	29
Cobble	64-256	11	11%	41	40
Boulder	>256	49	48%	90	87
Bedrock	bedrock	13	13%	103	100
	Sample Size (n)	103	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Boulder
Dominant Size Class	Boulder
% Fines	11%
% Particles < 2 mm	12%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	33	16	19	14

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

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	21	26	-	-	-	-	-



\\VTSBDATA\projects\57201.10 JPR 16-17 WQMP\tech\Biomonitoring\2016 Jay Pebble CountsSMB-T3-0.8 chart,1/20/2017

Jay Peak Water Quality Monitoring Plan 2016
Substrate Sampling Summary
Sample Location: SMB-T3-0.1
Sampling Date: October 3, 2016
Samplers: CS, RW

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

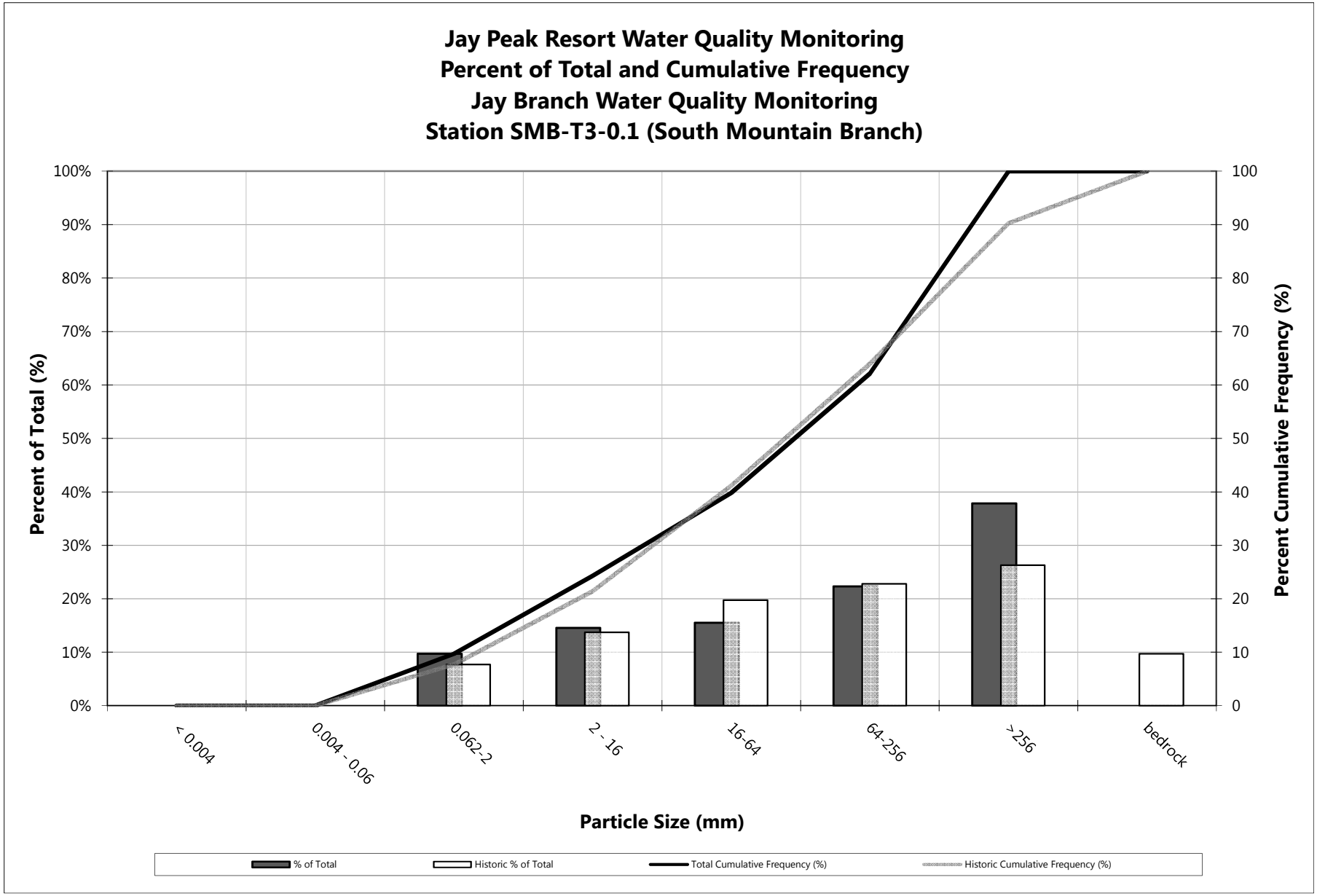
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	10	10%	10	10
Gravel	2 - 16	15	15%	25	24
Coarse gravel	16-64	16	16%	41	40
Cobble	64-256	23	22%	64	62
Boulder	>256	39	38%	103	100
Bedrock	bedrock	0	0%	103	100
	Sample Size (n)	103	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Cobble
Dominant Size Class	Boulder
% Fines	10%
% Particles < 2 mm	10%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	30	17	8	6

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

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



\\VTSBDATA\projects\57201.10 JPR 16-17 WQMP\tech\Biomonitoring\2016 Jay Pebble CountsSMB-T3-0.1 chart,1/20/2017

Jay Peak Water Quality Monitoring Plan 2016
Substrate Sampling Summary
Sample Location: SMB-1.2
Sampling Date: October 3, 2016
Samplers: CS

Station Habitat Observations	Sub-1
Canopy cover:	60%
Embeddedness:	0-25%
Bank stability:	Very Good

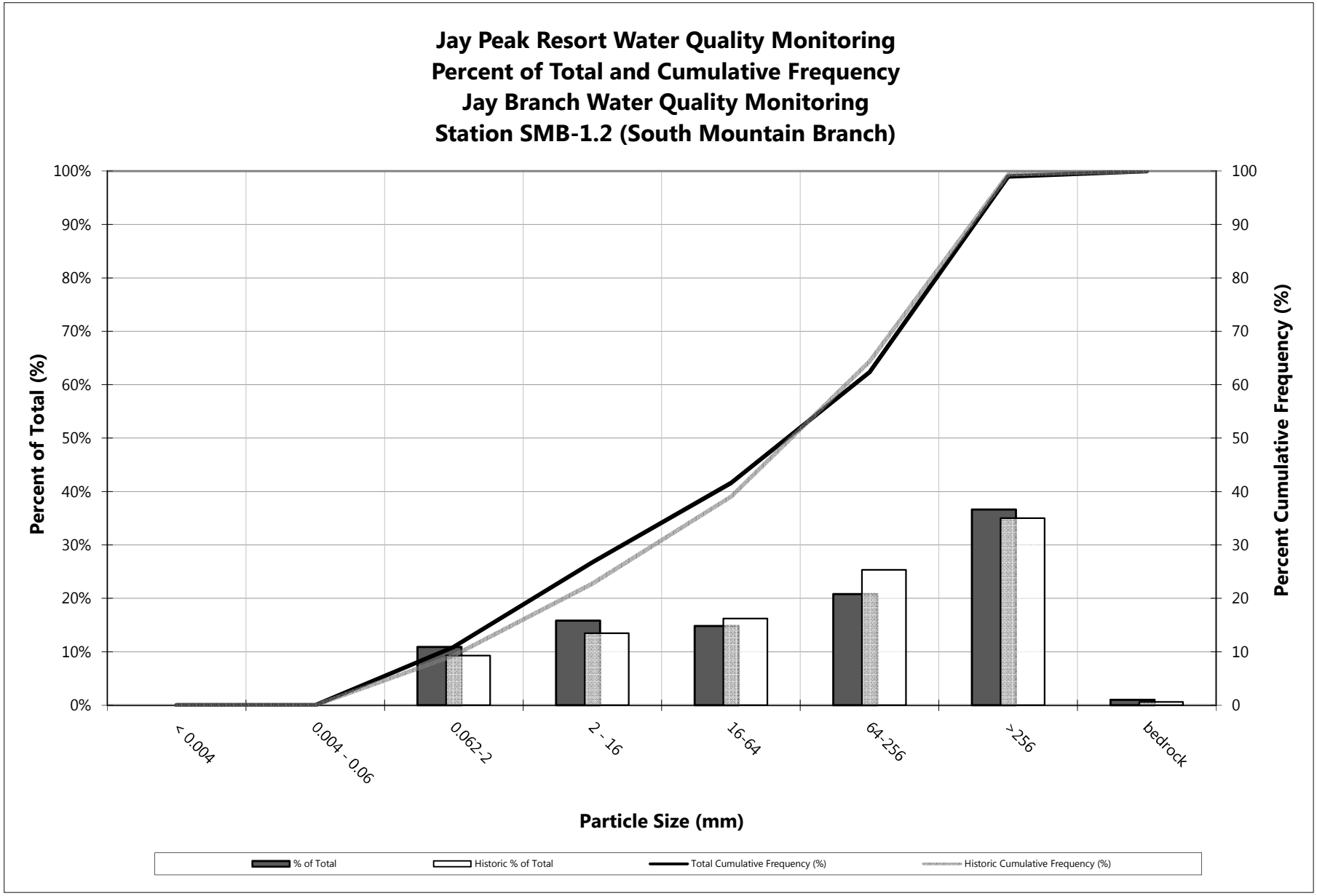
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	11	11%	11	11
Gravel	2 - 16	16	16%	27	27
Coarse gravel	16-64	15	15%	42	42
Cobble	64-256	21	21%	63	62
Boulder	>256	37	37%	100	99
Bedrock	bedrock	1	1%	101	100
	Sample Size (n)	101	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Cobble
Dominant Size Class	Boulder
% Fines	11%
% Particles < 2 mm	11%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	40	10	8	13

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

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	11	41	-	-	-	-	-



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APPENDIX 6

Jay Peak Resort
2016 Kick Net Data Summary (Class B, Small High Gradient Streams)
Prepared by VHB
January 26, 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 Trib. 13 to Jay Branch	874	34	21	70	0.72	0.62	0.96	61	Meets Class B Criteria (Ex-Very Good)	Benchmark station, near Hole 13. No interim targets set.
JB-9.1 Jay Branch	865	33	22	75	1.19	10	0.96	63	Meets Class B Criteria (Good)	Upstream of Hole 10 bridge. No interim targets set.
JB-8.3 Jay Branch	413	34	22	81	1.58	9	0.97	73	Meets Class B Criteria (Good)	Downstream of confluence with Trib. 9. Interim and Compliance Targets met.
JB-7.3 Jay Branch	394	33	25	76	1.06	8	0.98	61	Meets Class B Criteria (Good)	Upstream of Route 242 bridge. Interim and Compliance Targts met.
JB-T9-0.1 Trib. 9 to Jay Branch	373	30	21	82	1.16	4	1.00	56	Meets Class B Criteria (Vg-Good)	Upstream of confluence with Jay Branch. Interim and Compliance Targets met.
SMB-T3-0.8 Trib. 3 to SMB	415	31	19	59	0.73	5	0.91	35	Meets Class B Criteria * (Vg-Good)	* Per DEC, the failure of the PPCS-FG metric "is likely due to natural causes at this very high elevation site and the October collection date."
SMB-T3-0.1 Trib. 3 to SMB	206	26	19	58	0.93	30	0.97	54	Does Not Meet Class B Criteria (Fair-Poor)	1 of 4 Interim targets met (Density >250; Richness >26, EPT >15.7, % Oligo <14.5)
SMB-1.2 South Mountain Branch (SMB)	307	27	18	59	0.86	18	0.95	49	Does Not Meet Class B Criteria (Fair)	Upstream of Shallowbrook Road crossing. No interim targets set.

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%

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	468.5	32	21.5	63	1.22	0.86	0.9429	56	Meets Class B Criteria
2009 VHBP	625	34	23	73	1.34	0	0.93	59	Meets Class B Criteria
2010 VHB	642	40	24.5	78	1.71	0.36	0.889	56	Meets Class B Criteria
2011 VHB	420.5	35	23	70	0.85	0.11	0.93053	46	Meets Class B Criteria
2012 VHB	883	36	24.5	75	1.13	0	0.94714	44	Meets Class B Criteria
2013 VHB	872	33	21	70	0.94	0.0	0.922	61	Meets Class B Criteria
2014 VHB	781.2	36	23.5	74	1.24	0	0.91857	65	Meets Class B Criteria
2015 VHB	914	34	20.5	70	1.03	0.46	0.93728	55	Meets Class B Criteria
2016 VHB	873.6	34	21	70	0.72	0.62	0.9625	61	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 2016 version

Project Name: Jay Peak Resort	
VT DEC Lab ID:	Organization: VHB
Stream Name: Jay Branch Trib 13	Stream Class: SHG
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:	44.945723	-72.518770
or VT Site ID:	427813000002	
Date collected:	10/3/2016	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Dec. 2016	Dec. 2016
#sq picked:	8	10
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Dec. 2016	Dec. 2016

Taxonomic Data																			Biotic Index						Richness Metrics			
								Rep1				Rep2							Biotic Index Scores		Old BI (1-5)		New BI (1-10)		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	20	60	CCS	A	12	28.8		SCR	N	2	3	120	58	180	86	1	0	1	0
01.03.00.00.007.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	PROMORESIA	N/A	sp				0	CCS	A	1	2.4		SCR	N	2	2	0	5	0	5	-	0	1	0
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A	ZIA/PALPON	BEZZIA	N/A	sp				0	CCS	A	1	2.4		PRD	N	3	6	0	7	0	14	-	0	1	0
02.05.01.00.055.00.00	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	MICROTENDIPES	N/A	sp				0	CCS	A	1	2.4		CG	Y	3	6	0	7	0	14	-	0	1	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps				0	CCS	A	1	2.4		CG	Y	3	4	0	7	0	10	-	0	1	0
02.05.05.00.029.00.02	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	brehmi grp	CCS	A	1	3				0		CG	Y	2	4	6	0	12	0	1	0	-	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	5	15	CCS	A	2	4.8		CG	Y	2	2	30	10	30	10	1	0	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	4	12	CCS	A	2	4.8		CG	Y	3	5	36	14	60	24	1	0	1	0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca				0	CCS	A	2	4.8		CG	Y	2	4	0	10	0	19	-	0	1	0
02.05.09.04.110.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	MANNIMYIA	THIENEMANNIMYIA	N/A	sp	CCS	A	2	6	CCS	A	2	4.8		PRD	Y	3	6	18	14	36	29	1	0	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	2	6	CCS	A	3	7.2		PRD	N	2	3	12	14	18	22	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	2	6	CCS	A	4	9.6		PRD	N	2	2	12	19	12	19	1	0	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CCS	A	3	9	CCS	A	1	2.4		SRD	N	3	6	27	7	54	14	1	0	1	0
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	6	18	CCS	A	10	24		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	CCS	A	4	9.6		CG	N	2	4	0	19	0	38	-	0	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp				0	CCS	A	4	9.6		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	CCS	A	3	7.2		SCR	N	1	4	3	7	12	29	1	1	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp				0	CCS	A	1	2.4		CG	N	0	0	0	0	0	0	-	0	1	1
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	20	60	CCS	A	19	45.6		CG	N	2	1	120	91	60	46	1	1	1	1
03.14.00.00.001.00.00	EPHEMEROPTERA	AMELETIDAE	N/A	N/A	AMELETUS	N/A	sp	CCS	A	1	3	CCS	A	4	9.6		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	5	15	CCS	A	5	12		SHR	N	1	2	15	12	30	24	1	1	1	1
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS	A	2	6				0		SCR	N	1	0	6	0	0	0	1	1	-	0
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	30	90	CCS	A	23	55.2		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	12	36	CCS	A	10	24		SRD	N	1	1	36	24	36	24	1	1	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	45	135	CCS	A	19	45.6		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	1	3				0		CF	N	0	0	0	0	0	0	1	1	-	0
04.14.00.00.005.00.00	TRICHOPTERA	OLYCENTROPODIDA	N/A	N/A	POLYCENTROPUS	N/A	sp				0	CCS	A	1	2.4		PRD	N	3	6	0	7	0	14	-	0	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	1	3	CCS	A	3	7.2		PRD	N	1	2	3	7	6	14	1	1	1	1
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	invaria grp	invaria grp	CCS	A	1	3				0		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	6	18	CCS	A	1	2.4		PRD	N	0	1	0	0	18	2	1	1	1	1
04.16.00.00.001.03.09	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	minor/manistee	minor	CCS	A	7	21	CCS	A	14	33.6		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	CCS	A	1	3	CCS	A	4	9.6		SCR	N	1	3	3	10	9	29	1	1	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	24	72	CCS	A	15	36		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	73	219	CCS	A	118	283.2		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	17	51	CCS	A	22	52.8		SRD	N	1	0	51	53	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	1	3				0		PRD	N	1	2	3	0	6	0	1	1	-	0
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	8	24	CCS	A	8	19.2		PRD	N	1	2	24	19	48	38	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	11	33	CCS	A	6	14.4		SRD	N	1	0	33	14	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	2	6	CCS	A	5	12		PRD	N	2	5	12	24	30	60	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	CCS	A	1	2.4		CG	N	-	-	-	-	-	-	1	0	1	0
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A	N/A	N/A	N/A	uid				0	CCS	A	1	2.4		CG	N	-	-	-	-	-	-	-	0	1	0
TOTALS by Rep: --->										316	**948**			333	**799.2**													

Total BI Score	573	460.8	660	585.6	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
Total # Organisms	948	799.2	948	799.2				
# of Organisms w/o BI	6	4.8	6	4.8	31		36	
Total # Organisms with BI	942	794.4	942	794.4		21		21
Biotic Index	0.61	0.58	0.70	0.74				

GRAND TOTAL: 1747.2 organisms

*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 Trib 13
VT Site ID 427813000002
Sample Date 10/03/2016

2016 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	60	0	0	0	0	0	0	0	0	0	
01.03.00.00.007.00.00	0	0	0	0	0	0	0	0	0	0	
02.03.00.01.003.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.01.00.055.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.02	0	3	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	15	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	12	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	0	0	0	0	0	0	0	0	0	
02.05.09.04.110.00.00	0	6	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	6	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	6	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	9	0	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	18	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	0	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	0	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	3	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	0	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	60	0	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	3	0	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	15	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	6	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	90	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	36	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	135	0	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	3	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	3	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	3	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	18	0	0	0	0	0	0	
04.16.00.00.001.03.09	0	0	0	21	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	3	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	72	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	219	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	51	0	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	3	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	24	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	33	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	6	0	
18.04.00.00.000.00.00	0	0	0	0	0	6	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	0	0	0	0	0	
Total	**60**	**57**	**84**	**333**	**402**	**6**	**0**	**0**	**6**	**0**	**948**
Percent	**6%**	**6%**	**9%**	**35%**	**42%**	**1%**	**0%**	**0%**	**1%**	**0%**	**100.000%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB T13-0.2
Stream Jay Branch Trib 13
VT Site ID 427813000002
Sample Date 10/03/2016

2016 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	28.8	0	0	0	0	0	0	0	0	0	
01.03.00.00.007.00.00	2.4	0	0	0	0	0	0	0	0	0	
02.03.00.01.003.00.00	0	2.4	0	0	0	0	0	0	0	0	
02.05.01.00.055.00.00	0	2.4	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	2.4	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.02	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	4.8	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	4.8	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	4.8	0	0	0	0	0	0	0	0	
02.05.09.04.110.00.00	0	4.8	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	7.2	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	9.6	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	2.4	0	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	24	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	9.6	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	9.6	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	7.2	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	2.4	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	45.6	0	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	9.6	0	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	12	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	0	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	55.2	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	24	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	45.6	0	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	0	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	2.4	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	7.2	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	0	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	2.4	0	0	0	0	0	0	
04.16.00.00.001.03.09	0	0	0	33.6	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	9.6	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	36	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	283.2	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	52.8	0	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	0	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	19.2	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	14.4	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	12	0	
18.04.00.00.000.00.00	0	0	0	0	0	2.4	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	2.4	0	0	0	0	
Total	**31.2**	**45.6**	**108**	**192**	**405.6**	**4.8**	**0**	**0**	**12**	**0**	**799.2**
Percent	**4%**	**6%**	**14%**	**24%**	**51%**	**1%**	**0%**	**0%**	**2%**	**0%**	**100.00%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB T13-0.2
Stream Jay Branch Trib 13
Location 427813000002
Sample Date 10/03/2016

2016 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	0	0	0	0	60	0		0	0	0	0	0	28.8	0	
01.03.00.00.007.00.00	0	0	0	0	0	0	0		0	0	0	0	0	2.4	0	
02.03.00.01.003.00.00	0	0	0	0	0	0	0		0	0	2.4	0	0	0	0	
02.05.01.00.055.00.00	0	0	0	0	0	0	0		2.4	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	0	0	0	0	0	0		2.4	0	0	0	0	0	0	
02.05.05.00.029.00.02	3	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.029.00.11	15	0	0	0	0	0	0		4.8	0	0	0	0	0	0	
02.05.05.00.075.00.00	12	0	0	0	0	0	0		4.8	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	0	0	0	0	0	0		4.8	0	0	0	0	0	0	
02.05.09.04.110.00.00	0	0	6	0	0	0	0		0	0	4.8	0	0	0	0	
02.19.00.00.003.00.00	0	0	6	0	0	0	0		0	0	7.2	0	0	0	0	
02.19.00.00.006.00.00	0	0	6	0	0	0	0		0	0	9.6	0	0	0	0	
02.19.00.00.016.00.00	0	0	0	9	0	0	0		0	0	0	2.4	0	0	0	
03.04.00.00.004.00.01	18	0	0	0	0	0	0		24	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	0	0	0	0	0		9.6	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	0	0	0	0	0		9.6	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	3	0		0	0	0	0	0	7.2	0	
03.06.00.00.005.00.00	0	0	0	0	0	0	0		2.4	0	0	0	0	0	0	
03.07.00.00.005.00.00	60	0	0	0	0	0	0		45.6	0	0	0	0	0	0	
03.14.00.00.001.00.00	3	0	0	0	0	0	0		9.6	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	0	15	0	0		0	0	0	0	12	0	0	
04.03.00.00.002.00.00	0	0	0	0	0	6	0		0	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	90	0	0	0	0	0		0	55.2	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	36	0	0	0		0	0	0	24	0	0	0	
04.12.00.00.002.00.00	0	135	0	0	0	0	0		0	45.6	0	0	0	0	0	
04.12.00.00.003.00.00	0	3	0	0	0	0	0		0	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	0	0	0	0		0	0	2.4	0	0	0	0	
04.16.00.00.001.00.01	0	0	3	0	0	0	0		0	0	7.2	0	0	0	0	
04.16.00.00.001.01.00	0	0	3	0	0	0	0		0	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	18	0	0	0	0		0	0	2.4	0	0	0	0	
04.16.00.00.001.03.09	0	0	21	0	0	0	0		0	0	33.6	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	3	0		0	0	0	0	0	9.6	0	
05.02.00.00.006.00.00	0	0	72	0	0	0	0		0	0	36	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	219	0	0	0		0	0	0	283.2	0	0	0	
05.05.00.00.000.00.01	0	0	0	51	0	0	0		0	0	0	52.8	0	0	0	
05.07.00.00.006.00.00	0	0	3	0	0	0	0		0	0	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	24	0	0	0	0		0	0	19.2	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	33	0	0	0		0	0	0	14.4	0	0	0	
06.06.00.00.007.00.00	0	0	6	0	0	0	0		0	0	12	0	0	0	0	
18.04.00.00.000.00.00	6	0	0	0	0	0	0		2.4	0	0	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	0	0		2.4	0	0	0	0	0	0	
Total	**117**	**228**	**168**	**348**	**15**	**72**	**0**	**948**	**124.8**	**100.8**	**136.8**	**376.8**	**12**	**48**	**0**	**799.2**
Percent	**12%**	**24%**	**18%**	**37%**	**2%**	**8%**	**0%**	**100.00%**	**16%**	**13%**	**17%**	**47%**	**2%**	**6%**	**0%**	**100.00%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB T13-0.2
Stream Jay Branch Trib 13
Location 427813000002
Sample Date 10/03/2016

FFG Summary:							
	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS	KN-2	PPCS
Col. Gath.	31%	32%	22%	12.3%	39.8%	15.6%	50.4%
Col. Filt.	18%	30%	36%	24.1%	74.8%	12.6%	70.1%
Predator	19%	13%	7%	17.7%	93.3%	17.1%	90.1%
Shred-Det.	15%	4%	2%	36.7%	40.9%	47.1%	31.8%
Shred- Herb.	1%	1%	5%	1.58%	63.2%	1.50%	66.6%
Scraper	12%	13%	22%	7.59%	63.29%	6.01%	50.1%
				PPCS-FG =	**62.5%**	**PPCS-FG =**	**59.8%**

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 T13-0.2
Stream Jay Branch Trib 13
VT Site ID 427813000002 **Class** Small, High Gradient, B
Sample Date 10/03/2016 **Sampler** CCS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	6.33%	1.67	3.90%	4.10
Diptera	19%	18%	13%	6.0%	12.99	5.7%	13.294
Ephemeroptera	23%	34%	32%	8.9%	14.1	13.51%	9.5
Plecoptera	21%	8%	8%	42.4%	21.4	50.8%	29.8
Trichoptera	28%	33%	33%	35.1%	7.1	24.0%	4.0
Oligochaeta	0.5%	0.5%	1.0%	0.63%	0.13	0.60%	0.10
Other	0.5%	0.5%	1.0%	0.63%	0.133	1.50%	1.002
				Sum diff	57.6		61.7
				Sum diff * 0.5	28.8		30.9
				100-(sum diff * 0.5)	71.2		69.1
				% model affinity	**71.2%**		**69.1%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB T13-0.2
Stream Jay Branch Trib 13
Location 427813000002
Sample Date 10/03/2016
Class Small, High Gradient, B
Sampler CCS

	KN-1	KN-2
#EPT organisms	819	705.6
#C organisms	36	24
EPT/EPT+C	0.96	0.97

Biometric Summary

Project Jay Peak Resort
Station JB T13-0.2
Stream Jay Branch Trib 13
Location 427813000002 **Class** Small, High Gradient, B
Sample Date 10/03/2016 **Sampler** CCS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	948	799	874
Species Richness	31.0	36.0	33.5
EPT Richness	21.0	21.0	21.0
Old Bio Index (0 to 5)	0.61	0.58	0.59
New Bio Index (0 to 10)	0.70	0.74	0.72
% dominant taxa	23.1%	35.4%	29.3%
EPT/EPT+C	0.958	0.967	0.963
EPT/Richness	0.677	0.583	0.627
% Model Affinity (orders)	71.2%	69.1%	70.2%
PPCS - functional groups	62.5%	59.8%	61.2%
Major Groups:			
Coleoptera (%)	6.33%	3.90%	5.12%
Diptera (%)	6.0%	5.7%	5.9%
Ephemeroptera (%)	8.9%	13.51%	11.19%
Trichoptera (%)	35.1%	24.0%	29.6%
Plecoptera (%)	42.4%	50.8%	46.6%
Oligochaeta (%)	0.63%	0.60%	0.62%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.63%	1.50%	1.07%
Other (%)	0.00%	0.00%	0.00%
Total (%)	100.00%	100.00%	100%
Feeding Groups:			
Collector Gatherer (%)	12.3%	15.6%	14.0%
Collector Filterer (%)	24.1%	12.61%	18.3%
Predator (%)	17.7%	17.1%	17.4%
Shredder - Detritus (%)	36.7%	47.1%	41.9%
Shredder - Herbivore (%)	1.58%	1.50%	1.54%
Scraper (%)	7.59%	6.01%	6.80%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100.00%	100.00%	100%

Project Jay Peak Resort
Station JB T13-0.2 **Latitude** 44.945723
Stream Jay Branch Trib 13 **Longitude** -72.518770
Location 427813000002 **Class** Small, High Gradient, B
Sample Date 10/03/2016 **Sampler** CCS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/2004)

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	873.6	≥300	Pass	≥400	Pass	≥500	Pass
Richness	33.5	≥27	Pass	≥31	Pass	≥35	Fail
EPT	21.0	≥16	Pass	≥19	Pass	≥21	I+
% PMA-O	70.2%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	0.72	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	0.62%	≤12%	Pass	≤5	Pass	≤2	Pass
EPT/EPT+C	0.963	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	61.2%	≥ 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
(2015 edition)

Bug Lab ID _____
Chem ID _____ Time _____
DUP Chem ID Time

Site Name Jay JBT13-0.2 River Mile _____ USFS___ PROB___
Site ID 4-1 Date 10.3.16 Time 1110 New Site___
Crew CS, NS
Site Description _____

Town: _____ Stream Order: _____ Drainage Area: _____Km² Elevation: _____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS --NAD83:) _____
Weather: Light rain Flow/Weather Previous (2 weeks/2days): light rain last 48hr, quiet 2wk
Surrounding Land Use: Forest

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: ____ min Mesh: 500 um
Area: 1 m² Quantitative: Y / N
#Reps: 2 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 80 % Filamentous Green _____% and length _____in
Blue Green _____% Moss 40 % Green _____% Other _____%
Calcareous Deposits _____% Iron Precipitate _____%
General Trophic Rating: 0 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS
Embeddedness Estimate 10 % Silt Rating: 3 (0=none, 5= chocolate) FPOM
CPOM Rating (leaf packs): 2 (0= none,5=high) LWD (>4"dia) #: 12 /100m (reach)
Habitat Comments:

GENERAL WATER TYPE Riffle, Winder, Other _____ Channelized: Y / N Upstream Dam: Y / N ___mi
B.F.Width: 10' (m) B.F.Hght 1' (m) Wetted Width: 6' (m) Riffle Depth: 1-2" (m) Pool Depth: 1' (m)
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 *COVER RATING*: Exc Very Good Good Fair Poor *GRADIENT*: high med low flat

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) 60 % 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 60 °F, °C Temp Water 10 °C fpH_____lab pH_____ fCond_____ *D.O.%*_____ D.Omg/l_____
Was meter calibrated for D.O: Y / N ? Was meter calibrated for other parameters: Just prior to use/ In the lab on_____?
Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3, SO4 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
Aquatic Biota Observed: Mussels, Crayfish, Gastropods, Fish, Other

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	0.97	65	Meets Class B Criteria
2011 DEC	238	40	24	66	1.64	18.0	0.94	60	Does Not Meet Class B Criteria
2012 VHB	172	25	17	64	0.58	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	0.95	63	Meets Class B Criteria
2016 VHB	865	33	22	75	1.19	10.3	0.96	63	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 2016 version

Project Name: Jay Peak Resort	
VT DEC Lab ID:	Organization: VHB
Stream Name: Jay Branch	Stream Class: SHG
Station: JB-9.1	

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:	44.939733	-72.502249
or VT Site ID:	427800000091	
Date collected:	10/3/2016	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Dec. 2016	Dec. 2016
#sq picked:	8	9
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Dec. 2016	Dec. 2016

Taxonomic Data																			Biotic Index						Richness Metrics			
								Rep1				Rep2							Biotic Index Scores		Old BI (1-5)		New BI (1-10)		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	9	27	CCS	A	8	21		SCR	N	2	3	54	43	81	64	1	0	1	0
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A	N/A	ATHERIX	N/A	sp	CCS	A	1	3	CCS	A	2	5		PRD	N	3	2	9	16	6	11	1	0	1	0
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A	ZIA/PALPON	BEZZIA	N/A	sp				0	CCS	A	1	3		PRD	N	3	6	0	8	0	16	-	0	1	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	1	3	CCS	A	7	19		CG	Y	3	4	9	56	12	75	1	0	1	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	PSEC/TANYT	MICROPSECTRA	N/A	sp	CCS	A	1	3				0		CG	Y	3	6	9	0	18	0	1	0	-	0
02.05.05.00.008.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	CARDIOCLADIUS	N/A	sp	CCS	A	3	9				0		PRD	Y	3	5	27	0	45	0	1	0	-	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	1	3	CCS	A	1	3		CG	Y	2	2	6	5	6	5	1	0	1	0
02.05.05.00.065.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	ORTHOCLADIUS	N/A	sp	CCS	A	2	6	CCS	A	4	11		CG	Y	3	7	18	32	42	75	1	0	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp				0	CCS	A	1	3		CG	Y	3	5	0	8	0	13	-	0	1	0
02.06.00.00.001.00.00	DIPTERA	DIXIDAE	N/A	N/A	DIXA	N/A	sp	CCS	A	1	3				0		CG	N	2	1	6	0	3	0	1	0	-	0
02.19.00.00.001.00.00	DIPTERA	TIPULIDAE	N/A	N/A	ANTOCHA	N/A	sp	CCS	A	1	3	CCS	A	2	5		CG	N	3	4	9	16	12	21	1	0	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	3	9				0		PRD	N	2	3	18	0	27	0	1	0	-	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	3	9	CCS	A	4	11		PRD	N	2	2	18	21	18	21	1	0	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	1	3	CCS	A	4	11		CG	N	3	6	9	32	18	64	1	1	1	1
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	RELLA/PLAU	PLAUDITUS	N/A	sp				0	CCS	A	1	3		SCR	N	2	5	0	5	0	13	-	0	1	1
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	3	9	CCS	A	5	13		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	10	30	CCS	A	5	13		CG	N	2	4	60	27	120	53	1	1	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	2	6	CCS	A	2	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	10	30	CCS	A	6	16		SCR	N	1	4	30	16	120	64	1	1	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	35	105	CCS	A	14	37		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	2	6	CCS	A	1	3		CG	N	2	1	12	5	6	3	1	1	1	1
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS	A	2	6	CCS	A	2	5		SCR	N	1	0	6	5	0	0	1	1	1	1
04.05.00.02.008.01.07	TRICHOPTERA	HYDROPSYCHIDAE	N/A	PSYC/HYDI	CERATOPSYCHE	alh/slo/spa	sparna				0	CCS	A	1	3		CF	N	2	4	0	5	0	11	-	0	1	1
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	PSYC/HYDI	CERATOPSYCHE	alh/slo/spa	alhedra	CCS	A	20	60	CCS	A	11	29		CF	N	2	3	120	59	180	88	1	1	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	4	12	CCS	A	5	13		SRD	N	1	1	12	13	12	13	1	1	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	63	189	CCS	A	81	216		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	CCS	A	2	5		CF	N	0	0	0	0	0	0	-	0	1	1
04.14.00.00.005.00.00	TRICHOPTERA	OLYCENTROPODIDA	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	1	3				0		PRD	N	3	6	9	0	18	0	1	1	-	0
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	9	27	CCS	A	9	24		PRD	N	1	2	27	24	54	48	1	1	1	1
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group				0	CCS	A	1	3		PRD	N	0	1	0	0	0	3	-	0	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	13	39	CCS	A	2	5		SCR	N	1	3	39	5	117	16	1	1	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	24	72	CCS	A	34	91		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	CCS	A	4	11		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	8	24	CCS	A	16	43		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	11	33	CCS	A	4	11		SRD	N	1	0	33	11	0	0	1	1	1	1
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata				0	CCS	A	1	3		PRD	N	0	2	0	0	0	5	-	0	1	1
05.07.00.00.006.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	ISOPERLA	N/A	sp				0	CCS	A	1	3		PRD	N	1	2	0	3	0	5	-	0	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	18	54	CCS	A	26	69		PRD	N	1	2	54	69	108	139	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	14	42	CCS	A	4	11		SRD	N	1	0	42	11	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	28	84	CCS	A	35	93		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep: --->										304	**912**			307	**819**													

GRAND TOTAL: 1730.666667 organisms

	KN-1	KN-2	KN-1	KN-2	Total Richness	Total EPT-R	Total Richness	Total EPT-R
Total BI Score	636	496	1023	826.67				
Total # Organisms	912	818.67	912	818.67				
# of Organisms w/o BI	84	93.333	84	93.333	31		35	
Total # Organisms with BI	828	725.33	828	725.33		19		25
Biotic Index	0.77	0.68	1.24	1.14				

*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 10/03/2016

2016 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	27	0	0	0	0	0	0	0	0	0	
02.01.00.00.001.00.00	0	3	0	0	0	0	0	0	0	0	
02.03.00.01.003.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	3	0	0	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	3	0	0	0	0	0	0	0	0	
02.05.05.00.008.00.00	0	9	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	3	0	0	0	0	0	0	0	0	
02.05.05.00.065.00.00	0	6	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	0	0	0	0	0	0	0	0	0	
02.06.00.00.001.00.00	0	3	0	0	0	0	0	0	0	0	
02.19.00.00.001.00.00	0	3	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	9	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	9	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	3	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	0	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	9	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	30	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	6	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	30	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	105	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	6	0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	6	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	0	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	0	0	60	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	12	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	189	0	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	0	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	3	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	27	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	0	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	39	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	72	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	0	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	24	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	33	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	0	0	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	0	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	54	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	42	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	84	0	0	0	0	
Total	**27**	**51**	**189**	**336**	**225**	**84**	**0**	**0**	**0**	**0**	**912**
Percent	**3%**	**6%**	**21%**	**37%**	**25%**	**9%**	**0%**	**0%**	**0%**	**0%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
VT Site ID 427800000091
Sample Date 10/03/2016

2016 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	21	0	0	0	0	0	0	0	0	0	
02.01.00.00.001.00.00	0	5	0	0	0	0	0	0	0	0	
02.03.00.01.003.00.00	0	3	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	19	0	0	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.008.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	3	0	0	0	0	0	0	0	0	
02.05.05.00.065.00.00	0	11	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	3	0	0	0	0	0	0	0	0	
02.06.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.001.00.00	0	5	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	11	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	11	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	3	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	13	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	13	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	5	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	16	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	37	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	3	0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	5	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	3	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	0	0	29	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	13	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	216	0	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	5	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	24	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	3	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	5	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	91	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	11	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	43	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	11	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	3	0	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	3	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	69	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	11	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	93	0	0	0	0	
Total	**21**	**59**	**101**	**304**	**240**	**93**	**0**	**0**	**0**	**0**	**819**
Percent	**3%**	**7%**	**12%**	**37%**	**29%**	**11%**	**0%**	**0%**	**0%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091
Sample Date 10/03/2016

2016 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	0	0	0	0	27	0		0	0	0	0	0	21	0	
02.01.00.00.001.00.00	0	0	3	0	0	0	0		0	0	5	0	0	0	0	
02.03.00.01.003.00.00	0	0	0	0	0	0	0		0	0	3	0	0	0	0	
02.05.01.00.085.00.05	3	0	0	0	0	0	0		19	0	0	0	0	0	0	
02.05.03.02.121.00.00	3	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.008.00.00	0	0	9	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.029.00.11	3	0	0	0	0	0	0		3	0	0	0	0	0	0	
02.05.05.00.065.00.00	6	0	0	0	0	0	0		11	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	0	0	0	0	0	0		3	0	0	0	0	0	0	
02.06.00.00.001.00.00	3	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.19.00.00.001.00.00	3	0	0	0	0	0	0		5	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	9	0	0	0	0		0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	0	9	0	0	0	0		0	0	11	0	0	0	0	
03.01.00.00.001.00.09	3	0	0	0	0	0	0		11	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	0	0	0	0	0		0	0	0	0	0	3	0	
03.04.00.00.004.00.01	9	0	0	0	0	0	0		13	0	0	0	0	0	0	
03.04.00.00.004.01.00	30	0	0	0	0	0	0		13	0	0	0	0	0	0	
03.06.00.00.003.00.00	6	0	0	0	0	0	0		5	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	30	0		0	0	0	0	0	16	0	
03.06.00.00.005.00.00	105	0	0	0	0	0	0		37	0	0	0	0	0	0	
03.07.00.00.005.00.00	6	0	0	0	0	0	0		3	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	0	0	6	0		0	0	0	0	0	5	0	
04.05.00.02.008.01.07	0	0	0	0	0	0	0		0	3	0	0	0	0	0	
04.05.00.02.008.01.04	0	60	0	0	0	0	0		0	29	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	12	0	0	0		0	0	0	13	0	0	0	
04.12.00.00.002.00.00	0	189	0	0	0	0	0		0	216	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	0	0	0	0		0	5	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	3	0	0	0	0		0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	27	0	0	0	0		0	0	24	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	0	0	0	0		0	0	3	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	39	0		0	0	0	0	0	5	0	
05.02.00.00.006.00.00	0	0	72	0	0	0	0		0	0	91	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	0	0	0		0	0	11	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	24	0	0	0		0	0	0	43	0	0	0	
05.05.00.00.000.00.01	0	0	0	33	0	0	0		0	0	0	11	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	0	0	0		0	0	3	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	0	0	0		0	0	3	0	0	0	0	
05.07.00.00.007.00.00	0	0	54	0	0	0	0		0	0	69	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	42	0	0	0		0	0	0	11	0	0	0	
18.04.00.00.000.00.00	84	0	0	0	0	0	0		93	0	0	0	0	0	0	
Total	**264**	**249**	**186**	**111**	**0**	**102**	**0**	**912**	**216**	**253**	**221**	**77**	**0**	**51**	**0**	**819**
Percent	**29%**	**27%**	**20%**	**12%**	**0%**	**11%**	**0%**	**100%**	**26%**	**31%**	**27%**	**9%**	**0%**	**6%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091
Sample Date 10/03/2016

FFG Summary:							
	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS	KN-2	PPCS
Col. Gath.	31%	32%	22%	28.9%	93.4%	26.4%	85.1%
Col. Filt.	18%	30%	36%	27.3%	65.9%	30.9%	58.2%
Predator	19%	13%	7%	20.4%	93.2%	27.0%	70.3%
Shred-Det.	15%	4%	2%	12.2%	81.1%	9.4%	63.0%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.00%	0.0%
Scraper	12%	13%	22%	11.18%	93.20%	6.19%	51.6%
				PPCS-FG =	**71.1%**	**PPCS-FG =**	**54.7%**

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** Small, High Gradient, B
Sample Date 10/03/2016 **Sampler** CCS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	2.96%	5.04	2.61%	5.39
Diptera	19%	18%	13%	5.6%	13.41	7.2%	11.834
Ephemeroptera	23%	34%	32%	20.7%	2.3	12.38%	10.6
Plecoptera	21%	8%	8%	24.7%	3.7	29.3%	8.3
Trichoptera	28%	33%	33%	36.8%	8.8	37.1%	9.1
Oligochaeta	0.5%	0.5%	1.0%	9.21%	8.71	11.40%	10.90
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.00%	0.500
				Sum diff	42.4		56.7
				Sum diff * 0.5	21.2		28.4
				100-(sum diff * 0.5)	78.8		71.6
				% model affinity	**78.8%**		**71.6%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091
Sample Date 10/03/2016
Class Small, High Gradient, B
Sampler CCS

	KN-1	KN-2
#EPT organisms	750	645
#C organisms	24	35
EPT/EPT+C	0.97	0.95

Biometric Summary

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091 **Class** Small, High Gradient, B
Sample Date 10/03/2016 **Sampler** CCS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	912	819	865
Species Richness	31.0	35.0	33.0
EPT Richness	19.0	25.0	22.0
Old Bio Index (0 to 5)	0.77	0.68	0.73
New Bio Index (0 to 10)	1.24	1.14	1.19
% dominant taxa	20.7%	26.4%	23.6%
EPT/EPT+C	0.969	0.949	0.959
EPT/Richness	0.613	0.714	0.667
% Model Affinity (orders)	78.8%	71.6%	75.2%
PPCS - functional groups	71.1%	54.7%	62.9%
Major Groups:			
Coleoptera (%)	2.96%	2.61%	2.78%
Diptera (%)	5.6%	7.2%	6.4%
Ephemeroptera (%)	20.7%	12.38%	16.55%
Trichoptera (%)	36.8%	37.1%	37.0%
Plecoptera (%)	24.7%	29.3%	27.0%
Oligochaeta (%)	9.21%	11.40%	10.31%
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 (%)	28.9%	26.4%	27.7%
Collector Filterer (%)	27.3%	30.94%	29.1%
Predator (%)	20.4%	27.0%	23.7%
Shredder - Detritus (%)	12.2%	9.4%	10.8%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	11.18%	6.19%	8.69%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

LOTIC BENTHOS FIELD SHEET
(2015 edition)

Bug Lab ID _____
Chem ID _____ Time _____
DUP Chem ID Time

Site Name Jay JB-9.1 River Mile _____ USFS___ PROB___
Site ID 4-2 Date 10.3.16 Time 1200 New Site____
Crew CS NS
Site Description

Town: _____ Stream Order: _____ Drainage Area: _____Km² Elevation: _____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS --NAD83:) _____
Weather: Light rain Flow/Weather Previous (2 weeks/2days): light rain last 48hr., quiet 2wk
Surrounding Land Use: golf course, resort, forest

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: ____ min Mesh: 500 um
Area: 1 m² Quantitative: Y / N
#Reps: 2 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 80 % Filamentous Green 5 % and length _____in
Blue Green 5 % Moss 20 % Green _____% Other _____%
Terrestrial
Calcareous Deposits _____% Iron Precipitate _____%
General Trophic Rating: 1-2 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS
Embeddedness Estimate 15 % Silt Rating: 3 (0=none, 5= chocolate) FPOM
CPOM Rating (leaf packs): 1 (0= none,5=high) LWD (>4"dia) #: 1 /100m (reach)
Habitat Comments:

GENERAL WATER TYPE Riffle, Winder, Other _____ Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 35 (m) B.F.Hght 1' (m) Wetted Width: 12' (m) Riffle Depth: 2-4' (m) Pool Depth: _____(m)
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
natural armor
Fish: *Bottom Type*: Hard -- Soft -- Mixed *COVER RATING*: Exc Very Good Good Fair Poor *GRADIENT*: high med low flat

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*facing upstream*) L 80 m, R 100 m
Overstory: Softwood 10 % Hardwood 90 % Understory: Shrub (brush) 30 % Herbaceous 40 % 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 60 °F, °C Temp Water 10.5 °C fpH_____lab pH_____ fCond_____ D.O.%_____ D.Omg/l_____
Was meter calibrated for D.O: Y / N ? Was meter calibrated for other parameters: Just prior to use/ In the lab on_____?
Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3, SO4 Ca Mg Na K Hardness Metals, TNH3, TSS Other_____,
WQ Notes/Comments:

SITE SKETCH & GENERAL OBSERVATIONS (circle those that apply) Stain 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

Black rocks

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
2016 VHB	413	34	21.5	81	1.58	9	0.97	73	Meets Interim Targets and Class B Criteria

2014 Interim Targets	>250	≥28	≥17	(-)	(-)	≤12	(-)	(-)	Per 2014 WQRP, Appendix 4 (01/16/2015)
2015 Interim Targets	>275	≥28	≥17	(-)	(-)	≤12	(-)	(-)	
2016 Interim Targets	≥ 300	≥28	≥17	(-)	(-)	≤12	(-)	(-)	
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 2016 version

Project Name: Jay Peak Resort	
VT DEC Lab ID:	Organization: VHB
Stream Name: Jay Branch	Stream Class: SHG
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:	44.938950	-72.489451
or VT Site ID:	427800000083	
Date collected:	10/3/2016	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Dec. 2016	Dec. 2016
#sq picked:	16	20
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Dec. 2016	Dec. 2016

Taxonomic Data																			Biotic Index						Richness Metrics			
								Rep1				Rep2							Biotic Index Scores		Old BI (1-5)		New BI (1-10)		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	8	12	CCS	A	7	8.4		SCR	N	2	3	24	17	36	25	1	0	1	0
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A	ZIA/PALPON	BEZZIA	N/A	sp	CCS	A	2	3	CCS	A	1	1.2		PRD	N	3	6	9	4	18	7	1	0	1	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	2	3				0		CG	Y	3	4	9	0	12	0	1	0	-	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	PSEC/TANYT	MICROPSECTRA	N/A	sp	CCS	A	2	3	CCS	A	1	1.2		CG	Y	3	6	9	4	18	7	1	0	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	1	1.5	CCS	A	3	3.6		CG	Y	2	2	3	7	3	7	1	0	1	0
02.05.05.00.068.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARACHAETOCLADIUS	N/A	sp	CCS	A	1	1.5				0		CG	Y	2	2	3	0	3	0	1	0	-	0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca				0	CCS	A	1	1.2		CG	Y	2	4	0	2	0	5	-	0	1	0
02.05.09.04.110.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	MANNIMYIA	THIENEMANNIMYIA	N/A	sp	CCS	A	1	1.5	CCS	A	1	1.2		PRD	Y	3	6	5	4	9	7	1	0	1	0
02.14.00.00.004.00.00	DIPTERA	SIMULIDAE	N/A	N/A	PROSIMULIUM	N/A	sp				0	CCS	A	1	1.2		CF	N	1	2	0	1	0	2	-	0	1	0
02.19.00.00.001.00.00	DIPTERA	TIPULIDAE	N/A	N/A	ANTOCHA	N/A	sp				0	CCS	A	3	3.6		CG	N	3	4	0	11	0	14	-	0	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	5	7.5	CCS	A	9	10.8		PRD	N	2	3	15	22	23	32	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	8	12	CCS	A	7	8.4		PRD	N	2	2	24	17	24	17	1	0	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp				0	CCS	A	1	1.2		SRD	N	3	6	0	4	0	7	-	0	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	3	4.5	CCS	A	1	1.2		CG	N	3	6	14	4	27	7	1	1	1	1
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	RELLA/PLAU	PLAUDITUS	N/A	sp	CCS	A	1	1.5				0		SCR	N	2	5	3	0	8	0	1	1	-	0
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	8	12	CCS	A	7	8.4		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	12	18	CCS	A	3	3.6		CG	N	2	4	36	7	72	14	1	1	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	5	7.5	CCS	A	2	2.4		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	28	42	CCS	A	14	16.8		SCR	N	1	4	42	17	168	67	1	1	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	27	40.5	CCS	A	20	24		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	13	19.5	CCS	A	10	12		CG	N	2	1	39	24	20	12	1	1	1	1
03.14.00.00.001.00.00	EPHEMEROPTERA	AMELETIDAE	N/A	N/A	AMELETUS	N/A	sp	CCS	A	4	6				0		CG	N	0	0	0	0	0	0	1	1	-	0
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	PSYC/HYDI	CERATOPSYCHE	alh/slo/spa	alhedra	CCS	A	28	42	CCS	A	25	30		CF	N	2	3	84	60	126	90	1	1	1	1
04.05.00.02.008.01.07	TRICHOPTERA	HYDROPSYCHIDAE	N/A	PSYC/HYDI	CERATOPSYCHE	alh/slo/spa	sparna	CCS	A	2	3				0		CF	N	2	4	6	0	12	0	1	1	-	0
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	14	21	CCS	A	21	25.2		SRD	N	1	1	21	25	21	25	1	1	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	22	33	CCS	A	30	36		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	CCS	A	2	2.4		CF	N	0	0	0	0	0	0	-	0	1	1
04.14.00.00.005.00.00	TRICHOPTERA	OLYCENTROPODIDA	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	2	3				0		PRD	N	3	6	9	0	18	0	1	1	-	0
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	7	10.5	CCS	A	9	10.8		PRD	N	1	2	11	11	21	22	1	1	1	1
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	invaria grp	invaria grp	CCS	A	1	1.5				0		PRD	N	1	1	2	0	2	0	1	1	-	0
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	8	12	CCS	A	13	15.6		SCR	N	1	3	12	16	36	47	1	1	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	28	42	CCS	A	29	34.8		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	3				0		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	7	10.5	CCS	A	16	19.2		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	2	3				0		SRD	N	1	0	3	0	0	0	1	1	-	0
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata	CCS	A	4	6	CCS	A	1	1.2		PRD	N	0	2	0	0	12	2	1	1	1	1
05.07.00.00.006.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	ISOPERLA	N/A	sp				0	CCS	A	1	1.2		PRD	N	1	2	0	1	0	2	-	0	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	13	19.5	CCS	A	19	22.8		PRD	N	1	2	20	23	39	46	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	13	19.5	CCS	A	13	15.6		SRD	N	1	0	20	16	0	0	1	1	1	1
06.04.00.00.001.00.00	ODONATA	CORDULEGASTRIDAE	N/A	N/A	CORDULEGASTER	N/A	sp	CCS	A	1	1.5				0		PRD	N	1	3	2	0	5	0	1	0	-	0
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A	N/A	LANTHUS	N/A	sp	CCS	A	1	1.5				0		PRD	N	2	5	3	0	8	0	1	0	-	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	21	31.5	CCS	A	34	40.8		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep: --->										307	**460.5**			305	**366**													

GRAND TOTAL: 826.5 organisms

	KN-1	KN-2	KN-1	KN-2
Total BI Score	424.5	294	738	466.8
Total # Organisms	460.5	366	460.5	366
# of Organisms w/o BI	31.5	40.8	31.5	40.8
Total # Organisms with BI	429	325.2	429	325.2
Biotic Index	0.99	0.90	1.72	1.44

Total Richness	Total EPT-R	Total Richness	Total EPT-R
36		31	
	24		19

*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 10/03/2016

2016 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	12	0	0	0	0	0	0	0	0	0	
02.03.00.01.003.00.00	0	3	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	3	0	0	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	3	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	1.5	0	0	0	0	0	0	0	0	
02.05.05.00.068.00.00	0	1.5	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	0	0	0	0	0	0	0	0	0	
02.05.09.04.110.00.00	0	1.5	0	0	0	0	0	0	0	0	
02.14.00.00.004.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	7.5	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	12	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	0	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	4.5	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	1.5	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	12	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	18	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	7.5	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	42	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	40.5	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	19.5	0	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	6	0	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	0	0	42	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	3	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	21	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	33	0	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	0	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	3	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	10.5	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	1.5	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	12	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	42	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	3	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	10.5	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	3	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	6	0	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	0	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	19.5	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	19.5	0	0	0	0	0	
06.04.00.00.001.00.00	0	0	0	0	0	0	0	0	1.5	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	1.5	0	
18.04.00.00.000.00.00	0	0	0	0	0	31.5	0	0	0	0	
Total	**12**	**33**	**151.5**	**126**	**103.5**	**31.5**	**0**	**0**	**3**	**0**	**460.5**
Percent	**3%**	**7%**	**33%**	**27%**	**22%**	**7%**	**0%**	**0%**	**1%**	**0%**	**100.000%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
VT Site ID 427800000083
Sample Date 10/03/2016

2016 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	8.4	0	0	0	0	0	0	0	0	0	
02.03.00.01.003.00.00	0	1.2	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	0	0	0	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	1.2	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	3.6	0	0	0	0	0	0	0	0	
02.05.05.00.068.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	1.2	0	0	0	0	0	0	0	0	
02.05.09.04.110.00.00	0	1.2	0	0	0	0	0	0	0	0	
02.14.00.00.004.00.00	0	1.2	0	0	0	0	0	0	0	0	
02.19.00.00.001.00.00	0	3.6	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	10.8	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	8.4	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	1.2	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	1.2	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	0	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	8.4	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	3.6	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	2.4	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	16.8	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	24	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	12	0	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	0	0	30	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	0	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	25.2	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	36	0	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	2.4	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	10.8	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	0	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	15.6	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	34.8	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	0	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	19.2	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	0	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	1.2	0	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	1.2	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	22.8	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	15.6	0	0	0	0	0	
06.04.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	40.8	0	0	0	0	
Total	**8.4**	**33.6**	**68.4**	**120**	**94.8**	**40.8**	**0**	**0**	**0**	**0**	**366**
Percent	**2%**	**9%**	**19%**	**33%**	**26%**	**11%**	**0%**	**0%**	**0%**	**0%**	**100.00%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083
Sample Date 10/03/2016

2016 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	0	0	0	0	12	0		0	0	0	0	0	8.4	0	
02.03.00.01.003.00.00	0	0	3	0	0	0	0		0	0	1.2	0	0	0	0	
02.05.01.00.085.00.05	3	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.03.02.121.00.00	3	0	0	0	0	0	0		1.2	0	0	0	0	0	0	
02.05.05.00.029.00.11	1.5	0	0	0	0	0	0		3.6	0	0	0	0	0	0	
02.05.05.00.068.00.00	1.5	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	0	0	0	0	0	0		1.2	0	0	0	0	0	0	
02.05.09.04.110.00.00	0	0	1.5	0	0	0	0		0	0	1.2	0	0	0	0	
02.14.00.00.004.00.00	0	0	0	0	0	0	0		0	1.2	0	0	0	0	0	
02.19.00.00.001.00.00	0	0	0	0	0	0	0		3.6	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	7.5	0	0	0	0		0	0	10.8	0	0	0	0	
02.19.00.00.006.00.00	0	0	12	0	0	0	0		0	0	8.4	0	0	0	0	
02.19.00.00.016.00.00	0	0	0	0	0	0	0		0	0	0	1.2	0	0	0	
03.01.00.00.001.00.09	4.5	0	0	0	0	0	0		1.2	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	0	0	0	1.5	0		0	0	0	0	0	0	0	
03.04.00.00.004.00.01	12	0	0	0	0	0	0		8.4	0	0	0	0	0	0	
03.04.00.00.004.01.00	18	0	0	0	0	0	0		3.6	0	0	0	0	0	0	
03.06.00.00.003.00.00	7.5	0	0	0	0	0	0		2.4	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	42	0		0	0	0	0	0	16.8	0	
03.06.00.00.005.00.00	40.5	0	0	0	0	0	0		24	0	0	0	0	0	0	
03.07.00.00.005.00.00	19.5	0	0	0	0	0	0		12	0	0	0	0	0	0	
03.14.00.00.001.00.00	6	0	0	0	0	0	0		0	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	42	0	0	0	0	0		0	30	0	0	0	0	0	
04.05.00.02.008.01.07	0	3	0	0	0	0	0		0	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	21	0	0	0		0	0	0	25.2	0	0	0	
04.12.00.00.002.00.00	0	33	0	0	0	0	0		0	36	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	0	0	0	0		0	2.4	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	3	0	0	0	0		0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	10.5	0	0	0	0		0	0	10.8	0	0	0	0	
04.16.00.00.001.01.00	0	0	1.5	0	0	0	0		0	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	12	0		0	0	0	0	0	15.6	0	
05.02.00.00.006.00.00	0	0	42	0	0	0	0		0	0	34.8	0	0	0	0	
05.02.00.00.091.00.00	0	0	3	0	0	0	0		0	0	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	10.5	0	0	0		0	0	0	19.2	0	0	0	
05.05.00.00.000.00.01	0	0	0	3	0	0	0		0	0	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	6	0	0	0	0		0	0	1.2	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	0	0	0		0	0	1.2	0	0	0	0	
05.07.00.00.007.00.00	0	0	19.5	0	0	0	0		0	0	22.8	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	19.5	0	0	0		0	0	0	15.6	0	0	0	
06.04.00.00.001.00.00	0	0	1.5	0	0	0	0		0	0	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	1.5	0	0	0	0		0	0	0	0	0	0	0	
18.04.00.00.000.00.00	31.5	0	0	0	0	0	0		40.8	0	0	0	0	0	0	
Total	**148.5**	**78**	**112.5**	**54**	**0**	**67.5**	**0**	**460.5**	**102**	**69.6**	**92.4**	**61.2**	**0**	**40.8**	**0**	**366**
Percent	**32%**	**17%**	**24%**	**12%**	**0%**	**15%**	**0%**	**100.00%**	**28%**	**19%**	**25%**	**17%**	**0%**	**11%**	**0%**	**100.00%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083
Sample Date 10/03/2016

FFG Summary:							
	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS	KN-2	PPCS
Col. Gath.	31%	32%	22%	32.2%	96.1%	27.9%	89.9%
Col. Filt.	18%	30%	36%	16.9%	94.1%	19.0%	94.7%
Predator	19%	13%	7%	24.4%	77.8%	25.2%	75.3%
Shred-Det.	15%	4%	2%	11.7%	78.2%	16.7%	89.7%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.00%	0.0%
Scraper	12%	13%	22%	14.66%	81.87%	11.15%	92.9%
				PPCS-FG =	**71.3%**	**PPCS-FG =**	**73.7%**

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-8.3
Stream Jay Branch
VT Site ID 427800000083 **Class** Small, High Gradient, B
Sample Date 10/03/2016 **Sampler** CCS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	2.61%	5.39	2.30%	5.70
Diptera	19%	18%	13%	7.2%	11.83	9.2%	9.820
Ephemeroptera	23%	34%	32%	32.9%	9.9	18.69%	4.3
Plecoptera	21%	8%	8%	22.5%	1.5	25.9%	4.9
Trichoptera	28%	33%	33%	27.4%	0.6	32.8%	4.8
Oligochaeta	0.5%	0.5%	1.0%	6.84%	6.34	11.15%	10.65
Other	0.5%	0.5%	1.0%	0.65%	0.151	0.00%	0.500
				Sum diff	35.7		40.7
				Sum diff * 0.5	17.9		20.3
				100-(sum diff * 0.5)	82.1		79.7
				% model affinity	**82.1%**		**79.7%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083
Sample Date 10/03/2016
Class Small, High Gradient, B
Sampler CCS

	KN-1	KN-2
#EPT organisms	381	283.2
#C organisms	10.5	7.2
EPT/EPT+C	0.97	0.98

Biometric Summary

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083 **Class** Small, High Gradient, B
Sample Date 10/03/2016 **Sampler** CCS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	461	366	413
Species Richness	36.0	31.0	33.5
EPT Richness	24.0	19.0	21.5
Old Bio Index (0 to 5)	0.99	0.90	0.95
New Bio Index (0 to 10)	1.72	1.44	1.58
% dominant taxa	9.1%	11.1%	10.1%
EPT/EPT+C	0.973	0.975	0.974
EPT/Richness	0.667	0.613	0.642
% Model Affinity (orders)	82.1%	79.7%	80.9%
PPCS - functional groups	71.3%	73.7%	72.5%
Major Groups:			
Coleoptera (%)	2.61%	2.30%	2.45%
Diptera (%)	7.2%	9.2%	8.2%
Ephemeroptera (%)	32.9%	18.69%	25.79%
Trichoptera (%)	27.4%	32.8%	30.1%
Plecoptera (%)	22.5%	25.9%	24.2%
Oligochaeta (%)	6.84%	11.15%	8.99%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.65%	0.00%	0.33%
Other (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	32.2%	27.9%	30.1%
Collector Filterer (%)	16.9%	19.02%	18.0%
Predator (%)	24.4%	25.2%	24.8%
Shredder - Detritus (%)	11.7%	16.7%	14.2%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	14.66%	11.15%	12.90%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

LOTIC BENTHOS FIELD SHEET
(2015 edition)

Bug Lab ID _____
Chem ID _____ Time _____
DUP Chem ID Time

Site Name Jay Peak - Jay Br [JB-8.3] River Mile _____ USFS___ PROB___
Site ID 4-3 Date 10·3·16 Time 0930 New Site____
Crew CS NS
Site Description _____

Town: _____ Stream Order: _____ Drainage Area: _____ Km^2 Elevation: _____ ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS --NAD83.) _____
Weather: Light rain Flow/Weather Previous (2 weeks/2days): Light rain last 48 hr.
Surrounding Land Use: Golf course, resort, forest / Fairly quiet 2 wk

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 90 % Filamentous Green _____ % and length _____ in
Blue Green Tr % Moss 25 % Terrestrial Green _____ % Other _____ %
Calcareous Deposits _____ % Iron Precipitate _____ %
General Trophic Rating: 1 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS
Embeddedness Estimate 20 % Silt Rating: 2-3 (0=none, 5= chocolate)
CPOM Rating (leaf packs): 0-1 (0= none,5=high) LWD (>4"dia) #: 5 /100m (reach)
Habitat Comments:

GENERAL WATER TYPE (Riffle) Winder, Other _____ Channelized: Y / (N) Upstream Dam: Y (N) ___ mi
B.F.Width: 40' (m) B.F.Hght 1.5' (m) Wetted Width: 25' (m) Riffle Depth: 2-4" (m) Pool Depth: 3' (m)
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 natural armoring *COVER RATING*: Exc Very Good Good Fair Poor *GRADIENT*: high med low flat

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*facing upstream*) L >100 m, R >100 m
Overstory: Softwood 40 % Hardwood 60 % 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 58 °F, °C Temp Water 10.5 °C fpH _____ lab pH _____ fCond _____ *D.O.%* _____ D.Omg/l _____
Was meter calibrated for D.O: Y / N ? Was meter calibrated for other parameters: Just prior to use/ In the lab on _____?
Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3, SO4 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

Black rock, heavy stain
Leaves mainly on

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	1,276	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
2016 VHB	394	33	25	76	1.06	8	0.98	61	Meets Interim Targets and Class B Criteria

2014 Interim Targets	≥300	≥28	≥17	(-)	(-)	≤9.5	(-)	(-)	Per 2014 WQRP, Appendix 4 (01/16/2015)
2015 Interim Targets	≥300	≥28	≥17	(-)	(-)	≤9.5	(-)	(-)	
2016 Interim Targets	≥300	≥28	≥17	(-)	(-)	≤9.5	(-)	(-)	
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 2016 version

Project Name: Jay Peak Resort	
VT DEC Lab ID:	Organization: VHB
Stream Name: Jay Branch	Stream Class: SHG
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:	44.942180	-72.473810
or VT Site ID:	427800000073	
Date collected:	10/3/2016	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Dec. 2016	Dec. 2016
#sq picked:	18	21
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCs	CCS
Sorted Date:	Dec. 2016	Dec. 2016

Taxonomic Data																		Biotic Index						Richness Metrics			
								Rep1				Rep2						Biotic Index Scores		Old BI (1-5)		New BI (1-10)		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				0	CCS	A	1	1		SCR	N	2	3	0	2	0	3	-	0	1	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	1	1	CCS	A	2	2		CG	Y	3	4	4	7	5	9	1	0	1	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	MICROPSEC/TANYTARSUS	MICROPSECTRA	N/A	sp				0	CCS	A	1	1		CG	Y	3	6	0	3	0	7	-	0	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	1	1	CCS	A	2	2		CG	Y	2	2	3	5	3	5	1	0	1	0
02.05.05.00.068.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARACHAETOCLADIUS	N/A	sp	CCS	A	1	1	CCS	A	1	1		CG	Y	2	2	3	2	3	2	1	0	1	0
02.05.09.04.110.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	THIENEMANNIMYIA GROUP	THIENEMANNIMYIA	N/A	sp				0	CCS	A	1	1		PRD	Y	3	6	0	3	0	7	-	0	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	3	4	CCS	A	3	3		PRD	N	2	3	8	7	12	10	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	4	5	CCS	A	1	1		PRD	N	2	2	11	2	11	2	1	0	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	3	4	CCS	A	2	2		CG	N	3	6	12	7	24	14	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				0		SCR	N	2	5	3	0	7	0	1	1	-	0
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	7	9	CCS	A	3	3		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	12	16	CCS	A	9	10		CG	N	2	4	32	21	64	41	1	1	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	10	13	CCS	A	4	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	6	8	CCS	A	12	14		SCR	N	1	4	8	14	32	55	1	1	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	62	83	CCS	A	60	69		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	12	16	CCS	A	2	2		CG	N	2	1	32	5	16	2	1	1	1	1
03.14.00.00.001.00.00	EPHEMEROPTERA	AMELETIDAE	N/A	N/A	AMELETUS	N/A	sp	CCS	A	1	1	CCS	A	2	2		CG	N	0	0	0	0	0	0	1	1	1	1
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS	A	1	1	CCS	A	1	1		SCR	N	1	0	1	1	0	0	1	1	1	1
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	CERATOPSYC/HYDROPSYC	CERATOPSYCHE	alh/slo/spa	alhedra	CCS	A	26	35	CCS	A	12	14		CF	N	2	3	69	27	104	41	1	1	1	1
04.05.00.02.008.01.07	TRICHOPTERA	HYDROPSYCHIDAE	N/A	CERATOPSYC/HYDROPSYC	CERATOPSYCHE	alh/slo/spa	sparna	CCS	A	2	3	CCS	A	3	3		CF	N	2	4	5	7	11	14	1	1	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	8	11	CCS	A	3	3		SRD	N	1	1	11	3	11	3	1	1	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	43	57	CCS	A	63	72		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	1	1	CCS	A	1	1		CF	N	0	0	0	0	0	0	1	1	1	1
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	7	9	CCS	A	2	2		PRD	N	3	6	28	7	56	14	1	1	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	2	3	CCS	A	8	9		PRD	N	1	2	3	9	5	18	1	1	1	1
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	invaria grp	invaria grp				0	CCS	A	1	1		PRD	N	1	1	0	1	0	1	-	0	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	16	21	CCS	A	7	8		SCR	N	1	3	21	8	64	24	1	1	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	36	48	CCS	A	27	31		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	3	CCS	A	4	5		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	6	8	CCS	A	6	7		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	8	11	CCS	A	5	6		SRD	N	1	0	11	6	0	0	1	1	1	1
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata	CCS	A	1	1	CCS	A	8	9		PRD	N	0	2	0	0	3	18	1	1	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	9	12	CCS	A	14	16		PRD	N	1	2	12	16	24	32	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	10	13	CCS	A	13	15		SRD	N	1	0	13	15	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	23	31	CCS	A	27	31		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep: --->										325	**433**			311	**355**													

GRAND TOTAL: 789 organisms

Total BI Score	289	178	453	323	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
Total # Organisms	433	355	433	355				
# of Organisms w/o BI	31	31	31	31	31		34	
Total # Organisms with BI	403	325	403	325		25		25
Biotic Index	0.72	0.55	1.13	1.00				

*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 10/03/2016

2016 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	0	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	1	0	0	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	1	0	0	0	0	0	0	0	0	
02.05.05.00.068.00.00	0	1	0	0	0	0	0	0	0	0	
02.05.09.04.110.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	4	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	5	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	4	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	1	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	9	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	16	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	13	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	8	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	83	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	16	0	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	1	0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	1	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	0	0	35	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	3	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	11	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	57	0	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	1	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	9	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	3	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	0	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	21	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	48	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	3	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	8	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	11	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	1	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	12	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	13	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	31	0	0	0	0	
Total	**0**	**13**	**152**	**141**	**96**	**31**	**0**	**0**	**0**	**0**	**433**
Percent	**0%**	**3%**	**35%**	**33%**	**22%**	**7.08%**	**0%**	**0%**	**0%**	**0%**	**100.0%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
VT Site ID 427800000073
Sample Date 10/03/2016

2016 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	0	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	2	0	0	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	1	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	2	0	0	0	0	0	0	0	0	
02.05.05.00.068.00.00	0	1	0	0	0	0	0	0	0	0	
02.05.09.04.110.00.00	0	1	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	3	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	1	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	2	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	0	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	3	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	10	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	5	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	14	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	69	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	2	0	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	2	0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	1	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	0	0	14	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	3	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	3	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	72	0	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	1	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	2	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	9	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	1	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	8	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	31	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	5	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	7	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	6	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	9	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	16	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	15	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	31	0	0	0	0	
Total	**1**	**13**	**107**	**115**	**88**	**31**	**0**	**0**	**0**	**0**	**355**
Percent	**0%**	**4%**	**30%**	**32%**	**25%**	**8.68%**	**0%**	**0%**	**0%**	**0%**	**100.0%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073
Sample Date 10/03/2016

2016 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	0	0	0	0	0	0		0	0	0	0	0	1	0	
02.05.01.00.085.00.05	1	0	0	0	0	0	0		2	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
02.05.05.00.029.00.11	1	0	0	0	0	0	0		2	0	0	0	0	0	0	
02.05.05.00.068.00.00	1	0	0	0	0	0	0		1	0	0	0	0	0	0	
02.05.09.04.110.00.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
02.19.00.00.003.00.00	0	0	4	0	0	0	0		0	0	3	0	0	0	0	
02.19.00.00.006.00.00	0	0	5	0	0	0	0		0	0	1	0	0	0	0	
03.01.00.00.001.00.09	4	0	0	0	0	0	0		2	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	0	0	0	1	0		0	0	0	0	0	0	0	
03.04.00.00.004.00.01	9	0	0	0	0	0	0		3	0	0	0	0	0	0	
03.04.00.00.004.01.00	16	0	0	0	0	0	0		10	0	0	0	0	0	0	
03.06.00.00.003.00.00	13	0	0	0	0	0	0		5	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	8	0		0	0	0	0	0	14	0	
03.06.00.00.005.00.00	83	0	0	0	0	0	0		69	0	0	0	0	0	0	
03.07.00.00.005.00.00	16	0	0	0	0	0	0		2	0	0	0	0	0	0	
03.14.00.00.001.00.00	1	0	0	0	0	0	0		2	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	0	0	1	0		0	0	0	0	0	1	0	
04.05.00.02.008.01.04	0	35	0	0	0	0	0		0	14	0	0	0	0	0	
04.05.00.02.008.01.07	0	3	0	0	0	0	0		0	3	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	11	0	0	0		0	0	0	3	0	0	0	
04.12.00.00.002.00.00	0	57	0	0	0	0	0		0	72	0	0	0	0	0	
04.12.00.00.003.00.00	0	1	0	0	0	0	0		0	1	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	9	0	0	0	0		0	0	2	0	0	0	0	
04.16.00.00.001.00.01	0	0	3	0	0	0	0		0	0	9	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	21	0		0	0	0	0	0	8	0	
05.02.00.00.006.00.00	0	0	48	0	0	0	0		0	0	31	0	0	0	0	
05.02.00.00.091.00.00	0	0	3	0	0	0	0		0	0	5	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	8	0	0	0		0	0	0	7	0	0	0	
05.05.00.00.000.00.01	0	0	0	11	0	0	0		0	0	0	6	0	0	0	
05.06.00.00.007.00.01	0	0	1	0	0	0	0		0	0	9	0	0	0	0	
05.07.00.00.007.00.00	0	0	12	0	0	0	0		0	0	16	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	13	0	0	0		0	0	0	15	0	0	0	
18.04.00.00.000.00.00	31	0	0	0	0	0	0		31	0	0	0	0	0	0	
Total	**177**	**96**	**85**	**43**	**0**	**32**	**0**	**433**	**131**	**90**	**79**	**31**	**0**	**24**	**0**	**355**
Percent	**41%**	**22%**	**20%**	**10%**	**0%**	**7%**	**0%**	**100.0000%**	**37%**	**25%**	**22%**	**9%**	**0%**	**7%**	**0%**	**100.0000%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073
Sample Date 10/03/2016

FFG Summary:							
	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS	KN-2	PPCS
Col. Gath.	31%	32%	22%	40.9%	75.8%	37.0%	83.8%
Col. Filt.	18%	30%	36%	22.2%	81.3%	25.4%	70.9%
Predator	19%	13%	7%	19.7%	96.5%	22.2%	85.6%
Shred-Det.	15%	4%	2%	9.8%	65.6%	8.7%	57.9%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.00%	0.0%
Scraper	12%	13%	22%	7.38%	61.54%	6.75%	56.3%
				PPCS-FG =	**63.4%**	**PPCS-FG =**	**59.1%**

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-7.3
Stream Jay Branch
VT Site ID 427800000073 **Class** Small, High Gradient, B
Sample Date 10/03/2016 **Sampler** CCS

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	0.32%	7.68
Diptera	19%	18%	13%	3.1%	15.92	3.5%	15.463
Ephemeroptera	23%	34%	32%	35.1%	12.1	30.23%	7.2
Plecoptera	21%	8%	8%	22.2%	1.2	24.8%	3.8
Trichoptera	28%	33%	33%	32.6%	4.6	32.5%	4.5
Oligochaeta	0.5%	0.5%	1.0%	7.08%	6.58	8.68%	8.18
Other	0.5%	0.5%	1.0%	0.00%	0.500	0%	0.500
				Sum diff	48.8		47.3
				Sum diff * 0.5	24.4		23.6
				100-(sum diff * 0.5)	75.6		76.4
				% model affinity	**75.6%**		**76.4%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073
Sample Date 10/03/2016
Class Small, High Gradient, B
Sampler CCS

	KN-1	KN-2
#EPT organisms	389	310.8571
#C organisms	4	8
EPT/EPT+C	0.99	0.97

Biometric Summary

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073 **Class** Small, High Gradient, B
Sample Date 10/03/2016 **Sampler** CCS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	433	355	394
Species Richness	31.0	34.0	32.5
EPT Richness	25.0	25.0	25.0
Old Bio Index (0 to 5)	0.72	0.55	0.63
New Bio Index (0 to 10)	1.13	1.00	1.06
% dominant taxa	19.1%	20.3%	19.7%
EPT/EPT+C	0.990	0.975	0.982
EPT/Richness	0.806	0.735	0.769
% Model Affinity (orders)	75.6%	76.4%	76.0%
PPCS - functional groups	63.4%	59.1%	61.3%
Major Groups:			
Coleoptera (%)	0.00%	0.32%	0.16%
Diptera (%)	3.1%	3.5%	3.3%
Ephemeroptera (%)	35.1%	30.23%	32.65%
Trichoptera (%)	32.6%	32.5%	32.5%
Plecoptera (%)	22.2%	24.8%	23.5%
Oligochaeta (%)	7.08%	8.68%	7.88%
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 (%)	40.9%	37.0%	39.0%
Collector Filterer (%)	22.2%	25.40%	23.8%
Predator (%)	19.7%	22.2%	20.9%
Shredder - Detritus (%)	9.8%	8.7%	9.3%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	7.38%	6.75%	7.07%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Project Jay Peak Resort
Station JB-7.3 **Latitude** 44.942180
Stream Jay Branch **Longitude** -72.473810
Location 427800000073 **Class** Small, High Gradient, B
Sample Date 10/03/2016 **Sampler** CCS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/2004)

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	394.4	≥300	Pass	≥400	I-	≥500	Fail
Richness	32.5	≥27	Pass	≥31	Pass	≥35	Fail
EPT	25.0	≥16	Pass	≥19	Pass	≥21	Pass
% PMA-O	76.0%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	1.06	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	7.88%	≤12%	Pass	≤5	Fail	≤2	Fail
EPT/EPT+C	0.982	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	61.3%	≥ 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%
B2-3	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
(2015 edition)

Bug Lab ID _____
Chem ID _____ Time _____
DUP Chem ID Time

Site Name Jay [JB - 7.3] River Mile _____ USFS___ PROB___
Site ID 4-4a Date 10.3.16 Time 1530 New Site____
Crew CS, NS
Site Description _____

Town: _____ Stream Order: _____ Drainage Area: _____Km² Elevation: _____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS --NAD83:) _____
Weather: Light rain Flow/Weather Previous (2 weeks/2days): light rain last 48 hr., quiet 2wk
Surrounding Land Use: Resort, forest,

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: ____ min Mesh: 500 um
Area: 1 m² Quantitative: Y / N
#Reps: 2 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 90 % Filamentous Green _____% and length _____in
Blue Green _____% Moss 5 % Green _____% Other _____%
Calcareous Deposits _____% Iron Precipitate _____%
General Trophic Rating: 2 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS
Embeddedness Estimate 25 % Silt Rating: 4 (0=none, 5= chocolate)
CPOM Rating (leaf packs): 0-1 (0= none,5=high) LWD (>4"dia) #: 2 /100m (reach)
Habitat Comments:

GENERAL WATER TYPE Riffle, Winder, Other _____ Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 45' (m) B.F.Hght 2.5 (m) Wetted Width: 15' (m) Riffle Depth: 4" (m) Pool Depth: 3' (m)
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
well armoured
Fish: *Bottom Type*: Hard -- Soft -- Mixed *COVER RATING*: Exc Very Good Good Fair Poor *GRADIENT*: high med low flat

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____%
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 60 °F, °C Temp Water 11 °C fpH_____lab pH_____ fCond_____ *D.O.%*_____ D.Omg/l_____
Was meter calibrated for D.O: Y / N ? Was meter calibrated for other parameters: Just prior to use/ In the lab on_____?
Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3, SO4 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

Black rocks, hard to kick due to embeddeness

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%	<4.5	<12%	>0.45	>40%	
2004 PIO	200	24	14	44	4.61	0	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	1.0	0.88	29	Does Not Meet Class B Criteria
2007 DEC/PIO	484	37	24	63	1.22	2	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	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	9	0.99	55	Does Not Meet Class B Criteria
2012 VHB	95	26	16	69	1.958	21.2	0.93	54	Does Not Meet Class B Criteria
2013 VHB	157	30	19.5	74	2.07	13.6	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
2016 VHB	373	30	21	82	1.16	3.5	1.00	56	Meets Interim Targets and Class B Criteria

2014 Interim Targets	>200	≥28	≥17	(-)	(-)	≤12	(-)	(-)	Per 2014 WQRP, Appendix 4 (1/16/2015)
2015 Interim Targets	>250	≥28	≥17	(-)	(-)	≤12	(-)	(-)	
2016 Interim Targets	≥300	≥28	≥17	(-)	(-)	≤12	(-)	(-)	

Macroinvertebrate data submittal form - VTDEC October 2016 version

Project Name: Jay Peak Resort	
VT DEC Lab ID:	Organization: VHB
Stream Name: Trib. 9 to Jay Branch	Stream Class: SHG
Station: JB-T9-0.1	

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:	44.938650	-72.491635
or VT Site ID:	427809000001	
Date collected:	10/3/2016	
# Reps Collected:	1	
# Rep Picked:	1	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**
Picked By:	CCS
Date Picked:	Dec. 2016
#sq picked:	20
#sq total:	24
Checked By:	CCS
Sorted By:	CCS
Sorted Date:	Dec. 2016

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	8	9.6		SCR	N	2	3	19.2	28.8	1	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	MICROPSEC/TANYTARSUS	MICROPSECTRA	N/A	sp	CCS	A	1	1.2		CG	Y	3	6	3.6	7.2	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	13	15.6		PRD	N	2	3	31.2	46.8	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	5	6		PRD	N	2	2	12	12	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CCS	A	2	2.4		SRD	N	3	6	7.2	14.4	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	6	7.2		CG	N	3	6	21.6	43.2	1	1
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	ACENTRELLA/PLAUDITUS	PLAUDITUS	N/A	sp	CCS	A	6	7.2		SCR	N	2	5	14.4	36	1	1
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	18	21.6		CG	N	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	3	3.6		SCR	N	1	4	3.6	14.4	1	1
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	42	50.4		CG	N	2	1	100.8	50.4	1	1
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp	CCS	A	1	1.2		SHR	N	1	2	1.2	2.4	1	1
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	CERATOPSYC/HYDROPSYC	CERATOPSYCHE	alh/slo/spa	alhedra	CCS	A	18	21.6		CF	N	2	3	43.2	64.8	1	1
04.05.00.02.008.01.07	TRICHOPTERA	HYDROPSYCHIDAE	N/A	CERATOPSYC/HYDROPSYC	CERATOPSYCHE	alh/slo/spa	sparna	CCS	A	7	8.4		CF	N	2	4	16.8	33.6	1	1
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	1	1.2		CF	N	0	0	0	0	1	1
04.05.00.00.003.00.01	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	DIPLECTRONA	N/A	modesta	CCS	A	30	36		CF	N	0	0	0	0	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	9	10.8		SRD	N	1	1	10.8	10.8	1	1
04.09.00.00.018.00.00	TRICHOPTERA	LIMNEPHILIDAE	N/A	N/A	PYCNOPSYCHE	N/A	sp	CCS	A	1	1.2		SRD	N	2	4	2.4	4.8	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	53	63.6		CF	N	0	0	0	0	1	1
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	1	1.2		PRD	N	3	6	3.6	7.2	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	2	2.4		PRD	N	1	2	2.4	4.8	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	8	9.6		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	24	28.8		SRD	N	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	20	24		SRD	N	1	0	24	0	1	1
05.07.00.00.006.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	ISOPERLA	N/A	sp	CCS	A	1	1.2		PRD	N	1	2	1.2	2.4	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	2	2.4		PRD	N	1	2	2.4	4.8	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	14	16.8		SRD	N	1	0	16.8	0	1	1
07.02.00.00.001.00.00	MEGALOPTERA	SIALIDAE	N/A	N/A	SIALIS	N/A	sp	CCS	A	1	1.2		PRD	N	3	6	3.6	7.2	1	0
12.08.00.00.002.00.00	GASTROPODA	PHYSIDAE	N/A	N/A	PHYSA	N/A	sp	CCS	A	2	2.4		CG	N	4	8	9.6	19.2	1	0
16.01.00.00.001.00.00	NEMATOMORPHA	GORDIIDAE	N/A	N/A	GORDIUS	N/A	SP	CCS	A	1	1.2		-	N	-	-	-	-	1	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	11	13.2		CG	N	-	-	-	-	1	0
TOTALS by Rep: --->										311	**373.2**									
GRAND TOTAL:	373.2 organisms																			

	Total BI Score	351.6	415.2	**Total Richness**	**Total EPT-R**
	Total # Organisms	373.2	373.2		
	# of Organisms w/o BI	14.4	14.4	30	
	Total # Organisms with BI	358.8	358.8		21
	Biotic Index	0.98	1.16		

*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 10/03/16

2016 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	9.6	0	0	0	0	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	1.2	0	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	15.6	0	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	6	0	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	2.4	0	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	7.2	0	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	7.2	0	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	21.6	0	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	3.6	0	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	50.4	0	0	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	1.2	0	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	0	0	21.6	0	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	8.4	0	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	1.2	0	0	0	0	0	0	0	
04.05.00.00.003.00.01	0	0	0	36	0	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	10.8	0	0	0	0	0	0	0	
04.09.00.00.018.00.00	0	0	0	1.2	0	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	63.6	0	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	1.2	0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	2.4	0	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	9.6	0	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	28.8	0	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	24	0	0	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	1.2	0	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	2.4	0	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	16.8	0	0	0	0	0	0	
07.02.00.00.001.00.00	0	0	0	0	0	0	0	1.2	0	0	0	
12.08.00.00.002.00.00	0	0	0	0	0	0	0	0	0	0	2.4	
16.01.00.00.001.00.00	0	0	0	0	0	0	0	0	0	1.2	0	
18.04.00.00.000.00.00	0	0	0	0	0	13.2	0	0	0	0	0	
Total	**9.6**	**25.2**	**90**	**147.6**	**82.8**	**13.2**	**0**	**1.2**	**0**	**1.2**	**2.4**	**373.2**
Percent	**2.57%**	**6.8%**	**24.1%**	**39.5%**	**22.2%**	**3.54%**	**0.00%**	**0.32%**	**0.00%**	**0.32%**	**0.64%**	**100.00%**

Functional Feeding Group Analysis

Project Jay Peak Resort

Station JB-T9-0.1
Stream Trib. 9 to Jay Branch
Location 427809000001
Sample Date 10/03/16

2016 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	0	0	0	0	0	0	9.6	0	0	0	**9.6**
02.05.03.02.121.00.00	0	1.2	0	0	0	0	0	0	0	0	0	**1.2**
02.19.00.00.003.00.00	0	0	0	0	15.6	0	0	0	0	0	0	**15.6**
02.19.00.00.006.00.00	0	0	0	0	6	0	0	0	0	0	0	**6**
02.19.00.00.016.00.00	0	0	0	0	0	0	0	0	0	2.4	0	**2.4**
03.01.00.00.001.00.09	0	7.2	0	0	0	0	0	0	0	0	0	**7.2**
03.01.00.02.007.00.00	0	0	0	0	0	0	0	7.2	0	0	0	**7.2**
03.04.00.00.004.00.01	0	21.6	0	0	0	0	0	0	0	0	0	**21.6**
03.06.00.00.004.00.00	0	0	0	0	0	0	0	3.6	0	0	0	**3.6**
03.07.00.00.005.00.00	0	50.4	0	0	0	0	0	0	0	0	0	**50.4**
04.01.00.00.003.00.00	0	0	0	0	0	0	0	0	1.2	0	0	**1.2**
04.05.00.02.008.01.04	21.6	0	0	0	0	0	0	0	0	0	0	**21.6**
04.05.00.02.008.01.07	8.4	0	0	0	0	0	0	0	0	0	0	**8.4**
04.05.01.00.006.00.01	1.2	0	0	0	0	0	0	0	0	0	0	**1.2**
04.05.00.00.003.00.01	36	0	0	0	0	0	0	0	0	0	0	**36**
04.07.00.00.001.00.00	0	0	0	0	0	0	0	0	0	10.8	0	**10.8**
04.09.00.00.018.00.00	0	0	0	0	0	0	0	0	0	1.2	0	**1.2**
04.12.00.00.002.00.00	63.6	0	0	0	0	0	0	0	0	0	0	**63.6**
04.14.00.00.005.00.00	0	0	0	0	1.2	0	0	0	0	0	0	**1.2**
04.16.00.00.001.00.01	0	0	0	0	2.4	0	0	0	0	0	0	**2.4**
05.02.00.00.006.00.00	0	0	0	0	9.6	0	0	0	0	0	0	**9.6**
05.03.00.00.000.00.01	0	0	0	0	0	0	0	0	0	28.8	0	**28.8**
05.05.00.00.000.00.01	0	0	0	0	0	0	0	0	0	24	0	**24**
05.07.00.00.006.00.00	0	0	0	0	1.2	0	0	0	0	0	0	**1.2**
05.07.00.00.007.00.00	0	0	0	0	2.4	0	0	0	0	0	0	**2.4**
05.08.00.00.001.00.02	0	0	0	0	0	0	0	0	0	16.8	0	**16.8**
07.02.00.00.001.00.00	0	0	0	0	1.2	0	0	0	0	0	0	**1.2**
12.08.00.00.002.00.00	0	2.4	0	0	0	0	0	0	0	0	0	**2.4**
16.01.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	1.2	**1.2**
18.04.00.00.000.00.00	0	13.2	0	0	0	0	0	0	0	0	0	**13.2**
Group Total	**130.8**	**96**	**0**	**0**	**39.6**	**0**	**0**	**20.4**	**1.2**	**84**	**1.2**	**373.2**
Percent of Sample Total	**35.0%**	**25.7%**	**0.0%**	**0.0%**	**10.6%**	**0.0%**	**0.0%**	**5.5%**	**0.3%**	**22.5%**	**0.3%**	**100.0%**

	Model			Kicknet 1 vs. SHG	
	SHG	MHG	WWMG	**KN-1**	**PPCS**
Col. Gath.	31%	32%	22%	25.7%	83.0%
Col. Filt.	18%	30%	36%	35.05%	51.4%
Predator	19%	13%	7%	10.6%	55.8%
Shred-Det.	15%	4%	2%	22.5%	66.6%
Shred- Herb.	1%	1%	5%	0.32%	32.2%
Scraper	12%	13%	22%	5.47%	45.6%
				PPCS-FG =	**55.8%**

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, SHG
Sample Date 10/03/16 **Sampler** C. Szal

Order	Model			Kicknet 1 vs. Model (SHG)	
	SHG	MHG	WWMG	**%**	**difference**
Coleoptera	8%	6%	13%	2.57%	5.43
Diptera	19%	18%	13%	6.8%	12.25
Ephemeroptera	23%	34%	32%	24.1%	1.12
Plecoptera	21%	8%	8%	22.2%	1.2
Trichoptera	28%	33%	33%	39.5%	11.5
Oligochaeta	0.5%	0.5%	1.0%	3.54%	3.04
Other	0.5%	0.5%	1.0%	1.29%	0.786
				Sum diff	35.4
				Sum diff * 0.5	17.7
				100-(sum diff * 0.5)	82.3
				% model affinity	**82.3%**

EPT / EPT+C Calculations

Project Jay Peak Resort

Station JB-T9-0.1
Stream Trib. 9 to Jay Branch
Location 427809000001
Sample Date 10/03/16
Class B, SHG
Sampler C. Szal

	KN-1
#EPT organisms	320.4
#C organisms	1
EPT/EPT+C	0.996

Biometrics Summary

Project Jay Peak Resort

Station JB-T9-0.1
Stream Trib. 9 to Jay Branch
Location 427809000001 **Class** B, SHG
Sample Date 10/03/16 **Sampler** C. Szal

Replicate # Sampling Method	1 KN	Average KN
Biometrics:		
Density/Unit	373	373
Species Richness	30.0	30.0
EPT Richness	21.0	21.0
Old Bio Index (0 to 5)	0.98	0.98
New Bio Index (0 to 10)	1.16	1.16
% dominant taxa	17.0%	17.0%
# dominant taxa	63.6	
dominant taxa ID	TRICHOPTERA	PHILOPOTAMIDAE
EPT/EPT+C	0.996	0.996
EPT/Richness	0.700	0.700
% Model Affinity (orders)	82.3%	82.3%
PPCS - functional groups	55.8%	55.8%
Major Groups:		
Coleoptera (%)	2.57%	2.57%
Diptera (%)	6.8%	6.8%
Ephemeroptera (%)	24.1%	24.1%
Trichoptera (%)	39.5%	39.5%
Plecoptera (%)	22.2%	22.2%
Oligochaeta (%)	3.54%	3.54%
Bivalvia (%)	0.00%	0.00%
Megaloptera (%)	0.32%	0.32%
Odonata (%)	0.00%	0.00%
Other (%)	0.96%	0.96%
Total (%)	100%	100%
Feeding Groups:		
Collector Gatherer (%)	25.7%	25.7%
Collector Filterer (%)	35.05%	35.05%
Predator (%)	10.6%	10.6%
Shredder - Detritus (%)	22.5%	22.5%
Shredder - Herbivore (%)	0.32%	0.32%
Scraper (%)	5.47%	5.47%
Other (%)	0.32%	0.32%
Total (%)	100%	100%

Project Jay Peak Resort

Station JB-T9-0.1
Stream Trib. 9 to Jay Branch
Location 427809000001
Sample Date 10/03/16

Latitude 44.938650
Longitude -72.491635
Class B, Small High Gradient
Sampler C. Szal

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/2004)

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	373	≥300	Pass	≥400	I-	≥500	Fail
Richness	30.0	≥27	Pass	≥31	I-	≥35	Fail
EPT	21.0	≥16	Pass	≥19	Pass	≥21	I+
PMA-O	82.3%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	1.16	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	3.54%	≤12%	Pass	≤5	I+	≤2	Fail
EPT/EPT+C	0.996	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
PPCS-FG	55.8%	≥ 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
(2015 edition)

Bug Lab ID _____
Chem ID _____ Time _____
DUP Chem ID Time

Site Name Jay Peak JB-T9-0.1 River Mile _____ USFS___ PROB___
Site ID 3-1 / Trib Date 10.3.16 Time 1030 New Site___
Crew CS, NS
Site Description _____

Town: _____ Stream Order: _____ Drainage Area: _____ Km^2 Elevation: _____ ft
D.D° Latitude: _____ **Longitude:** _____ Lat/Long source (GPS --NAD83:) _____
Weather: Light rain Flow/Weather Previous (2 weeks/2days): light rain last 48hr., quiet 2wk
Surrounding Land Use: Golf course resort forest

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: ____ min Mesh: 500 um
Area: 2 m^2 Quantitative: Y / N
#Reps: 1 Comp/rep: 4
limited space

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 80 % Filamentous Green _____% and length _____in
Blue Green _____% Moss 10 % (Terrestrial) Green _____% Other _____%
Calcareous Deposits _____% Iron Precipitate _____%
General Trophic Rating: 1 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS
Embeddedness Estimate 20 % Silt Rating: 4 (0=none, 5= chocolate) FPOM & silt
CPOM Rating (leaf packs): 0-1 (0= none,5=high) LWD (>4"dia) #: 2 /100m (reach)
Habitat Comments:

GENERAL WATER TYPE Riffle, Winder, Other _____ Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 15' (m) B.F.Hght 1' (m) Wetted Width: 8' (m) Riffle Depth: 1-2" (m) Pool Depth: _____(m)
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 *COVER RATING*: Exc Very Good Good Fair Poor *GRADIENT*: high med low flat
Armored

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*facing upstream*) L >100 m, R >100 m
Overstory: Softwood 50 % Hardwood 50 % Understory: Shrub (brush) 40 % 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 60 °F, °C Temp Water 11.5 °C fpH_____ lab pH_____ fCond_____ *D.O.%*_____ D.Omg/l_____
Was meter calibrated for D.O: Y / N ? Was meter calibrated for other parameters: Just prior to use/ In the lab on_____?
Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3, SO4 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

Very black rocks

Field Sheet Complete: CS (initial)
Photos: Y N
Fish Survey Conducted: Y N

Jay Peak Resort Kick Net Data - South Mountain Branch - Tributary 3 - SMB-T3-0.8 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**	
2016 VHB	415	31	19	59	0.73	5	0.91	35	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%

* Per email from DEC Aquatic Biologist Steve Fiske dated 1/18/2017, the failure of the PPCS-FG metric "is likely due to natural causes at this very high elevation site and the October collection date" and characterize the final assessment outcome as good-very good.

Macroinvertebrate data submittal form - VTDEC October 2016 version

Project Name: Jay Peak Resort	
VT DEC Lab ID:	Organization: VHB
Stream Name: South Mountain Branch - Tributary 3	Stream Class: SHG
Station: SMB-T3-0.8	

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:	44.928484	-72.507207
or VT Site ID:	427807030008	
Date collected:	10/3/2016	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	Rep 1	Rep 2
Picked By:	CCS	CCS
Date Picked:	Dec. 2016	Dec. 2016
#sq picked:	20	17
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Dec. 2016	Dec. 2016

Taxonomic Data								Rep1				Rep2							Biotic Index						Richness Metrics			
																			Biotic Index Scores		Old BI (1-5)		New BI (1-10)		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
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps				0	CCS	A	1	1		CG	Y	3	4	0	4	0	6	-	0	1	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	PSEC/TANYT	MICROPSECTRA	N/A	sp				0	CCS	A	3	4		CG	Y	3	6	0	13	0	25	-	0	1	0
02.05.05.00.005.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	BRILLIA	N/A	sp				0	CCS	A	1	1		SRD	Y	3	5	0	4	0	7	-	0	1	0
02.05.05.00.008.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	CARDIOCLADIUS	N/A	sp	CCS	A	2	2.4				0		PRD	Y	3	5	7	0	12	0	1	0	-	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	18	21.6	CCS	A	17	24		CG	Y	2	2	43	48	43	48	1	0	1	0
02.05.05.00.065.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	ORTHOCLADIUS	N/A	sp	CCS	A	1	1.2				0		CG	Y	3	7	4	0	8	0	1	0	-	0
02.05.05.00.068.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARACHAETOCLADIUS	N/A	sp	CCS	A	1	1.2	CCS	A	4	6		CG	Y	2	2	2	11	2	11	1	0	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	2	2.4	CCS	A	1	1		CG	Y	3	5	7	4	12	7	1	0	1	0
02.05.09.04.110.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	MANNIMYIA	THIENEMANNIMYIA	N/A	sp	CCS	A	1	1.2				0		PRD	Y	3	6	4	0	7	0	1	0	-	0
02.06.00.00.001.00.00	DIPTERA	DIXIDAE	N/A	N/A	DIXA	N/A	sp	CCS	A	1	1.2	CCS	A	1	1		CG	N	2	1	2	3	1	1	1	0	1	0
02.08.00.00.000.00.00	DIPTERA	EMPIDIDAE	N/A	N/A	N/A	N/A	uid				0	CCS	A	1	1		PRD	N	3	6	0	4	0	8	-	0	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	8	9.6	CCS	A	4	6		PRD	N	2	3	19	11	29	17	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	8	9.6	CCS	A	3	4		PRD	N	2	2	19	8	19	8	1	0	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp				0	CCS	A	2	3		SRD	N	3	6	0	8	0	17	-	0	1	0
02.19.00.00.019.00.00	DIPTERA	TIPULIDAE	N/A	N/A	MOLOPHILUS	N/A	sp	CCS	A	1	1.2				0		CG	N	3	4	4	0	5	0	1	0	-	0
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii				0	CCS	A	1	1		CG	N	0	0	0	0	0	0	-	0	1	1
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EURYLOPHELLA	N/A	funeralis	CCS	A	3	3.6	CCS	A	7	10		SRD	N	1	0	4	10	0	0	1	1	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	25	30	CCS	A	10	14		CG	N	0	0	0	0	0	0	1	1	1	1
03.14.00.00.001.00.00	EPHEMEROPTERA	AMELETIDAE	N/A	N/A	AMELETUS	N/A	sp	CCS	A	1	1.2	CCS	A	4	6		CG	N	0	0	0	0	0	0	1	1	1	1
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS	A	2	2.4				0		SCR	N	1	0	2	0	0	0	1	1	-	0
04.05.00.02.008.01.07	TRICHOPTERA	HYDROPSYCHIDAE	N/A	PSYC/HYDI	CERATOPSYCHE	alh/slo/spa	sparna				0	CCS	A	1	1		CF	N	2	4	0	3	0	6	-	0	1	1
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	5	6	CCS	A	4	6		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	17	20.4	CCS	A	17	24		SRD	N	1	1	20	24	20	24	1	1	1	1
04.09.00.00.018.00.00	TRICHOPTERA	LIMNEPHILIDAE	N/A	N/A	PYCNOPSYCHE	N/A	sp				0	CCS	A	1	1		SRD	N	2	4	0	3	0	6	-	0	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	5	6	CCS	A	8	11		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	1	1.2				0		CF	N	0	0	0	0	0	0	1	1	-	0
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	6	7.2	CCS	A	10	14		PRD	N	1	2	7	14	14	28	1	1	1	1
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	invaria grp	invaria grp	CCS	A	2	2.4	CCS	A	2	3		PRD	N	1	1	2	3	2	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	3	3.6	CCS	A	6	8		PRD	N	0	1	0	0	4	8	1	1	1	1
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A	N/A	NEOPHYLAX	N/A	sp	CCS	A	3	3.6	CCS	A	4	6		SCR	N	2	3	7	11	11	17	1	1	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	5	6	CCS	A	2	3		SCR	N	1	3	6	3	18	8	1	1	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	49	58.8	CCS	A	37	52		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	111	133.2	CCS	A	129	182		SRD	N	0	0	0	0	0	0	1	1	1	1
05.04.00.00.000.00.01	PLECOPTERA	NEMOURIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	1	1.2	CCS	A	4	6		SRD	N	1	2	1	6	2	11	1	1	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	12	14.4	CCS	A	18	25		PRD	N	1	2	14	25	29	51	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	1	1.2	CCS	A	3	4		SRD	N	1	0	1	4	0	0	1	1	1	1
06.04.00.00.001.00.00	ODONATA	CORDULEGASTRIDAE	N/A	N/A	CORDULEGASTER	N/A	sp	CCS	A	1	1.2				0		PRD	N	1	3	1	0	4	0	1	0	-	0
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A	N/A	LANTHUS	N/A	sp	CCS	A	2	2.4				0		PRD	N	2	5	5	0	12	0	1	0	-	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	26	31.2	CCS	A	7	10		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep: --->										324	**389**			313	**442**													

Total BI Score	183.6	225.88	255.6	319.06	Total Richness	Total EPT-R	Total Richness	Total EPT-R
Total # Organisms	388.8	441.88	388.8	441.88				
# of Organisms w/o BI	31.2	9.8824	31.2	9.8824	31		31	
Total # Organisms with BI	357.6	432	357.6	432		18		19
Biotic Index	0.51	0.52	0.71	0.74				

GRAND TOTAL: 831 organisms

*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-T3-0.8
Stream South Mountain Branch - Tributary 3
VT Site ID 427807030008
Sample Date 10/03/2016

2016 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
02.05.01.00.085.00.05	0	0	0	0	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.005.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.008.00.00	0	2.4	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	21.6	0	0	0	0	0	0	0	0	
02.05.05.00.065.00.00	0	1.2	0	0	0	0	0	0	0	0	
02.05.05.00.068.00.00	0	1.2	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	2.4	0	0	0	0	0	0	0	0	
02.05.09.04.110.00.00	0	1.2	0	0	0	0	0	0	0	0	
02.06.00.00.001.00.00	0	1.2	0	0	0	0	0	0	0	0	
02.08.00.00.000.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	9.6	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	9.6	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.019.00.00	0	1.2	0	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	0	0	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	3.6	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	30	0	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	1.2	0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	2.4	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	0	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	6	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	20.4	0	0	0	0	0	0	
04.09.00.00.018.00.00	0	0	0	0	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	6	0	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	1.2	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	7.2	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	2.4	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	3.6	0	0	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	3.6	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	6	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	58.8	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	133.2	0	0	0	0	0	
05.04.00.00.000.00.01	0	0	0	0	1.2	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	14.4	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	1.2	0	0	0	0	0	
06.04.00.00.001.00.00	0	0	0	0	0	0	0	0	1.2	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	2.4	0	
18.04.00.00.000.00.00	0	0	0	0	0	31.2	0	0	0	0	
Total	**0**	**51.6**	**34.8**	**58.8**	**208.8**	**31.2**	**0**	**0**	**3.6**	**0**	**389**
Percent	**0%**	**13%**	**9%**	**15%**	**54%**	**8%**	**0%**	**0%**	**1%**	**0%**	**100.000%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-T3-0.8
Stream South Mountain Branch - Tributary 3
VT Site ID 427807030008
Sample Date 10/03/2016

2016 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
02.05.01.00.085.00.05	0	1	0	0	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	4	0	0	0	0	0	0	0	0	
02.05.05.00.005.00.00	0	1	0	0	0	0	0	0	0	0	
02.05.05.00.008.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	24	0	0	0	0	0	0	0	0	
02.05.05.00.065.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.068.00.00	0	6	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	1	0	0	0	0	0	0	0	0	
02.05.09.04.110.00.00	0	0	0	0	0	0	0	0	0	0	
02.06.00.00.001.00.00	0	1	0	0	0	0	0	0	0	0	
02.08.00.00.000.00.00	0	1	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	6	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	4	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	3	0	0	0	0	0	0	0	0	
02.19.00.00.019.00.00	0	0	0	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	1	0	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	10	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	14	0	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	6	0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	0	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	1	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	6	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	24	0	0	0	0	0	0	
04.09.00.00.018.00.00	0	0	0	1	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	11	0	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	14	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	3	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	8	0	0	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	6	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	3	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	52	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	182	0	0	0	0	0	
05.04.00.00.000.00.01	0	0	0	0	6	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	25	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	4	0	0	0	0	0	
06.04.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	10	0	0	0	0	
Total	**0**	**54**	**31**	**78**	**270**	**10**	**0**	**0**	**0**	**0**	**442**
Percent	**0%**	**12%**	**7%**	**18%**	**61%**	**2%**	**0%**	**0%**	**0%**	**0%**	**100.000%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-T3-0.8
Stream South Mountain Branch - Tributary 3
Location 427807030008
Sample Date 10/03/2016

2016 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
02.05.01.00.085.00.05	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	0	0	0	0	0	0		4	0	0	0	0	0	0	
02.05.05.00.005.00.00	0	0	0	0	0	0	0		0	0	0	1	0	0	0	
02.05.05.00.008.00.00	0	0	2	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.029.00.11	22	0	0	0	0	0	0		24	0	0	0	0	0	0	
02.05.05.00.065.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.068.00.00	1	0	0	0	0	0	0		6	0	0	0	0	0	0	
02.05.05.00.075.00.00	2	0	0	0	0	0	0		1	0	0	0	0	0	0	
02.05.09.04.110.00.00	0	0	1	0	0	0	0		0	0	0	0	0	0	0	
02.06.00.00.001.00.00	1	0	0	0	0	0	0		1	0	0	0	0	0	0	
02.08.00.00.000.00.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
02.19.00.00.003.00.00	0	0	10	0	0	0	0		0	0	6	0	0	0	0	
02.19.00.00.006.00.00	0	0	10	0	0	0	0		0	0	4	0	0	0	0	
02.19.00.00.016.00.00	0	0	0	0	0	0	0		0	0	0	3	0	0	0	
02.19.00.00.019.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	0	4	0	0	0		0	0	0	10	0	0	0	
03.06.00.00.003.00.00	30	0	0	0	0	0	0		14	0	0	0	0	0	0	
03.14.00.00.001.00.00	1	0	0	0	0	0	0		6	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	0	0	2	0		0	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	0	0	0	0		0	1	0	0	0	0	0	
04.05.01.00.006.00.01	0	6	0	0	0	0	0		0	6	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	20	0	0	0		0	0	0	24	0	0	0	
04.09.00.00.018.00.00	0	0	0	0	0	0	0		0	0	0	1	0	0	0	
04.12.00.00.002.00.00	0	6	0	0	0	0	0		0	11	0	0	0	0	0	
04.12.00.00.003.00.00	0	1	0	0	0	0	0		0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	7	0	0	0	0		0	0	14	0	0	0	0	
04.16.00.00.001.01.00	0	0	2	0	0	0	0		0	0	3	0	0	0	0	
04.16.00.00.001.02.00	0	0	4	0	0	0	0		0	0	8	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	0	0	4	0		0	0	0	0	0	6	0	
04.20.00.00.001.00.00	0	0	0	0	0	6	0		0	0	0	0	0	3	0	
05.02.00.00.006.00.00	0	0	59	0	0	0	0		0	0	52	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	133	0	0	0		0	0	0	182	0	0	0	
05.04.00.00.000.00.01	0	0	0	1	0	0	0		0	0	0	6	0	0	0	
05.07.00.00.007.00.00	0	0	14	0	0	0	0		0	0	25	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	1	0	0	0		0	0	0	4	0	0	0	
06.04.00.00.001.00.00	0	0	1	0	0	0	0		0	0	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	2	0	0	0	0		0	0	0	0	0	0	0	
18.04.00.00.000.00.00	31	0	0	0	0	0	0		10	0	0	0	0	0	0	
Total	**91**	**13**	**113**	**160**	**0**	**12**	**0**	**389**	**69**	**18**	**114**	**232**	**0**	**8**	**0**	**442**
Percent	**23%**	**3%**	**29%**	**41%**	**0%**	**3%**	**0%**	**100.0%**	**16%**	**4%**	**26%**	**52%**	**0%**	**2%**	**0%**	**100.0%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-T3-0.8
Stream South Mountain Branch - Tributary 3
Location 427807030008
Sample Date 10/03/2016

FFG Summary:							
	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS	KN-2	PPCS
Col. Gath.	31%	32%	22%	23.5%	75.7%	15.7%	50.5%
Col. Filt.	18%	30%	36%	3.4%	18.9%	4.2%	23.1%
Predator	19%	13%	7%	29.0%	65.5%	25.9%	73.4%
Shred-Det.	15%	4%	2%	41.0%	36.5%	52.4%	28.6%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.00%	0.0%
Scraper	12%	13%	22%	3.09%	25.72%	1.92%	16.0%
				PPCS-FG =	**37.0%**	**PPCS-FG =**	**31.9%**

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 SMB-T3-0.8
Stream South Mountain Branch - Tributary 3
VT Site ID 427807030008 **Class** Small, High Gradient, B
Sample Date 10/03/2016 **Sampler** CCS

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	0.00%	8.00
Diptera	19%	18%	13%	13.3%	5.73	12.1%	6.859
Ephemeroptera	23%	34%	32%	9.0%	14.0	7.03%	16.0
Plecoptera	21%	8%	8%	53.7%	32.7	61.0%	40.0
Trichoptera	28%	33%	33%	15.1%	12.9	17.6%	10.4
Oligochaeta	0.5%	0.5%	1.0%	8.02%	7.52	2.24%	1.74
Other	0.5%	0.5%	1.0%	0.93%	0.426	0.00%	0.500
				Sum diff	81.3		83.5
				Sum diff * 0.5	40.7		41.8
				100-(sum diff * 0.5)	59.3		58.2
				% model affinity	**59.3%**		**58.2%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station SMB-T3-0.8
Stream South Mountain Branch - Tributary 3
Location 427807030008
Sample Date 10/03/2016
Class Small, High Gradient, B
Sampler CCS

	KN-1	KN-2
#EPT organisms	302.4	378
#C organisms	30	38
EPT/EPT+C	0.91	0.91

Biometric Summary

Project Jay Peak Resort
Station SMB-T3-0.8
Stream South Mountain Branch - Tributary 3
Location 427807030008 **Class** Small, High Gradient, B
Sample Date 10/03/2016 **Sampler** CCS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	389	442	415
Species Richness	31.0	31.0	31.0
EPT Richness	18.0	19.0	18.5
Old Bio Index (0 to 5)	0.51	0.52	0.52
New Bio Index (0 to 10)	0.71	0.74	0.73
% dominant taxa	34.3%	41.2%	37.7%
EPT/EPT+C	0.910	0.908	0.909
EPT/Richness	0.581	0.613	0.597
% Model Affinity (orders)	59.3%	58.2%	58.8%
PPCS - functional groups	37.0%	31.9%	34.5%
Major Groups:			
Coleoptera (%)	0.00%	0.00%	0.00%
Diptera (%)	13.3%	12.1%	12.7%
Ephemeroptera (%)	9.0%	7.03%	7.99%
Trichoptera (%)	15.1%	17.6%	16.3%
Plecoptera (%)	53.7%	61.0%	57.4%
Oligochaeta (%)	8.02%	2.24%	5.13%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.93%	0.00%	0.46%
Other (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	23.5%	15.7%	19.6%
Collector Filterer (%)	3.4%	4.15%	3.8%
Predator (%)	29.0%	25.9%	27.4%
Shredder - Detritus (%)	41.0%	52.4%	46.7%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	3.09%	1.92%	2.50%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Project Jay Peak Resort
Station SMB-T3-0.8 **Latitude** 44.928484
Stream South Mountain Branch - Tributary 3 **Longitude** -72.507207
Location 427807030008 **Class** Small, High Gradient, B
Sample Date 10/03/2016 **Sampler** CCS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/2004)

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	415.3	≥300	Pass	≥400	I+	≥500	Fail
Richness	31.0	≥27	Pass	≥31	I+	≥35	Fail
EPT	18.5	≥16	Pass	≥19	I-	≥21	Fail
% PMA-O	58.8%	≥45%	Pass	≥55%	I+	≥65%	Fail
BI (New 1-10)	0.73	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	5.13%	≤12%	Pass	≤5	I-	≤2	Fail
EPT/EPT+C	0.909	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	34.5%	≥ 40%	Fail	≥ 45%	Fail	≥ 50%	Fail
Outcome:		**Biocriteria are not met**					
The following metrics do not meet Class B thresholds:		% PPCS-FG. DEC Aquatic Biologist Steve Fiske identified failure to meet this metric was likely due to high elevation stream and October sample collection date.					

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
(2015 edition)

Bug Lab ID _____
Chem ID _____ Time _____
DUP Chem ID Time

Site Name Jay [SMB-T3-0.8] River Mile _____ USFS___ PROB___
Site ID Arbor Date 10.3.16 Time 1300 New Site____
Crew CS, NS
Site Description _____

Town: _____ Stream Order: _____ Drainage Area: _____Km² Elevation: _____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS --NAD83:) _____
Weather: Light rain Flow/Weather Previous (2 weeks/2days): light rain last 48hr., quiet 2 wk
Surrounding Land Use: Ski area, forest

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: ____ min Mesh: 500 um
Area: 1 m² Quantitative: Y / N
#Reps: 2 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 50 % Filamentous Green _____% and length _____in
Blue Green _____% Moss 50 % Green _____% Other _____%
Calcareous Deposits _____% Iron Precipitate _____%
Terrestrial
General Trophic Rating: 0 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS
Embeddedness Estimate 10 % Silt Rating: 4 (0=none, 5= chocolate)
CPOM Rating (leaf packs): 0-1 (0= none,5=high) LWD (>4"dia) #: 15 /100m (reach)
Habitat Comments:

GENERAL WATER TYPE Riffle, Winder, Other Fall & pool Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 15' (m) B.F.Hght 1' (m) Wetted Width: 8' (m) Riffle Depth: 2-4 (m) Pool Depth: 3' (m)
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
Armoured
Fish: *Bottom Type*: Hard -- Soft -- Mixed *COVER RATING*: Exc Very Good Good Fair Poor *GRADIENT*: high med low flat

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*facing upstream*) L 20 m, R 20 m
Overstory: Softwood _____% Hardwood 100 % Understory: Shrub (brush) 80 % 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 60 °F, °C Temp Water 9.5 °C fpH_____lab pH_____ fCond_____ *D.O.%*_____ D.Omg/l_____
Was meter calibrated for D.O: Y / N ? Was meter calibrated for other parameters: Just prior to use/ In the lab on_____?
Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3, SO4 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
Aquatic Biota Observed: Mussels, Crayfish, Gastropods, Fish, Other

Sand transport leaves mainly on

Field Sheet Complete: CS (initial)
Photos: Y / N
Fish Survey Conducted: Y / N

Jay Peak Resort
Kick Net Data - South Mountain Branch - Tributary 3 - 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
2016 VHB	206	26	19	58	0.93	30	0.97	54	Does Not Meet Class B Criteria, 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	(-)	(-)	
2016 Interim Targets	> 250	> 26	> 15.7	(-)	(-)	< 14.5	(-)	(-)	
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 2016 version

Project Name: Jay Peak Resort	
VT DEC Lab ID:	Organization: VHB
Stream Name: **South Mountain Branch - Tributary 3**	Stream Class: SHG
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:	44.928768	-72.494217
or VT Site ID:	427807030001	
Date collected:	10/3/2016	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Dec. 2016	Dec. 2016
#sq picked:	24	24
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Dec. 2016	Dec. 2016

Taxonomic Data																			Biotic Index						Richness Metrics			
								Rep1				Rep2							Biotic Index Scores		Old BI (1-5)		New BI (1-10)		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	3	3	CCS	A	2	2		SCR	N	2	3	6	4	9	6	1	0	1	0
02.05.05.00.008.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	CARDIOCLADIUS	N/A	sp	CCS	A	1	1				0		PRD	Y	3	5	3	0	5	0	1	0	-	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	3	3	CCS	A	4	4		CG	Y	2	2	6	8	6	8	1	0	1	0
02.05.09.04.110.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	MANNIMYIA	THIENEMANNIMYIA	N/A	sp	CCS	A	1	1				0		PRD	Y	3	6	3	0	6	0	1	0	-	0
02.08.00.00.000.00.00	DIPTERA	EMPIDIDAE	N/A	N/A	N/A	N/A	uid				0	CCS	A	1	1		PRD	N	3	6	0	3	0	6	-	0	1	0
02.19.00.00.001.00.00	DIPTERA	TIPULIDAE	N/A	N/A	ANTOCHA	N/A	sp				0	CCS	A	1	1		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	1	1	CCS	A	3	3		PRD	N	2	3	2	6	3	9	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	3	3	CCS	A	1	1		PRD	N	2	2	6	2	6	2	1	0	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CCS	A	2	2				0		SRD	N	3	6	6	0	12	0	1	0	-	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	1	1	CCS	A	1	1		CG	N	3	6	3	3	6	6	1	1	1	1
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	RELLA/PLAU	PLAUDITUS	N/A	sp				0	CCS	A	1	1		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				0	CCS	A	1	1		CG	N	0	0	0	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	2	2				0		CG	N	2	4	4	0	8	0	1	1	-	0
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EURYLOPHELLA	N/A	funeralis	CCS	A	2	2				0		SRD	N	1	0	2	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	34	34	CCS	A	17	17		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				0		SCR	N	1	4	2	0	8	0	1	1	-	0
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp				0	CCS	A	1	1		CG	N	2	1	0	2	0	1	-	0	1	1
03.14.00.00.001.00.00	EPHEMEROPTERA	AMELETIDAE	N/A	N/A	AMELETUS	N/A	sp	CCS	A	1	1				0		CG	N	0	0	0	0	0	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				0		SHR	N	1	2	1	0	2	0	1	1	-	0
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS	A	1	1	CCS	A	1	1		SCR	N	1	0	1	1	0	0	1	1	1	1
04.05.00.02.008.01.07	TRICHOPTERA	HYDROPSYCHIDAE	N/A	OPSYC/HYDI	CERATOPSYCHE	alh/slo/spa	sparna	CCS	A	1	1	CCS	A	1	1		CF	N	2	4	2	2	4	4	1	1	1	1
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	1	1				0		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	5	5	CCS	A	18	18		SRD	N	1	1	5	18	5	18	1	1	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	6	6	CCS	A	16	16		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	2	2	CCS	A	1	1		PRD	N	1	2	2	1	4	2	1	1	1	1
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A	N/A	NEOPHYLAX	N/A	sp	CCS	A	1	1	CCS	A	1	1		SCR	N	2	3	2	2	3	3	1	1	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	4	4	CCS	A	1	1		SCR	N	1	3	4	1	12	3	1	1	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	13	13	CCS	A	12	12		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	9	9	CCS	A	8	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	CCS	A	4	4	CCS	A	11	11		SRD	N	1	0	4	11	0	0	1	1	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	23	23	CCS	A	23	23		PRD	N	1	2	23	23	46	46	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	14	14	CCS	A	23	23		SRD	N	1	0	14	23	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	56	56	CCS	A	66	66		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep: --->										197	**197**			215	**215**													
GRAND TOTAL:			412 organisms																									

Total BI Score	101	115	145	123
Total # Organisms	197	215	197	215
# of Organisms w/o BI	56	66	56	66
Total # Organisms with BI	141	149	141	149
Biotic Index	0.72	0.77	1.03	0.83

Total Richness	**Total EPT-R**	**Total Richness**	**Total EPT-R**
28		24	
	20		17

*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 South Mountain Branch - Tributary 3
VT Site ID 427807030001
Sample Date 10/03/2016

2016 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	3	0	0	0	0	0	0	0	0	0	
02.05.05.00.008.00.00	0	1	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	3	0	0	0	0	0	0	0	0	
02.05.09.04.110.00.00	0	1	0	0	0	0	0	0	0	0	
02.08.00.00.000.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	1	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	3	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	2	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	1	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	0	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	0	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	2	0	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	2	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	34	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	2	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	0	0	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	1	0	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	1	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	1	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	1	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	1	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	5	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	6	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	2	0	0	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	1	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	4	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	13	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	9	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	4	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	23	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	14	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	56	0	0	0	0	
Total	**3**	**11**	**42**	**22**	**63**	**56**	**0**	**0**	**0**	**0**	**197**
Percent	**2%**	**6%**	**21%**	**11%**	**32%**	**28%**	**0%**	**0%**	**0%**	**0%**	**100.00%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch - Tributary 3
VT Site ID 427807030001
Sample Date 10/03/2016

2016 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	0	0	0	0	0	0	0	0	0	
02.05.05.00.008.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	4	0	0	0	0	0	0	0	0	
02.05.09.04.110.00.00	0	0	0	0	0	0	0	0	0	0	
02.08.00.00.000.00.00	0	1	0	0	0	0	0	0	0	0	
02.19.00.00.001.00.00	0	1	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	3	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	1	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	0	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	1	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	1	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	1	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	0	0	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	0	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	17	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	1	0	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	1	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	1	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	0	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	18	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	16	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	1	0	0	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	1	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	1	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	12	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	8	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	11	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	23	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	23	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	66	0	0	0	0	
Total	**2**	**10**	**21**	**39**	**77**	**66**	**0**	**0**	**0**	**0**	**215**
Percent	**1%**	**5%**	**10%**	**18%**	**36%**	**31%**	**0%**	**0%**	**0%**	**0%**	**100.00%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch - Tributary 3
Location 427807030001
Sample Date 10/03/2016

2016 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	0	0	0	0	3	0		0	0	0	0	0	2	0	
02.05.05.00.008.00.00	0	0	1	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.029.00.11	3	0	0	0	0	0	0		4	0	0	0	0	0	0	
02.05.09.04.110.00.00	0	0	1	0	0	0	0		0	0	0	0	0	0	0	
02.08.00.00.000.00.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
02.19.00.00.001.00.00	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	1	0	0	0	0		0	0	3	0	0	0	0	
02.19.00.00.006.00.00	0	0	3	0	0	0	0		0	0	1	0	0	0	0	
02.19.00.00.016.00.00	0	0	0	2	0	0	0		0	0	0	0	0	0	0	
03.01.00.00.001.00.09	1	0	0	0	0	0	0		1	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	0	0	0	0	0		0	0	0	0	0	1	0	
03.04.00.00.004.00.01	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
03.04.00.00.004.01.00	2	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	0	2	0	0	0		0	0	0	0	0	0	0	
03.06.00.00.003.00.00	34	0	0	0	0	0	0		17	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	2	0		0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
03.14.00.00.001.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	0	1	0	0		0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	0	0	1	0		0	0	0	0	0	1	0	
04.05.00.02.008.01.07	0	1	0	0	0	0	0		0	1	0	0	0	0	0	
04.05.01.00.006.00.01	0	1	0	0	0	0	0		0	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	5	0	0	0		0	0	0	18	0	0	0	
04.12.00.00.002.00.00	0	6	0	0	0	0	0		0	16	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	2	0	0	0	0		0	0	1	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	0	0	1	0		0	0	0	0	0	1	0	
04.20.00.00.001.00.00	0	0	0	0	0	4	0		0	0	0	0	0	1	0	
05.02.00.00.006.00.00	0	0	13	0	0	0	0		0	0	12	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	9	0	0	0		0	0	0	8	0	0	0	
05.05.00.00.000.00.01	0	0	0	4	0	0	0		0	0	0	11	0	0	0	
05.07.00.00.007.00.00	0	0	23	0	0	0	0		0	0	23	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	14	0	0	0		0	0	0	23	0	0	0	
18.04.00.00.000.00.00	56	0	0	0	0	0	0		66	0	0	0	0	0	0	
Total	**97**	**8**	**44**	**36**	**1**	**11**	**0**	**197**	**91**	**17**	**41**	**60**	**0**	**6**	**0**	**215**
Percent	**49%**	**4%**	**22%**	**18%**	**1%**	**6%**	**0%**	**100.0%**	**42%**	**8%**	**19%**	**28%**	**0%**	**3%**	**0%**	**100.0%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch - Tributary 3
Location 427807030001
Sample Date 10/03/2016

FFG Summary:							
	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS	KN-2	PPCS
Col. Gath.	31%	32%	22%	49.2%	63.0%	42.3%	73.2%
Col. Filt.	18%	30%	36%	4.1%	22.6%	7.9%	43.9%
Predator	19%	13%	7%	22.3%	85.1%	19.1%	99.6%
Shred-Det.	15%	4%	2%	18.3%	82.1%	27.9%	53.8%
Shred- Herb.	1%	1%	5%	0.51%	50.8%	0.00%	0.0%
Scraper	12%	13%	22%	5.58%	46.53%	2.79%	23.3%
				PPCS-FG =	**58.3%**	**PPCS-FG =**	**49.0%**

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 South Mountain Branch - Tributary 3
VT Site ID 427807030001 **Class** Small, High Gradient, B
Sample Date 10/03/2016 **Sampler** CCS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	1.52%	6.48	0.93%	7.07
Diptera	19%	18%	13%	5.6%	13.42	4.7%	14.349
Ephemeroptera	23%	34%	32%	21.3%	1.7	9.77%	13.2
Plecoptera	21%	8%	8%	32.0%	11.0	35.8%	14.8
Trichoptera	28%	33%	33%	11.2%	16.8	18.1%	9.9
Oligochaeta	0.5%	0.5%	1.0%	28.43%	27.93	30.70%	30.20
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.00%	0.500
				Sum diff	77.8		90.0
				Sum diff * 0.5	38.9		45.0
				100-(sum diff * 0.5)	61.1		55.0
				% model affinity	**61.1%**		**55.0%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch - Tributary 3
Location 427807030001
Sample Date 10/03/2016
Class Small, High Gradient, B
Sampler CCS

	KN-1	KN-2
#EPT organisms	127	137
#C organisms	5	4
EPT/EPT+C	0.96	0.97

Biometric Summary

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch - Tributary 3
Location 427807030001 **Class** Small, High Gradient, B
Sample Date 10/03/2016 **Sampler** CCS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	197	215	206
Species Richness	28.0	24.0	26.0
EPT Richness	20.0	17.0	18.5
Old Bio Index (0 to 5)	0.72	0.77	0.74
New Bio Index (0 to 10)	1.03	0.83	0.93
% dominant taxa	28.4%	30.7%	29.6%
EPT/EPT+C	0.962	0.972	0.967
EPT/Richness	0.714	0.708	0.712
% Model Affinity (orders)	61.1%	55.0%	58.0%
PPCS - functional groups	58.3%	49.0%	53.6%
Major Groups:			
Coleoptera (%)	1.52%	0.93%	1.23%
Diptera (%)	5.6%	4.7%	5.1%
Ephemeroptera (%)	21.3%	9.77%	15.54%
Trichoptera (%)	11.2%	18.1%	14.7%
Plecoptera (%)	32.0%	35.8%	33.9%
Oligochaeta (%)	28.43%	30.70%	29.56%
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 (%)	49.2%	42.3%	45.8%
Collector Filterer (%)	4.1%	7.91%	6.0%
Predator (%)	22.3%	19.1%	20.7%
Shredder - Detritus (%)	18.3%	27.9%	23.1%
Shredder - Herbivore (%)	0.51%	0.00%	0.25%
Scraper (%)	5.58%	2.79%	4.19%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Project Jay Peak Resort
Station SMB-T3-0.1 **Latitude** 44.928768
Stream South Mountain Branch - Tribut **Longitude** -72.494217
Location 427807030001 **Class** Small, High Gradient, B
Sample Date 10/03/2016 **Sampler** CCS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/2004)

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	206.0	≥300	Fail	≥400	Fail	≥500	Fail
Richness	26.0	≥27	I-	≥31	Fail	≥35	Fail
EPT	18.5	≥16	Pass	≥19	I-	≥21	Fail
% PMA-O	58.0%	≥45%	Pass	≥55%	I+	≥65%	Fail
BI (New 1-10)	0.93	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	29.56%	≤12%	Fail	≤5	Fail	≤2	Fail
EPT/EPT+C	0.967	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	53.6%	≥ 40%	Pass	≥ 45%	Pass	≥ 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
(2015 edition)

Bug Lab ID _____
Chem ID _____ Time _____
DUP Chem ID Time

Site Name Jay SMB-T3-0.1 River Mile _____ USFS___ PROB___
Site ID 106 Date 10-3-16 Time 1400 New Site____
Crew CS NS
Site Description _____

Town: _____ Stream Order: _____ Drainage Area: _____Km² Elevation: _____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS --NAD83:) _____
Weather: Cloudy Flow/Weather Previous (2 weeks/2days): light rain last 48hr., quiet 2wk
Surrounding Land Use: Resort, Highway, forest

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: ____ min Mesh: 500 um
Area: 1 m² Quantitative: Y / N
#Reps: 2 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 90 % Filamentous Green _____% and length _____in
Blue Green _____% Moss 10 % Green _____% Other _____%
Calcareous Deposits _____% Iron Precipitate _____%
terrestrial
General Trophic Rating: 1 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS Very hard to kick substrate too buried to move
Embeddedness Estimate 40 % Silt Rating: 5 (0=none, 5= chocolate)
CPOM Rating (leaf packs): 0 (0= none,5=high) LWD (>4"dia) #: 4 /100m (reach)
Habitat Comments:

GENERAL WATER TYPE Riffle, Winder, Other fall & pool Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 30' (m) B.F.Hght 1' (m) Wetted Width: 8' (m) Riffle Depth: 2-4" (m) Pool Depth: 1' (m)
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
well armored
Fish: *Bottom Type*: Hard -- Soft -- Mixed *COVER RATING*: Exc Very Good Good Fair Poor *GRADIENT*: high med low flat

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) 30 % Herbaceous _____% 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 60 °F °C Temp Water 11 °C fpH_____lab pH_____ fCond_____ *D.O.*%_____ D.Omg/l_____
Was meter calibrated for D.O: Y / N ? Was meter calibrated for other parameters: Just prior to use/ In the lab on_____?
Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3, SO4 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_____m
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

Stain
bank widening where no boulders, black rocks

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
2016 VHB	307	26.5	18	59	0.86	18	0.95	49	Does Not Meet 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 2016 version

Project Name: Jay Peak Resort	
VT DEC Lab ID:	Organization: VHB
Stream Name: **South Mountain Branch**	Stream Class: SHG
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:	44.938327	-72.479061
or VT Site ID:	427807000012	
Date collected:	10/3/2016	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Dec. 2016	Dec. 2016
#sq picked:	24	24
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Dec. 2016	Dec. 2016

Taxonomic Data																			Biotic Index						Richness Metrics			
								Rep1				Rep2							Biotic Index Scores		Old BI (1-5)		New BI (1-10)		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				0		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				0	CCS	A	2	2		CG	Y	3	4	0	6	0	8	-	0	1	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	PSEC/TANYT	MICROPSECTRA	N/A	sp	CCS	A	2	2	CCS	A	4	4		CG	Y	3	6	6	12	12	24	1	0	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	7	7	CCS	A	7	7		CG	Y	2	2	14	14	14	14	1	0	1	0
02.05.05.00.068.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARACHAETOCLADIUS	N/A	sp				0	CCS	A	2	2		CG	Y	2	2	0	4	0	4	-	0	1	0
02.06.00.00.001.00.00	DIPTERA	DIXIDAE	N/A	N/A	DIXA	N/A	sp	CCS	A	1	1				0		CG	N	2	1	2	0	1	0	1	0	-	0
02.14.00.00.004.00.00	DIPTERA	SIMULIDAE	N/A	N/A	PROSIMULIUM	N/A	sp	CCS	A	1	1				0		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	6	6	CCS	A	9	9		PRD	N	2	3	12	18	18	27	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	14	14	CCS	A	7	7		PRD	N	2	2	28	14	28	14	1	0	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CCS	A	2	2	CCS	A	1	1		SRD	N	3	6	6	3	12	6	1	0	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus				0	CCS	A	3	3		CG	N	3	6	0	9	0	18	-	0	1	1
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group				0	CCS	A	3	3		CG	N	2	4	0	6	0	12	-	0	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	14	14	CCS	A	2	2		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	4	4	CCS	A	5	5		SCR	N	1	4	4	5	16	20	1	1	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	31	31	CCS	A	20	20		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	1	1				0		CG	N	2	1	2	0	1	0	1	1	-	0
03.14.00.00.001.00.00	EPHEMEROPTERA	AMELETIDAE	N/A	N/A	AMELETUS	N/A	sp				0	CCS	A	1	1		CG	N	0	0	0	0	0	0	-	0	1	1
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp				0	CCS	A	1	1		SCR	N	1	0	0	1	0	0	-	0	1	1
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	PSYC/HYDI	CERATOPSYCHE	alh/slo/spa	alhedra				0	CCS	A	1	1		CF	N	2	3	0	2	0	3	-	0	1	1
04.05.00.02.008.01.07	TRICHOPTERA	HYDROPSYCHIDAE	N/A	PSYC/HYDI	CERATOPSYCHE	alh/slo/spa	sparna	CCS	A	1	1				0		CF	N	2	4	2	0	4	0	1	1	-	0
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	1	1	CCS	A	1	1		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				0	CCS	A	2	2		SRD	N	1	1	0	2	0	2	-	0	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	18	18	CCS	A	20	20		CF	N	0	0	0	0	0	0	1	1	1	1
04.14.00.00.005.00.00	TRICHOPTERA	OLYCENTROPODIDA	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	1	1				0		PRD	N	3	6	3	0	6	0	1	1	-	0
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	12	12	CCS	A	3	3		PRD	N	1	2	12	3	24	6	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				0		PRD	N	0	1	0	0	1	0	1	1	-	0
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	8	8	CCS	A	10	10		SCR	N	1	3	8	10	24	30	1	1	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	44	44	CCS	A	46	46		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	32	32	CCS	A	19	19		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	CCS	A	34	34		SRD	N	1	0	5	34	0	0	1	1	1	1
05.07.00.00.006.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	ISOPERLA	N/A	sp				0	CCS	A	1	1		PRD	N	1	2	0	1	0	2	-	0	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	16	16	CCS	A	19	19		PRD	N	1	2	16	19	32	38	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	17	17	CCS	A	39	39		SRD	N	1	0	17	39	0	0	1	1	1	1
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A	N/A	LANTHUS	N/A	sp				0	CCS	A	1	1		PRD	N	2	5	0	2	0	5	-	0	1	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	68	68	CCS	A	43	43		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep: --->										308	**308**			306	**306**				**Total BI Score**		140	204	198	233	**Total**	**Total**	**Total**	**Total**
GRAND TOTAL:				614 organisms															**Total # Organisms**		308	306	308	306	**Richness**	**EPT-R**	**Richness**	**EPT-R**
																			# of Organisms w/o BI		68	43	68	43	25		28	
																			Total # Organisms with BI		240	263	240	263		16		19
																			Biotic Index		0.58	0.78	0.83	0.89				

*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 10/03/2016

2016 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	0	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	0	0	0	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	2	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	7	0	0	0	0	0	0	0	0	
02.05.05.00.068.00.00	0	0	0	0	0	0	0	0	0	0	
02.06.00.00.001.00.00	0	1	0	0	0	0	0	0	0	0	
02.14.00.00.004.00.00	0	1	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	6	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	14	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	2	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	0	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	0	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	14	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	4	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	31	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	1	0	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	0	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	0	0	0	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	1	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	1	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	18	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	1	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	12	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	1	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	8	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	44	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	32	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	5	0	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	0	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	16	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	17	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	68	0	0	0	0	
Total	**1**	**33**	**50**	**42**	**114**	**68**	**0**	**0**	**0**	**0**	**308**
Percent	**0%**	**11%**	**16%**	**14%**	**37%**	**22%**	**0%**	**0%**	**0%**	**0%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
VT Site ID 427807000012
Sample Date 10/03/2016

2016 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	0	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	2	0	0	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	4	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	7	0	0	0	0	0	0	0	0	
02.05.05.00.068.00.00	0	2	0	0	0	0	0	0	0	0	
02.06.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
02.14.00.00.004.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	9	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	7	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	1	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	3	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	3	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	2	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	5	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	20	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	0	0	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	1	0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	1	0	0	0	0	0	0	
04.05.00.02.008.01.04	0	0	0	1	0	0	0	0	0	0	
04.05.00.02.008.01.07	0	0	0	0	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	1	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	2	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	20	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	3	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	0	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	10	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	46	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	19	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	34	0	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	1	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	19	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	39	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	1	0	
18.04.00.00.000.00.00	0	0	0	0	0	43	0	0	0	0	
Total	**0**	**32**	**34**	**38**	**158**	**43**	**0**	**0**	**1**	**0**	**306**
Percent	**0%**	**10%**	**11%**	**12%**	**52%**	**14%**	**0%**	**0%**	**0%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
Location 427807000012
Sample Date 10/03/2016

2016 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	0	0	0	0	1	0		0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	0	0	0	0	0	0		2	0	0	0	0	0	0	
02.05.03.02.121.00.00	2	0	0	0	0	0	0		4	0	0	0	0	0	0	
02.05.05.00.029.00.11	7	0	0	0	0	0	0		7	0	0	0	0	0	0	
02.05.05.00.068.00.00	0	0	0	0	0	0	0		2	0	0	0	0	0	0	
02.06.00.00.001.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.14.00.00.004.00.00	0	1	0	0	0	0	0		0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	6	0	0	0	0		0	0	9	0	0	0	0	
02.19.00.00.006.00.00	0	0	14	0	0	0	0		0	0	7	0	0	0	0	
02.19.00.00.016.00.00	0	0	0	2	0	0	0		0	0	0	1	0	0	0	
03.01.00.00.001.00.09	0	0	0	0	0	0	0		3	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	0	0	0	0	0		3	0	0	0	0	0	0	
03.06.00.00.003.00.00	14	0	0	0	0	0	0		2	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	4	0		0	0	0	0	0	5	0	
03.06.00.00.005.00.00	31	0	0	0	0	0	0		20	0	0	0	0	0	0	
03.07.00.00.005.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	0	0	0	0		0	0	0	0	0	1	0	
04.05.00.02.008.01.04	0	0	0	0	0	0	0		0	1	0	0	0	0	0	
04.05.00.02.008.01.07	0	1	0	0	0	0	0		0	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	1	0	0	0	0	0		0	1	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	0	0	0	0		0	0	0	2	0	0	0	
04.12.00.00.002.00.00	0	18	0	0	0	0	0		0	20	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	1	0	0	0	0		0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	12	0	0	0	0		0	0	3	0	0	0	0	
04.16.00.00.001.02.00	0	0	1	0	0	0	0		0	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	8	0		0	0	0	0	0	10	0	
05.02.00.00.006.00.00	0	0	44	0	0	0	0		0	0	46	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	32	0	0	0		0	0	0	19	0	0	0	
05.05.00.00.000.00.01	0	0	0	5	0	0	0		0	0	0	34	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
05.07.00.00.007.00.00	0	0	16	0	0	0	0		0	0	19	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	17	0	0	0		0	0	0	39	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
18.04.00.00.000.00.00	68	0	0	0	0	0	0		43	0	0	0	0	0	0	
Total	**124**	**21**	**94**	**56**	**0**	**13**	**0**	**308**	**87**	**22**	**86**	**95**	**0**	**16**	**0**	**306**
Percent	**40%**	**7%**	**31%**	**18%**	**0%**	**4%**	**0%**	**100%**	**28%**	**7%**	**28%**	**31%**	**0%**	**5%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
Location 427807000012
Sample Date 10/03/2016

FFG Summary:							
	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS	KN-2	PPCS
Col. Gath.	31%	32%	22%	40.3%	77.0%	28.4%	91.7%
Col. Filt.	18%	30%	36%	6.8%	37.9%	7.2%	39.9%
Predator	19%	13%	7%	30.5%	62.3%	28.1%	67.6%
Shred-Det.	15%	4%	2%	18.2%	82.5%	31.0%	48.3%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.00%	0.0%
Scraper	12%	13%	22%	4.22%	35.17%	5.23%	43.6%
				PPCS-FG =	**49.1%**	**PPCS-FG =**	**48.5%**

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 10/03/2016 **Sampler** CCS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	0.32%	7.68	0.00%	8.00
Diptera	19%	18%	13%	10.7%	8.29	10.5%	8.542
Ephemeroptera	23%	34%	32%	16.2%	6.8	11.11%	11.9
Plecoptera	21%	8%	8%	37.0%	16.0	51.6%	30.6
Trichoptera	28%	33%	33%	13.6%	14.4	12.4%	15.6
Oligochaeta	0.5%	0.5%	1.0%	22.08%	21.58	14.05%	13.55
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.33%	0.173
				Sum diff	75.2		88.4
				Sum diff * 0.5	37.6		44.2
				100-(sum diff * 0.5)	62.4		55.8
				% model affinity	**62.4%**		**55.8%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
Location 427807000012
Sample Date 10/03/2016
Class B, Small, High Gradient
Sampler CCS

	KN-1	KN-2
#EPT organisms	206	230
#C organisms	9	15
EPT/EPT+C	0.96	0.94

Biometric Summary

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
Location 427807000012 **Class** B, Small, High Gradient
Sample Date 10/03/2016 **Sampler** CCS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	308	306	307
Species Richness	25.0	28.0	26.5
EPT Richness	16.0	19.0	17.5
Old Bio Index (0 to 5)	0.58	0.78	0.68
New Bio Index (0 to 10)	0.83	0.89	0.86
% dominant taxa	22.1%	15.0%	18.6%
EPT/EPT+C	0.958	0.939	0.948
EPT/Richness	0.640	0.679	0.660
% Model Affinity (orders)	62.4%	55.8%	59.1%
PPCS - functional groups	49.1%	48.5%	48.8%
Major Groups:			
Coleoptera (%)	0.32%	0.00%	0.16%
Diptera (%)	10.7%	10.5%	10.6%
Ephemeroptera (%)	16.2%	11.11%	13.67%
Trichoptera (%)	13.6%	12.4%	13.0%
Plecoptera (%)	37.0%	51.6%	44.3%
Oligochaeta (%)	22.08%	14.05%	18.07%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.00%	0.33%	0.16%
Other (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	40.3%	28.4%	34.3%
Collector Filterer (%)	6.8%	7.19%	7.0%
Predator (%)	30.5%	28.1%	29.3%
Shredder - Detritus (%)	18.2%	31.0%	24.6%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	4.22%	5.23%	4.72%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Project Jay Peak Resort
Station SMB-1.2 **Latitude** 44.938327
Stream South Mountain Branch **Longitude** -72.479061
Location 427807000012.00 **Class** B, Small, High Gradient
Sample Date 10/03/2016 **Sampler** CCS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/2004)

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	307.0	≥300	I+	≥400	Fail	≥500	Fail
Richness	26.5	≥27	I-	≥31	Fail	≥35	Fail
EPT	17.5	≥16	Pass	≥19	Fail	≥21	Fail
% PMA-O	59.1%	≥45%	Pass	≥55%	I+	≥65%	Fail
BI (New 1-10)	0.86	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	18.07%	≤12%	Fail	≤5	Fail	≤2	Fail
EPT/EPT+C	0.948	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	48.8%	≥ 40%	Pass	≥ 45%	I+	≥ 50%	I-
Outcome:		**Biocriteria are not met**					
The following metrics do not meet Class B thresholds:		% Oligo, Richness					

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
(2015 edition)

Bug Lab ID _____
Chem ID _____ Time _____
DUP Chem ID Time

Site Name Jay SMB-1.2 River Mile _____ USFS___ PROB___
Site ID 107 Date 10.3.16 Time 1445 New Site____
Crew CS NS
Site Description _____

Town: _____ Stream Order: _____ Drainage Area: _____Km² Elevation: _____ft
D.D° Latitude: _____ **Longitude:** _____ Lat/Long source (GPS --NAD83:) _____
Weather: rain Flow/Weather Previous (2 weeks/2days): light rain last 48 hr, quiet 2wk
Surrounding Land Use: residential, resort, road, forest

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: ____ min Mesh: 500 um
Area: 1 m² Quantitative: Y / N
#Reps: 2 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 90 % Filamentous Green _____% and length _____in
Blue Green Tr % Moss 25 % Green 1 % Other _____%
Calcareous Deposits _____% Iron Precipitate terrestrial %
General Trophic Rating: 1 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS
Embeddedness Estimate 25 % Silt Rating: 3-4 (0=none, 5= chocolate)
CPOM Rating (leaf packs): 1-2 (0= none,5=high) LWD (>4"dia) #: 2 /100m (reach)
Habitat Comments:

Some riprapping

GENERAL WATER TYPE Riffle, Winder, Other _____ Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 20' (m) B.F.Hght 2' (m) Wetted Width: 12' (m) Riffle Depth: 4" (m) Pool Depth: 1' (m)
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
riprapped armored
Fish: *Bottom Type*: Hard -- Soft -- Mixed *COVER RATING*: Exc Very Good Good Fair Poor *GRADIENT*: high med low flat

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*facing upstream*) L 30 m, R 30 m
Overstory: Softwood _____% Hardwood 100 % Understory: Shrub (brush) 30 % Herbaceous 40 % 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 65 °F, °C Temp Water 10.5 °C fpH_____lab pH_____ fCond_____ *D.O.%*_____ D.Omg/l_____
Was meter calibrated for D.O: Y / N ? Was meter calibrated for other parameters: Just prior to use/ In the lab on_____?
Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3, SO4 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
dusky salamander

Field Sheet Complete: CS (initial)
Photos: Y N
Fish Survey Conducted: Y N