April 2, 2019

Ref: 57201.12

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")
2018 Performance Report

Dear Tim:

In accordance with the latest *Jay Peak Resort Watershed Study and Water Quality Remediation Plan* ("Revised 2014 WQRP") (January 2015) and subsequent updates, VHB has prepared the enclosed annual report summarizing water quality monitoring activities conducted during 2018. 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 most of the streams around the Resort, including the Jay Branch reference station (JB-T13-0.2), two Jay Branch main stem stations (JB-9.1 and JB-7.3), Tributary 9 to Jay Branch (JB-T9-0.1), and the South Mountain Branch reference station (SMB-T3-0.8). The intermediate Jay Branch station (JB-8.3) experienced lower results for density and richness than is required for a "Full Support" characterization; however, this result appears to be linked to annual biological variability and stream geomorphology within the sampled reach rather than an indication of backsliding. Similarly, the main stem station of South Mountain Branch (SMB-1.2) received a rating of "Indeterminate" but would have been characterized as "Good" except that it missed the density criterion by 4 bugs. Lastly, the sampling station on Tributary 3 to South Mountain Branch (SMB-T3-0.1) did not meet the aquatic life use standards in 2018. Additional efforts appear to be required to identify sediment sources and to improve water quality in this subwatershed.

With respect to natural variability and the overall sampling results, it should be noted that macroinvertebrate density at the reference station JB-T13-0.2 in 2018 was among the lowest that has been recorded over the period of record, second only to samples collected in 2011 following Tropical Storm Irene. These results reflect the relatively dry conditions that prevailed in the early part of the summer followed by above-average rainfall in the weeks leading up to the index (sampling) period. This weather pattern, while not thought to constitute a "regionally significant event" in the terms of the

www.vhb.com

Engineers | Scientists | Planners | Designers

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

Settlement Agreement, is not conducive to having high numbers of macroinvertebrates present during the index period.

The streams in the Jay Branch watershed met Vermont Water Quality Standards ("VWQS") biocriteria for two years and were removed from the latest 303(d) list, as was envisioned by the Settlement Agreement. However, the South Mountain Branch Tributary 3 watershed has not consistently met the VWQS biocriteria and is not a candidate for delisting at this time. As required by the terms of the Settlement Agreement, progressively larger BMPs have been installed in this watershed over the past three years. As part of a dynamic and complex system, it may require more time for the suite of BMPs that have been implemented to improve water quality sufficiently for the stream to meet the aquatic life use standard. Because it was installed at the end of the summer in 2018, the large-scale BMP for Tributary 3 has not had a full opportunity to demonstrate its effectiveness in reducing sediment in this watershed. For these reasons, additional large-scale BMPs are not proposed at this time. Jay Peak remains committed to the Settlement Agreement process and will conduct additional monitoring and evaluation of stormwater treatment practices, implement additional sediment reduction practices, and continue to provide on-going maintenance of BMPs across the Resort.

As specified in DEC's "Procedure for Water Quality Remediation Plans," proposed updates to the WQRP must be submitted for review and comment so that they can be properly noticed. A brief listing of proposed changes is presented in Chapter 6 of the WQMP Report for your review. We anticipate providing a more detailed summary of this additional information in advance of the Annual Public Meeting, which is tentatively scheduled for May 15, 2019.

If you have any questions or require further information, please feel free to call me at (802) 497-6164 or email rwildey@vhb.com.

Best regards,

Robert Wildey, PE, CPESC
Water Resources Engineer

RAW/djj

Enclosure

cc: Aaron Moore (AAFM)
Jon Groveman (VNRC)
Rachel Stevens (VLS)
Walter Elander (JPR)

Water Quality Monitoring Plan
2018 Performance Report

JAY PEAK RESORT

Jay, Vermont

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

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

April 2, 2019

Table of Contents

Table of Contents i

1.0 Introduction 1

2.0 Background 1

3.0 Study Area 3

4.0 Monitoring Network Design 4

5.0 Monitoring Results 8

5.1 Baseflow Water Chemistry Analysis 8

5.1.1 Conductivity & Chloride 8

5.1.2 pH 10

5.1.3 Turbidity 10

5.1.4 Iron 11

5.2 Event Flow Water Chemistry Analysis 13

5.2.1 Conductivity & Chloride 13

5.2.2 pH 15

5.2.3 Turbidity 15

5.2.4 Iron 17

5.3 Winter Melt Water Chemistry Analysis 19

5.3.1 Conductivity 19

5.3.2 pH 20

5.3.3 Turbidity 20

5.4 Supplemental Turbidity Monitoring 22

5.5 Substrate Analysis 23

5.5.1 Embeddedness 23

5.5.2 Channel Materials 24

5.6 Biomonitoring 25

6.0 Monitoring Recommendations for 2019 38

7.0 Conclusions 39

References 40

Appendices

Appendix 1 – Baseflow Water Chemistry

Appendix 2 – Event flow Water Chemistry

Appendix 3 – Snow Melt Water Chemistry

Appendix 4 – Supplemental Turbidity

Appendix 5 - Substrate

Appendix 6 – Biomonitoring

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 2018 monitoring season. This data was collected in conformance with the "Water Quality Monitoring Plan, Quality Assurance Project Plan" ("QAPP") (VHB 2017).

2.0 Background

Since 2004, an annual WQMP Performance Report has been prepared and submitted to the DEC that describes surface water quality within portions of the Jay Branch watershed in the vicinity of the Resort. Concurrent with the WQMP program and in conjunction with the WQRP recommendations, JPR has implemented stormwater runoff remediation measures, as well as ongoing stream and wetland restoration and mitigation efforts. Continued monitoring and reporting serve to chart the progress of existing remediation efforts and guide the implementation of future water quality improvements in an adaptive management scenario, with the goal of attainment of Vermont Water Quality Standards ("VWQS") criteria in the subject waters (ANR 2017).

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

snow storage basins and away from streams and wetlands. Snow storage basins constructed in previous years are being maintained and new snow storage basins are added as opportunities to do so are identified.

Under the terms of the Settlement Agreement reached between DEC, JPR and the Vermont Natural Resources Council dated February 12, 2015 ("Settlement Agreement"), 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 the biocriteria implementing the 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 2018 biomonitoring are discussed in Section 5.6 and the supporting data and 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. The Athletic Fields Project was constructed in 2018 and is anticipated to be operational in 2019. The required sediment offsets for this Project were calculated and were previously presented in a memorandum dated January 30, 2018.

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 together 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.

- Tributary 13 flows through undeveloped forested areas before crossing a portion of the golf course and converging with Jay Branch downslope of Hole 14. This station serves as the reference reach for streams in the Jay Branch watershed.

- 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 to South Mountain Branch originates upgradient from the Stateside Hotel, Base Lodge, and the Stateside Road culvert 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. Station SMB-T3-0.8 provide a reference condition for Tributary 3.

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)
- Supplemental Turbidity Monitoring (conducted by JPR staff)

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,

including changes to the WQM station locations, sampling activities, and frequency. Table 1 summarizes water quality data collected during the 2018 sampling period. The Water Quality Monitoring Station Location Map in Appendix 1 identifies the locations of these stations.

Table 1: Jay Peak Resort Water Quality 2018 Monitoring Station Locations, Activities, and Frequency

Stream	Water Quality Monitoring Station Name	Water Chemistry						Substrate	Biomonitoring
		Winter Melt*		Baseflow		Event Flow		9/14/18, 10/8/18 and 10/10/18	
		3/29/18	4/30/18	8/2/18	9/14/18	9/11/18	9/21/18		
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	Dry	x	x	x	x	
Phase II Trib.	JB-T9-P2-0.1	x	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	x	
	SMB-T3-0.1			x	x	x	x	x	x
	SMB-T3-0.8	x	x	x	x	x	x	x	x
South Mountain Branch	SMB-1.8			x	x	x	x	x	
	SMB-1.2	x	x	x	x	x	x	x	x

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

As indicated in Table 1, the 12 WQM stations were monitored for water chemistry in 2018 during baseflow and event flow conditions. Water chemistry parameters monitored in 2018 included temperature, specific conductivity, pH, dissolved oxygen, turbidity, and total iron. Specific conductivity is used in conjunction with the site-specific regression equation to evaluate potential chloride concentration. Ten stations were monitored during winter melt conditions for field parameters, including Station SMB-T3-0.8. No samples were collected for laboratory analysis of total iron during winter melt conditions.

Substrate characteristics and aquatic biota ("biomonitoring") were monitored at eight of the twelve stations in 2018.

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 future 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 permitting and 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 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. This station represents conditions of upslope on mountain activities and approximates a reference condition for downstream reaches of SMB-T3. 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 monitoring conducted in 2018 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 August 2 and September 14, 2018 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 2018.

The box and whisker plots below provide a summary of the available water chemistry parameters at each monitoring station from 2004 to 2018. 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 2018 data points. A complete summary of 2004 through 2018 baseflow water chemistry results for each monitoring station and the laboratory reports for each sampling event are included in Appendix 1. WQM results were evaluated to determine compliance with relevant narrative and numerical criteria of the VWQS.

5.1.1 Conductivity & Chloride

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

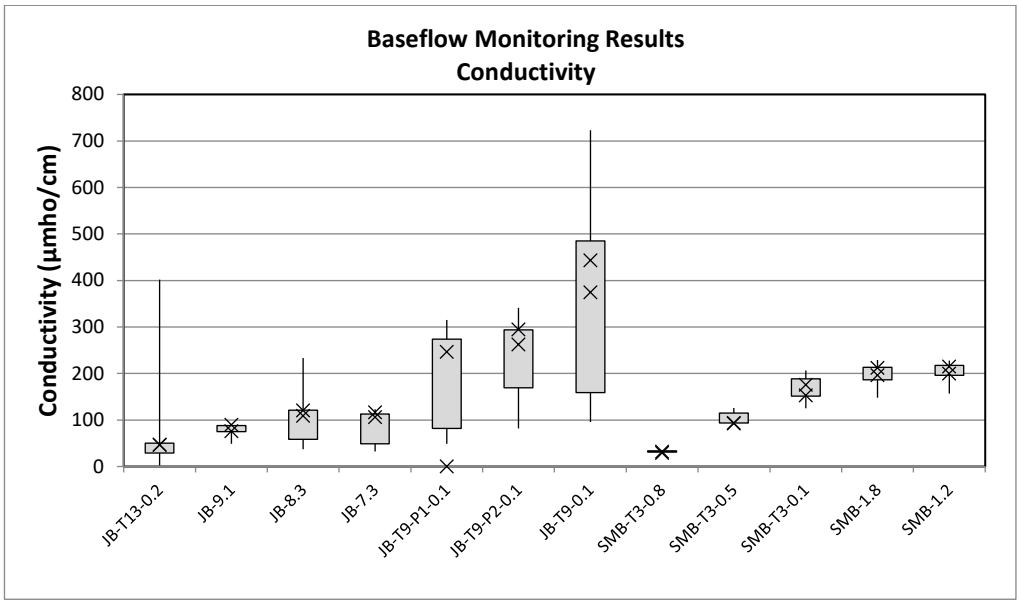


Figure 1: Baseflow Monioring Results for Conductivity

Baseflow conductivity values measured in 2018 were generally higher than average when compared to the period of record for each station. However, no samples were above 500 µmho/cm, therefore no samples were collected for laboratory analysis. The maximum conductivity value observed during 2018 baseflow monitoring was recorded at JB-T9-0.1 on August 2, 2018 (443 µmho/cm). Using the site-specific regression equation, this value equates to an approximate chloride concentration of 91.2 mg/L and is well below the chronic VWQS threshold of 230 mg/L. As noted in the past, stations within the smaller and 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. Although Jay Branch stations exhibited some conductivity values on August 2 that were slightly above the 3rd quartile, these measurements were within 4 µmho/cm of that statistic. Using the site-specific regression, the 3rd quartile values ranging between 294 to 485 µmho/cm would correspond to a chloride concentration of approximately 58 to 101 mg/L.

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 cumulative effects of runoff from roadways

and developed areas in the lower portions of this watershed. As in 2017, Station SMB-T3-0.8 exhibited conductivity measurements less than 100 µmho/cm, similar to those observed at the Jay Branch reference station (JB-T13-0.2).

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 acute (860 mg/L) and chronic (230 mg/L) criteria in all baseflow samples.

5.1.2 pH

WQM samples were field measured for pH using a pre-calibrated YSI Multi-meter for both baseflow events. Baseflow pH values in 2018 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.

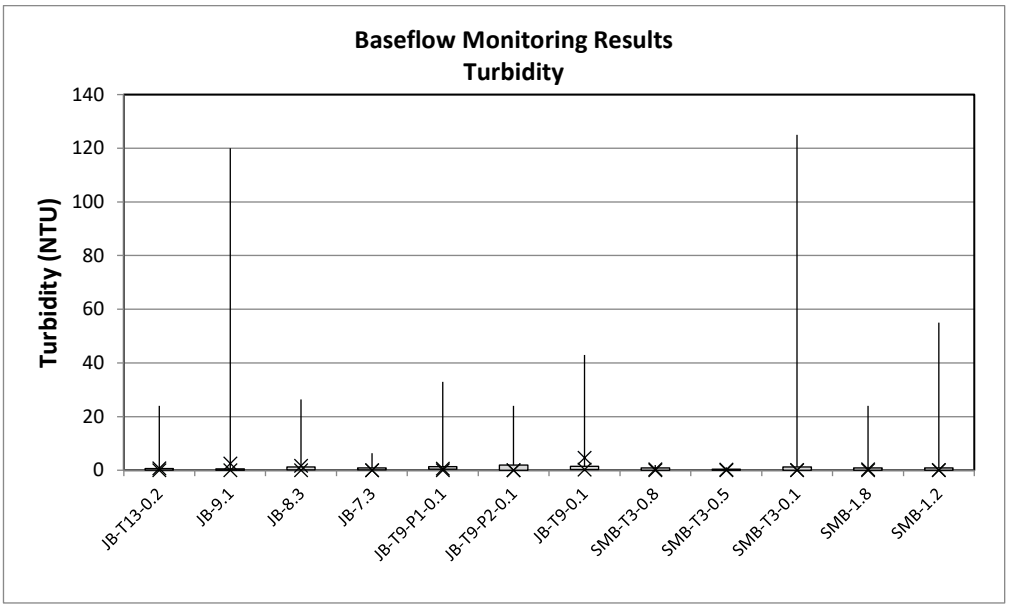


Figure 2: Baseflow Monitoring Results for Turbidity

Baseflow turbidity results for 2018 were within ranges of the period of record for all stations. The maximum sampled value for baseflow turbidity from all sampled stations in 2018 was

4.70 nephelometric turbidity units ("NTU"). The minimum possible value of 0.0 NTU was observed at 3 stations during the August 2, 2018 sampling event and at 10 stations during the September 14, 2018 sampling event. This indicates that entrainment of sediment was minimal during baseflow conditions in 2018.

5.1.4 Iron

Iron was in compliance with the VWQS criterion of 1 mg/L at all sampled stations under baseflow conditions.

Baseflow Summary

In 2018 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.

Additionally, conductivity values 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 2018, turbidity values were low and at or approaching zero NTU at all stations and pH values were within the acceptable VWQS range during baseflow conditions. Iron concentrations were in compliance with the VWQS standard at all stations during both baseflow samples in 2018.

Station JB-T9-P2-0.1 reported a percent oxygen saturation of 68 percent on August 2, 2018, slightly below the 70 percent saturation criteria in the VWQS. During the second round of sampling conducted on September 14, 2018, this station met the VWQS with 86 percent saturation. Both Phase 1 and Phase 2 tributaries had very low flow during the 2018 baseflow sampling. As can be seen in Photographs 1 and 2 below, there was no flow at JB-T9-P1-0.1 and only minimal flow at JB-T9-P2-0.1 during the August 2, 2018 baseflow sampling. No sample could be collected at JB-T9-P1-0.1 due to the absence of flow and sampling from marginally flowing water would typically result in lower percent saturation than would otherwise be expected. As described in Section 5.2, all stations were observed to have

dissolved oxygen percent saturation above 90 percent during event flow samples, with the exception of JB-T13-0.2, JB-T9-0.1 on September 21.

Photograph 1: Dry stream conditions during baseflow sampling event at JB-T9-P1-0.1 on August 2, 2018

Photograph 2: Low-flow stream conditions during baseflow sampling event at JB-T9-P2-0.1 on August 2, 2018

5.2 Event Flow Water Chemistry Analysis

Event flow water chemistry samples were collected during rainfall events on September 11 and September 21, 2018, 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 the available event flow water chemistry parameters at each monitoring station over the period of record (2005 to 2018). 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 2018 data points. A complete summary of event flow water chemistry results over the period of record 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 2018.

Rainfall recorded by the on-site rain gauge weather station totaled 1.15 inches during the rainfall event of September 11, 2018 and 0.75 inches during the September 21, 2018 rainfall event.

5.2.1 Conductivity & Chloride

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

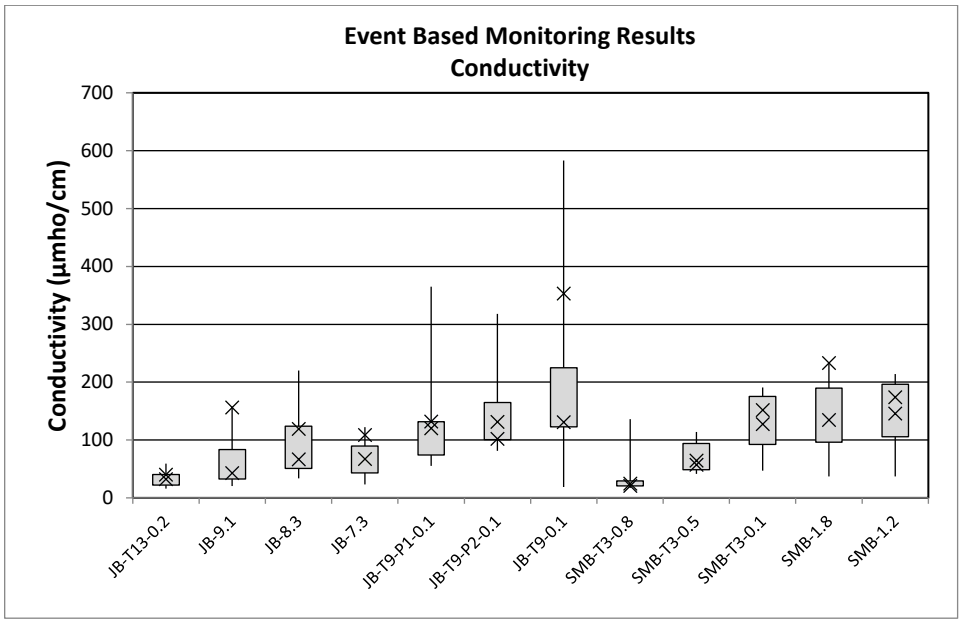


Figure 3: Event Flow Monitoring Results for Conductivity

Storm event conductivity values measured in 2018 were within ranges from the period of record. In 2018, conductivity values were generally higher during the September 21 sampling event when compared to the September 11 event. For 2018, the maximum conductivity value was observed in Station JB-T9-0.1 on September 21 (353 µmho/cm). Using the site-specific regression equation, this value equates to an approximate chloride concentration of 71.1 mg/L and is well below the chronic VWQS threshold of 230 mg/L.

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 2018, 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.

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 cumulative effects of roadways and development in the lower portions of this watershed.

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 acute (860 mg/L) and chronic criteria (230 mg/L) in all event flow samples.

5.2.2 pH

WQM samples were field measured for pH using a pre-calibrated YSI Multi-meter for both events. Stations JB-T13-0.2, JB-7.3, JB-T9-P1-0.1, JB-T9-P2-0.1, SMB-T3-0.1, SMB-1.8 and SMB-1.2 exhibited elevated pH values on September 21 which were not within the acceptable VWQS range of 6.5 to 8.5 s.u., but were all below 9.0 s.u. The sites exceeding the threshold included the reference station (JB-T13-0.2), which indicate that these conditions were not limited to developed portions of the watershed and may be an anomalous environmental phenomenon. Observations recorded at all other stations in 2018 had event flow pH values that were within the acceptable VWQS range.

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.

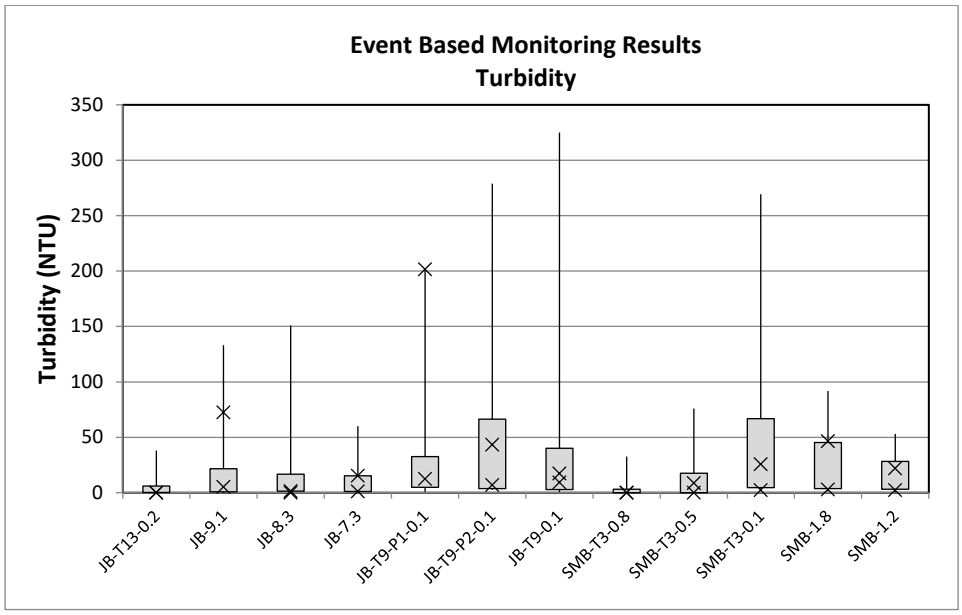


Figure 4: Event Flow Monitoring Results for Turbidity

Event flow turbidity results for 2018 were variable, and 9 of the 12 stations exhibited higher turbidity during the September 21, 2018 event compared to the September 11, 2018 event. Rainfall during the September 21 event amounted to 0.47 inches in 3 hours, a relatively heavy rain that followed a period of 10 days without measurable rainfall. The intensity of this event could have led to the high turbidity that was observed. Station JB-T9-P1-0.1 exhibited the maximum turbidity value for the period of record, and four stations (JB-T9-P1-0.1, JB-T9-P2-0.1, SMB-T3-0.1, and SMB-1.8) reported turbidity values above the 25 NTU construction action level on that date. Station JB-9.1 reported a turbidity value above the 25 NTU construction action level on the September 11 event. As noted below in Section 5.4, none of the event flow samples collected as part of the Supplement Turbidity Monitoring at the Phase 1, Phase 2 or Tributary 9 stations were elevated on September 26, 2018. Elevated turbidity values within the South Mountain Branch watershed indicate that further investigation of this area is warranted to identify sediment sources that need to be addressed. Elsewhere at the Resort, the turbidity results at most stations were generally low and within range of previous years.

Stations within the Tributary 9 subwatershed (JB-T9-0.1, JB-T9-P1-0.1, and JB-T9-P2-0.1) continue to exhibit generally higher turbidity values on the respective sampling dates as compared to other stations within the Jay Branch watershed. Supplemental turbidity measurements at additional

stations along the Phase 1 and Phase 2 tributaries are reported in Section 5.4, below. Turbidity values from stations on Tributary 3 and the South Mountain Branch located downgradient of VT Route 242 (SMB-T3-0.1 and SMB-1.8) were higher than stations of Tributary 3 located upgradient of VT Route 242 (SMB-T3-0.5 and SMB-T3-0.8).

5.2.4 Iron

Iron concentrations in samples collected during the September 11, 2018 event flow sampling were all below the VWQS criterion of 1 mg/L. However, iron concentrations in samples collected at 4 of the 12 stations during the September 21, 2018 event flow sampling were at or above the VWQS criterion of 1 mg/L (JB-T9-P1-0.1, JB-T9-P2-0.1, SMB-1.8 and SMB-1.2).

Based on the period of record, it appears that exceedances of iron occur periodically in some of the smaller streams around the Resort, with comparable results observed in some event flow samples collected in 2012, 2013, and 2015. Stations at the Jay Branch were below the VWQS criterion of 1 mg/L for iron, suggesting that the areas of concern are Tributary 9 of the Jay Branch, Tributary 3 of the South Mountain Branch, and the South Mountain Branch main stem. Natural iron seeps were visually noticeable at SMB-1.8 during event flow sampling on September 11, 2018 (See Photograph 3). It is possible that iron-rich floc accumulates at these seeps during dry periods and are then flushed into the stream during wet weather events. Additional investigation of iron seeps and other potential sources may be required if elevated iron concentrations continue to be a concern. However, because they are limited to periodic event flow samples and do not appear to affect baseflow conditions, no additional investigation is proposed at this time.

Photograph 3: Iron seep observed at SMB-1.8 during event flow sampling on September 11, 2018

Event Flow Summary

In 2018, conductivity values were generally within the range of the period of record in the Jay Branch watershed (JB-T13-0.2, JB-9.1, JB-8.3, and JB-7.3). Comparable to past results, conductivity and turbidity values for the Tributary 9 subwatershed (JB-T9-P1-0.1, JB-T9-P2-0.1, and JB-T9-0.1) were relatively similar to the range of the period of record with generally higher values than the other stations. Additionally, conductivity values were still below the 500 µmho/cm requirement for conducting additional chloride sampling. Stations along Tributary 3 and the South Mountain Branch located downgradient of VT Route 242 continued to exhibit higher conductivity and turbidity values than stations of Tributary 3 located upgradient of VT Route 242. The increased conductivity results may reflect annual variations in salt usage based on the severity of the preceding winter.

In 2018, pH values were within the acceptable VWQS range during event flow conditions, except for six stations sampled during the September 21 event (JB-7.3, JB-T9-P1-0.1, JB-T9-P2-0.1, SMB-T3-0.1, SMB-1.8 and SMB-1.2). Iron concentrations exceeded the VWQS standard at 4 stations in the Tributary 9 subwatersheds and in the South Mountain Branch watershed (JB-T9-P1-0.1, JB-T9-P2-0.1, SMB-1.8 and SMB-1.2) in event flow samples collected on September 21, 2018. These areas will continue to be monitored for iron seeps and for any other possible sources.

5.3 Winter Melt Water Chemistry Analysis

Winter melt water chemistry samples were collected on March 29 and April 30, 2018, 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 ten WQM stations. The box and whisker plots below provide a summary of water chemistry parameters at each monitoring station from 2008 to 2018. 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 2018 data points. A complete summary of 2008 through 2018 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 Multi-meter for both events. Figure 5 displays the results for conductivity measurements at each respective station.

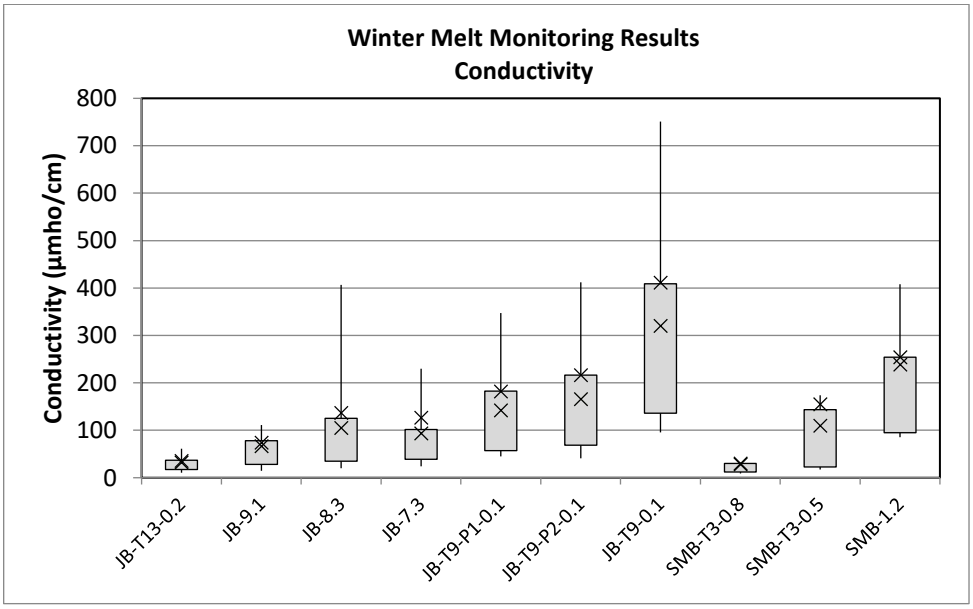


Figure 5: Winter Melt Monitoring Results for Conductivity

Conductivity values during both March 29 and April 30, 2018 sampling events were high relative to the historic data, containing values above the 1st quartile. Conductivity was higher on March 29, 2018 and contained values within the 3rd quartile. In 2018, the maximum conductivity value was observed at Station JB-T9-0.1 on March 29 (411 µmho/cm) which was under the 500 µmho/cm sampling trigger.

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 YSI Multi-meter for both events. Winter melt pH values in 2018 were within the acceptable VWQS range of 6.5 to 8.5 s.u with the exception of values recorded on March 29 including JB-T13-0.2, JB-9.1, and JB-7.3 which recorded pH values between 4.9 and 6.2. In addition, JB-T13-0.2 recorded a pH of 5.7 on April 30. These values are the lowest recorded over the period of record at these stations. As with the elevated pH results observed at some stations during storm event sampling, these low pH results may be an anomalous environmental phenomenon as they also occurred at the reference reach station (JB-T13-0.2) that is outside of the developed portion of the Resort.

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.

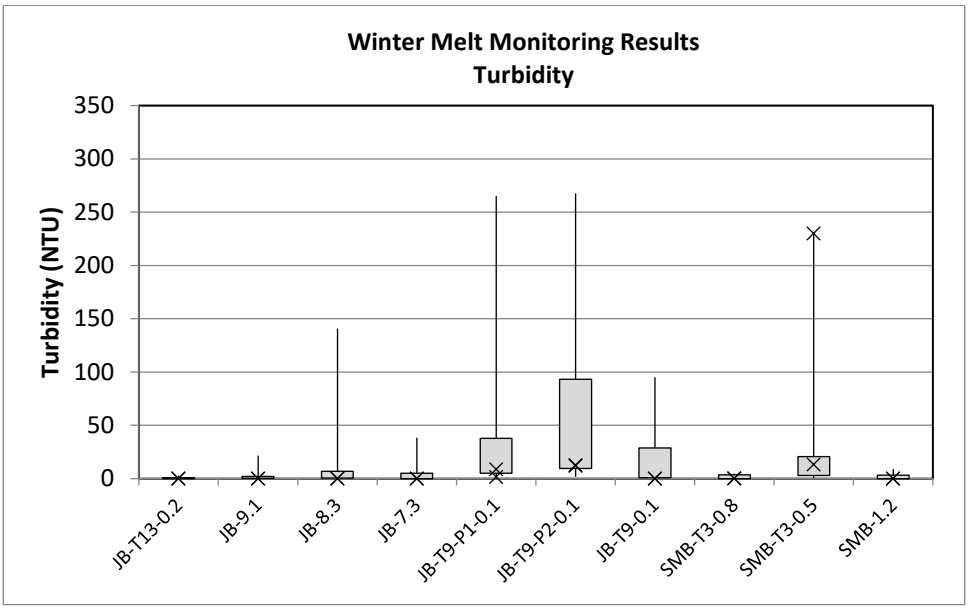


Figure 6: Winter Melt Monitoring Results for Turbidity

Winter melt turbidity results for 2018 were within range and were relatively low when compared to the period of record. Turbidity values were generally higher on April 30 than March 29, except for 1 station (SMB-T3-0.5) which recorded a turbidity value of 230. Station SMB-T3-0.5 exhibited the highest turbidity values in 2018 as compared to other stations but was generally within the range of turbidity values for the period of record. Additionally, the stations in Tributary 9 subwatershed (JB-T9-P1-0.1 and JB T9-P2-0.1) were generally higher in comparison to the other stations, similar to what was seen in 2017. All stations in 2018 exhibited turbidity values that were within the distribution of turbidity values throughout the period, except for station SMB-T3-0.5 on March 29, 2018 which was 230 NTU – the one winter melt observation recorded above the construction action level of 25 NTU.

Winter Melt Summary

In 2018, conductivity values were within the range of the period of record. The highest conductivity values were observed at stations within the Jay Branch (JB-8.3 and JB-7.3), 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). All conductivity observations in 2017 were below the 500 µmho/cm trigger for conducting additional chloride sampling. Chloride concentrations calculated from field measurements of conductivity and the site-specific regression equation indicate that chloride concentrations were well below the VWQS acute (860 mg/L) and chronic (230 mg/L) criteria in all winter melt samples.

In 2018, pH values were within the acceptable VWQS range during winter melt conditions except for JB-T13-0.2, JB-9.1, and JB-7.3 which recorded pH values of 4.9, 5.8 and 6.2 on March 29. In addition, JB-T13-0.2 recorded a pH value of 5.7 on April 30. All these ranges fall less than the VWQS range of 6.5-8.5 s.u.

All turbidity observations in 2018 were below the 25 NTU construction action level, except for the highest value recorded during winter melt sampling at 230 NTU, observed at station SMB-T3-0.5 on March 29, 2018.

5.4 Supplemental Turbidity Monitoring

Supplemental turbidity monitoring was completed at multiple locations within the target watersheds between June and November of 2018 (see the map included on page 1 of Appendix 4 for location information). This monitoring was done to provide feedback on the success of the remedial activities that have been completed in the targeted watersheds and to identify other potential sources of sediment washoff that require treatment, consistent with the adaptive management approach of the WQRP. Monitoring was completed by JPR staff and in accordance with the wet weather monitoring protocols detailed in the QAPP.

There are 24 turbidity monitoring 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.

Twenty supplemental turbidity monitoring events were completed between June and November 2018 (see event charts included in Appendix 4). Rainfall depths for each event were recorded by Resort staff using the on-site rain gage. Ten of these events occurred with antecedent rainfall depths of less than 0.5 inches, three of these events occurred with antecedent rainfall depths between 0.5 and 1 inches, and six events occurred with antecedent rainfall depths of greater than 1 inch. No dry weather samples were collected as part of this monitoring effort.

A total of 420 turbidity measurements were collected during 2018. Of these, only 37 were above the construction action level of 25 NTU. These 37 measurements occurred intermittently throughout the sampling period.

The mean turbidity for all samples at each station was below the 25 NTU construction action level in 2018. Sites with more than one event that exceeded the construction action level of 25 NTU included P1-02, P1-03, P1-05, P1-06, P2-02, P2-04, P2-07, T9-01, T9-02, and T9-03. No specific actionable sediment sources were observed at these locations by field staff in 2018.

5.5 Substrate Analysis

In 2018, 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), Phase 1 Tributary (JB-T9-P1-0.1), Phase II Tributary (JB-T9-P2-0.1), South Mountain Branch (SMB-1.2 and SMB-1.8), and Tributary 3 to South Mountain Branch (SMB-T3-0.8, SMB-T3-0.5 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.

5.5.1 Embeddedness

The percentage of substrate embeddedness was observed at the twelve monitored stations using quartile estimates and is recorded in accordance with the DEC Lotic Benthos Field Sheet (2016 edition). Substrate embeddedness is evaluated because it is a key factor in the success of macroinvertebrate populations, with lower degrees of embeddedness typically corresponding to

higher macroinvertebrate populations and vice-versa. Embeddedness ratios below 50 percent are desirable, with ratios between 0 and 5 percent considered excellent, between 25 and 50 percent considered good, between 50 and 75 percent considered fair and above 75 percent considered poor. Substrate embeddedness was reported as very good (5-25 percent) at JB-T13-0.2, JB-9.1, JB-7.3, JB-T9-0.1, SMB-T3-0.8, SMB-1.8, and SMB-1.2, and as good (25-50 percent) at JB-8.3, JB-T9-P2-0.1, SMB-T3-0.5, 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, gravels). Table 2 below displays the substrate metrics for 2018. 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 2018 and a comparison to historic averages from 2007 to 2018.

Table 2: 2018 Summary of Channel Materials in Jay Branch and Select Tributaries

Station	Percent < 2 mm (sands and fines)	D50 Particle Size	Particle Size Range (mm)
JB-T13-0.2	0	Coarse Gravel	16 to 64 mm
JB-9.1	0	Cobble	64 to 256 mm
JB-8.3	4	Coarse Gravel	16 to 64 mm
JB-7.3	3	Cobble	64 to 256 mm
JB-T9-0.1	10	Coarse Gravel	16 to 64 mm
SMB-T3-0.8	8	Cobble	64 to 256 mm
SMB-T3-0.1	7	Coarse Gravel	16 to 64 mm
SMB-1.2	11	Coarse Gravel	16 to 64 mm

Since 2017, the median particle size decreased from cobble (64 to 256 mm) to coarse gravel (16-64 mm) at four of the eight monitored stations. The median particle size decreased from boulder (> 256 mm) to coarse gravel (16 to 64 mm) and cobble at two of the eight monitored stations,

including the reference station JB-T13-0.2 and Tributary 9. There were no changes in median particle size observed for the other two stations.

Substrate Summary

Substrate embeddedness remained the same as 2017 for two of the eight stations that were monitored in 2018 on the main stem of the Jay Branch (JB-9.1, and JB-8.3). The median particle size decreased at Tributary 9 (JB-T9-0.1), the reference reach on Tributary 13 of the Jay Branch (JB-T13-0.2), and the remaining four stations. The most common median particle size for the stations sampled in 2018 was coarse gravel. The percentage of small particles increased at JB-9.1, JB-8.3, JB-T9-0.1, SMB-T3-0.8, SMB-T3-0.1 and SMB-1.2. The percentage of small particles remained the same at JB-T13-0.2 and JB-7.3 and was the highest at SMB-1.2.

5.6 Biomonitoring

On October 8 and October 10, 2018, kick net sampling per aquatic biota was conducted by VHB in accordance with the DEC protocol (ANR 2004). This biomonitoring occurred at eight locations in 2018: 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 2018 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 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	22	63	1.22	0.9	0.94	56	Meets Class B Criteria
2009	625	34	23	73	1.34	0.0	0.93	59	Meets Class B Criteria
2010	642	40	25	78	1.71	0.36	0.89	56	Meets Class B Criteria
2011	421	35	23	70	0.85	0.1	0.93	46	Meets Class B Criteria
2012	883	36	25	75	1.13	0.0	0.95	44	Meets Class B Criteria
2013	872	33	21	70	0.94	0.0	0.92	61	Meets Class B Criteria
2014	781	36	24	74	1.24	0.0	0.9	65	Meets Class B Criteria
2015	914	34	21	70	1.03	0.5	0.94	55	Meets Class B Criteria
2016	874	34	21	70	0.72	0.6	0.96	61	Meets Class B Criteria
2017	512	35	22	65	0.77	5.0	0.93	64	Meets Class B Criteria
2018	455	31	20	62	0.92	0.3	0.94	62	Meets Class B Criteria

[1]ANR macroinvertebrate thresholds (2/10/04)
Bold 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. However, the density of organisms observed in 2018 was the second lowest over the period of

record for this station. The sampling event with the fewest organisms at this station was observed in 2011, shortly after Tropical Storm Irene passed through Vermont.

JB-9.1 (Jay Branch)

Station JB-9.1 is located on the Jay Branch, upstream of the confluence with Tributaries 9 and 10 and downgradient of portions of the resort and golf course. 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**	0.94	64	Does Not Meet Class B Criteria
2007	1,872	39	22	62	1.50	**20**	0.95	52	Does Not Meet Class B Criteria
2008	1,162	37	23	76	1.97	6.40	0.96	71	Meets Class B Criteria
2009	1,892	46	25	76	1.88	**17**	0.92	66	Does Not Meet Class B Criteria
2010	1,516	42	25	68	2.29	6.0	0.97	65	Meets Class B Criteria
2011	**238**	40	24	66	1.64	**18**	0.94	60	Does Not Meet Class B Criteria
2012	**172**	**25**	17	64	0.58	3.2	1.0	46	Does Not Meet Class B Criteria
2013	828.0	39	24	80	1.09	7.5	0.95	53	Meets Class B Criteria
2014 [2]	1,071	40	24	68	1.95	**17**	0.93	52	Does Not Meet Class B Criteria
2015	525	37	26	68	1.40	11	0.95	63	Meets Class B Criteria
2016	865	33	22	75	1.19	10	0.96	63	Meets Class B Criteria
2017	430	32	22	72	0.98	8	0.93	50	Meets Class B Criteria
2018	478	32	21	74	0.78	9	0.97	68	Meets Class B Criteria

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**	

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

Results for all eight biometrics during 2018 were within the established thresholds for meeting Class B criteria, indicating generally high-water quality conditions at JB-9.1. This marks the fourth consecutive year that this station has met the Class B criteria.

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	18	60	1.96	7	0.98	56	Meets Class B Criteria
2005	849	49	23	69	2.65	**21**	0.87	60	Does Not Meet Class B Criteria
2006	851	34	21	58	2.68	0	0.95	**34**	Does Not Meet Class B Criteria
2007	363	32	22	72	1.12	8	0.96	60	Meets Class B Criteria
2008	311	31	19	70	1.41	**15**	0.98	50	Does Not Meet Class B Criteria
2009	374	32	24	71	1.55	10	0.98	61	Meets Class B Criteria
2010	361	31	25	57	1.36	6	1.0	55	Meets Class B Criteria

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**	
2011	**117**	**22**	15	58	1.10	**18**	0.97	54	Does Not Meet Class B Criteria
2012	**230**	**24**	17	71	1.15	7	0.98	56	Does Not Meet Class B Criteria
2013	**238**	30	22	80	1.13	10	0.95	57	Does Not Meet Class B Criteria
2014	403	34	23	63	0.99	**26**	0.97	**39**	Does Not Meet Class B Criteria
2015	347	35	24	63	1.18	**13**	0.97	51	Indeterminate
2016	413	34	22	81	1.58	9	0.97	73	Meets Class B Criteria
2017	490	31	21	82	1.63	5	0.94	62	Meets Class B Criteria
2018	**228**	28	19	69	0.93	11	0.96	49	Does Not Meet Class B Criteria

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

After fully meeting Class B criteria during 2016 and 2017, results for seven of the eight biometrics were within the established thresholds for meeting Class B criteria during 2018. One metric, density, did not meet the threshold value in 2018, resulting in a Non-Support (Fail) for the station. This outcome may represent a localized anomaly due to the geomorphology of the sampled reach, the kick net methodology, and natural biological variation due to the weather conditions in the months preceding the index period. Station JB-8.3 is located in a reach that is constrained both upstream and downstream by boulder cascades that demarcate the limits of the reach that can be effectively sampled. The sampling methodology requires that a riffle-like feature be present to use the kick net. During the 2018 index period, the stream geomorphology in this area appeared to have shifted slightly, giving it characteristics of a deeper, run-like feature. This shift resulted in less available macroinvertebrate habitat and lowered the overall sampling success (and hence the apparent reduced density) within the limits of the reach. Given the Full-Support conditions that were observed upstream and downstream of this

station at JB 9.1 and JB-7.3, attainment of the remaining seven biocriteria at this station, and the generally low density that was recorded at the reference reach for this year, VHB believes that the Non-Support result at JB-8.3 represents physical limitations of the sampling site in a stream that is otherwise meeting the Class B criteria rather than a setback of in-stream water quality

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**	20	61	1.54	4.4	0.98	54	Does Not Meet Class B Criteria
2005	458	40	21	62	2.34	8.1	0.88	**38**	Does Not Meet Class B Criteria
2006	1,276	**25**	**14**	55	2.85	0.77	0.94	**23**	Does Not Meet Class B Criteria
2007	423	27	19	73	1.24	1.4	0.95	58	Meets Class B Criteria
2008	568	33	22	72	0.94	2.4	0.97	49	Meets Class B Criteria
2009	427	34	25	76	1.26	6.1	0.99	67	Meets Class B Criteria
2010	344	31	23	55	1.11	1.3	1.0	54	Meets Class B Criteria
2011	**98**	**17**	**11**	71	0.94	3.7	0.99	44	Does Not Meet Class B Criteria
2012	**176**	28	20	67	1.24	9.3	0.96	48	Does Not Meet Class B Criteria
2013	327	28	21	74	0.79	9.2	0.96	62	Meets Class B Criteria
2014	340	34	26	66	1.17	8.9	0.98	63	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**	
2015	378	35	24	68	0.95	**14**	0.97	45	Indeterminate
2016	394	33	25	76	1.06	8	0.98	61	Meets Class B Criteria
2017	464	32	24	77	1.37	2.7	0.98	58	Meets Class B Criteria
2018	312	30	23	72	0.40	0.67	0.98	50	Meets Class B Criteria

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

Results for all eight biocriteria metrics during 2018 were within the established thresholds for meeting Class B criteria, indicating generally high-water quality conditions at JB-7.3. This marks the third consecutive year and the fifth year since 2013 that this station has fully met the Class B criteria.

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**	**14**	**44**	**4.61**	0	**0.31**	42	Does Not Meet Class B Criteria
2005	309	41	17	70	4.23	**17**	0.82	53	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**	
2006	320	36	16	55	**5.12**	1	0.88	**29**	Does Not Meet Class B Criteria
2007	484	37	24	63	1.22	2	0.95	**39**	Meets Class B Criteria
2008	492	28	17	70	1.18	0	0.92	42	Meets Class B Criteria
2009	**252**	28	**16**	80	1.72	8	0.95	61	Indeterminate
2010	**176**	**22**	**16**	63	2.13	**23**	0.98	53	Does Not Meet Class B Criteria
2011	**77**	**23**	**15**	66	1.47	9	0.99	55	Does not Meet Class B Criteria
2012	**95**	**26**	**16**	69	1.96	**21**	0.93	54	Does Not Meet Class B Criteria
2013	**157**	30	19.5	74	2.07	**14**	0.91	58	Does Not Meet Class B Criteria
2014	**168**	27	**15**	63	1.49	**15**	0.96	54	Does Not Meet Class B Criteria
2015	**209**	32	16	60	3.33	**27**	0.92	67	Does Not Meet Class B Criteria
2016	373	30	21	82	1.16	4	1.00	56	Meets Class B Criteria
2017	333	39	25	74	1.93	6	0.98	63	Meets Class B Criteria
2018	332	32	21	67	1.90	10	0.99	50	Meets Class B Criteria

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

Results for all eight biometrics during 2018 were within the established thresholds for meeting Class B criteria indicating an improvement in water quality at JB-T9-0.1 compared to past results. This marks the third consecutive year that this station has met the Class B criteria.

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. Sampling began in 2016 at this station to isolate the potential 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 collected to date. 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	5.1	0.91	**35**	Meets Class B Criteria
2017	392	31	21	58	0.90	5.6	0.92	**35**	Meets Class B Criteria
2018	411	32	21	54	0.60	8.2	0.95	43	Meets Class B Criteria

[1]ANR macroinvertebrate thresholds (2/10/04)
Bold 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 indicating continued excellent water quality conditions at SMB-T3-0.8. This year's data supports the conclusions made by DEC aquatic biologists in 2016 and 2017, when the station received a "Good" rating after meeting 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. That metric was attributed to the high elevation of the site and relatively small watershed size. In summary, this marks the third consecutive year that this station has met the Class B criteria.

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. Since 2016, SMB-T3-0.8 (described above) has been sampled because SMB-T3-0.5 did not consistently meet the biocriteria.

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

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B[1] Criteria	**≥ 300**	**≥ 27**	**≥ 16**	**≥ 45**	**≤ 4.50**	**≤ 12**	**≥ 0.45**	**≥ 40**	
2012	**259**	35	22	67	0.93	**21**	0.93	57	Does Not Meet Class B Criteria/Fair-Poor
2013	**133**	**22**	**15**	58	1.04	**30**	0.93	50	Does Not Meet Class B Criteria
2014	361	**27**	19	58	0.71	**18**	0.96	46	Does Not Meet Class B Criteria, Meets 4 of 4 Interim Targets
2015	**218**	**21**	**14**	46	0.71	**37**	0.98	42	Does Not Meet Class B Criteria, Meets 2 of 4 Interim Targets
2016	**206**	**26**	19	58	0.93	**30**	0.97	54	Does Not Meet Class B Criteria, Meets 1 of 4 Interim Targets
2017	**178**	**23**	17	64	0.81	**20**	0.97	54	Does Not Meet Class B Criteria
2018	**224**	**23**	17	54	0.63	**32**	0.98	64	Does Not Meet Class B Criteria

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

Station SMB-T3-0.1 met 5 of the 8 Class B biocriteria in 2018 and did not meet the remaining three. Density increased, and richness remained the same since 2017. Percent Oligochaeta also increased, still exceeding the SHG criterion for this metric. These results suggest excess sediment is still entering the reach, reducing the overall number of macroinvertebrates while shifting the population toward Oligochaetes. These results also did not meet 3 of the 4 interim biocriteria targets that were established for this station in the Revised 2014 WQRP. A large-scale sediment reduction BMP was implemented within this watershed during 2018, as required by the pre-attainment flow chart (Appendix 4 of the Revised 2014 WQRP). Because this BMP was installed at the end of the summer, the sediment reduction that it provides is not represented in these biomonitoring results, as the sampling for the biomonitoring index period occurred shortly after BMP construction was completed. It is anticipated that sampling during the 2019 index period will demonstrate improved physical and biological conditions in the downstream reach now that this BMP is operational.

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**	28	19	71	0.89	**12.1**	0.98	58	Does Not Meet Class B Criteria
2013	**239**	**26**	18	61	0.81	**22.6**	0.96	49	Does Not Meet Class B Criteria/Fair
2014	354	27	20	71	0.71	**13.31**	0.99	63	Indeterminate
2015	339	27	18	54	0.62	**17.1**	0.96	44	Does Not Meet Class B Criteria

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**	
2016	307	27	18	59	0.86	**18.1**	0.95	49	Does Not Meet Class B Criteria
2017	**288**	33	22	75	1.20	**13.8**	0.92	61	Does Not Meet Class B Criteria
2018	**296**	27	19	77	0.68	5.0	0.97	68	Indeterminate

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

SMB-1.2 met seven of the eight Class B biocriteria in 2018 but fell just below the density threshold. Percent Oligochaeta met biocriteria in 2018, reaching the lowest percentage recorded at this station since 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	'17	'18
Tributary 13 (Reference)	JB-T13-0.2	-	-	-	-	**P**	**P**	**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**	**P**	**P**
	JB-8.3	**P**	F	F	**P**	F	**P**	**P**	F	F	F	F	I	**P**	**P**	F
	JB-7.3	F	F	F	**P**	**P**	**P**	**P**	F	F	**P**	**P**	I	**P**	**P**	**P**
Tributary 9	JB-T9-0.1	F	F	F	**P**	**P**	I	F	F	F	F	F	F	**P**	**P**	**P**
South Mountain Branch	SMB-T3-0.8	-	-	-	-	-	-	-	-	-	-	-	-	**P**	**P**	**P**
	SMB-T3-0.5	-	-	-	-	-	-	-	-	-	-	**P**	F	-	-	-
	SMB-T3-0.1	-	-	-	-	-	-	-	-	F	F	F	F	F	F	F
	SMB-1.2	-	-	-	-	-	-	-	-	F	F	I	F	F	F	I

P = Pass, I = Indeterminate, F = Fail, - = Not sampled

In 2018, five of the eight sampled stations, JB-T13-0.2 (reference), JB-9.1, JB-7.3, JB-T9-0.1, and SMB-T3-0.8 met the Class B biocriteria. In 2017, 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" by the DEC. However, 2018 results show that SMB-T3-0.8 improved to meet full Class B biocriteria, as the percent PPCS-FG criteria showed a 20% increase from 35 to 55%, well above the 40% minimum threshold. Two stations (JB-8.3 and SMB-T3-0.1) did not meet the Class B biocriteria. Station SMB-1.2 resulted in an "Indeterminate" outcome of biological integrity but was within a few organisms of the density metric and would have met criteria based on the other seven metrics.

6.0 Recommendations for 2019

Recommendations for 2019 highlight the continuing adaptive management approach outlined in the WQRP and reflect challenges or anomalies that were observed during the 2018 monitoring season. Based on the review of the 2018 data, VHB recommends the following updates to the monitoring plan or QAPP.

- Conduct a joint stream walk-over with VHB and JPR staff responsible for turbidity monitoring to refresh training on identifying and reporting sediment sources.
- Evaluate biomonitoring sampling reaches for appropriate habitat conditions prior to kick net sampling and determine if the station location needs to shift upstream or downstream to collect a more representative sample of stream conditions, particularly at JB-8.3.
- Collect supplemental readings upstream and downstream from a sampling station if field parameters (pH, temperature, dissolved oxygen, specific conductivity, or turbidity) are outside of anticipated ranges during base flow, event flow and winter melt sampling.
- Collect sample for laboratory analysis of iron if pH is found to be less than 6.5 s.u. during base flow, event flow and winter melt sampling.

With respect to the non-attainment results at Tributary 3 of South Mountain Branch, VHB recommends the following BMPs as updates to the WQRP.

- Evaluate off-site areas draining to Tributary 3 of South Mountain Branch that may contribute sediment to station SMB-T3-0.1 but which are not part of the developed Stateside base area.
- Recheck the contributing drainage area and sediment retention capacity of the "Hotel 3" Basin that provides stormwater treatment for the Stateside Hotel and associated areas within the Tributary 3 watershed.
- Pave the section of Stateside Road between the vehicle maintenance garage and Stateside Hotel, as paving this steeply sloped segment will reduce sediment loading to the Hotel 3 basin.
- Maintain and improve existing work roads along the Northway trail, which will further reduce sediment loading in the upper part of the Tributary 3 watershed.

7.0 Conclusions

Water quality monitoring at Jay Peak Resort was conducted in 2018 in accordance with the requirements of the Resort's Water Quality Remediation Plan and the associated Quality Assurance Project Plan. This monitoring shows full attainment at all stations but one within the Jay Branch and Tributary 9 to Jay Branch watersheds and continues to show the need for further remedial efforts in the South Mountain Branch watershed. Monitoring will continue in 2019 per the terms of the Settlement Agreement for Post-Attainment reaches and this reach is anticipated to meet all of the biomonitoring criteria moving forward.

In accordance with the requirements of the Settlement Agreement, a large-scale BMP was implemented in the Tributary 3 to South Branch watershed in 2018. This BMP consists of a subsurface sediment trap installed under the Route 242 parking lot near the intersection of Stateside Road and Route 242, together with the associated drainage infrastructure and ditch improvements. Although the system started treating previously untreated stormwater as soon as it was brought online, the full benefits of this treatment practice may take additional time before they are reflected in the biomonitoring results. No new large-scale BMPs are proposed at this time, however, additional sediment reduction practices and stormwater investigations are proposed within the Tributary 3 watershed to identify other sediment sources that may be obstacles to achieving attainment in Tributary 3. The annual meeting also provides an opportunity for the parties to meet and confer on the status of the Water Quality Remediation Plan implementation and evaluate other remedial measures that may be required.

References

ANR 2004. Biocriteria for Fish and Macroinvertebrate Assemblages in Vermont Wadeable Streams and Rivers, Implementation Phase (Methods for Determining Aquatic Life Use Status in Selected Wadeable Streams Pursuant to Applicable Water Quality Management Objectives for Aquatic Biota Found in Vermont Water Quality Standards (WQS) Chapter 3 §3-01, as Well as Those Specified in 3-02 (A1 and B3), 3-03 (A1 and B3), and 3-04 (A1 and B4:a-d)). Biomonitoring and Aquatic Studies Section, Water Quality Division, Department of Environmental Conservation. Waterbury, Vermont.

ANR 2017. Vermont Agency of Natural Resources. Vermont Water Quality Standards (Effective January 15, 2017). Watershed Management Division. Montpelier, Vermont. 33 pages plus appendices.

Harrelson 1994. Harrelson, C.C., and C.L. Rawlins, and J.P. Potyondy. 1994. Stream Channel Reference Sites: An Illustrated Guide to Field Technique. United States Department of Agriculture (Forest Service). Rocky Mountain Forest and Range Experiment Station. Fort Collins, Colorado. General Technical Report RM-245.

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

VHB 2017. Water Quality Monitoring Program Quality Assurance Project Plan. Last revised August 31, 2017.

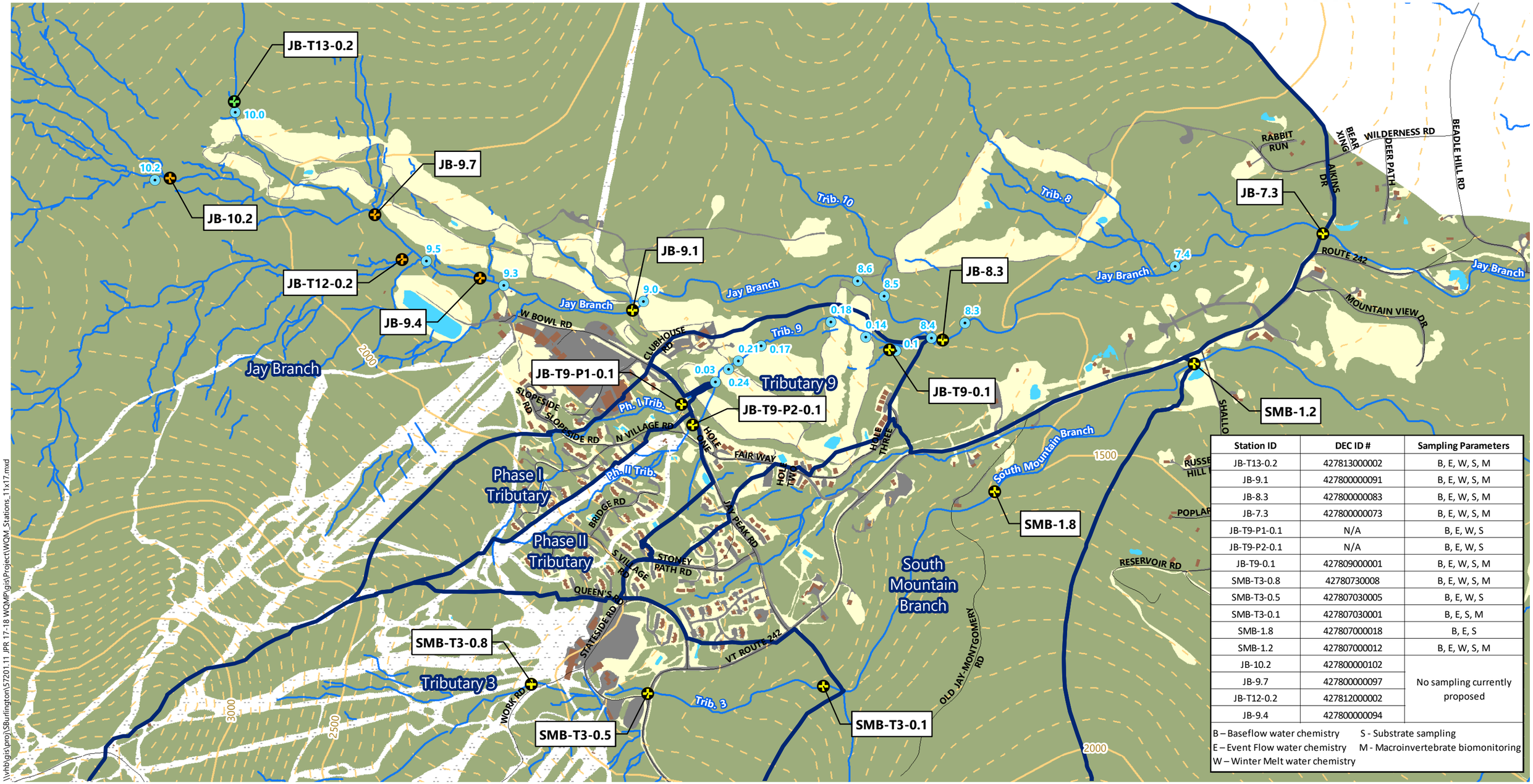
\\vhb\gbl\proj\SBurlington\57201.12 JPR 18-19 WQMP\Reports\WQMP\2018 WQMP Report.docx

APPENDIX 1

JAY PEAK VERMONT

vhb

January 04, 2019



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

\\vhb\gis\proj\Burlington\57201.11_JPR 17-18 WQMP\gis\Project\WQM_Stations_11x17.mxd

Water Quality Monitoring Station (VHB, 2012)
- Water Quality Monitoring Station
- Benchmark Station
- Reference Station

2018 Landuse/Landcover (VHB)
- Building
- Forest
- Open
- Ski Trails
- Transportation
- Water
- River Mile (VHB, 2012)
- Watershed Boundary (VHB, 2012)
- Stream (VHB/VCGI, 2015)
- Road (VTrans, 2017)
- 500 ft Contour (VCGI, 2018)
- 50 ft Contour (VCGI, 2018)

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

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Baseflow Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch
Prepared by VHB on: January 13, 2019

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							0.20		
10/26/2004	12:35 PM							0.05		
11/24/2004	12:12 PM	32	4.7		7.20	7.4	< 2.5	0.11		
9/29/2005		402			56.00	8.0	< 2.5	0.29		
10/22/2005		157			27.00	6.8		0.15		< 2
11/3/2006		32			5.33	6.9	< 2.5	0.26		< 2
9/7/2007	11:05 AM	49	16.6		17.00	7.0	< 2.5	3.50		< 2
10/31/2007	1:00 PM	19	8.1		8.60	7.0	< 2.5	0.78		< 2
11/26/2007	11:57 AM	25	4.2		10.00	7.3	< 2.5	1.29		< 2
10/27/2008	12:35 PM	23	9.6		24.00	7.3	< 2.5	0.50		< 2
11/4/2008	11:21 AM	17	8.4		5.60	7.0	< 2.5	0.50		< 2
4/17/2009	9:06 AM	20	4.4			7.2	< 2.5	0.00		< 2
8/17/2009	11:50 AM	51	15.5		21.00	6.9	< 2.5	0.50		< 2
9/9/2009	9:23 AM	64	11.3		18.00	7.9	< 2.5	0.50		< 2
10/20/2009	12:23 PM	42	6.8		12.00	7.3	< 2.5	0.50		< 2
9/14/2010	9:43 AM	38	18.5		19.00	7.1	< 2.5	0.50		< 2
9/22/2010	9:20 AM	45	18.9		19.00	7.8	< 2.5	0.50		< 2
10/10/2011	3:40 PM	29	12.3	100	28.00	7.3	< 2.5	0.01		< 2
10/20/2011	3:53 PM	20	10.4	101	26.00	6.9	< 2.5	0.00		< 2
8/23/2012	12:01 PM	43	13.4	88	22.00	7.1	< 2.5	24.00	< 0.020	< 2
10/9/2012	1:30 PM	35	8.5	94	8.30	8.1	< 2.5	4.20	< 0.020	< 2
8/22/2013	9:50 AM	51	14.1	85	5.30	8.0	< 2.5	0.09	< 0.020	< 2.5
9/5/2013	4:10 PM	45	11.0	85	2.90	7.9	< 2.5	0.01	< 0.046	< 2.5
8/29/2014	12:16 PM	52	12.0	80	19.00	8.4	< 2.5	0.00	< 0.020	< 1
9/29/2014	10:36 AM	51	12.1	79	24.00	8.6	< 2.5	0.05	< 0.020	< 1
8/27/2015	12:40 PM	47	12.5	83		8.5	2.6	0.15	< 0.340	
9/23/2015	10:11 AM	50	10.9	88		8.5	3.2	0.51	< 0.020	
9/7/2016	10:40 AM	2	14.4	*81*		7.8	< 2.5	0.76	< 0.120	
9/20/2016	10:21 AM	43	13.8	*78*		7.8	1.7	0.00	< 0.020	
9/1/2017	11:00 AM	46	8.3			7.7	2.2	0.00	< 0.020	
9/22/2017	10:38 AM	47	11.1	95		7.6	2.5	1.45	< 0.110	
8/2/2018	10:40 AM	47	15.0	*82*		6.9	2.5	0.70	< 0.020	
9/14/2018	10:35 AM	46	13.1	*89*		7.5	2.4	0.00	< 0.020	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Baseflow Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch
Prepared by VHB on: January 13, 2019

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)
2018 STATISTICS										
Mean	***	46	14	85		7.1	2	0	0	
Min	***	46	13	82		7	2	0	0	
Max	***	47	15	89		7	2	1	0	
n	***	2	2	2		2	2	2	2	
2004 - 2018 STATISTICS										
Mean	***	54	11.4	87	17.51	7.3	2.5	1.27	0.058	< 2
Min	***	2	4.2	78	2.90	6.8	1.7	0.00	0.020	< 1
Max	***	402	18.9	101	56.00	8.6	3.2	24.00	0.340	< 2.5
n	***	31	28	15	22	31	30	33	14	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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Baseflow Water Chemistry Sampling
Station JB-9.1 (DEC Station 427800000091) Jay Branch
Prepared by VHB on: January 13, 2019

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	87	15.5	95	37.00	7.5	6	0.04	0.100	< 2
10/9/2012	1:00 PM	49	8.0	97	12.00	7.9	< 2.5	120.00	0.047	< 2
8/22/2013	10:05 AM	83	15.6	84	3.70	8.0	5.2	0.30	0.093	< 3
9/5/2013	4:30 PM	72	12.1	89	2.30	7.8	< 3.3	0.36	0.170	< 2
8/29/2014	12:40 PM	88	13.5	84	32.00	8.4	5.1	0.43	0.092	< 1
9/29/2014	10:52 AM	89	13.0	78	24.00	8.6	5.5	0.05	0.092	< 1
8/27/2015	12:51 PM	78	13.9	92		8.4	9.5	0.00	0.410	
9/23/2015	10:29 AM	86	11.1	91		8.0	11.3	0.01	0.085	
9/7/2016	10:55 AM	90	15.3	*84*		7.9	12.2	0.00	0.084	
9/20/2016	10:48 AM	77	14.7	*80*		8.0	9.4	0.00	0.076	
9/1/2017	11:15 AM	62	9.5			7.8	5.8	0.76	0.085	
9/22/2017	10:12 AM	86	11.6	103		8.0	11.2	0.00	0.100	
8/2/2018	10:15 AM	89	16.4	*93*		7.2	12.1	< 2.5	0.085	
9/14/2018	10:18 AM	76	13.7	*101*		7.6	9.0	0.00	0.076	
2018 STATISTICS										
Mean	***	83	15	97		7.4	11	1	0.081	
2012 - 2018 STATISTICS										
Mean	***	79	13.1	90	18.50	7.8	7.7	8.89	0.114	< 2
Min	***	49	8.0	78	2.30	7.2	2.5	0.00	0.047	< 1
Max	***	90	16.4	103	37.00	8.6	12.2	120.00	0.410	< 3
n	***	14	14	13	6	14	14	14	14	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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Baseflow Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch
Prepared by VHB on: January 13, 2019

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							0.12		
11/24/2004	9:58 AM	61	4.5		16.00	7.5	4.2	0.61		
10/3/2005		124			23.00	7.5	6.2	1.34		< 2
10/21/2005		41			8.60	6.7		1.19		< 2
11/3/2006		48			7.79	8.6	8	0.52		< 2
9/7/2007	9:45 AM	103	14.6		36.00	7.0	5.5	0.15		< 2
10/31/2007	10:06 AM	38	5.3		29.00	7.7	6	0.33		< 2
11/26/2007	11:15 AM	55	3.2		16.00	7.3	5.8	0.52		< 2
10/27/2008	11:35 AM	52	9.3		24.00	7.5	5.6	4.06		< 2
11/4/2008	9:50 AM	37	7.8		9.20	7.2	4.2	1.26		< 2
4/17/2009	8:04 AM	60	3.7			7.2	4.3	0.00		< 2
8/17/2009	10:24 AM	93	16.9		26.00	7.7	7.1	< 0.50		< 2
9/9/2009	9:53 AM	120	12.4		29.00	7.9	11	< 0.50		< 2
10/20/2009	10:59 AM		5.8		23.00	6.9	6.9	< 0.50		< 2
9/14/2010	9:06 AM	82	11.3		22.00	7.0	5.9	< 1.80		< 2
9/22/2010	8:36 AM	96	11.5		32.00	7.9	7.8	< 0.50		< 2
10/10/2011	2:40 PM	64	12.7	106	27.00	7.2	6.5	< 0.55		< 2
10/20/2011	2:53 PM	41	10.6	106	22.00	6.3	4.9	< 26.42		14
8/23/2012	10:32 AM	99	14.8	89	38.00		12	< 0.05	< 0.020	< 2
10/9/2012	11:45 AM	75	7.7	97	16.00	8.1	5.9	< 4.80	0.044	3
8/22/2013	9:10 AM	103	16.0	90	4.80	8.3	10	0.55	< 0.029	< 2.5
9/22/2013	2:00 PM	116	12.6	90	5.90	8.1	12	0.01	0.059	2
8/29/2014	11:46 AM	127	13.5	85	31.00	8.5	16	0.00	< 0.029	< 1
9/29/2014	11:09 AM	220	13.3	77	32.00	8.3	16	0.00	0.030	1
8/27/2015	12:18 PM	233	14.8	93		8.3	44.2	0.62	0.046	
9/23/2015	11:02 AM	145	11.4	96		8.0	24.5	0.19	0.055	
9/7/2016	10:10 AM	137	15.4	*87*		8.0	22.6	1.42	0.044	
9/20/2016	9:40 AM	143	14.8	*77*		8.2	24	0.00	0.043	
9/1/2017	9:45 AM	113	9.2			8.1	17.3	0.73	0.030	
9/22/2017	9:20 AM	115	11.9	101		8.0	17.8	0.89	0.074	
8/2/2018	9:32 AM	120	17.0	*96*		7.2	19.0	1.70	0.034	
9/14/2018	9:43 AM	108	13.9	*98*		6.8	16.3	0.00	0.080	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Baseflow Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch
Prepared by VHB on: January 13, 2019

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)
2018 STATISTICS										
Mean	***	114	15	97		6.9	18	1	0.057	
2004 - 2018 STATISTICS										
Mean	***	99	11.3	93	21.74	7.2	11.9	1.62	0.044	2.5
Min	***	37	3.2	77	4.80	6.3	4.2	0.00	0.020	1
Max	***	233	17.0	106	38.00	8.6	44.2	26.42	0.080	14
n	***	30	28	15	22	30	30	32	14	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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Baseflow Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch
Prepared by VHB on: January 13, 2019

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							0.13		
10/26/2004	7:55 AM							0.53		
10/3/2005		78			20.00	6.2	5.2	2.28		4
10/21/2005		47			12.00	7.0		0.77		< 2
11/3/2006		48			8.61	8.3	2.7	0.93		< 2
9/7/2007	2:50 PM	94	17.4		24.00	7.2	7.2	0.17		< 2
10/31/2007	1:23 PM	41	6.7		13.00	7.3	< 2	0.33		< 2
11/26/2007	12:34 PM	46	3.1		14.00	7.4	4.7	0.63		< 2
10/27/2008	12:55 PM	49	8.9		20.00	7.3	4.8	6.29		< 2
11/4/2008	11:50 AM	32	8.5		10.00	7.2	2.9	1.67		2
4/17/2009	9:40 AM	37	5.2			6.7	3.4	0.00		< 2
8/17/2009	12:56 PM	91	19.4		26.00	7.4	7.1	< 0.50		< 2
9/9/2009	11:41 AM	112	13.0		27.00	6.7	9.5	< 0.50		< 2
10/20/2009	12:58 PM	80	6.9		23.00	6.9	6.2	< 0.50		< 2
9/14/2010	10:10 AM	77	11.9		23.00	7.1	5.1	1.17		< 2
9/22/2010	9:54 AM	95	12.1		29.00	7.6	7.4	0.50		< 2
10/10/2011	1:53 PM	64	13.1	115	25.00	6.5	5.9	0.37		< 2
10/20/2011	4:40 PM	43	11.0	105	22.00	7.2	4.2	2.15		4
8/23/2012	3:42 PM	110	16.4	91	40.00	7.3	12	0.02	0.024	< 2
10/9/2012	9:30 AM	72	6.7	99	15.00	8.1	5.3	0.42	0.035	< 2
8/22/2013	11:00 AM	115	17.1	89	9.00	8.1	12	0.13	0.500	5
9/5/2013	9:30 AM	104	13.1	91	3.60	8.1	9.3	0.18	0.068	< 2
8/29/2014	3:46 PM	123	15.8	83	27.00	8.1	12	0.87	0.025	1
9/29/2014	12:25PM	121	14.2	81	30.00	8.5	12	0.30	< 0.020	< 1
8/27/2015	2:15 PM	109	15.8	96		8.0	16.5	0.48	0.130	
9/23/2015	11:53 AM	119	12.2	87		8.3	18.7	1.05	0.029	
9/7/2016	11:28 AM	123	17.8	*76*		7.9	19.5	0.00	0.025	
9/20/2016	1:32 PM	108	17.1	*76*		8.4	16.3	0.00	0.074	
9/1/2017	12:35 PM	115	11.0			8.1	17.8	0.00	< 0.020	
9/22/2017	12:12 PM	110	14.5	107		8.2	16.6	0.19	0.020	
8/2/2018	11:50 AM	116	18.4	*95*		7.5	18.1	0.00	< 0.020	
9/14/2018	12:50 PM	106	16.4	*98*		8.2	15.7	0.00	< 0.020	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Baseflow Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch
Prepared by VHB on: January 13, 2019

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)
2018 STATISTICS										
Mean	***	111	17	96		7.7	17	0	0.020	
2004 - 2018 STATISTICS										
Mean	***	86	12.7	92	20.06	7.1	9.65	0.72	0.072	2.2
Min	***	32	3.1	76	3.60	6.2	2.00	0.00	0.020	1
Max	***	123	19.4	115	40.00	8.5	19.54	6.29	0.500	5
n	***	30	27	15	21	30	29	32	14	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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Baseflow Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary
Prepared by VHB on: January 13, 2019

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							0.11		
10/26/2004	1:05 PM							0.59		
9/30/2005		172			54.00	6.8	14.3	0.91		< 2
10/22/2005		84			25.00	7.5		1.07		< 2
11/3/2006		64			15.60	8.1	3.4	0.85		< 2
9/7/2007	9:05 AM	169	15.1		48.00	7.0	14.8	0.42		< 2
10/31/2007	9:35 AM	78	11.6		22.00	7.7	8.6	0.58		< 2
11/26/2007	12:22 PM	66	4.0		19.00	7.2	8.6	0.50		< 2
10/27/2008	11:20 AM	79	12.2		28.00	7.4	12	2.78		< 2
11/4/2008	11:22 AM	49	7.9		11.00	7.2	5.9	2.25		< 2
4/17/2009	7:31 AM	55	3.6			7.2	9.5	0.15		5
8/17/2009	9:28 AM	177	18.7		36.00	7.3	21	< 0.50		< 2
9/9/2009	11:06 AM	286	14.3		46.00	7.4	40	< 0.50		< 2
10/20/2009	10:03 AM	169	10.2		29.00	6.9	21	0.74		< 2
9/14/2010	8:41 AM	180	12.1		38.00	6.7	29	6.01		< 2
9/22/2010	8:15 AM	206	12.1		37.00	7.7	30	< 0.50		< 2
10/10/2011	4:08 PM	172	13.5	96	32.00	7.4	38	0.16		< 2
10/20/2011	4:20 PM	90	11.5	100	25.00	7.0	20	1.30		2
8/23/2012	3:20 AM									
10/9/2012	4:00 PM	205	9.1	91	32.00	7.8	35	33.00	0.038	< 2
9/5/2013	4:45 PM	276	12.8	76	6.80	7.9	44	0.28	0.190	< 2
8/29/2014										
9/29/2014										
8/27/2015	10:42 AM	315	15.6	89		8.2	62.6	10.30	1.700	
9/23/2015	2:18 PM	309	13.5	79		8.2	61.2	0.76	0.049	
9/7/2016	11:08 AM	310	17.8	*64*		7.7	61.5	1.07	0.026	
9/20/2016	11:29 AM	250	16.8	*41*		7.6	48	1.55	0.020	
9/1/2017	12:00 PM	272	10.3			8.0	52.9	0.00	0.210	
9/22/2017	11:54 AM	278	14.3	62		7.8	54.3	0.01	0.075	
8/2/2018										
9/14/2018	11:45 AM	247	16.1	*81*		7.7	47.2	0.68	< 0.020	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Baseflow Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary
Prepared by VHB on: January 13, 2019

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)
2018 STATISTICS										
Mean	***	247	16	81		7.7	47	1	0	
2004 - 2018 STATISTICS										
Mean	***	182	12.4	78	29.67	7.3	31.0	2.50	0.259	2.2
Min	***	49	3.6	41	6.80	6.7	3.4	0.00	0.020	2
Max	***	315	18.7	100	54.00	8.2	62.6	33.00	1.700	5
n	***	25	22	10	17	25	24	27	9	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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Baseflow Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary
Prepared by VHB on: January 13, 2019

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							0.39		
10/26/2004	1:08 PM							0.98		
9/30/2005		196			71.00	7.4	9.1	1.05		3
10/22/2005		159			57.80	7.1		1.93		< 2
11/3/2006		122			34.90	7.6	7.3	11.20		2
9/7/2007	9:15 AM	218	15.8		76.00	7.5	13.6	0.34		< 2
10/31/2007	9:38 AM	179	6.7		62.00	7.7	11	1.64		< 2
11/26/2007	12:26 PM	107	4.2		42.00	7.3	11	2.42		< 2
10/27/2008	11:25 AM	125	9.2		44.00	7.5	16	2.34		2
11/4/2008	9:30 AM	109	8.1		24.00	7.2	9.5	2.05		4
4/17/2009	7:39 AM	82	3.2			7.2	14	3.00		6
8/17/2009	9:29 AM	219	17.8		59.00	7.6	23	0.58		< 2
9/9/2009	11:16 AM	271	14.0		74.00	7.7	25	1.23		7
10/20/2009	10:14 AM	210	7.9		48.00	7.0	23	0.50		< 2
8/23/2012	3:23 PM									
10/9/2012	4:20 PM	283	10.3	85	54.00	7.7	45	24.00	< 0.034	< 3
8/22/2013	10:40 AM	323	17.5	78	80.00	8.0	37	0.30	< 0.027	< 2.5
9/5/2013	4:55 PM	293	13.3	84	6.60	8.0	42	0.45	< 0.044	< 1
8/29/2014	1:20 PM	340	17.4	67	72.00	8.2	46	0.00	< 0.042	< 1
9/29/2014	11:55 AM	341	14.2	61	61.00	8.1	49	0.00	< 0.042	< 1
8/27/2015	10:46 AM	256	16.0	96		8.1	49.4	1.06	< 0.220	
9/23/2015	2:05 PM	284	17.6	98		8.0	55.6	0.64	< 0.081	
9/7/2016	11:15 AM	315	17.8	*82*		8.1	62.5	0.00	< 0.050	
9/20/2016	11:42 AM	262	16.4	*82*		8.1	50.8	0.00	< 0.039	
9/1/2017	12:10 PM	289	11.3			8.2	56.8	0.00	0.061	
9/22/2017	11:36 AM	294	13.5	82		8.0	57.9	1.25	0.054	
8/2/2018	11:24 AM	295	20.4	*68*		7.4	58.0	0.00	0.037	
9/14/2018	12:16 PM	262	16.6	*86*		8.0	50.7	0.00	0.034	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Baseflow Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary
Prepared by VHB on: January 13, 2019

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)
2018 STATISTICS										
Mean	***	278	19	77		8.0	54	0	0.036	
2004 - 2018 STATISTICS										
Mean	***	233	13.1	81	54.14	7.7	34.3	2.12	0.059	2.6
Min	***	82	3.2	61	6.60	7.0	7.3	0.00	0.027	1
Max	***	341	20.4	98	80.00	8.2	62.5	24.00	0.220	7
n	***	25	22	12	16	25	24	27	13	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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Baseflow Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9
Prepared by VHB on: January 13, 2019

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	5.0		26.00	7.6	46.9	1.89		
10/4/2005		402			46.50	7.6	78.7	1.23		< 2
10/21/2005		157			28.00	6.8		2.45		< 2
11/3/2006		177			26.20	8.1	26.9	1.07		< 2
9/7/2007	9:30 AM	98	16.3		14.00	7.2	14.4	0.23		< 2
10/31/2007	9:52 AM	96	6.3		45.00	7.6	32	1.37		3
11/26/2007	11:00 AM	155	3.4		46.00	7.4	36	1.47		< 2
10/27/2008	11:30 AM	159	9.5		28.00	7.5	37	1.11		< 2
11/4/2008	9:45 AM	109	8.1		16.00	7.2	24	1.42		< 2
4/17/2009	7:56 AM	123	4.0			7.2	30	0.30		2
8/17/2009	10:05 AM	355	18.9		46.00	7.7	68	< 0.50		2
9/9/2009	9:46 AM	485	13.0		44.00	7.9	100	< 0.50		2
10/20/2009	10:46 AM	317	6.5		44.00	7.1	60	0.97		2
9/14/2010	9:00 AM	279	12.3		42.00	6.8	48	1.16		2
9/22/2010	8:48 AM	415	12.8		51.00	7.8	79	< 0.50		2
10/10/2011	2:49 PM	324	14.7	104	52.00	7.5	80	0.17		2
10/20/2011	3:10 PM	116	11.9	107	36.00	6.8	41	2.42		2
8/23/2012	10:54 AM	560	15.9	88	65.00		160	0.22	0.063	2
10/9/2012	12:15 PM	330	9.3	90	43.00	8.1	63	43.00	0.038	2
8/22/2013	9:00 AM	723	17.0	85	14.00	8.2	160	0.16	0.046	3
9/5/2013	2:10 PM	567	13.9	84	9.00	8.1	120	0.24	0.059	2
8/29/2014	11:09 AM	479	14.4	80	46.00	8.5	100	0.20	0.130	1
9/29/2014	11:21 AM	636	13.9	73	56.00	8.3	150	0.20	0.044	1
8/27/2015	12:12 PM	572	16.2	89		8.1	130	0.49	0.280	
9/23/2015	11:11 AM	540	12.7	95		7.8	120	0.25	0.061	
9/7/2016	10:15 AM	450	16.7	*69*		8.1	92.8	0.00	0.040	
9/20/2016	10:00 AM	353	15.6	*69*		8.2	71.1	0.00	0.082	
9/1/2017	10:15 PM	477	9.4			8.2	< 2.5	1.70	0.029	
9/22/2017	9:33 AM	485	12.1	94		8.1	100.7	0.12	0.110	
8/2/2018	9:52 AM	443	18.0	*80*		7.4	91.2	4.70	0.22	
9/14/2018	9:59 AM	374	14.7	*89*		7.3	75.8	0.28	0.043	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Baseflow Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9
Prepared by VHB on: January 13, 2019

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)
2018 STATISTICS										
Mean	***	409	16	85		7.4	84	2	0.132	
2004 - 2018 STATISTICS										
Mean	***	355	12.2	86	37.44	7.3	75	2.45	0.089	2
Min	***	96	3.4	69	9.00	6.8	2.5	0.00	0.029	1
Max	***	723	18.9	107	65.00	8.5	160	43.00	0.280	3
n	***	31	28	15	22	30	30	33	14	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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Baseflow Water Chemistry Sampling
Station SMB-T3-0.8 (DEC Station ID 42780730008), Tributary 3 to South Mountain Branch, upstream from Stateside Hotel
Prepared by VHB on: January 13, 2019

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	13.6	*82*		7.6	0.1	1.91	0.026	
9/20/2016	12:19 PM	33	13.2	*85*		7.6	< 2.5	0.00	0.045	
9/1/2017	1:15 PM	31	8.1			7.6	< 2.5	0.00	< 0.020	
9/22/2017	1:54 PM	31	11.0	96		7.5	< 2.5	0.47	0.038	
8/2/2018	1:35 PM	31	14.2	*91*		6.8	< 2.5	0.35	0.022	
9/14/2018	2:10 PM	29	12.3	*96*		7.9	< 2.5	0.00	0.025	
2018 STATISTICS										
Mean	***	30	13.3	94		7.6	2.5	0.24	0.029	
2016 - 2018 STATISTICS										
Mean	***	32	12.1	90		7.6	2.1	0.46	0.029	
Min	***	29	8.1	82		6.8	0.1	0.00	0.020	
Max	***	36	14.2	96		7.9	2.5	1.91	0.045	
n	***	6	6	5		6	6	6	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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Baseflow Water Chemistry Sampling
Station SMB-T3-0.5 (DEC Station ID 427807030005), Tributary 3 to South Mountain Branch
Prepared by VHB on: January 13, 2019

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	23.00	8.4	14	0.92	0.044	< 1
9/29/2014	1:55 PM	113	12.9	76	20.00	8.2	16	0.00	0.053	< 1
8/27/2015	1:24 PM	98	13.3	95		8.1	14	0.10	0.059	
9/23/2015	1:45 PM	121	12.0	90		8.2	19.1	1.14	0.100	
9/7/2016	12:30 PM	112	15.7	*83*		7.9	17.2	0.00	0.046	
9/20/2016	12:04 PM	111	14.3	*81*		7.9	16.8	0.00	0.058	
9/1/2017	2:30 PM	126	8.9			7.8	20.2	0.00	0.045	
9/22/2017	1:23 PM	93	12.3	90		7.8	12.9	0.00	0.056	
8/2/2018	1:55 PM	92	16.3	*91*		6.9	12.6	0.21	0.043	
9/14/2018	2:23 PM	93	13.8	*93*		7.7	13.0	0.00	0.31	
2018 STATISTICS										
Mean	***	93	15	92		7.5	12.8	0.11	0.177	
2014 - 2018 STATISTICS										
Mean	***	106	13.2	87	21.50	8.2	15.6	0.24	0.081	< 1
Min	***	92	8.9	76	20.00	6.9	12.6	0.00	0.043	< 1
Max	***	126	16.3	95	23.00	8.4	20.2	1.14	0.310	< 1
n	***	10	10	9	2	10	10	10	10	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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Baseflow Water Chemistry Sampling
Station SMB-T3-0.1 (DEC Station ID 42780730001), Tributary 3 to South Mountain Branch
Prepared by VHB on: January 13, 2019

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	31.00	7.6	26	0.01	< 0.020	< 2
10/9/2012	11:00 AM	125	7.2	95	13.00	8.1	22	125.00	0.031	< 2
8/22/2013	12:00 PM	179	16.1	88	7.90	8.1	30	1.31	< 0.072	< 2.5
9/5/2013	1:55 PM	185	12.0	90	4.20	8.0	32	11.45	0.590	< 2
8/29/2014	2:35 PM	181	13.4	81	24.00	8.4	31	0.53	< 0.045	< 1
9/29/2014	1:38 PM	186	13.1	80	28.00	8.3	33	0.10	0.021	< 1
8/27/2015	1:41 PM	171	14.2	95		8.2	30.3	1.21	< 1.200	
9/23/2015	12:55 PM	196	11.7	94		8.1	35.9	0.77	0.028	
9/7/2016	11:58 AM	207	15.8	*81*		8.0	38.3	0.00	< 0.020	
9/20/2016	12:39 PM	147	13.4	*86*		7.9	25	0.00	0.025	
9/1/2017	1:35 PM	204	9.1			7.9	37.7	0.00	0.033	
9/22/2017	1:00 PM	164	12.5	101		7.9	28.7	0.00	0.070	
8/2/2018	1:10 PM	175	17.1	*90*		7.3	31.3	0.20	0.024	
9/14/2018	1:54 PM	153	14.2	*98*		8.0	26.3	0.00	0.020	

2018 STATISTICS										
Mean	***	164	16	94		7.5	28.8	0.10	0.022	
2012 - 2018 STATISTICS										
Mean	***	171	13.2	90	18.02	7.4	30.5	10.04	0.157	1.8
Min	***	125	7.2	80	4.20	7.3	22	0.00	0.020	1
Max	***	207	17.1	101	31.00	8.4	38.3	125.00	1.200	2.5
n	***	14	14	13	6	14	14	14	14	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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Baseflow Water Chemistry Sampling
Station SMB-1.8 (DEC Station ID 427807000018), South Mountain Branch
Prepared by VHB on: January 13, 2019

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	38.00	7.5	34.00	0.01	< 0.020	< 2
10/9/2012	10:45 AM	155	6.9	96	16.00	8.2	28.00	24.00	< 0.020	< 2
8/22/2013	11:40 AM	199	14.3	88	6.90	7.9	31.00	0.97	< 0.080	< 2.5
9/5/2013	12:55 PM	188	11.0	91	5.30	8.1	36.00	3.25	< 0.100	< 2
8/29/2014	2:50 PM	213	12.5	77	28.00	8.3	36.00	0.00	< 0.020	< 1
9/29/2014	1:20 PM	214	12.0	77	34.00	8.3	39.00	0.05	< 0.029	< 1
8/27/2015	1:56 PM	201	13.0	97		7.9	37.05	0.46	< 0.088	
9/23/2015	1:24 PM	210	11.1	90		8.1	39.07	0.77	< 0.039	
9/7/2016	11:43 AM	229	14.2	*82*		8.0	43.28	0.00	0.037	
9/20/2016	1:04 PM	202	13.9	*79*		7.8	37.34	0.00	0.036	
9/1/2017	1:15 PM	229	8.7			8.0	43.32	0.00	0.021	
9/22/2017	12:42 PM	181	11.0	104		7.8	32.64	0.23	< 0.020	
8/2/2018	12:45 PM	212	15.3	*95*		7.3	39.4	0.39	0.032	
9/14/2018	1:16 PM	196	13.2	*95*		8.0	36.0	0.00	0.23	

2018 STATISTICS										
Mean	***	204	14	95		7.5	37.70	0.20	0.131	
2012 - 2018 STATISTICS										
Mean	***	198	12.2	90	21.37	7.5	36.58	2.15	0.061	1.8
Min	***	148	6.9	77	5.30	7.3	28.00	0.00	0.020	1
Max	***	229	15.3	104	38.00	8.3	43.32	24.00	0.230	2.5
n	***	14	14	13	6	14	14	14	12	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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Baseflow Water Chemistry Sampling
Station SMB-1.2 (DEC Station ID 427807000012), South Mountain Branch
Prepared by VHB on: January 13, 2019

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	32.00	7.5	36	0.04	< 0.020	< 2
10/9/2012	10:30 AM	157	6.8	93	17.00	8.3	29	55.00	< 0.020	< 2
8/22/2013	11:15 AM	209	14.7	87	10.00	7.9	35	0.46	< 0.080	< 2.5
9/5/2013	11:55 AM	203	11.2	89	4.80	8.2	9.3	1.04	< 0.068	< 2
8/29/2014	3:26 PM	217	12.9	84	31.00	8.4	38	0.16	< 0.047	< 2
9/29/2014	12:36 PM	219	12.2	77	39.00	8.4	39	0.00	< 0.020	< 1
8/27/2015	2:10 PM	197	13.4	97		8.0	36.2	0.63	< 0.058	
9/23/2015	12:25 PM	227	10.8	99		8.1	42.9	0.85	< 0.025	
9/7/2016	11:34 AM	228	14.3	*86*		7.9	43	2.56	0.028	
9/20/2016	1:20 PM	195	14.2	*82*		8.0	35.8	0.00	0.028	
9/1/2017	12:55 PM	200	8.9			8.0	36.8	0.23	0.170	
9/22/2017	12:27 PM	196	11.2	104		7.9	36	0.00	0.031	
8/2/2018	12:17 PM	215	15.7	*96*		7.4	40.1	0.12	0.024	
9/14/2018	1:02 PM	200	13.4	*92*		8.0	36.7	0.00	0.020	
2018 STATISTICS										
Mean	***	207	15	94		7.6	38.4	0.06	0.022	
2012 - 2018 STATISTICS										
Mean	***	202	12.4	91	22.30	7.5	35.3	4.36	0.048	1.9
Min	***	157	6.8	77	4.80	7.4	9.3	0.00	0.020	1
Max	***	228	15.7	104	39.00	8.4	43	55.00	0.170	2.5
n	***	14	14	13	6	14	14	14	13	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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

ENDYNE Inc.
Environmental Laboratories

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

PROJECT: Jay Peak WQM Project
WORK ORDER: **1808-19157**
DATE RECEIVED: August 03, 2018
DATE REPORTED: August 17, 2018
SAMPLER: Jordan Duffy

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: 08/17/2018

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1808-19157**
PROJECT: Jay Peak WQM Project DATE RECEIVED: 08/03/2018

001 Site: JB-T13-0.2 Date Sampled: 8/2/18 Time: 10:40

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	8/13/18	W FAA	A	
Iron, Total	< 0.020	mg/L	EPA 6010C	8/14/18	W FAA	A	

002 Site: JB-9.1 Date Sampled: 8/2/18 Time: 10:15

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	8/13/18	W FAA	A	
Iron, Total	0.085	mg/L	EPA 6010C	8/14/18	W FAA	A	

003 Site: JB-8.3 Date Sampled: 8/2/18 Time: 9:35

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	8/13/18	W FAA	A	
Iron, Total	0.034	mg/L	EPA 6010C	8/14/18	W FAA	A	

004 Site: JB-7.3 Date Sampled: 8/2/18 Time: 11:50

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	8/13/18	W FAA	A	
Iron, Total	< 0.020	mg/L	EPA 6010C	8/14/18	W FAA	A	

005 Site: JB-T9-P1-0.1 No Sample Date Sampled: 8/2/18 Time: 9:35

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
No analysis							

006 Site: JB-T9-P2-0.1 Date Sampled: 8/2/18 Time: 11:24

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	8/13/18	W FAA	A	
Iron, Total	0.037	mg/L	EPA 6010C	8/14/18	W FAA	A	

007 Site: JB-T9-0.1 Date Sampled: 8/2/18 Time: 9:52

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	8/13/18	W FAA	A	
Iron, Total	0.22	mg/L	EPA 6010C	8/14/18	W FAA	A	

008 Site: SMB-T3-0.8 Date Sampled: 8/2/18 Time: 13:35

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	8/13/18	W FAA	A	
Iron, Total	0.022	mg/L	EPA 6010C	8/14/18	W FAA	A	

009 Site: SMB-T3-0.5 Date Sampled: 8/2/18 Time: 13:55

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	8/13/18	W FAA	A	
Iron, Total	0.043	mg/L	EPA 6010C	8/14/18	W FAA	A	

Laboratory Report DATE REPORTED: 08/17/2018

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1808-19157**
PROJECT: Jay Peak WQM Project DATE RECEIVED: 08/03/2018

010 Site: SMB-T3-0.1 Date Sampled: 8/2/18 Time: 13:10

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	8/13/18	W FAA	A	
Iron, Total	0.024	mg/L	EPA 6010C	8/14/18	W FAA	A	

011 Site: SMB-1.8 Date Sampled: 8/2/18 Time: 12:45

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	8/13/18	W FAA	A	
Iron, Total	0.032	mg/L	EPA 6010C	8/14/18	W FAA	A	

012 Site: SMB-1.2 Date Sampled: 8/2/18 Time: 12:17

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	8/13/18	W FAA	A	
Iron, Total	0.024	mg/L	EPA 6010C	8/14/18	W FAA	A	

Jay Peak WQM Project #57201.10

Endyne Inc. COC **1808-19157**

Prepared: 9/6/17

1808-19157

Vanasse Hangen Brustlin, Inc.
Jay Peak WQM Project #57201.10

Customer # 0

GEN

W-903

Bill to:

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

Report to:

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

JB-T13-0.2	Sampled Date/Time: 8/2/18 @ 10:40			Sampler: JMD
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____		
JB-9.1	Sampled Date/Time: 8/2/18 @ 10:15			Sampler: JMD
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____		
JB-8.3	Sampled Date/Time: 8/2/18 @ 9:35			Sampler: JMD
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____		
JB-7.3	Sampled Date/Time: 8/2/18 @ 11:50			Sampler: JMD
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____		
~~JB-T9-P1-0.1~~	~~Sampled Date/Time: / / @~~			~~Sampler: JMD~~
~~Iron, Total~~	~~1- 8 oz Plastic Total Metals~~	~~HNO3 pH< 2 ____~~		
JB-T9-P2-0.1	Sampled Date/Time: 8/2/18 @ 11:24			Sampler: JMD
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____		
JB-T9-0.1	Sampled Date/Time: 8/2/18 @ 9:52			Sampler: JMD
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____		
SMB-T3-0.8	Sampled Date/Time: 8/2/18 @ 13:35			Sampler: JMD
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____		
SMB-T3-0.5	Sampled Date/Time: 8/2/18 @ 13:55			Sampler: JMD
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____		
SMB-T3-0.1	Sampled Date/Time: 8/2/18 @ 13:10			Sampler: JMD
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____		
SMB-1.8	Sampled Date/Time: 8/2/18 @ 12:45			Sampler: JMD
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____		
SMB-1.2	Sampled Date/Time: 8/2/18 @ 12:17			Sampler: JMD
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____		

Relinquished by: Jonathan Duffy 8/3/18 8:40 (Date Time)

Relinquished by: _____ Date Time

Accepted by: _____ Date Time

Received by: Rod Lamothe 8/3/18 8:35 (Date Time)

Sites/Parameters correct as listed. Client Initials _____

Client Authorization to use Subcontract lab Client Initials _____

Sample origin: VT ☑ NH ☐ NY ☐ Other ☐

Special reporting instructions: (PO#) _____

Requested Turnaround Time: Routine: Rush Due Date _____

Lab use Only

Delv: Cli
Temp C: 5.2°C
Comment:

Tmpl Ck
Log by

ENDYNE Inc.
www.endynelabs.com

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

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

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

ENDYNE Inc.
Environmental Laboratories

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

PROJECT: Jay Peak WQM 57201.10
WORK ORDER: **1809-23781**
DATE RECEIVED: September 14, 2018
DATE REPORTED: October 03, 2018
SAMPLER: TGB

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: 10/03/2018

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1809-23781**
PROJECT: Jay Peak WQM 57201.10 DATE RECEIVED: 09/14/2018

001 Site: JB-T13-0.2 Date Sampled: 9/14/18 Time: 10:35

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/18	W FAA	A	
Iron, Total	< 0.020	mg/L	EPA 6010C	9/28/18	W FAA	A	

002 Site: JB-9.1 Date Sampled: 9/14/18 Time: 10:18

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/18	W FAA	A	
Iron, Total	0.076	mg/L	EPA 6010C	9/28/18	W FAA	A	

003 Site: JB-8.3 Date Sampled: 9/14/18 Time: 9:43

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/18	W FAA	A	
Iron, Total	0.080	mg/L	EPA 6010C	9/28/18	W FAA	A	

004 Site: JB-7.3 Date Sampled: 9/14/18 Time: 12:50

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/18	W FAA	A	
Iron, Total	< 0.020	mg/L	EPA 6010C	9/28/18	W FAA	A	

005 Site: JB-T9-P1-0.1 Date Sampled: 9/14/18 Time: 11:45

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/18	W FAA	A	
Iron, Total	< 0.020	mg/L	EPA 6010C	9/28/18	W FAA	A	

006 Site: JB-T9-P2-0.1 Date Sampled: 9/14/18 Time: 12:16

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/18	W FAA	A	
Iron, Total	0.034	mg/L	EPA 6010C	9/28/18	W FAA	A	

007 Site: JB-T9-0.1 Date Sampled: 9/14/18 Time: 9:59

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/18	W FAA	A	
Iron, Total	0.043	mg/L	EPA 6010C	9/28/18	W FAA	A	

008 Site: SMB-T3-0.8 Date Sampled: 9/14/18 Time: 14:10

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/18	W FAA	A	
Iron, Total	0.025	mg/L	EPA 6010C	9/28/18	W FAA	A	

009 Site: SMB-T3-0.5 Date Sampled: 9/14/18 Time: 14:23

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/18	W FAA	A	

Laboratory Report DATE REPORTED: 10/03/2018

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1809-23781**
PROJECT: Jay Peak WQM 57201.10 DATE RECEIVED: 09/14/2018

009 Site: SMB-T3-0.5 Date Sampled: 9/14/18 Time: 14:23

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.31	mg/L	EPA 6010C	9/28/18	W FAA	A	

010 Site: SMB-T3-0.1 Date Sampled: 9/14/18 Time: 13:54

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/18	W FAA	A	
Iron, Total	0.020	mg/L	EPA 6010C	9/28/18	W FAA	A	

011 Site: SMB-1.8 Date Sampled: 9/14/18 Time: 13:16

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/18	W FAA	A	
Iron, Total	0.23	mg/L	EPA 6010C	9/28/18	W FAA	A	

012 Site: SMB-1.2 Date Sampled: 9/14/18 Time: 13:02

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/27/18	W FAA	A	
Iron, Total	0.020	mg/L	EPA 6010C	9/28/18	W FAA	A	

Jay Peak WQM Project #57201.10

Endyne Inc. COC

Prepared: 9/6/17

Lab Use WO# 1809-23781

Customer #

1809-23781

Vanasse Hangen Brustlin, Inc.
Jay Peak WQM 57201.10

W

Bill to:

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

Report to:

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

JB-T13-0.2	Sampled Date/Time: 09 / 14 / 18 @ 10:35	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
JB-9.1	Sampled Date/Time: 09 / 14 / 18 @ 10:18	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
JB-8.3	Sampled Date/Time: 09 / 14 / 18 @ 09:43	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
JB-7.3	Sampled Date/Time: 09 / 14 / 18 @ 12:50	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
JB-T9-P1-0.1	Sampled Date/Time: 09 / 14 / 18 @ 11:45	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
JB-T9-P2-0.1	Sampled Date/Time: 09 / 14 / 18 @ 12:16	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
JB-T9-0.1	Sampled Date/Time: 09 / 14 / 18 @ 09:59	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
SMB-T3-0.8	Sampled Date/Time: 09 / 14 / 18 @ 14:10	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
SMB-T3-0.5	Sampled Date/Time: 09 / 14 / 18 @ 14:23	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
SMB-T3-0.1	Sampled Date/Time: 09 / 14 / 18 @ 13:54	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
SMB-1.8	Sampled Date/Time: 09 / 14 / 18 @ 13:16	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
SMB-1.2	Sampled Date/Time: 09 / 14 / 18 @ 13:02	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	

Relinquished by: [signature] 09/14/18 @ 1704 (Date Time)

Accepted by: ____ (Date Time)

Relinquished by: ____ (Date Time)

Received by: [signature] 9/14/18 @ 1704 (Date Time)

Sites/Parameters correct as listed. Client Initials ____

Client Authorization to use Subcontract lab Client Initials ____

Sample origin: VT ☐ NH ☐ NY ☐ Other ☐

Special reporting instructions: (PO#) ____

Requested Turnaround Time: Routine: Rush Due Date ____

Lab use Only

Delv: Client
Temp C: 0.7
Comment:

Tmpl Ck
Log by

ENDYNE Inc.
www.endynelabs.com

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

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

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

APPENDIX 2

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Event Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch
Prepared by VHB on: January 14, 2019

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			5.30	7.2	< 2.5	0.41		< 2
10/28/2006	---	30			< 4.51	7.2	< 2.5	0.51		< 2
8/30/2007	1:35 PM	46	13.0		8.00	7.3	< 2.5	0.23		< 2
9/28/2007	9:10 AM				< 20.00	7.0	1	0.53		< 1
10/10/2008	11:55 AM	21	5.8			7.2	< 2.5	0.50		< 2
11/17/2008	9:36 AM	21	6.3			7.0	< 2.5	0.50		< 2
10/1/2009	11:32 AM	36	8.0		20.00	6.9	< 2.5	0.50		< 2
11/20/2009	10:30 AM	26	7.3		< 7.07	7.3	< 2.5	0.90		< 3
8/3/2010	3:39 PM	23	14.8		14.00		< 2.5	1.30		< 3
8/23/2010	3:40 PM	58	12.8		< 22.00	7.7	< 2.5	0.50		< 2
10/25/2011	9:53 AM	19	7.0			6.5	< 2.5	0.50		< 1
11/30/2011	10:56 AM	22	7.1			6.3	< 2.5	0.00		< 1
9/5/2012	1:50 PM	16	14.6	91	4.80		< 2.5	38.00	0.028	< 2
9/19/2012	2:30 PM	18	10.7	89	< 4.80	7.1	< 2.5	35.00	0.027	< 2
9/12/2013	4:15 PM	28	14.5	97	2.00	7.6	< 2.5	0.81	0.053	< 1
9/22/2013	3:50 PM	26	10.9	99	< 5.20	7.6	< 2.5	0.40	0.067	< 2
8/13/2014	2:24 PM	49	13.3	72	12.00	8.3	< 2.5	14.53	0.071	< 3
9/11/2014	12:30 PM	50	12.8	78	< 30.00	8.5	< 2.5	5.70	0.110	< 1
8/21/2015	10:30 AM	37	14.5	94		8.1	0.3	8.75	0.037	
9/14/2015	10:24 AM	30	12.4	92		7.5	< 2.5	7.04	0.620	
8/22/2016	9:55 AM	22	12.9			7.7	< 2.5	0.00	0.022	
9/11/2016	1:37 PM	32	13.7	*83*		7.8	< 2.5	0.00	0.046	
9/7/2017	10:15 AM	30	10.8	97		6.7	< 2.5	1.11	0.130	
10/9/2017	2:00 PM	41	12.8	104		6.5	1.1	6.82	0.120	
9/11/2018	11:15 AM	32	12.0	*94*		7.3	< 2.5	0.00	0.050	
9/21/2018	12:10 PM	40	12.0	*88*		8.6	1.0	0.00	0.076	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Event Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch
Prepared by VHB on: January 14, 2019

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)
2018 STATISTICS										
Mean	***	36	12.0	91		7.5	1.7	0.00	0.063	
2005 - 2018 STATISTICS										
Mean	***	32	11.3	91	11.41	7.0	2.2	4.79	0.104	2
Min	***	16	5.8	72	2.00	6.3	0.3	0.00	0.022	1
Max	***	59	14.8	104	30.00	8.6	2.5	38.00	0.620	3
n	***	25	23	13	14	24	26	26	14	18

Notes:

Blank cells indicates no data available
2005 and 2006 data from ESI
*** 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.
Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Event Water Chemistry Sampling
Station JB-9.1 (DEC Station 427800000091) Jay Branch
Prepared by VHB on: January 14, 2019

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	1:10 PM	21	14.9	92	4.30		< 2.5	133.00	0.420	8
9/19/2012	1:00 PM	24	10.8	91	3.70	7.2	< 2.5	33.00	0.210	4
9/12/2013	12:00 PM	35	15.4	102	2.00	7.5	< 2.5	1.71	0.180	5
9/22/2013	3:50 PM	33	11.2	100	6.20	7.8	< 2.5	0.85	0.170	3
8/13/2014	2:41 PM	103	14.3	80	31.00	8.4	8.5	0.00	0.140	2
9/11/2014	12:45 PM	101	13.5	79	17.00	8.6	8	10.16	0.110	
8/21/2015	10:45 AM	57	15.9	95			4.8	13.28	0.170	
9/14/2015	9:07 AM	44	13.0	98		7.6	1.9	17.67	5.500	
8/22/2016	10:10 AM	32	14.1			7.8	< 2.5	0.44	0.096	
9/11/2016	1:44 PM	51	14.8	*86*		7.8	< 2.5	0.00	0.250	
9/7/2017	9:55 AM	43	11.4	104		6.9	1.7	3.05	0.620	
10/9/2017	2:30 PM	78	13.3	117		6.6	9.4	11.69	0.640	
9/11/2018	10:55 AM	43	12.4	*97*		7.3	1.56	72.50	0.17	
9/21/2018	11:57 AM	156	12.7	*96*		8.4	26.9	5.11	0.69	
2018 STATISTICS										
Mean	***	99	12.6	97		7.6	14.2	38.81	0.430	
2012 - 2018 STATISTICS										
Mean	***	59	13.4	95	10.70	7.3	5.6	21.60	0.669	4
Min	***	21	10.8	79	2.00	6.6	1.6	0.00	0.096	2
Max	***	156	15.9	117	31.00	8.6	26.9	133.00	5.500	8
n	***	14	14	13	6	12	14	14	14	5

Notes:

Blank cells indicate 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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Event Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch
Prepared by VHB on: January 14, 2019

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
9/30/2005		44			7.00	6.4	3.2	151.00		626
10/28/2006		52			9.84	7.2	4.4	18.30		86
8/30/2007	12:25 PM	111	15.9		18.00	7.5	< 2.5	1.58		3
9/28/2007	8:20 AM				22.00	7.3	5	1.40		3
10/10/2008	10:45 AM	56	5.6			7.3	12	1.52		2
11/17/2008	8:10 AM	50	5.6			7.5	6	2.07		2
10/1/2009	10:18 AM	52	8.1		24.00	6.9	3.5	1.77		2
11/20/2009	11:15 AM	85	7.3		13.90		19	86.10		66
8/3/2010	2:35 PM	42	16.3		14.10	7.7	3.5	20.00		26
8/23/2010	2:35 PM	97	14.6		30.00	7.7	7.8	0.50		2
10/25/2011	10:33 AM	43	7.2			6.9		1.38		1
11/30/2011	9:45 AM	55	7.9			6.8		0.00		4
9/5/2012	11:50 AM	34	15.3	92	6.40	6.7	4	108.00	3.300	67
9/19/2012	12:15 PM	41	11.3	90	7.30	7.5	4.7	44.00	0.500	9
9/12/2013	2:45 PM	65	16.1	103	2.00	7.8	5.7	7.31	0.530	7
9/22/2013	3:05 PM	69	12.0	99	9.90	8.0	6.2	16.01	0.260	5
8/13/2014	1:51 PM	135	15.1	83	33.00	8.5	19	0.00	0.068	1
9/11/2014	12:05 PM	220	14.0	80	29.00	8.6	15	5.53	0.075	1
8/21/2015	10:05 AM	200	17.0	96		8.0	36.8	13.50	0.280	
9/14/2015	9:52 AM	131	13.8	92		6.6	21.4	9.72	1.200	
8/22/2016	9:20 AM	82	14.9			8.2	10.4	6.88	0.250	
9/11/2016	12:52 PM	169	16.1	*81*		8.1	29.9	7.93	0.290	
9/7/2017	9:10 AM	73	11.8	110		7.1	8.3	2.72	0.330	
10/9/2017	12:45 PM	129	13.4	104		6.7	21	10.15	0.280	
9/11/2018	10:15 AM	66	12.5	*98*		6.8	6.9	1.40	0.27	
9/21/2018	11:22 AM	119	12.9	*102*		7.1	18.7	0.00	0.069	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Event Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch
Prepared by VHB on: January 14, 2019

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)
2018 STATISTICS										
Mean	***	93	12.7	100		6.9	12.8	0.70	0.170	
2005 - 2018 STATISTICS										
Mean	***	89	12.4	94	16.17	7.1	11.5	19.95	0.550	51
Min	***	34	5.6	80	2.00	6.4	2.5	0.00	0.068	1
Max	***	220	17.0	110	33.00	8.6	36.8	151.00	3.300	626
n	***	25	23	13	14	25	24	26	14	18

Notes:

Blank cells indicates no data available
2005 and 2006 data from ESI
*** 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.
Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Event Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch
Prepared by VHB on: January 14, 2019

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
9/30/2005		71			7.00	7.1	3.2	12.30		58
10/28/2006		42			9.43	7.1	2.9	20.10		71
8/30/2007	2:05 PM	89	16.8		12.00	6.9	8.3	8.06		21
9/28/2007	9:30 AM				23.00	7.0	5	0.96		1
10/10/2008	12:10 PM	41	6.3			7.2	4.1	1.44		2
11/17/2008	10:00 AM	44	6.5			7.1	3.7	1.65		2
10/1/2009	11:59 AM	53	8.7		20.00	6.9	3.5	3.42		2
11/20/2009	11:15 AM	54	7.5		11.30		3.9	45.80		39
8/3/2010	4:10 PM	42	16.9		8.90	7.0	3	17.80		41
8/23/2010	4:15 PM	94	15.8		28.00	7.7	7.2	0.50		2
10/25/2011	9:08 AM	41	7.4			6.8		2.03		3
11/30/2011	8:59 AM	56	8.4			6.9		1.91		9
9/5/2012	8:50 AM	23	15.5	95						
9/19/2012	10:00 AM	37	11.6	91	8.50	7.2	3.7	60.00	0.810	20
9/12/2013	12:00 PM	51	16.0	101	2.00	8.0	3.5	7.58	0.660	12
9/22/2013	1:10 PM	63	12.9	102	11.00	8.3	4.8	2.30	0.240	4
8/13/2014	3:18 PM	122	15.8	79	32.00	8.4	13	0.00	0.064	1
9/11/2014	1:45PM	119	15.0	81	29.00	8.6	12	4.83	0.037	1
8/21/2015	12:35 PM	95	17.5	98		7.8	13.3	2.12	0.170	
9/14/2015	11:55 AM	55	13.8	100		7.8	4.4	44.51	6.100	
8/22/2016	12:15 PM	54	14.9			7.7	4.1	0.00	0.110	
9/11/2016	4:00 PM	78	15.4	*80*		8.0	9.5	0.00	0.140	
9/7/2017	2:50 PM	57	12.6	107		7.2	4.9	3.94	0.270	
10/9/2017	3:10 PM	108	13.9	107		6.9	16.3	15.16	0.990	
9/11/2018	12:40 PM	67	13.3	*101*		7.8	7.0	1.25	0.25	
9/21/2018	1:16 PM	103	13.8	*95*		8.9	15.1	0.00	0.23	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Event Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch
Prepared by VHB on: January 14, 2019

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)
2018 STATISTICS										
Mean	***	85	13.6	98		8.1	11.1	0.63	0.240	
2005 - 2018 STATISTICS										
Mean	***	66	12.9	95	15.55	7.2	6.8	10.31	0.775	17
Min	***	23	6.3	79	2.00	6.8	2.9	0.00	0.037	1
Max	***	122	17.5	107	32.00	8.9	16.3	60.00	6.100	71
n	***	25	23	13	13	24	23	25	13	17

Notes:

Blank cells indicates no data available
2005 and 2006 data from ESI
*** 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.
Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Event Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary
Prepared by VHB on: January 14, 2019

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		55			17.20	7.4	2.9	16.30		46
8/30/2007	11:45 AM	125	17.1		36.00	7.5	11.5	9.85		5
9/28/2007	7:36 AM				39.00	6.7	7	1.20		2
10/10/2008	10:12 AM	66	8.6			7.2	9.7	1.77		< 2
11/17/2008	7:28 AM	68	6.4			7.6	10	2.44		< 2
10/1/2009	9:43 AM	69	8.8		21.00	6.6	10	9.22		< 3
11/20/2009	8:37 AM	63	7.5		11.30	7.9	9.6	34.70		< 29
8/3/2010	2:10 PM	74	17.5		10.60		11	19.70		< 23
8/23/2010	1:55 AM	201	16.2		41.00	7.4	32	0.81		
10/25/2011	11:33 AM	87	7.3			6.9		4.43		< 2
11/30/2011	11:15 AM	81	7.1			6.7		1.10		< 3
9/5/2012	5:20 AM	85	17.2	82	14.00		15	52.00	1.300	< 21
9/19/2012	3:45 AM	92	12.5	87	27.00	7.5	19	26.00	0.680	< 7
9/12/2013	5:50 AM	134	17.0	94	2.50	7.9	18	12.32	0.480	< 24
9/22/2013	5:45 AM	131	12.4	97	25.00	7.7	7	11.54	0.300	< 7
8/13/2014	12:58 PM	365	15.9	74	83.00	8.4	53	8.74	0.480	< 9
9/11/2014										
8/21/2015	11:05 AM	194	17.7	85		7.5	35.5	37.50	0.300	
9/14/2015	10:51 AM	87	13.8	94		7.6	11.5	75.66	7.300	
8/22/2016	10:35 AM	107	15.6			8.0	16	21.05	0.290	
9/11/2016	2:15 PM	223	16.4	*80*		8.0	41.9	5.88	0.250	
9/7/2017	11:25 AM	127	12.7	99		7.7	20.5	6.78	0.560	
10/9/2017	2:45 PM	112	14.3	98		6.8	17	68.15	3.800	
9/11/2018	12:05 PM	132	14.6	*95*		7.7	21.5	12.50	0.51	
9/21/2018	12:54 PM	120	13.5	*92*		8.6	18.9	201.50	6.4	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Event Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary
Prepared by VHB on: January 14, 2019

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)
2018 STATISTICS										
Mean	***	126	14.1	93		7.9	20.2	107.00	3.455	
2006 - 2018 STATISTICS										
Mean	***	122	13.2	90	27.30	7.2	18.1	26.71	1.742	12
Min	***	55	6.4	74	2.50	6.6	2.9	0.81	0.250	2
Max	***	365	17.7	99	83.00	8.6	53	201.50	7.300	46
n	***	23	22	12	12	22	22	24	13	15

Notes:

Blank cells indicates no data available

2006 data from ESI

*** 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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Event Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary
Prepared by VHB on: January 14, 2019

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			28.70	7.4	4.3	279.00		673
8/30/2007	12:05 PM	165	16.8		60.00	7.6	12	9.65		4
9/28/2007	7:47 AM				56.00	7.5	7	3.30		5
10/10/2008	10:22 AM	100	5.6			7.2	13	44.40		13
11/17/2008	7:35 AM	99	5.6			7.6	12	4.04		9
10/1/2009	9:50 AM	137	8.3		32.00	6.3	14	3.31		2
11/20/2009	8:37 AM	91	7.1		18.80	7.7	8.6	60.10		122
9/5/2012	4:50 PM	101	17.0	88	6.70		17	190.00	1.500	17
9/19/2012	4:00 PM	129	14.7	83	31.00		25	75.00	0.500	8
9/12/2013	6:00 PM	165	17.6	91	3.00	8.1	23	7.28	0.460	8
9/22/2013	4:15 PM	164	12.9	98	33.00	7.9	24	5.38	0.470	8
8/13/2014	12:50 PM	310	15.7	73	70.00	8.0	43	11.25	0.310	5
9/11/2014	11:30 AM	318	15.1	71	64.00	8.4	44	2.87	0.029	2
8/21/2015	11:10 AM	192	18.5	96		7.9	35	45.35	0.620	
9/14/2015	10:55 AM	91	13.9	97		7.8	12.4	76.98	6.100	
8/22/2016	10:40 AM	105	15.2			8.1	15.4	2.53	0.120	
9/11/2016	2:23 PM	136	16.4	*85*		8.1	22.5	3.13	0.200	
9/7/2017	11:35 AM	148	13.3	92		7.9	25.3	3.84	0.260	
10/9/2017	2:48 PM	116	14.5	98		6.9	17.9	72.90	3.700	
9/11/2018	12:15 PM	102	15.8	*95*		7.9	14.8	6.90	0.36	
9/21/2018	1:02 PM	131	13.9	*94*		8.7	21.4	43.19	1.3	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Event Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary
Prepared by VHB on: January 14, 2019

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)
2018 STATISTICS										
Mean	***	116	14.9	94.6		8.1	18.1	25.05	0.830	
2006 - 2018 STATISTICS										
Mean	***	144	13.6	89	36.65	7.3	19.6	45.26	1.138	67
Min	***	81	5.6	71	3.00	6.3	4.3	2.53	0.029	2
Max	***	318	18.5	98	70.00	8.7	44	279.00	6.100	673
n	***	20	19	13	11	19	21	21	14	13

Notes:

Blank cells indicates no data available

2006 data from ESI

*** 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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Event Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9
Prepared by VHB on: January 14, 2019

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
9/30/2005	***	100			16.00	6.8	12.3	73.20		169
10/28/2006	***	86			13.50	7.0	11.5	72.30		256
8/30/2007	12:20 PM	209	17.8		48.00	7.6	36.8	5.77		4
9/28/2007	8:45 AM				36.00	7.4	18	1.90		4
10/10/2008	10.36 am	116	5.7			7.3	23	1.42		< 2
11/17/2008	7:55 AM	126	6.5			7.5	27	2.05		< 2
10/1/2009	10:08 AM	151	8.4		27.00	6.7	24	44.00		16
11/20/2009	9:04 AM	19	7.3		16.40		< 2.5	11.50		11
8/3/2010	2:27 PM	121	19.3		16.90	7.7	21	53.70		86
8/23/2010	2:50 PM	355	14.6		51.00	8.1	62	0.58		< 2
10/25/2011	11:01 AM	129	7.5			6.9		3.08		< 1
11/30/2011	10:02 AM	161	7.8			7.0		0.55		< 2
9/5/2012	11:30 AM	107	19.0	92	14.00	6.7	22	325.00	17.000	200
9/19/2012	11:45 AM	141	14.0	83	17.00	7.4	33	165.00	4.700	34
9/12/2013	7:55 PM	192	15.1	99	2.60	7.9	32	38.51	1.500	20
9/22/2013	3:25 PM	216	13.2	100	38.00	8.1	38	16.01	0.890	8
8/13/2014	1:40 PM	463	16.1	79	53.00	8.5	92	1.45	0.390	5
9/11/2014	11:55 AM	583	15.0	70	51.00	8.6	130	3.94	0.120	1
8/21/2015	9:55 AM	326	17.8	93		7.9	65	12.40	0.650	
9/14/2015	10:02 AM	125	14.2	18		7.4	20	38.87	3.600	
8/22/2016	9:35 AM	143	15.4			8.1	24.1	7.10	0.390	
9/11/2016	1:07 PM	233	16.6	*82*		8.2	44.1	5.60	0.380	
9/7/2017	9:30 AM	175	12.9	97		7.5	31.2	4.07	0.600	
10/9/2017	1:00 PM	217	14.2	99		6.9	40.7	14.74	0.890	
9/11/2018	10:35 AM	131	14.0	*95*		7.2	21.3	9.20	0.89	
9/21/2018	11:32 AM	353	13.4	*87*		7.8	71.1	17.19	0.72	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Event Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9
Prepared by VHB on: January 14, 2019

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)
2018 STATISTICS										
Mean	***	242	13.7	91		7.4	46.2	13.20	0.805	
2005 - 2018 STATISTICS										
Mean	***	199	13.3	84	28.60	7.2	37.6	35.74	2.337	45.7
Min	***	19	5.7	18	2.60	6.7	2.5	0.55	0.120	1
Max	***	583	19.3	100	53.00	8.6	130	325.00	17.000	256
n	***	25	23	13	14	25	24	26	14	18

Notes:

Blank cells indicates no data available
2005 and 2006 data from ESI
*** 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.
Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Event Water Chemistry Sampling
Station SMB-T3-0.8, Tributary 3 to South Mountain Branch, upstream from Stateside Hotel
Prepared by VHB on: January 14, 2019

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	17	12.2			7.5	< 2.5	0.00	0.081	
9/11/2016	2:48 PM	29	12.9	*83*		7.8	< 2.5	0.00	0.054	
9/11/2016	2:23 PM	136	16.4	*85*		8.1	22.5	3.13	0.200	
9/7/2017	12:40 PM	22	10.4	104		6.3	< 2.5	1.77	0.110	
10/9/2017	4:20 PM	24	12.6	101		5.9	< 2.5	32.66	1.800	
9/11/2018	2:15 PM	21	11.9	*97*		7.4	< 2.5	0.00	0.063	
9/21/2018	2:42 PM	24	11.5	*98*		8.5	< 2.5	0.00	0.10	

2018 STATISTICS										
Mean	***	22	11.7	97		7.6	2.5	0.00	0.082	
2016 - 2018 STATISTICS										
Mean	***	39	12.6	95		6.5	5.4	5.37	0.344	
Min	***	17	10.4	83		5.9	2.5	0.00	0.054	
Max	***	136	16.4	104		8.5	22.5	32.66	1.800	
n	***	7	7	6		7	7	7	7	

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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

* questionable value due to problematic pH meter

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Event Water Chemistry Sampling
Station SMB-T3-0.5, Tributary 3 to South Mountain Branch
Prepared by VHB on: January 14, 2019

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	32.00	8.6	14.0	11.04	0.092	7
8/21/2015	11:30 AM	114	15.4	96		7.9	17.6	2.36	0.150	
9/14/2015	11:47 AM	61	12.7	95		7.9	5.7	24.17	3.100	
8/22/2016	11:25 AM	42	12.7			7.5	< 2.5	0.00	0.110	
9/11/2016	2:34 PM	86	13.7	*85*		7.9	11.4	0.00	0.150	
9/7/2017	1:05 PM	54	11.0	99		6.5	4	4.75	0.160	
10/9/2017	4:05 PM	44	13.3	100		6.4	2	76.03	4.800	
9/11/2018	2:40 PM	57	12.4	*96*		7.4	4.8	0.00	0.10	
9/21/2018	2:52 PM	64	12.1	*98*		8.4	6.4	8.51	0.23	

2018 STATISTICS										
Mean	***	60	12.3	97		7.7	6	4.26	0.165	
2014 - 2018 STATISTICS										
Mean	***	69	12.9	94	32.00	7.0	7.6	14.10	0.988	7
Min	***	42	11.0	82	32.00	6.4	2	0.00	0.092	7
Max	***	114	15.4	100	32.00	8.6	17.6	76.03	4.800	7
n	***	9	9	8	1	9	9	9	9	1

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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

* questionable value due to problematic pH meter

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Event Water Chemistry Sampling
Station SMB-T3-0.1, Tributary 3 to South Mountain Branch
Prepared by VHB on: January 14, 2019

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	14.8	93	4.50	6.5	10	75.00	1.600	43
9/19/2012	11:15 AM	58	10.6	88	6.70	7.4	13	110.00	0.410	9
9/12/2013	2:10 PM	84	15.4	102	< 2.00	7.6	14	16.19	1.200	14
9/22/2013	2:15 PM	105	11.7	100	8.80	7.8	18	11.29	0.540	8
8/13/2014	11:53 AM	191	14.9	57	26.00	7.5	31	2.47	0.071	< 1
9/11/2014	11:15 AM	182	13.4	80	20.00	8.6	32	8.68	0.073	2
8/21/2015	11:55 AM	175	16.5	95		7.9	31.2	15.76	0.260	
9/14/2015	11:47 AM	156	12.9	98		7.8	27	64.05	4.500	
8/22/2016	11:30 AM	95	13.6			7.5	13.3	21.08	0.270	
9/11/2016	3:11 PM	177	14.6	*82*		7.9	31.6	4.39	0.230	
9/7/2017	1:50 PM	107	11.5	105		7.2	15.9	4.74	0.420	
10/9/2017	3:50 PM	132	13.8	106		6.8	21.6	269.30	20.000	
9/11/2018	1:50 PM	127	12.9	*98*		7.8	20.6	2.18	0.26	
9/21/2018	2:23 PM	151	12.8	*94*		8.8	25.9	25.64	0.73	
2018 STATISTICS										
Mean	***	139	13	96		8.0	23	14	0	
2012 - 2018 STATISTICS										
Mean	***	128	13.5	92	11.33	7.3	21.8	45.06	2.183	13
Min	***	47	10.6	57	2.00	6.5	10	2.18	0.071	1
Max	***	191	16.5	106	26.00	8.8	32	269.30	20.000	43
n	***	14	14	13	6	14	14	14	14	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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Event Water Chemistry Sampling
Station SMB-1.8, South Mountain Branch
Prepared by VHB on: January 14, 2019

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	14.7	95	3.60	6.6	7.2	45.00	1.900	45
9/19/2012	10:45 AM	51	10.6	93	7.80	7.3	10	26.00	0.440	8
9/12/2013	1:50 PM	75	15.1	100	< 2.00	7.7	11	11.48	0.780	12
9/22/2013	1:45 PM	110	11.6	100	11.00	7.9	19	8.17	0.350	6
8/13/2014	12:30 PM	205	13.0	86	28.00	8.0	33	1.99	0.038	2
9/11/2014	2:15 PM	207	12.6	81	26.00	8.6	8	8.06	0.020	1
8/21/2015	12:10 PM	180	15.1	99		7.8	32.4	7.69	0.280	
9/14/2015	11:37 AM	137	12.8	96		7.8	22.7	51.82	4.800	
8/22/2016	11:50 AM	103	13.1			7.8	15.1	8.68	0.150	
9/11/2016	3:30 PM	178	13.5	*81*		7.9	31.9	1.47	0.110	
9/7/2017	2:20 PM	113	11.3	96		7.2	17.2	3.89	0.150	
10/9/2017	3:30 PM	185	12.7	100		6.9	33.4	91.88	5.900	
9/11/2018	1:30 PM	135	12.7	*100*		7.9	22.2	2.78	0.24	
9/21/2018	1:49 PM	233	12.1	*96*		8.7	44.2	46.46	2.8	

2018 STATISTICS										
Mean	***	184	12	98		8.1	33	25	2	
2012 - 2018 STATISTICS										
Mean	***	139	12.9	94	13.07	7.3	21.9	22.53	1.283	12
Min	***	37	10.6	81	2.00	6.6	7.2	1.47	0.020	1
Max	***	233	15.1	100	28.00	8.7	44.2	91.88	5.900	45
n	***	14	14	13	6	14	14	14	14	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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Event Water Chemistry Sampling
Station SMB-1.2, South Mountain Branch
Prepared by VHB on: January 14, 2019

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	15.0	95	4.30	6.7	8.6	48.00	2.300	45
9/19/2012	10:25 AM	37	10.8	91	9.20	7.4	13	53.00	0.440	9
9/12/2013	12:30 PM	86	15.3	103	< 2.00	7.7	14	20.02	1.200	17
9/22/2013	1:30 PM	133	12.0	102	12.00	7.9	23	8.25	0.350	6
8/13/2014	3:05 PM	212	13.6	77	32.00	8.5	34	7.06	0.044	1
9/11/2014	2:27 PM	214	13.1	83	30.00	8.5	38	6.83	0.020	1
8/21/2015	12:25 PM	194	15.4	100		7.8	35.5	3.13	0.140	
9/14/2015	11:23 AM	126	13.2	98		7.7	20.3	49.86	6.100	
8/22/2016	12:05 PM	112	13.3			7.9	17.1	5.78	0.110	
9/11/2016	3:48 PM	178	13.9	*95*		7.9	31.8	0.24	0.200	
9/7/2017	2:30 PM	125	11.6	103		7.2	19.9	3.23	0.130	
10/9/2017	3:17 PM	203	13.6	103		7.0	37.4	15.01	1.000	
9/11/2018	1:00 PM	145	12.6	*99*		7.7	24.6	2.26	0.23	
9/21/2018	1:30 PM	174	12.1	*97*		8.7	30.9	21.78	1.4	

2018 STATISTICS										
Mean	***	159	12	98		8.0	28	12	1	
2012 - 2018 STATISTICS										
Mean	***	141	13.3	96	14.92	7.4	24.9	17.46	0.976	13
Min	***	37	10.8	77	2.00	6.7	8.6	0.24	0.020	1
Max	***	214	15.4	103	32.00	8.7	38	53.00	6.100	45
n	***	14	14	13	6	14	14	14	14	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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

ENDYNE Inc.
Environmental Laboratories

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

PROJECT: Jay Peak WQM Project #57201.10
WORK ORDER: **1809-23346**
DATE RECEIVED: September 12, 2018
DATE REPORTED: September 28, 2018
SAMPLER: JMD

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: 09/28/2018

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1809-23346**
PROJECT: Jay Peak WQM Project #57201.10 DATE RECEIVED: 09/12/2018

001 Site: JB-T13-0.2 Date Sampled: 9/11/18 Time: 11:15

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/18	W FAA	A	
Iron, Total	0.050	mg/L	EPA 6010C	9/26/18	W FAA	A	

002 Site: JB-9.1 Date Sampled: 9/11/18 Time: 10:55

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/18	W FAA	A	
Iron, Total	0.17	mg/L	EPA 6010C	9/26/18	W FAA	A	

003 Site: JB-8.3 Date Sampled: 9/11/18 Time: 10:15

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/18	W FAA	A	
Iron, Total	0.27	mg/L	EPA 6010C	9/26/18	W FAA	A	

004 Site: JB-7.3 Date Sampled: 9/11/18 Time: 12:40

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/18	W FAA	A	
Iron, Total	0.25	mg/L	EPA 6010C	9/26/18	W FAA	A	

005 Site: JB-T9-P1-0.1 Date Sampled: 9/11/18 Time: 12:05

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/18	W FAA	A	
Iron, Total	0.51	mg/L	EPA 6010C	9/26/18	W FAA	A	

006 Site: JB-T9-P2-0.1 Date Sampled: 9/11/18 Time: 12:15

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/18	W FAA	A	
Iron, Total	0.36	mg/L	EPA 6010C	9/26/18	W FAA	A	

007 Site: JB-T9-0.1 Date Sampled: 9/11/18 Time: 10:35

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/18	W FAA	A	
Iron, Total	0.89	mg/L	EPA 6010C	9/26/18	W FAA	A	

008 Site: SMB-T3-0.8 Date Sampled: 9/11/18 Time: 14:15

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/18	W FAA	A	
Iron, Total	0.063	mg/L	EPA 6010C	9/26/18	W FAA	A	

009 Site: SMB-T3-0.5 Date Sampled: 9/11/18 Time: 14:40

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/18	W FAA	A	

Laboratory Report DATE REPORTED: 09/28/2018

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1809-23346**
PROJECT: Jay Peak WQM Project #57201.10 DATE RECEIVED: 09/12/2018

009 Site: SMB-T3-0.5 Date Sampled: 9/11/18 Time: 14:40

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.10	mg/L	EPA 6010C	9/26/18	W FAA	A	

010 Site: SMB-T3-0.1 Date Sampled: 9/11/18 Time: 13:50

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/18	W FAA	A	
Iron, Total	0.26	mg/L	EPA 6010C	9/26/18	W FAA	A	

011 Site: SMB-1.8 Date Sampled: 9/11/18 Time: 13:30

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/18	W FAA	A	
Iron, Total	0.24	mg/L	EPA 6010C	9/26/18	W FAA	A	

012 Site: SMB-1.2 Date Sampled: 9/11/18 Time: 13:00

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	9/26/18	W FAA	A	
Iron, Total	0.23	mg/L	EPA 6010C	9/26/18	W FAA	A	

ay Peak WQM Project #57201.10

Endyne Inc. COC

Prepared: 9/6/17

Lab Use WO#

1809-23346

1809-23346

Customer # 090

GENEI Vanasse Hangen Brustlin, Inc.
Jay Peak WQM Project #57201.10

W-90395

Bill to:

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

Report to:

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

JB-T13-0.2	Sampled Date/Time: 9 / 11 / 18 @ 11:15	Sampler: JMD	
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____	
JB-9.1	Sampled Date/Time: 9 / 11 / 18 @ 10:55	Sampler: JMD	
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____	
JB-8.3	Sampled Date/Time: 9 / 11 / 18 @ 10:15	Sampler: JMD	
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____	
JB-7.3	Sampled Date/Time: 9 / 11 / 18 @ 12:40	Sampler: JMD	
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____	
JB-T9-P1-0.1	Sampled Date/Time: 9 / 11 / 18 @ 12:05	Sampler: JMD	
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____	
JB-T9-P2-0.1	Sampled Date/Time: 9 / 11 / 18 @ 12:15	Sampler: JMD	
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____	
JB-T9-0.1	Sampled Date/Time: 9 / 11 / 18 @ 10:35	Sampler: JMD	
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____	
SMB-T3-0.8	Sampled Date/Time: 9 / 11 / 18 @ 14:15	Sampler: JMD	
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____	
SMB-T3-0.5	Sampled Date/Time: 9 / 11 / 18 @ 14:40	Sampler: JMD	
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____	
SMB-T3-0.1	Sampled Date/Time: 9 / 11 / 18 @ 13:50	Sampler: JMD	
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____	
SMB-1.8	Sampled Date/Time: 9 / 11 / 18 @ 13:30	Sampler: JMD	
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____	
SMB-1.2	Sampled Date/Time: 9 / 11 / 8 @ 13:00	Sampler: JMD	
Iron, Total	1- 8 oz Plastic Total Metals	HNO3 pH< 2 ____	

Relinquished by: [signature] 09/12/18 @ 1219 Date Time

Accepted by: ____ Date Time

Received by: [signature] 9/12/18 @ 1219 Date Time

Relinquished by: ____ Date Time

Sites/Parameters correct as listed. Client Initials ____

Client Authorization to use Subcontract lab Client Initials ____

Sample origin: VT ☐ NH ☐ NY ☐ Other ☐

Special reporting instructions: (PO#) ____

Requested Turnaround Time: Routine: Rush Due Date ____

Lab use Only

Delv Client
Temp C: 4.9
Comment:

Tmpl Ck
Log by

ENDYNE Inc.
www.endynelabs.com

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

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

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

ENDYNE Inc.
Environmental Laboratories

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

PROJECT: Jay Peak WQM Project #57201.10
WORK ORDER: **1809-24572**
DATE RECEIVED: September 21, 2018
DATE REPORTED: October 09, 2018
SAMPLER: TGB

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: 10/09/2018

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1809-24572**
PROJECT: Jay Peak WQM Project #57201.10 DATE RECEIVED: 09/21/2018

001 Site: JB-T13-0.2 Date Sampled: 9/21/18 Time: 12:10

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/8/18	W FAA	A	
Iron, Total	0.076	mg/L	EPA 6010C	10/8/18	W FAA	A	

002 Site: JB-9.1 Date Sampled: 9/21/18 Time: 11:57

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/8/18	W FAA	A	
Iron, Total	0.69	mg/L	EPA 6010C	10/8/18	W FAA	A	

003 Site: JB-8.3 Date Sampled: 9/21/18 Time: 11:22

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/8/18	W FAA	A	
Iron, Total	0.069	mg/L	EPA 6010C	10/8/18	W FAA	A	

004 Site: JB-7.3 Date Sampled: 9/21/18 Time: 13:16

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/8/18	W FAA	A	
Iron, Total	0.23	mg/L	EPA 6010C	10/8/18	W FAA	A	

005 Site: JB-T9-P1-0.1 Date Sampled: 9/21/18 Time: 12:54

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/8/18	W FAA	A	
Iron, Total	6.4	mg/L	EPA 6010C	10/8/18	W FAA	A	

006 Site: JB-T9-P2-0.1 Date Sampled: 9/21/18 Time: 13:02

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/8/18	W FAA	A	
Iron, Total	1.3	mg/L	EPA 6010C	10/8/18	W FAA	A	

007 Site: JB-T9-0.1 Date Sampled: 9/21/18 Time: 11:32

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/8/18	W FAA	A	
Iron, Total	0.72	mg/L	EPA 6010C	10/8/18	W FAA	A	

008 Site: SMB-T3-0.8 Date Sampled: 9/21/18 Time: 14:42

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/8/18	W FAA	A	
Iron, Total	0.10	mg/L	EPA 6010C	10/8/18	W FAA	A	

009 Site: SMB-T3-0.5 Date Sampled: 9/21/18 Time: 14:52

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/8/18	W FAA	A	

Laboratory Report DATE REPORTED: 10/09/2018

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1809-24572**
PROJECT: Jay Peak WQM Project #57201.10 DATE RECEIVED: 09/21/2018

009 Site: SMB-T3-0.5 Date Sampled: 9/21/18 Time: 14:52

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.23	mg/L	EPA 6010C	10/8/18	W FAA	A	

010 Site: SMB-T3-0.1 Date Sampled: 9/21/18 Time: 14:23

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/8/18	W FAA	A	
Iron, Total	0.73	mg/L	EPA 6010C	10/8/18	W FAA	A	

011 Site: SMB-1.8 Date Sampled: 9/21/18 Time: 13:49

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/8/18	W FAA	A	
Iron, Total	2.8	mg/L	EPA 6010C	10/8/18	W FAA	A	

012 Site: SMB-1.2 Date Sampled: 9/21/18 Time: 13:30

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Metals Digestion	Digested		EPA 3015A	10/8/18	W FAA	A	
Iron, Total	1.4	mg/L	EPA 6010C	10/8/18	W FAA	A	

Jay Peak WQM Project #57201.10

Endyne Inc. COC

Prepared: 9/6/17

1809-24572

1809-24572

Customer # 090395

GENERAL Vanasse Hangen Brustlin, Inc.
Jay Peak WQM Project #57201.10

W-90395JFE

Bill to:

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

Report to:

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

JB-T13-0.2	Sampled Date/Time: 09 / 21 / 18 @ 12:10	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
JB-9.1	Sampled Date/Time: 09 / 21 / 18 @ 11:57	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
JB-8.3	Sampled Date/Time: 09 / 21 / 18 @ 11:22	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
JB-7.3	Sampled Date/Time: 09 / 21 / 18 @ 13:16	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
JB-T9-P1-0.1	Sampled Date/Time: 09 / 21 / 18 @ 12:54	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
JB-T9-P2-0.1	Sampled Date/Time: 09 / 21 / 18 @ 13:02	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
JB-T9-0.1	Sampled Date/Time: 09 / 21 / 18 @ 11:32	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
SMB-T3-0.8	Sampled Date/Time: 09 / 21 / 18 @ 14:42	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
SMB-T3-0.5	Sampled Date/Time: 09 / 21 / 18 @ 14:52	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
SMB-T3-0.1	Sampled Date/Time: 09 / 21 / 18 @ 14:23	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
SMB-1.8	Sampled Date/Time: 09 / 21 / 18 @ 13:49	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	
SMB-1.2	Sampled Date/Time: 09 / 21 / 18 @ 13:30	Sampler: TGB	
Iron, Total	1 - 1L Plastic Total Metals	HNO3 pH< 2 ____	

Relinquished by: [signature] 09/21/18 16:54 (Date Time)

Accepted by: ____ (Date Time)

Relinquished by: ____ (Date Time)

Received by: [signature] 9/21/18 16:54 (Date Time)

Sites/Parameters correct as listed. Client Initials ____

Client Authorization to use Subcontract lab Client Initials ____

Sample origin: VT ☐ NH ☐ NY ☐ Other ☐

Special reporting instructions: (PO#) ____

Requested Turnaround Time: Routine: Rush Due Date ____

Lab use Only

Delv: Client
Temp C: 5.5
Comment:

Tmpl Ck
Log by

ENDYNE Inc.
www.endynelabs.com

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

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

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

APPENDIX 3

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Winter Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch
Prepared by VHB on: January 3, 2019

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
2/11/2009	10:30 AM	55	2.2		18.00	6.8	3.5	0.00	<2
4/21/2009	12:01 PM	61	6.4		9.55	6.6	<2.5	0.00	
3/12/2013	12:46 PM	30	0.8	97		8.5		0.00	
4/27/2013	13:01 PM	22	5.8	130		6.7		0.88	
4/18/2014	11:45 AM	30	2.2	97		8.6		0.24	<2
4/28/2014	3:40 PM	27	3.7	98		7.7		0.20	
4/10/2015	9:40 AM	40	1.5	*158*		7.4	<2.5	0.01	
4/15/2015	11:28 AM	19	2.2	*112*		7.5	<8.0	0.29	
3/18/2016	2:24 PM	13	2.3			7.2	<2.5	1.02	
4/8/2016	10:30 AM	12	0.2	94		8.1	<2.5	2.82	
4/3/2017	10:15 AM	20	2.3	*75*		8.0	<2.5	1.43	
4/13/2017	10:16 AM	10	1.4	84		7.8	<2.5	0.00	
3/29/2018	10:15 AM	36	1.9	92		4.9	<2.5	0.00	
4/30/2018	10:50 AM	32	2.3	108		5.7	<2.5	0.00	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Winter Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch
Prepared by VHB on: January 3, 2019

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
2018 STATISTICS									
Mean	***	34	2.1	99.9		5.14	2.5	0.00	
2009-2018 STATISTICS									
Mean	***	29	2.5	104	13.78	5.96	3.1	0.49	<2
Min	***	10	0.2	75	9.55	4.90	<2.5	0.00	<2
Max	***	61	6.4	158	18.00	8.60	8.0	2.82	<2
n	***	14	14	11	2	14	10	14	2

Notes:

Blank cells indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

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 2018
Winter Water Chemistry Sampling
Station JB-9.1 (DEC Station 427800000091) Jay Branch
Prepared by VHB on: January 3, 2019

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
2/27/2008	10:00 AM	45	2.0		37.00	7.0	3.0	0.37	<2
3/12/2010	12:44 PM	89	1.6		27.00	6.6	6.4	0.50	
3/18/2010	11:25 AM	78	2.1		28.00	6.7	6.0	1.68	
3/11/2011	11:58 AM	39	0.1		21.00	7.6	5.7	1.79	
3/18/2011	10:00 AM	38	0.0		26.00	6.7	8.3	11.53	
3/8/2012	1:02 PM	79	0.5		21.00	6.7	30.0	21.70	
3/22/2012	9:48 AM	16	4.7		21.00	6.5	2.5	2.16	
3/12/2013	12:02 AM	88	0.3	96		8.3		4.23	
4/27/2013	12:25 PM	33	5.7	125		6.9		0.21	
4/18/2014	12:15 PM	47	2.7	98		8.3		0.44	
4/28/2014	4:10 PM	39	4.1	98		7.7		1.95	
4/10/2015	10:17 AM	111	1.5	*112*		7.8	16.0	1.95	
4/15/2015	12:00 PM	28	2.8	*130*		6.9	<8.0	1.10	
3/18/2016	3:04 PM	20	1.8			7.2	<2.5	1.20	
4/8/2016	11:05 AM	16	0.4	100		7.9	<2.5	2.49	
4/3/2017	10:53 AM	42	1.9	*86*		7.8	1.5	0.20	
4/13/2017	10:51 AM	15	1.4	93		8.6	<2.5	0.98	
3/29/2018	10:59 AM	74	1.7	96		5.8	8.6	0.00	
4/30/2018	11:24 AM	67	3.8	102		6.7	7.0	0.00	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Winter Water Chemistry Sampling
Station JB-9.1 (DEC Station 427800000091) Jay Branch
Prepared by VHB on: January 3, 2019

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
2018 STATISTICS									
Mean	***	70	2.8	99		6.0	7.8	0.00	
2008 - 2018 STATISTICS									
Mean	***	51	2.1	103	25.86	6.7	7.4	2.87	<2
Min	***	15	0.0	86	21.00	5.8	1.5	0.00	<2
Max	***	111	5.7	130	37.00	8.6	30.0	21.70	<2
n	***	19	19	11	7	19	15	19	1

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

This conversion requires site-specific barometric pressure data which was not recorded in the field.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Winter Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch
Prepared by VHB on: January 3, 2019

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
1/30/2008	8:30 AM	37	2.1		13.00	7.1	2.7		
2/11/2009	10:30 AM	174	1.7		28.00	7.9	42	0.66	<2
4/21/2009	1:30 PM	25	5.6		9.95	6.7	3.2	0.00	
3/12/2010	11:12 AM	107	1.2			6.7	22	0.54	
3/18/2010	10:22 AM	114	1.4		23.00	6.5	18	1.85	
3/11/2011	11:00 AM	39	0.5		21.00	6.9	18	0.64	
3/18/2011	9:15 AM	74	0.1		28.00	6.7	23	35.64	
3/8/2012	11:27 AM	162	0.4		20.00	6.7	77	140.70	
3/22/2012	10:20 AM	28	5.7		24.00	6.7	5.1	3.34	
3/12/2013	11:05 AM	407	1.1	97		8.2		23.40	
4/27/2013	11:30 AM	33	5.1	133		7.1		0.80	
4/18/2014	1:10 PM	109	3.3	99		8.3		1.12	
4/28/2014	2:40 PM	80	4.7	95		8.6		2.70	
4/10/2015	11:13 AM	195	0.7	*136*		8.0	38	20.50	
4/15/2015	12:41 PM	80	3.5	*119*		7.1	10	7.68	
3/18/2016	1:38 PM	74	2.3			6.2	8.5	4.70	
4/8/2016	12:30 PM	23	0.8	96		8.0	<2.5	3.45	
4/3/2017	11:30 AM	89	1.8	*88*		7.9	11.9	0.00	
4/13/2017	12:50 PM	20	2.8	87		8.5	<2.5	2.90	
3/29/2018	12:44 PM	137	2.0	94		6.9	22.7	0.00	
4/30/2018	12:46 PM	105	5.3	96		7.3	15.6	0.00	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Winter Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch
Prepared by VHB on: January 3, 2019

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
2018 STATISTICS									
Mean	***	121	3.7	95		7.0	19.1	0.00	
2008 - 2018 STATISTICS									
Mean	***	101	2.5	104	20.87	6.9	19	12.53	2
Min	***	20	0.1	87	9.95	6.2	2.5	0.00	2
Max	***	407	5.7	136	28.00	8.6	77	140.70	2
n	***	21	21	11	8	21	17	20	1

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

This conversion requires site-specific barometric pressure data which was not recorded in the field.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Winter Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary
Prepared by VHB on: January 3, 2019

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
3/8/2012	1:02 PM	136	0.4			6.4		265.00	
3/22/2012	10:54 AM	56	6.9			6.9		24.94	
3/12/2013	1:40 PM	263	0.8	67		8.3		77.06	
4/27/2013	1:47 PM	91	8.5	128		7.3		12.30	
4/18/2014	12:35 PM	184	2.5	95		8.3		11.58	
4/28/2014	3:10 PM	93	4.4	101		8.2		20.17	
4/10/2015	12:00 PM	347	2.8	*91*		8.2	82.0	126.20	
4/15/2015	12:12 PM	78	1.2	*141*		6.8	9.5	15.54	
3/18/2016	3:20 PM	50	1.6			7.5	3.3	5.12	
4/8/2016	11:30 AM	45	0.1	92		7.5	2.1	18.31	
4/3/2017	12:46 PM	110	1.2	*79*		7.6	16.7	0.00	
4/13/2017	1:11 PM	57	3.3	86		8.3	4.9	5.31	
3/29/2018	1:10 PM	182	0.5	97		6.9	32.9	1.59	
4/30/2018	1:18 PM	142	3.9	110		7.2	23.9	8.60	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Winter Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary
Prepared by VHB on: January 3, 2019

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
2018 STATISTICS									
Mean	***	162	2.2	103		7.0	28.4	5.10	
2012-2018 STATISTICS									
Mean	***	131	2.7	99		7.1	21.9	42.27	
Min	***	45	0.1	67		6.4	2.1	0.00	
Max	***	347	8.5	141		8.3	82.0	265.00	
n	***	14	14	11		14	8	14	

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

This conversion requires site-specific barometric pressure data which was not recorded in the field.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Winter Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch
Prepared by VHB on: January 3, 2019

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
4/18/2014	5:00 PM	89	3.6	99		8.3		2.60	
4/28/2014	1:40 PM	67	5.0	99		8.9		2.65	
4/10/2015	12:46 PM	230	0.9	*121*		8.4	50.0	38.29	
4/15/2015	1:00 PM	42	4.0	*114*		7.0	<8.0	5.42	
3/18/2016	3:33 PM	44	2.2			7.7	1.9	3.64	
4/8/2016	1:15 PM	30	1.1	95		7.8	<2.5	4.99	
4/3/2017	12:15 PM	83	2.1	*85*		7.7	10.6	0.00	
4/13/2017	11:11 AM	24	1.9	94		8.7	<2.5	0.20	
3/29/2018	11:48 AM	127	2.1	97		6.2	20.4	0.00	
4/30/2018	11:58 AM	94	4.4	115		6.9	13.0	0.00	

2018 STATISTICS									
Mean	***	110	3.3	106		6.5	16.7	0.00	
2014 - 2018 STATISTICS									
Mean	***	83	2.7	102		7.1	13.6	5.78	
Min	***	24	0.9	85		6.2	1.9	0.00	
Max	***	230	5.0	121		8.9	50	38.29	
n	***	10	10	9		10	8	10	

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

This conversion requires site-specific barometric pressure data which was not recorded in the field.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Winter Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary
Prepared by VHB on: January 3, 2019

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
3/18/2011	10:33 AM	83	0.0			6.5		106.10	
3/8/2012	1:09 PM	160	0.4			6.6		267.60	
3/22/2012	11:01 AM	41	7.2			6.9		20.61	
3/12/2013	2:00 PM	342	1.4			8.4		120.00	
4/27/2013	1:55 PM	104	8.8	126		7.5		9.50	
4/18/2014	12:50 PM	295	3.3	95		7.8		29.58	
4/28/2014	3:00 PM	131	5.2	101		8.2		15.02	
4/10/2015	12:14 PM	412	0.9	*93*		7.8	100	93.24	
4/15/2015	12:20 PM	95	1.7	*121*		7.0	13.2	15.63	
3/18/2016	3:25 PM	69	1.5			7.6	7.5	4.98	
4/8/2016	11:48 AM	54	0.2	96		7.6	4.2	20.48	
4/3/2017	1:00 PM	141	2.7	*82*		7.6	23.5	6.37	
4/13/2017	1:15 PM	66	3.0	85		8.4	6.7	1.86	
3/29/2018	1:23 PM	216	2.7	90		6.9	40.5	12.15	
4/30/2018	1:27 PM	166	4.5	90		7.3	29.2	12.75	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Winter Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary
Prepared by VHB on: January 3, 2019

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
2018 STATISTICS									
Mean	***	191	3.6	90		7.1	34.9	12.45	
2011 - 2018 STATISTICS									
Mean	***	158	2.9	98		7.1	28.1	49.06	
Min	***	41	0.0	82		6.5	4.2	1.86	
Max	***	412	8.8	126		8.4	100	268	
n	***	15	15	10		15	8	15	

Notes:

Blank cells indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

This conversion requires site-specific barometric pressure data which was not recorded in the field.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Winter Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9
Prepared by VHB on: January 3, 2019

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
1/30/2008	8:47 AM	162	1.6		28	7.3	38.0		
2/8/2008	9:45 AM	194	2.1		29	7.3	54.0	0.59	3
3/12/2010	11:41 AM	545	1.5			6.4	130	1.72	
3/18/2010	10:41 AM	334	1.9		25	6.9	75.0	2.72	
3/11/2011	10:30 AM	409	1.0		41	6.8	180	1.39	
3/18/2011	9:28 AM	116	0.0		19	6.6	49.0	95.27	
3/8/2012	11:47 AM	232	0.4		21	6.4	110	77.98	
3/22/2012	10:30 AM	95	7.9		20	7.0	29.0	7.06	
3/12/2013	10:36 AM	530	0.0	97		8.0		28.70	
4/27/2013	11:46 AM	142	7.7	122		7.5		1.01	
4/18/2014	1:20 PM	409	4.0	95		7.7		3.12	
4/28/2014	2:25 PM	224	5.9	98		8.9		8.55	
4/10/2015	10:52 AM	751	0.7	*135*		8.4	200	49.96	
4/15/2015	12:34 PM	136	3.4	*126*		7.0	22.5	43.14	
3/18/2016	1:45 PM	136	2.3			7.0	22.5	7.20	
4/8/2016	12:10 PM	122	1.1	95		7.8	19.4	20.27	
4/3/2017	11:50 AM	398	1.7	*83*		7.7	81.1	0.00	
4/13/2017	12:35 PM	108	2.8	89		8.4	16.3	1.35	
3/29/2018	12:30 PM	411	1.5	95		6.9	84.1	0.00	
4/30/2018	12:31 PM	321	6.0	103		7.3	63.8	0.00	

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Winter Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9
Prepared by VHB on: January 3, 2019

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
2018 STATISTICS									
Mean	***	366	3.8	99		7.0	74.0	0.0	
2008 - 2018 STATISTICS									
Mean	***	289	2.7	103	26.1	7.0	73.4	18.42	3
Min	***	95	0.0	83	19.0	6.4	16.3	0.00	3
Max	***	751	7.9	135	41.0	8.9	200	95.27	3
n	***	20	20	0	7	20	16	19	1

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

This conversion requires site-specific barometric pressure data which was not recorded in the field.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Winter Water Chemistry Sampling
Station SMB-T3-0.5, Tributary 3 to South Mountain Branch
Prepared by VHB on: January 3, 2019

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
4/10/2015	1:35 PM	174	2.8	*97*		8.4	31.0	22.30	
4/15/2015	1:17 PM	30	2.9	*130*		6.9	<8.0	5.04	
3/18/2016	3:57 PM	21	1.7			7.6	<2.5	3.20	
4/8/2016	2:00 PM	42	0.8	96		7.9	1.3	3.00	
4/3/2017	1:15 PM	110	2.9	*85*		7.7	16.6	16.00	
4/13/2017	12:00 PM	17	2.1	86		8.5	<2.5	0.66	
3/29/2018	2:03 PM	110	3.3	92		6.9	16.7	230.00	
4/30/2018	2:07 PM	155	4.9	103		7.2	<26.7	13.28	
2018 STATISTICS									
Mean	***	132	4.1	97		7.0	21.7	121.64	
2015 - 2018 STATISTICS									
Mean	***	82	2.7	98		7.3	13.2	36.69	
Min	***	17	0.8	85		6.9	1.3	0.66	
Max	***	174	4.9	130		8.5	31.0	230.00	
n	***	8	8	7		8	8	8	

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

This conversion requires site-specific barometric pressure data which was not recorded in the field.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Winter Water Chemistry Sampling
Station SMB-1.2, South Mountain Branch
Prepared by VHB on: January 3, 2019

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
4/27/2013	2:07 PM	158	6.7	130		7.1		0.93	
4/18/2014	3:30 PM	270	4.2	98		8.4		1.20	
4/28/2014	2:00 PM	188	4.8	94		8.8		1.07	
4/10/2015	1:01 PM	408	3.6	*171*		7.9	99.0	2.82	
4/15/2015	1:08 PM	106	3.7	*121*		6.9	15.9	3.49	
3/18/2016	3:46 PM	95	2.5			7.6	13.3	3.45	
4/8/2016	1:35 PM	92	1.5	98		7.7	12.6	8.92	
4/3/2017	12:31 PM	178	2.7	*86*		7.6	32.0	0.00	
4/13/2017	11:30 AM	86	2.1	91		8.6	11.2	0.05	
3/29/2018	11:59 AM	238	3.5	98		6.6	45.4	0.00	
4/30/2018	12:10 PM	255	4.4	96		7.1	49.0	0.00	
2018 STATISTICS									
Mean	***	246	4.0	97		6.8	47.2	0.00	
2013 - 2018 STATISTICS									
Mean	***	189	3.6	108		7.3	34.8	1.99	
Min	***	86	1.5	86		6.6	11.2	0.00	
Max	***	408	6.7	171		8.8	99	8.92	
n	***	11	11	10		11	8	11	

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

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.

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

This conversion requires site-specific barometric pressure data which was not recorded in the field.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2018
Winter Water Chemistry Sampling
Station SMB-T3-0.8, Tributary 3 to South Mountain Branch, upstream from Stateside Hotel
Prepared by VHB on: January 3, 2019

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
4/3/2017	1:30 PM	22	3.7	*82*		7.6	<2.5	0.00	
4/13/2017	11:48 AM	9	2.0	88		8.6	<2.5	4.79	
3/29/2018	1:50 PM	30	3.7	92		6.9	<2.5	0.00	
4/30/2018	1:46 PM	28	4.8	95		7.1	<2.5	0.28	
2018 STATISTICS									
Mean	***	29	4.3	93		6.9	2.5	0.14	
2017 - 2018 STATISTICS									
Mean	***	22	3.6	89		7.3	2.5	1.27	
Min	***	9	2.0	82		6.9	2.5	0.00	
Max	***	30	4.8	95		8.6	2.5	4.79	
n	***	4	4	4		4	4	4	

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Dissolved oxygen data in *italics* converted from mg/L to % with: http://water.usgs.gov/software/DOTABLES/

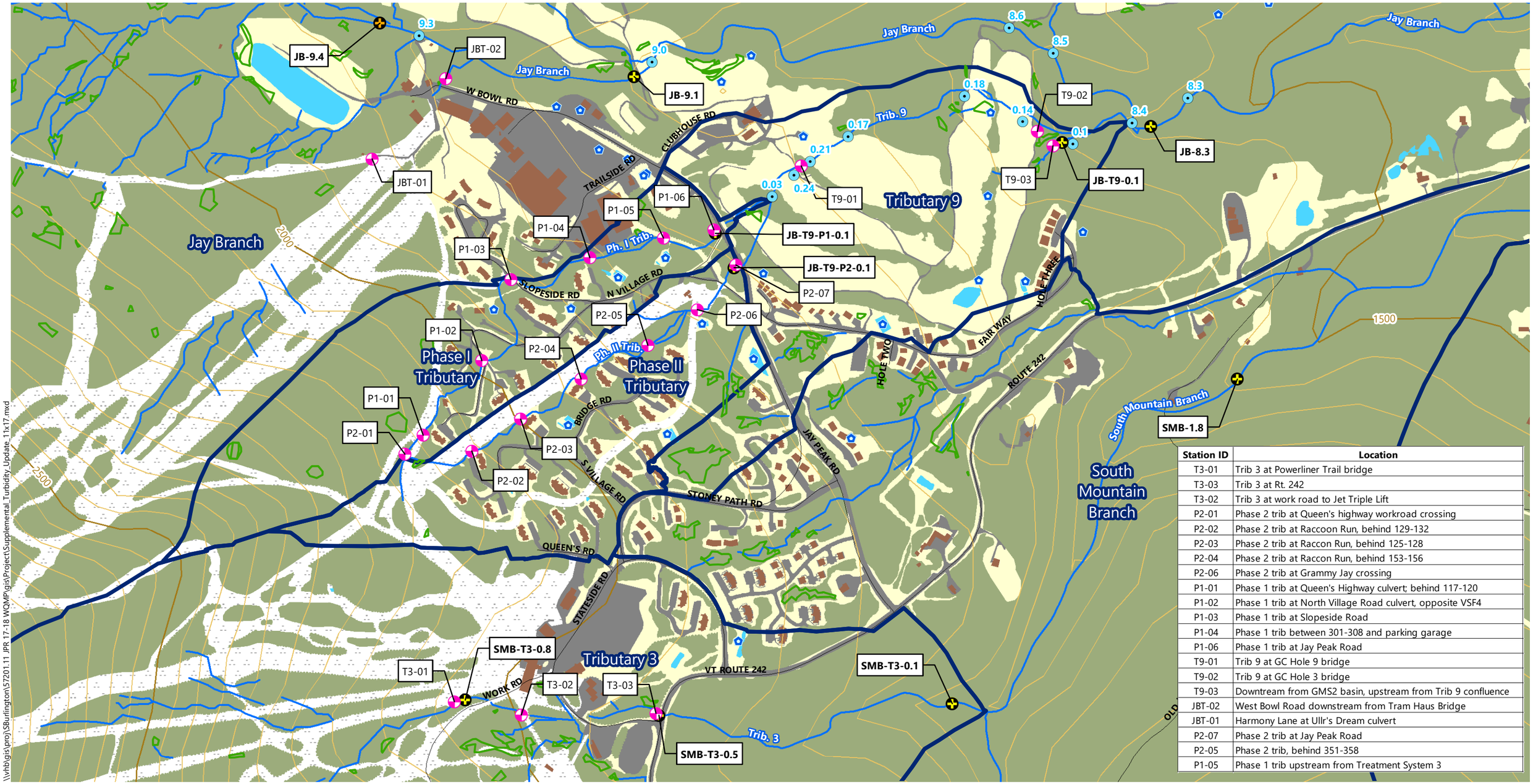
Chloride values after 2015 based on regression using Conductivity data, unless >500 umho/cm measured in the field, then a sample is collected and processed in the laboratory.

APPENDIX 4

JAY PEAK VERMONT

vhb

January 04, 2019



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, 2012)

- Water Quality Monitoring Station
- Benchmark Station
- Reference Station
- River Mile (VHB, 2012)
- Stormwater Feature (VHB)
- Wetland (VHB)
- Watershed Boundary (VHB, 2012)
- Stream (VHB/VCGI)
- Road (VTrans)
- 500 ft Contour (VCGI)
- 50 ft Contour (VCGI)

2018 Landuse/Landcover (VHB)

- Building
- Forest
- Open
- Ski Trails
- Transportation
- Water

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

\\vhb\gis\proj\SBurlington\57201.11 JPR 17-18 WQMP\gis\Project\Supplemental_Turbidity_Update_11x17.mxd

Jay Peak Resort, Jay Vermont
Water Quality Monitoring Plan 2018
Supplemental Turbidity Monitoring

	Date	Location	6/4/2018	6/18/2018	6/25/2018	6/28/2018	7/6/2018	7/17/2018	7/23/2018
	Rainfall Depth (in)		0.46	0.50	0.41	0.37	0.58	0.20	0.12
	Sampler		D/K	K	K/C	K/C	D	K/C	K
	0.02 ntu Standard (start)		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
	1000 ntu Standard (start)		1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00
	0.02 ntu Standard (end)		0.39	0.00	0.30	0.46	0.54	0.00	0.00
	10 ntu Standard (end)		11.60	11.72	10.17	11.01	9.07	10.88	10.34
	1000 ntu Standard (end)		799.40	1100.00	906.40	963.70	858.60	1049.00	1078.00
Supplemental Turbidity Monitoring Station	JBT-01	Unnamed Tributary to Jay Branch (JBT-01)	1.29	6.91	23.94	0.81	7.13	0.00	0.00
	JBT-02	Unnamed Tributary to Jay Branch (JBT-02)	2.68	9.64	6.36	2.52	17.72	0.00	14.30
	P1-01	Phase I Tributary (P1-01)	22.14	10.05	11.95	4.48	3.78	1.89	2.96
	P1-02	Phase I Tributary (P1-02)	3.40	7.76	9.00	2.70	11.28	1.32	0.01
	P1-03	Phase I Tributary (P1-03)	3.99	18.19	16.58	1.47	14.77	1.79	0.00
	P1-04	Phase I Tributary (P1-04)	2.79	17.16	8.34	1.56	14.69	0.68	0.00
	P1-05	Phase I Tributary (P1-05)	0.15	8.51	16.50	4.76	16.84	Dry	Dry
	P1-06	Phase I Tributary (P1-06)	0.54	40.85	32.55	0.53	25.56	Dry	Dry
	P2-01	Phase II Tributary (P2-01)	0.69	8.25	10.24	3.12	6.20	Dry	Dry
	P2-02	Phase II Tributary (P2-02)	0.48	10.06	40.91	7.45	6.74	12.19	2.17
	P2-03	Phase II Tributary (P2-03)	13.63	14.44	36.12	2.56	13.82	1.76	0.00
	P2-04	Phase II Tributary (P2-04)	16.90	13.96	45.41	8.70	40.81	3.26	0.32
	P2-05	Phase II Tributary (P2-05)	14.20	17.03	41.45	3.73	17.81	4.08	Dry
	P2-06	Phase II Tributary (P2-06)	1.78	17.63	10.18	1.53	7.01	1.67	0.35
	P2-07	Phase II Tributary (P2-07)	4.68	32.09	24.17	6.82	23.38	22.74	3.39
	T9-01	Tributary 9 to Jay Branch (T9-01)	30.43	29.20	23.16	12.80	61.91	17.21	9.95
	T9-02	Tributary 9 to Jay Branch (T9-02)	30.07	3.33	15.94	3.56	68.79	22.22	28.06
	T9-03	Tributary 9 to Jay Branch (T9-03)	25.62	4.34	22.30	9.29	77.70	16.12	16.88
	SMB-T3-01	Tributary 3 to South Mountain Branch (T3-01)	3.65	19.64	43.15	0.98	6.02	1.69	0.00
	SMB-T3-02	Tributary 3 to South Mountain Branch (T3-02)	1.34	9.60	42.57	3.73	7.05	1.42	0.00
	SMB- T3-03	Tributary 3 to South Mountain Branch (T3-03)	1.10	18.11	52.33	6.61	3.18	3.98	4.00

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 2018
Supplemental Turbidity Monitoring

	Date	Location	7/26/2018	8/9/2018	8/28/2018	9/4/2018	9/11/2018	9/26/2018	9/27/2018
	Rainfall Depth (in)		1.54	1.08	0.17	1.66	1.24	0.13	1.58
	Sampler		K/D	K	K/C	K	K/C	K/B	K
	0.02 ntu Standard (start)		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
	1000 ntu Standard (start)		1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00
	0.02 ntu Standard (end)		0.00	0.16	0.31	0.20	0.00	1.42	0.00
	10 ntu Standard (end)		11.23	11.67	11.10	10.51	11.26	12.13	10.42
	1000 ntu Standard (end)		1100.00	1100.00	1071.00	1029.00	1100.00	906.3	1050.00
Supplemental Turbidity Monitoring Station	JBT-01	Unnamed Tributary to Jay Branch (JBT-01)	11.51	0.68	0.65	0.00	3.30	0.00	1.62
	JBT-02	Unnamed Tributary to Jay Branch (JBT-02)	8.61	1.54	0.33	0.00	2.41	0.00	1.22
	P1-01	Phase I Tributary (P1-01)	2.56	1.49	0.01	0.23	0.78	7.57	0.65
	P1-02	Phase I Tributary (P1-02)	35.05	4.03	0.00	0.00	7.51	2.40	2.84
	P1-03	Phase I Tributary (P1-03)	23.45	5.01	0.74	1.70	10.58	2.66	1.42
	P1-04	Phase I Tributary (P1-04)	14.60	8.84	1.39	4.50	10.07	0.00	1.32
	P1-05	Phase I Tributary (P1-05)	10.40	25.70	0.54	78.66	21.35	0.08	18.23
	P1-06	Phase I Tributary (P1-06)	18.39	18.08	0.31	40.30	25.48	0.00	14.69
	P2-01	Phase II Tributary (P2-01)	1.56	0.66	Dry	0.00	6.20	Dry	0.50
	P2-02	Phase II Tributary (P2-02)	20.95	8.89	1.50	0.83	15.88	3.81	2.03
	P2-03	Phase II Tributary (P2-03)	22.08	1.33	1.79	0.71	7.21	0.34	1.18
	P2-04	Phase II Tributary (P2-04)	15.57	2.40	1.22	46.19	17.53	0.00	1.07
	P2-05	Phase II Tributary (P2-05)	23.87	2.11	0.50	16.16	14.20	0.00	0.70
	P2-06	Phase II Tributary (P2-06)	16.11	2.92	0.82	1.05	12.79	0.00	5.06
	P2-07	Phase II Tributary (P2-07)	14.31	9.95	0.83	11.29	11.95	0.00	6.48
	T9-01	Tributary 9 to Jay Branch (T9-01)	26.09	18.61	1.04	39.36	No Data	0.00	10.75
	T9-02	Tributary 9 to Jay Branch (T9-02)	24.01	24.36	0.01	12.21	12.30	0.00	10.48
	T9-03	Tributary 9 to Jay Branch (T9-03)	33.54	20.28	0.00	13.63	14.25	0.00	12.36
	SMB-T3-01	Tributary 3 to South Mountain Branch (T3-01)	11.31	0.00	0.00	0.00	1.88	0.00	0.00
	SMB-T3-02	Tributary 3 to South Mountain Branch (T3-02)	6.19	1.38	0.00	0.00	1.33	0.00	0.00
	SMB- T3-03	Tributary 3 to South Mountain Branch (T3-03)	7.40	0.00	0.02	0.00	1.46	0.00	0.00

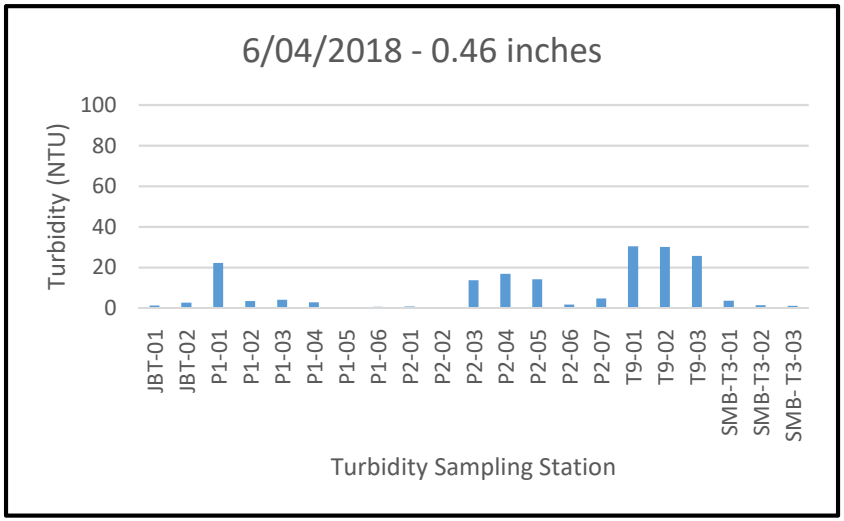
Notes:
All values reported as NTU
Highlighted cells indicate dry conditions or greater than 25 NTU

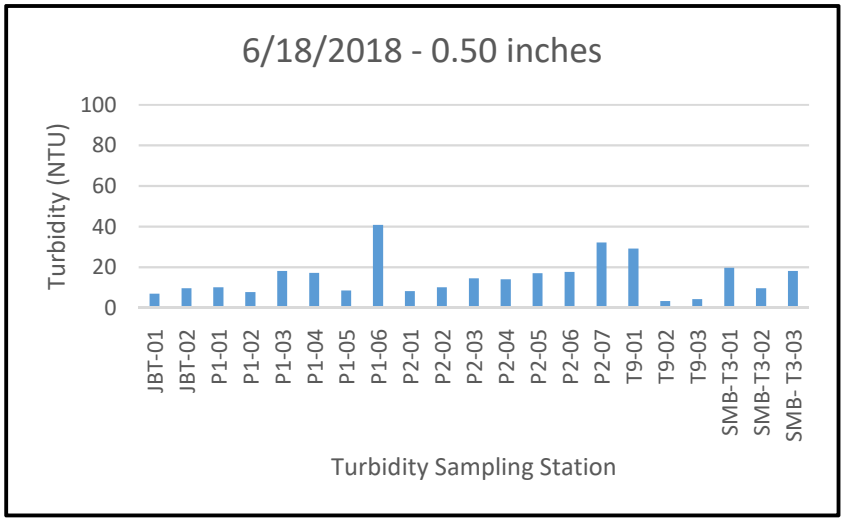
Jay Peak Resort, Jay Vermont
Water Quality Monitoring Plan 2018
Supplemental Turbidity Monitoring

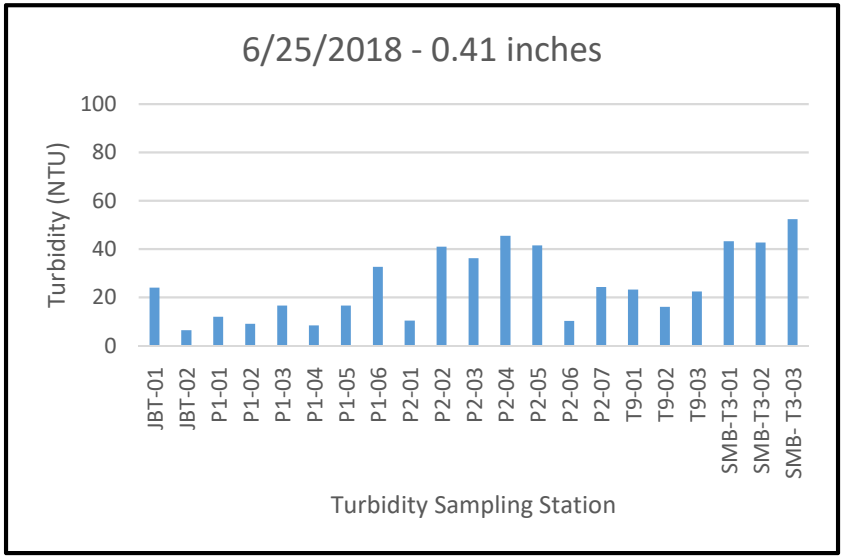
	Date	Location	9/28/2018	10/2/2018	10/11/2018	10/12/2018	10/30/2018	11/2/2018
	Rainfall Depth (in)		0.13	0.46	0.58	0.87	0.12	1.08
	Sampler		K	K	K/L	K	K	K/C
	0.02 ntu Standard (start)		0.02	0.02	0.02	0.02	0.02	0.02
	10 ntu Standard (start)		10.00	10.00	10.00	10.00	10.00	10.00
	1000 ntu Standard (start)		1000.00	1000.00	1000.00	1000.00	1000.00	1000.00
	0.02 ntu Standard (end)		1.08	0.00	5.88	0.83	0.00	0.00
	10 ntu Standard (end)		9.87	10.64	15.76	10.21	11.32	11.89
	1000 ntu Standard (end)		638.50	1100.00	979.40	796.10	1037.00	9409.00
Supplemental Turbidity Monitoring Station	JBT-01	Unnamed Tributary to Jay Branch (JBT-01)	0.29	5.58	10.38	1.45	0.00	2.08
	JBT-02	Unnamed Tributary to Jay Branch (JBT-02)	0.08	4.30	9.21	1.38	0.00	1.43
	P1-01	Phase I Tributary (P1-01)	1.62	3.33	4.19	1.27	0.38	1.63
	P1-02	Phase I Tributary (P1-02)	0.53	12.61	29.44	4.55	0.00	12.37
	P1-03	Phase I Tributary (P1-03)	1.85	15.34	27.56	2.45	0.12	159.70
	P1-04	Phase I Tributary (P1-04)	0.43	12.36	19.99	0.84	0.15	17.18
	P1-05	Phase I Tributary (P1-05)	6.58	9.27	42.47	3.10	0.00	4.11
	P1-06	Phase I Tributary (P1-06)	5.45	18.96	7.08	3.38	0.00	16.57
	P2-01	Phase II Tributary (P2-01)	1.62	13.64	29.47	1.48	0.38	3.38
	P2-02	Phase II Tributary (P2-02)	2.51	16.98	31.54	3.40	1.86	24.86
	P2-03	Phase II Tributary (P2-03)	1.17	16.04	17.46	3.44	1.44	20.21
	P2-04	Phase II Tributary (P2-04)	2.05	10.79	16.40	3.32	1.04	22.34
	P2-05	Phase II Tributary (P2-05)	0.23	8.40	18.21	3.48	0.38	23.01
	P2-06	Phase II Tributary (P2-06)	0.25	4.88	24.43	3.04	1.35	6.94
	P2-07	Phase II Tributary (P2-07)	0.79	9.03	40.05	3.40	0.00	10.42
	T9-01	Tributary 9 to Jay Branch (T9-01)	2.31	6.31	33.48	4.48	0.64	10.28
	T9-02	Tributary 9 to Jay Branch (T9-02)	1.11	4.38	16.29	4.24	0.00	16.33
	T9-03	Tributary 9 to Jay Branch (T9-03)	1.03	5.41	18.67	4.08	0.00	19.13
	SMB-T3-01	Tributary 3 to South Mountain Branch (T3-01)	0.00	0.00	1.97	1.51	0.94	1.64
	SMB-T3-02	Tributary 3 to South Mountain Branch (T3-02)	0.00	0.00	1.30	1.32	0.27	1.34
	SMB- T3-03	Tributary 3 to South Mountain Branch (T3-03)	0.00	0.00	1.27	2.56	5.86	7.05

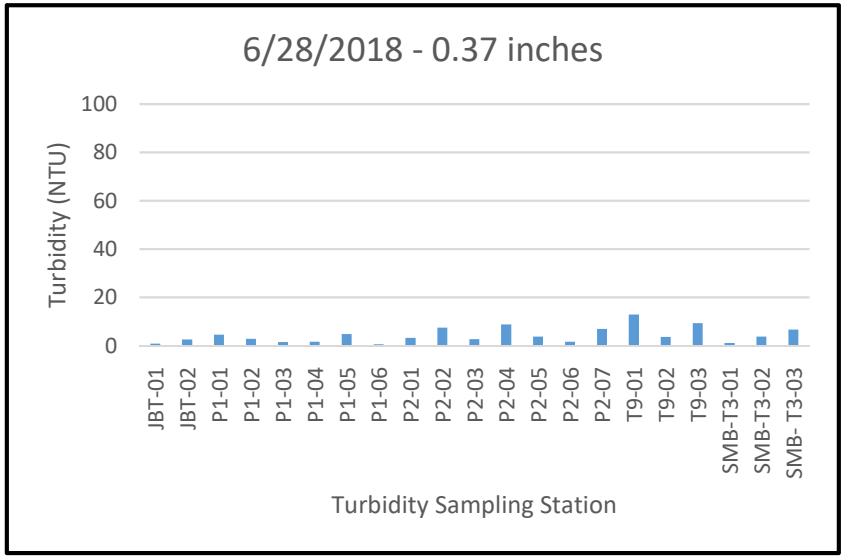
Notes:
All values reported as NTU
Highlighted cells indicate dry conditions or greater than 25 NTU

Jay Peak Resort
Supplemental Turbidity Monitoring Results
2018 Rainfall Events

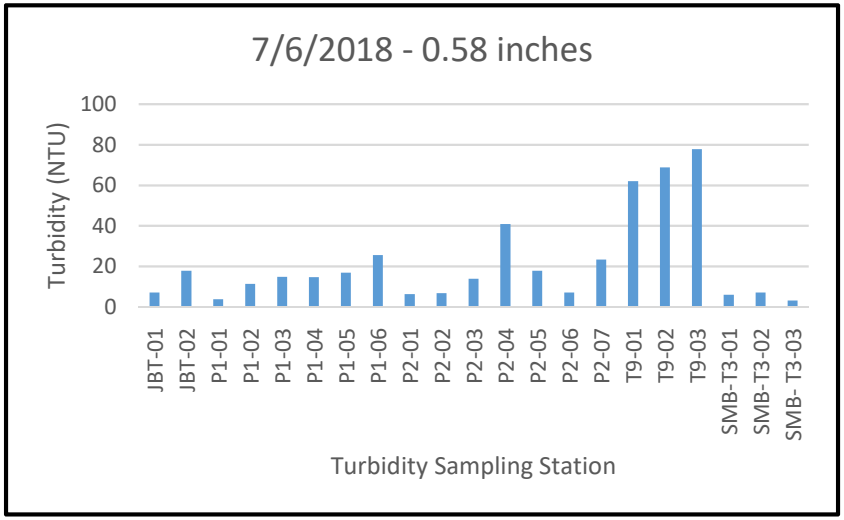


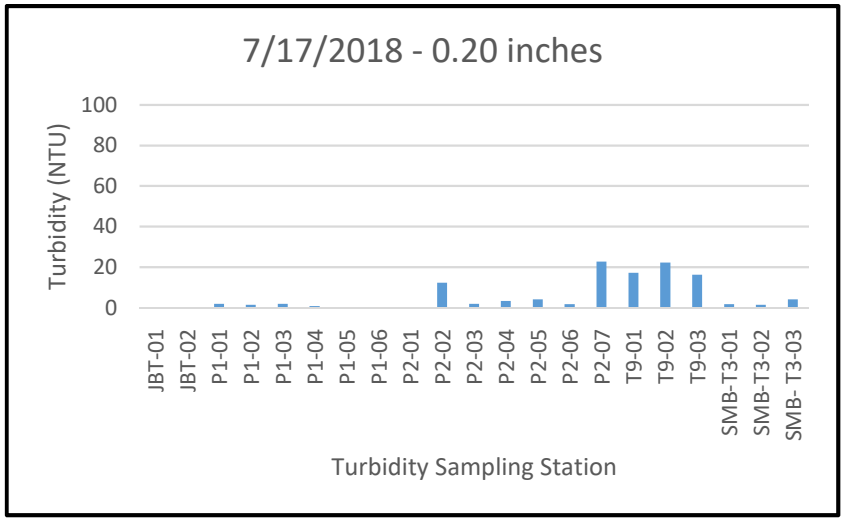


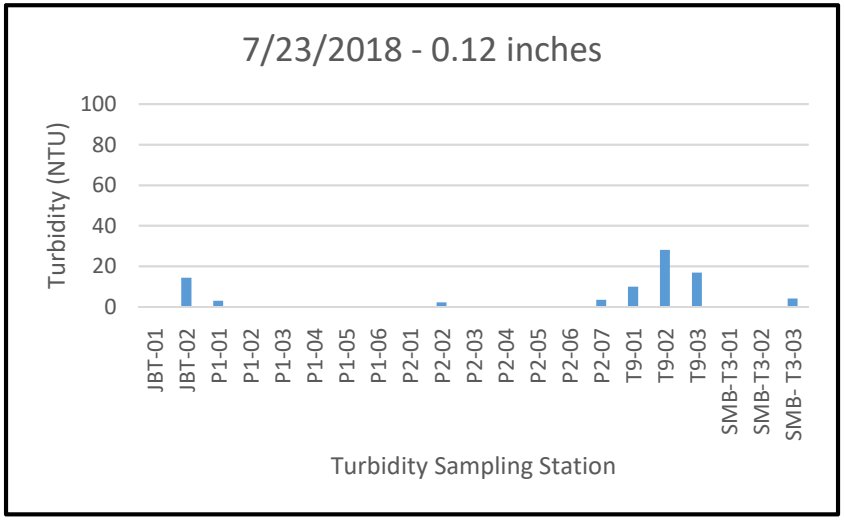


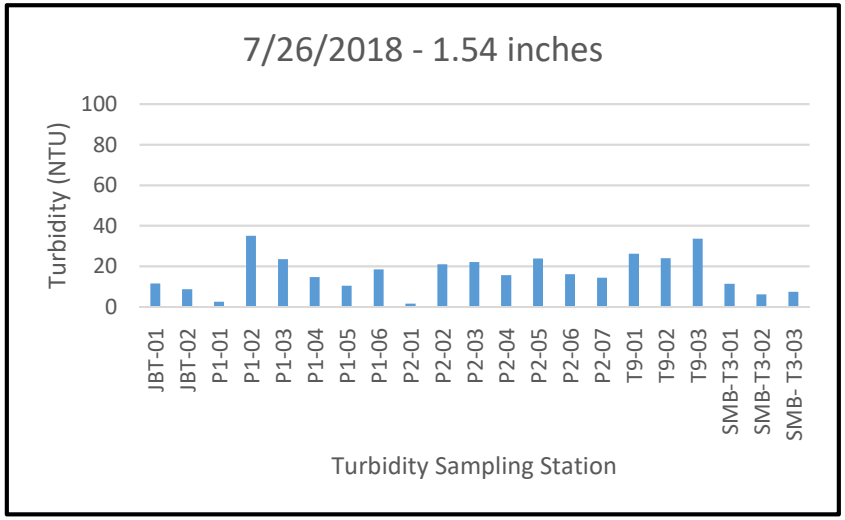


Jay Peak Resort
Supplemental Turbidity Monitoring Results
2018 Rainfall Events

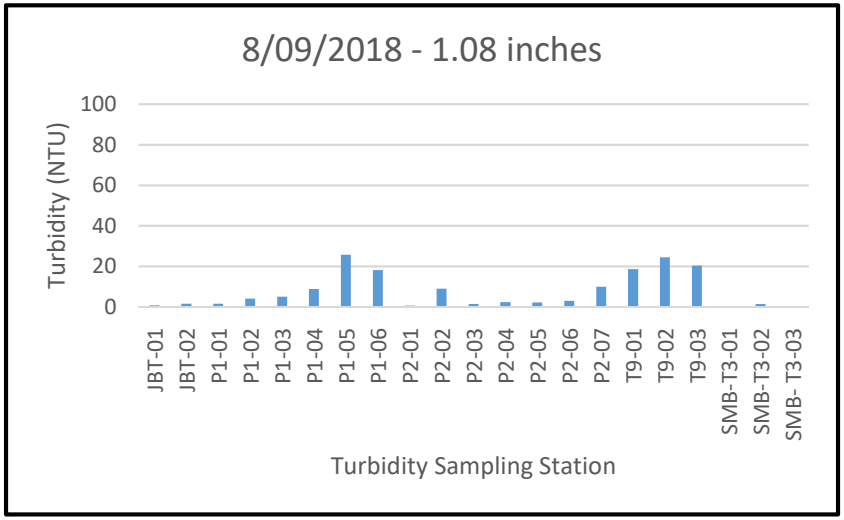


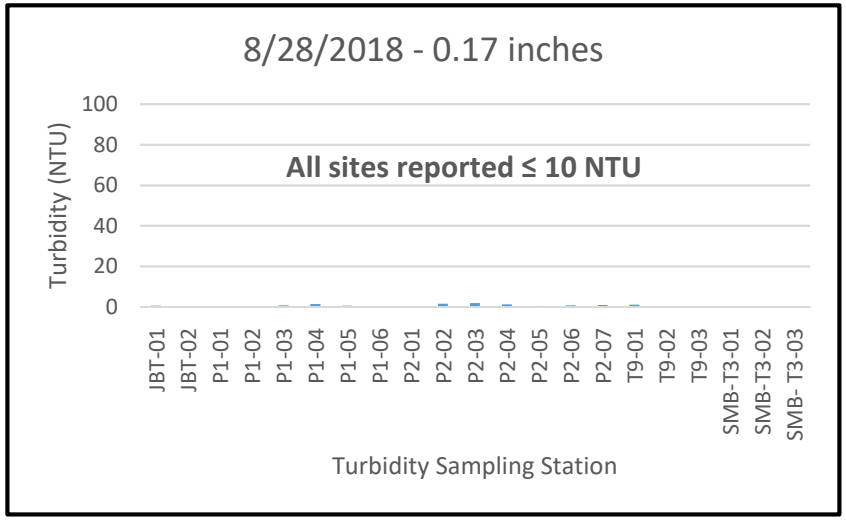


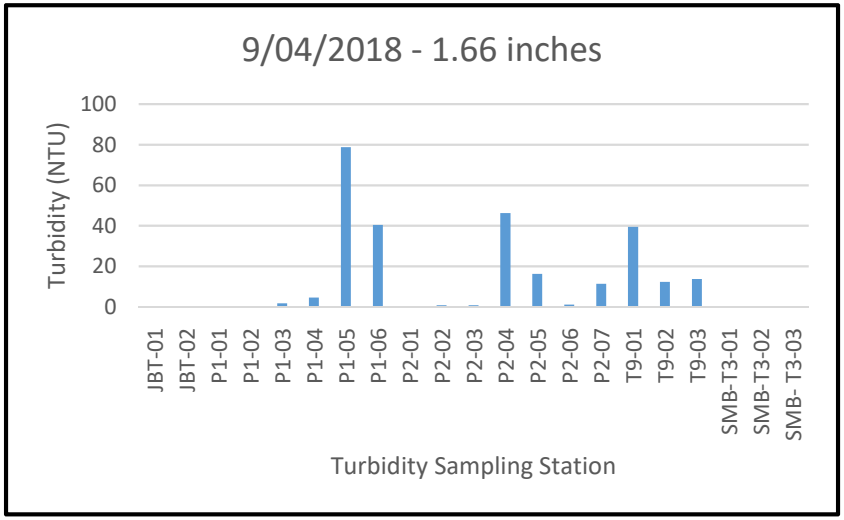


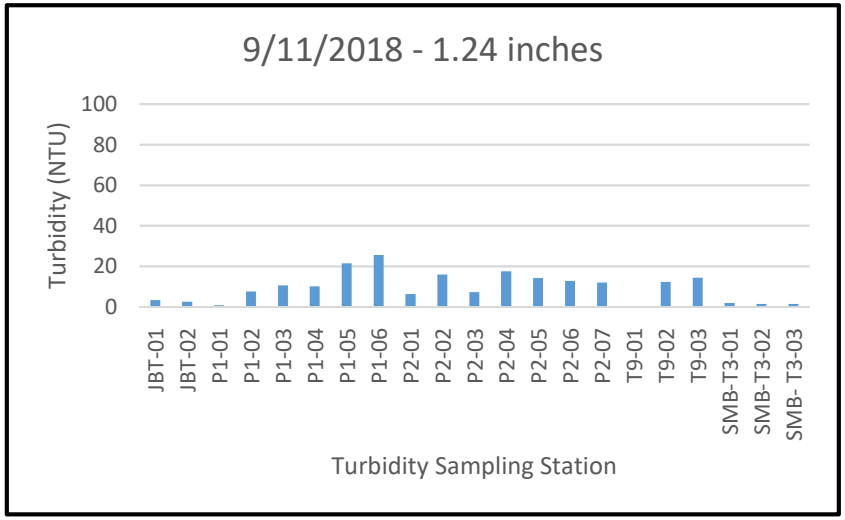


Jay Peak Resort
Supplemental Turbidity Monitoring Results
2018 Rainfall Events

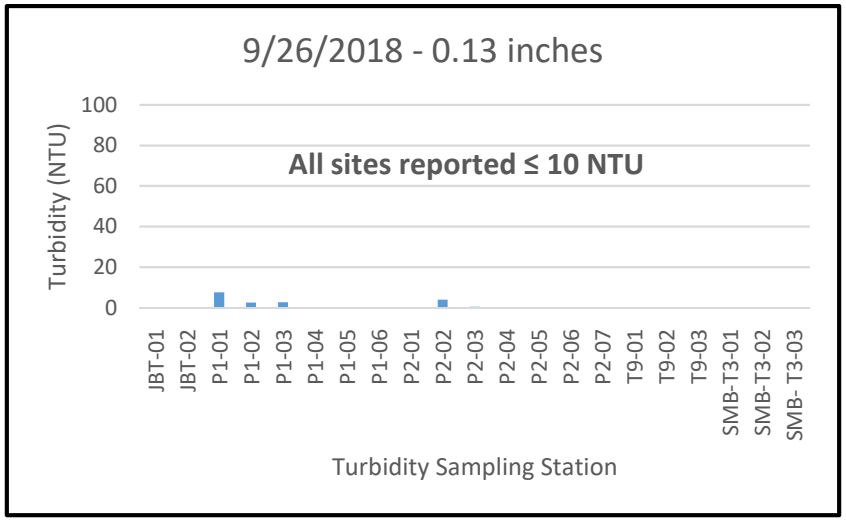


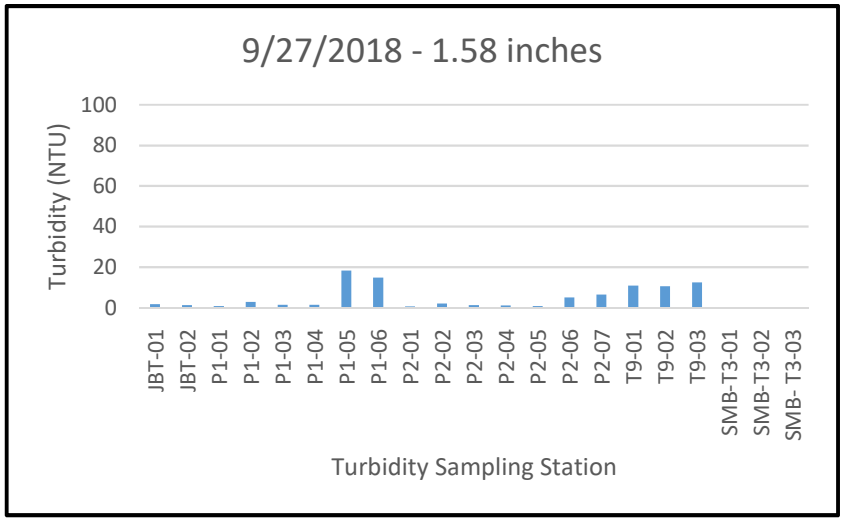


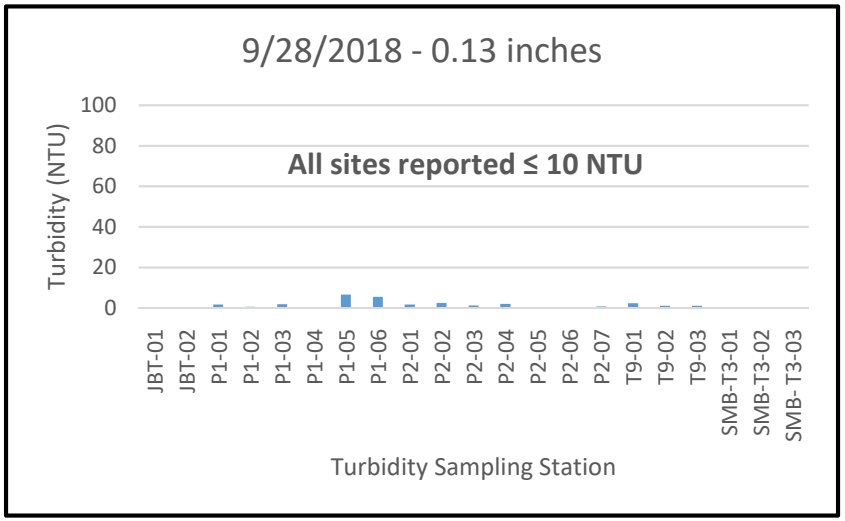


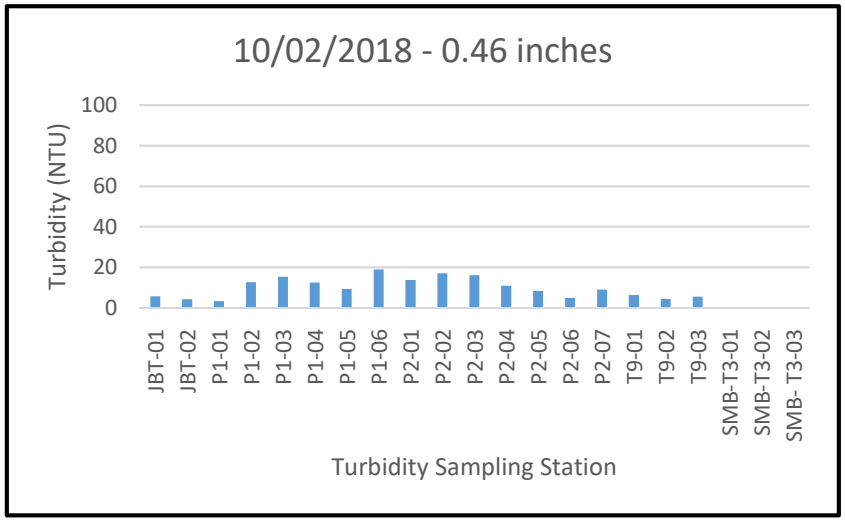


Jay Peak Resort
Supplemental Turbidity Monitoring Results
2018 Rainfall Events

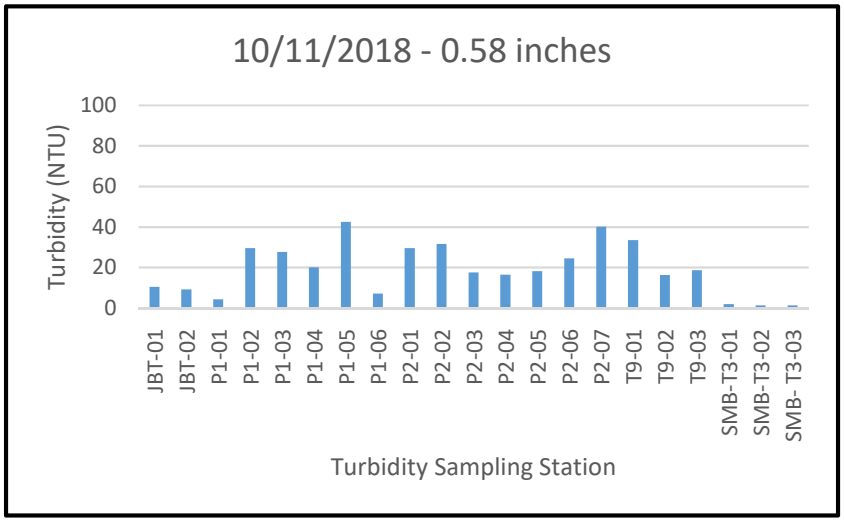


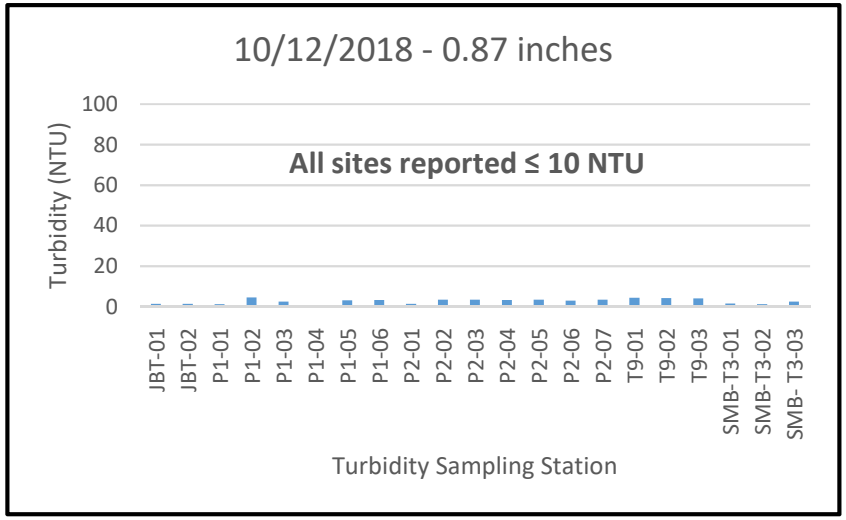


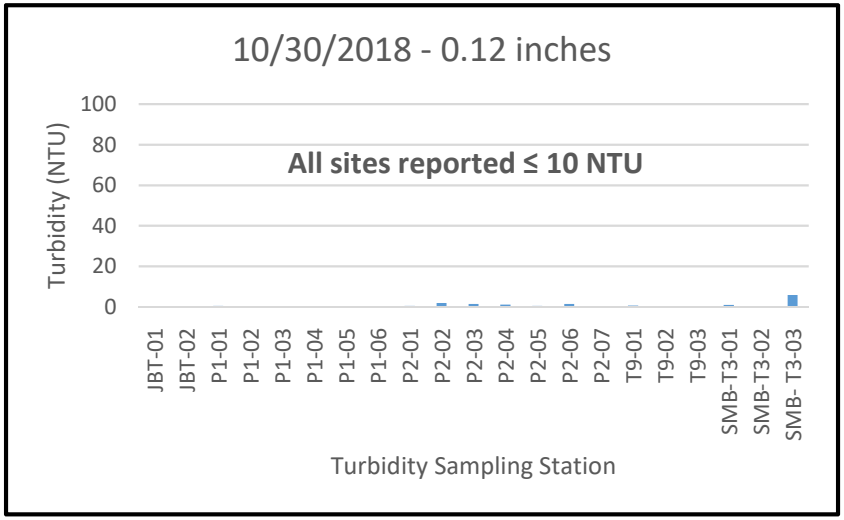


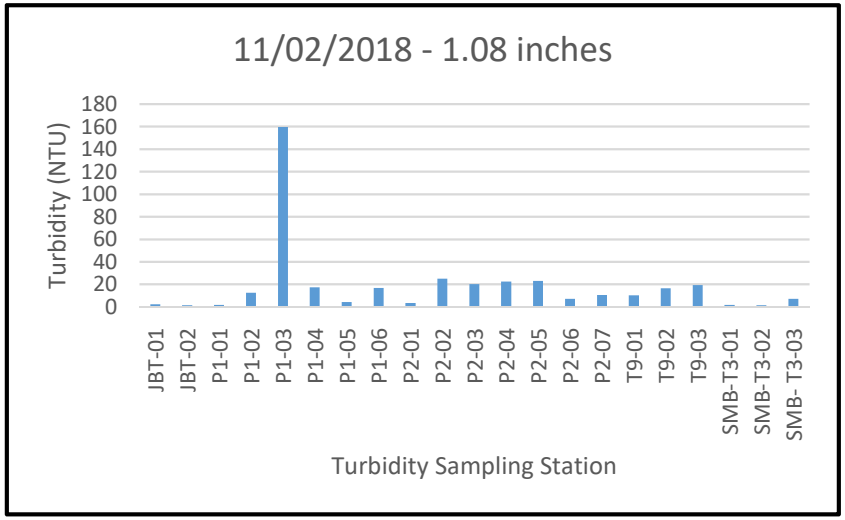


Jay Peak Resort
Supplemental Turbidity Monitoring Results
2018 Rainfall Events









APPENDIX 5

Jay Peak Water Quality Monitoring Plan 2018
Substrate Sampling Summary
Prepared by VHB on: January 7, 2019

Pebble Count and Sediment Monitoring Observations 2004-2018

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
		2017	0-25%	0.0	0.0	>256
		2018	5-25%	0.0	0.0	16-64

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
		2017	0-25%	0.0	0.0	64-256
		2018	5-25%	0.0	0.0	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
\\vhb\gbl\proj\SBurlington\57201.12 JPR 18-19 WQMP\tech\Biomonitoring\Jay Pebble Counts.xlsx, 3/19/2019

Jay Peak Water Quality Monitoring Plan 2018
Substrate Sampling Summary
Prepared by VHB on: January 7, 2019

Pebble Count and Sediment Monitoring Observations 2004-2018

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
		2017	0-25%	2.0	2.0	64-256
		2018	25-50%	4.0	4.0	16-64

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
		2017	0-25%	3	3	64-256
		2018	0-25%	3	3	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
\\vhb\gbl\proj\SBurlington\57201.12 JPR 18-19 WQMP\tech\Biomonitoring\Jay Pebble Counts.xlsx, 3/19/2019

Jay Peak Water Quality Monitoring Plan 2018
Substrate Sampling Summary
Prepared by VHB on: January 7, 2019

Pebble Count and Sediment Monitoring Observations 2004-2018

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			
		2017	No sample collected			
		2018	50-75%	14	14	2-16

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			
		2017	No sample collected			
		2018	25-50%	7	7	2-16

'--- no data available
*** no percentage due to size class variation
2004 data from Pioneer Environmental Associates LLC.
2005 and 2006 data from ESI
\\vhb\gbl\proj\SBurlington\57201.12 JPR 18-19 WQMP\tech\Biomonitoring\Jay Pebble Counts.xlsx, 3/19/2019

Jay Peak Water Quality Monitoring Plan 2018
Substrate Sampling Summary
Prepared by VHB on: January 7, 2019

Pebble Count and Sediment Monitoring Observations 2004-2018

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
		2017	25-50%	8	10	64-256
		2018	5-25%	10	10	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
		2017	0-25%	1	1	>256
		2018	0-25%	8	8	64-256

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			
		2017	No sample collected			
		2018	25-50%	2	2	16-64

'--- no data available
*** no percentage due to size class variation
2004 data from Pioneer Environmental Associates LLC.
2005 and 2006 data from ESI
\\vhb\gbl\proj\SBurlington\57201.12 JPR 18-19 WQMP\tech\Biomonitoring\Jay Pebble Counts.xlsx, 3/19/2019

Jay Peak Water Quality Monitoring Plan 2018
Substrate Sampling Summary
Prepared by VHB on: January 7, 2019

Pebble Count and Sediment Monitoring Observations 2004-2018

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
		2017	25-50%	2	2	64-256
		2018	25-50%	7	7	16-64

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			
		2017	No sample collected			
		2018	5-25%	8	8	16-64

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
		2017	0-25%	3	3	64-256
		2018	0-25%	11	11	16-64

'--- no data available
*** no percentage due to size class variation
2004 data from Pioneer Environmental Associates LLC.
2005 and 2006 data from ESI
\\vhb\gbl\proj\SBurlington\57201.12 JPR 18-19 WQMP\tech\Biomonitoring\Jay Pebble Counts.xlsx, 3/19/2019

Jay Peak Water Quality Monitoring Plan 2018
Substrate Sampling Summary
Sample Location: JB-T13-0.2
Sampling Date: October 8, 2018
Samplers: TB, CS
Prepared by VHB on: January 7, 2019

Station Habitat Observations	Sub-1
Canopy cover:	80%
Embeddedness:	15%
Bank stability:	Exceeded

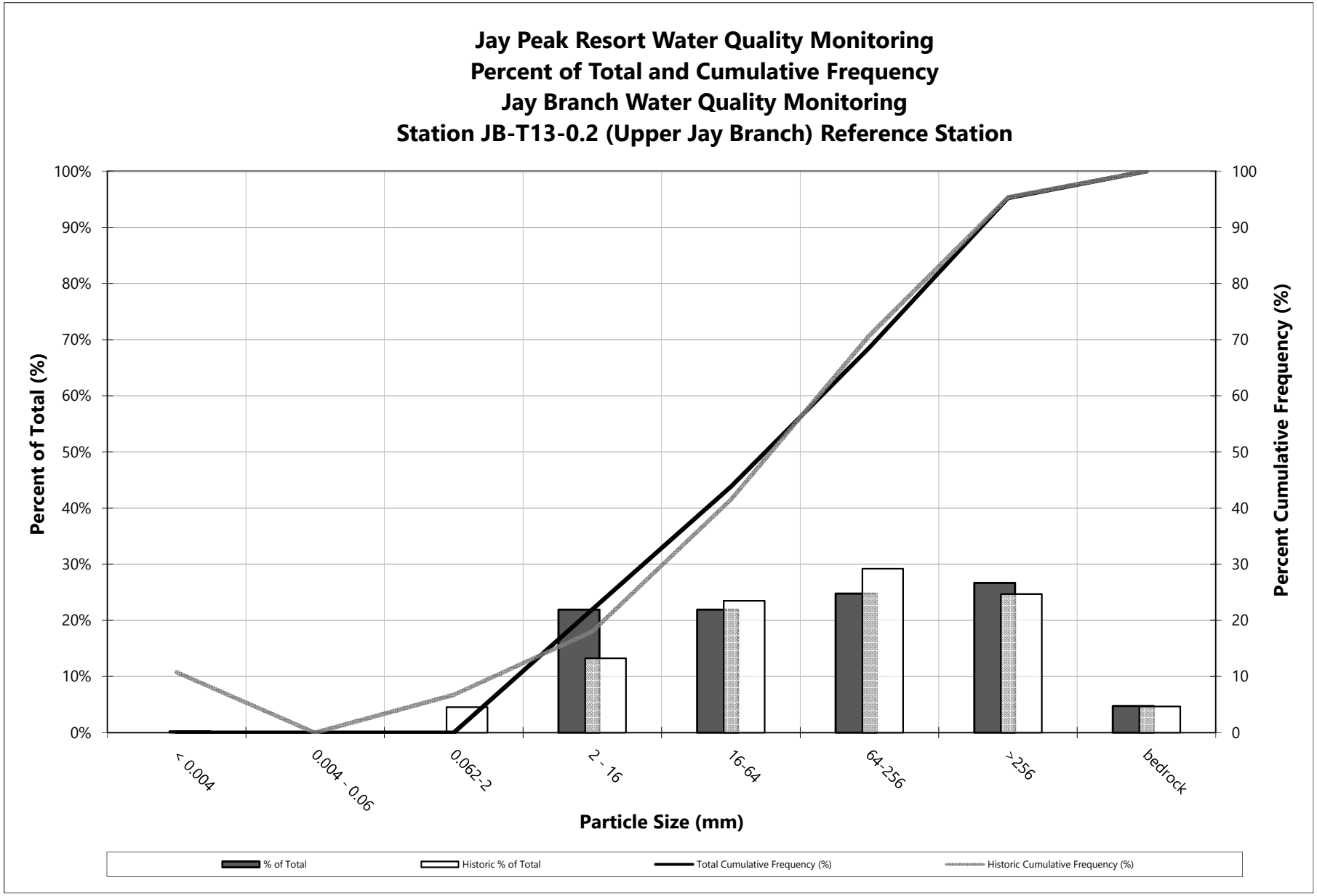
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	0	0%	0	0
Gravel	2 - 16	23	22%	23	22
Coarse gravel	16-64	23	22%	46	44
Cobble	64-256	26	25%	72	69
Boulder	>256	28	27%	100	95
Bedrock	bedrock	5	5%	105	100
	Sample Size (n)	105	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Coarse Gravel
Dominant Size Class	Boulder
% Fines	0%
% Particles < 2 mm	0%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	47	5	8	23

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

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	18	63	-	-	-	-	-


Jay Peak Resort Water Quality Monitoring
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station JB-T13-0.2 (Upper Jay Branch) Reference Station
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 2018
Substrate Sampling Summary
Sample Location: JB-9.1
Sampling Date: October 8, 2018
Samplers: TB, CS
Prepared by VHB on: January 7, 2019

Station Habitat Observations	Sub-1
Canopy cover:	60%
Embeddedness:	15%
Bank stability:	Very Good

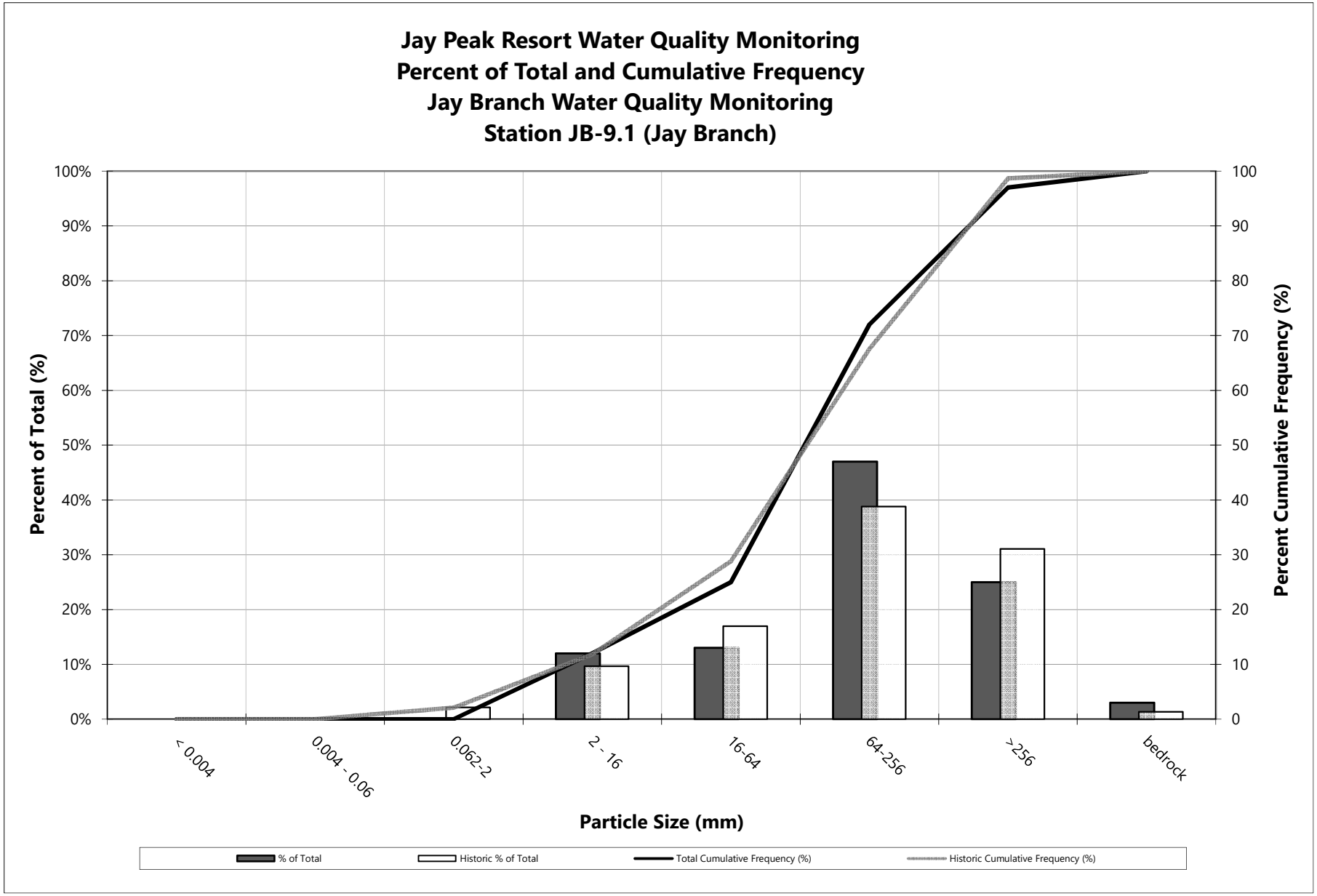
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	0	0%	0	0
Gravel	2 - 16	12	12%	12	12
Coarse gravel	16-64	13	13%	25	25
Cobble	64-256	47	47%	72	72
Boulder	>256	25	25%	97	97
Bedrock	bedrock	3	3%	100	100
	Sample Size (n)	100	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	58	7	7	16

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

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	6	82	-	-	-	-	-


Jay Peak Resort Water Quality Monitoring
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station JB-9.1 (Jay Branch)
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 2018
Substrate Sampling Summary
Sample Location: JB-8.3
Sampling Date: October 8, 2018
Samplers: TB, CS
Prepared by VHB on: January 7, 2019

Station Habitat Observations	Sub-1
Canopy cover:	50%
Embeddedness:	30%
Bank stability:	Very Good

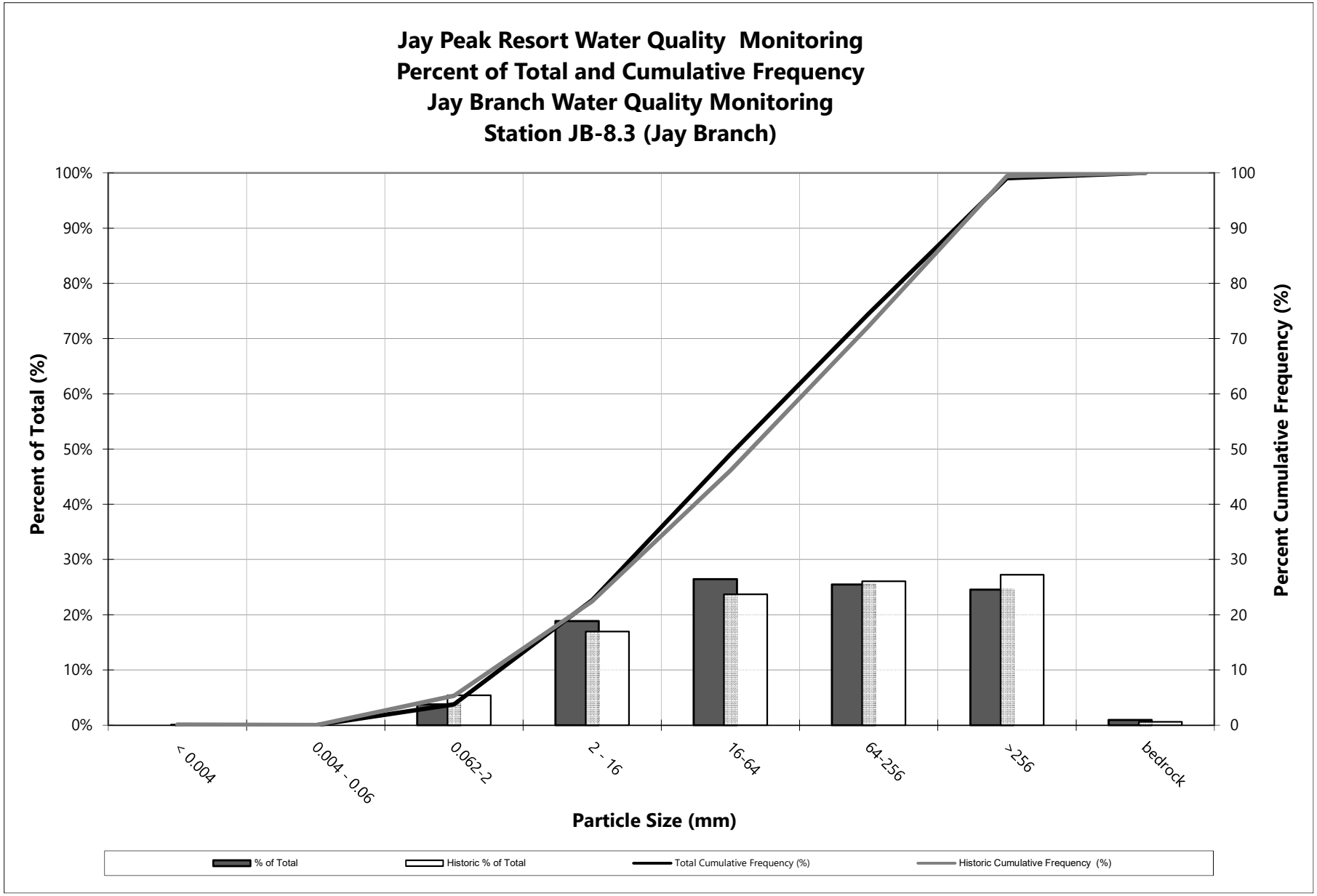
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	4	4%	4	4
Gravel	2 - 16	20	19%	24	23
Coarse gravel	16-64	28	26%	52	49
Cobble	64-256	27	25%	79	75
Boulder	>256	26	25%	105	99
Bedrock	bedrock	1	1%	106	100
	Sample Size (n)	106	100%		
	Longitudinal Distance (ft)	0'-100'			

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

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	68	7	10	3

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

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	49	32	-	-	-	-	-


Jay Peak Resort Water Quality Monitoring
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station JB-8.3 (Jay Branch)
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 2018
Substrate Sampling Summary
Sample Location: JB-7.3
Sampling Date: October 10, 2018
Samplers: CS
Prepared by VHB on: January 7, 2019

Station Habitat Observations	Sub-1
Canopy cover:	80%
Embeddedness:	20%
Bank stability:	Very Good

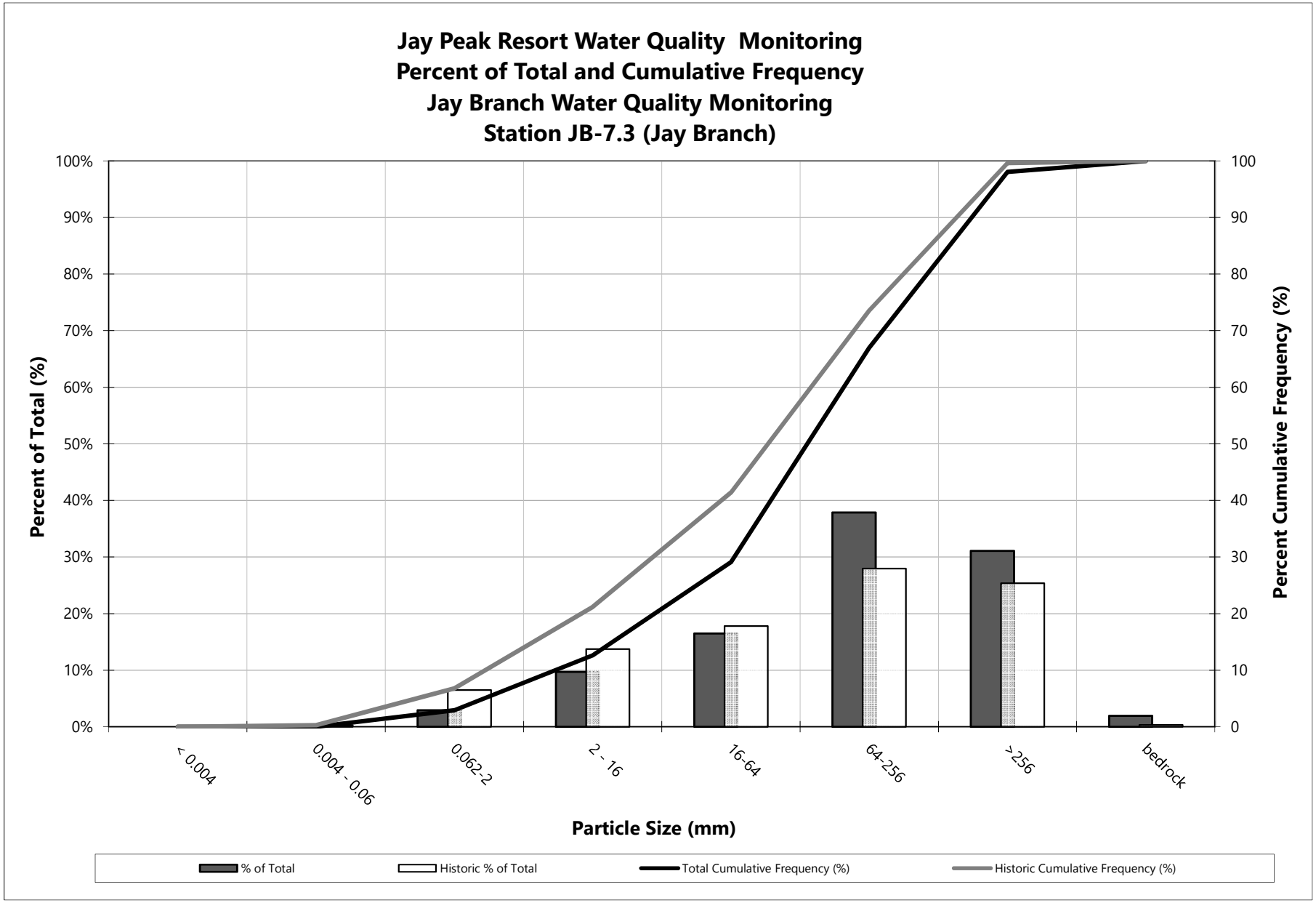
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	3	3%	3	3
Gravel	2 - 16	10	10%	13	13
Coarse gravel	16-64	17	17%	30	29
Cobble	64-256	39	38%	69	67
Boulder	>256	32	31%	101	98
Bedrock	bedrock	2	2%	103	100
	Sample Size (n)	103	100%		
	Longitudinal Distance (ft)	0'-100'			

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

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	75	8	5	1

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

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

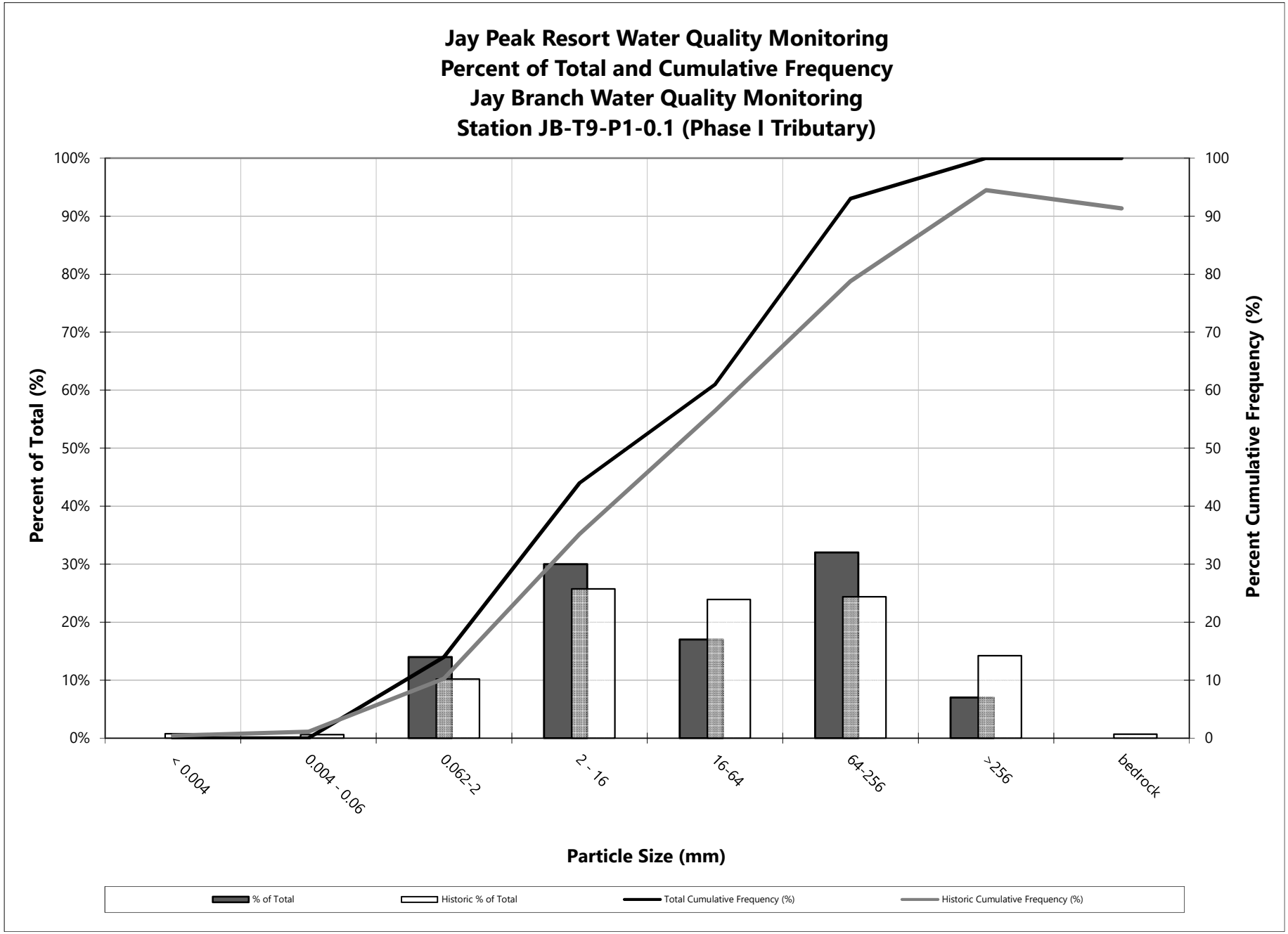

Jay Peak Resort Water Quality Monitoring
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station JB-7.3 (Jay Branch)
Percent of Total (%)
Percent Cumulative Frequency (%)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
100
90
80
70
60
50
40
30
20
10
0
< 0.004
0.004 - 0.06
0.062-2
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 2018
Substrate Sampling Summary
Sample Location: JB-T9-P1-0.1
Sampling Date: September 14, 2018
Samplers: TB
Prepared by VHB on: January 7, 2019

Station Habitat Observations	Sub-1
Canopy cover:	-
Embeddedness:	-
Bank stability:	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	14	14%	14	14
Gravel	2 - 16	30	30%	44	44
Coarse gravel	16-64	17	17%	61	61
Cobble	64-256	32	32%	93	93
Boulder	>256	7	7%	100	100
Bedrock	bedrock	0	0%	100	100
	Sample Size (n)	100	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Gravel
Dominant Size Class	Cobble
% Fines	14%
% Particles < 2 mm	14%

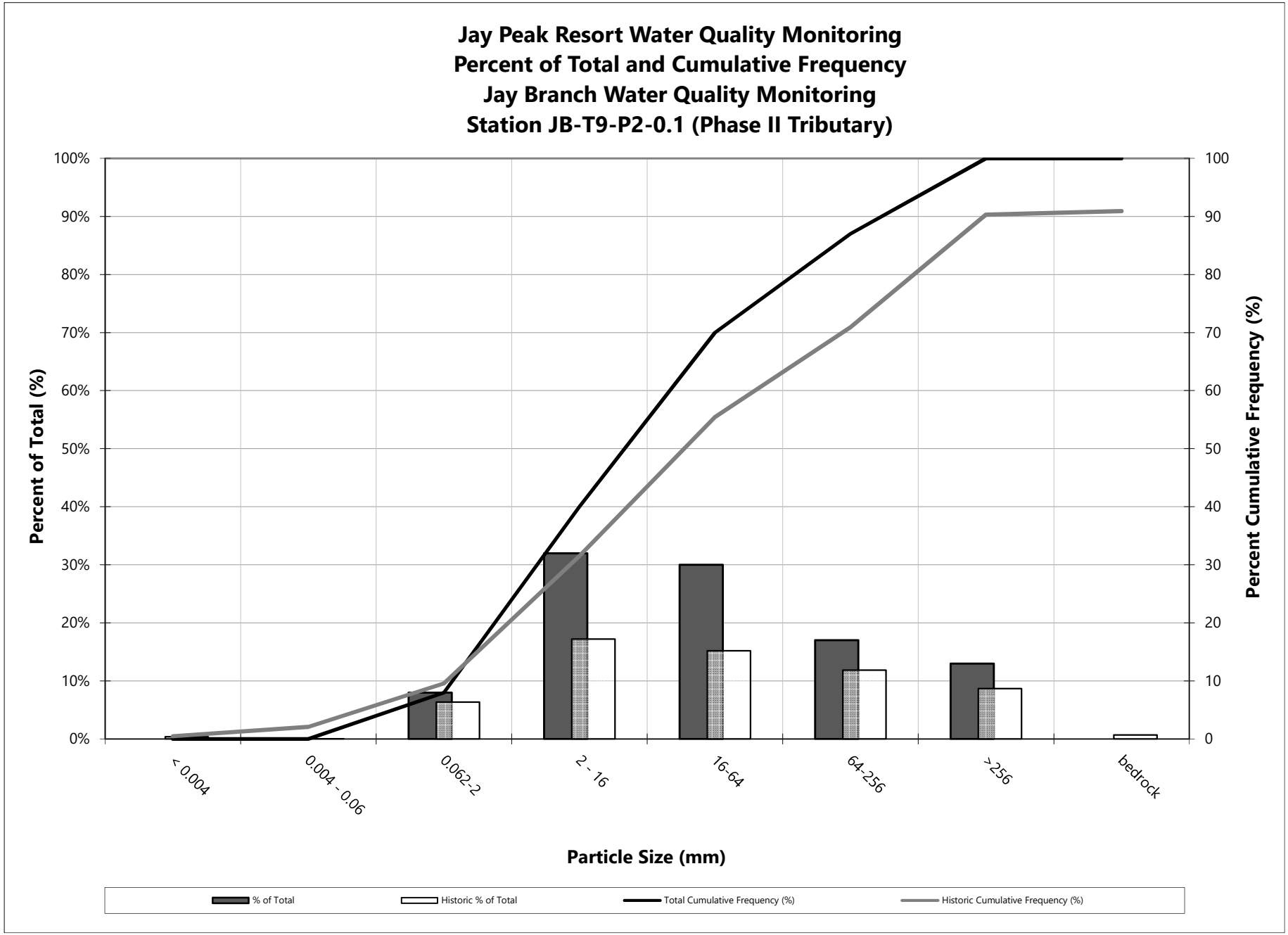

Jay Peak Resort Water Quality Monitoring
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station JB-T9-P1-0.1 (Phase I Tributary)
Percent of Total (%)
Percent Cumulative Frequency (%)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
100
90
80
70
60
50
40
30
20
10
0
< 0.004
0.004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

Jay Peak Water Quality Monitoring Plan 2018
Substrate Sampling Summary
Sample Location: JB-T9-P2-0.1
Sampling Date: September 14, 2018
Samplers: TB
Prepared by VHB on: January 7, 2019

Station Habitat Observations	Sub-1
Canopy cover:	-
Embeddedness:	-
Bank stability:	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	8	8%	8	8
Gravel	2 - 16	32	32%	40	40
Coarse gravel	16-64	30	30%	70	70
Cobble	64-256	17	17%	87	87
Boulder	>256	13	13%	100	100
Bedrock	bedrock	0	0%	100	100
	Sample Size (n)	100	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Gravel
Dominant Size Class	Gravel
% Fines	8%
% Particles < 2 mm	8%


Jay Peak Resort Water Quality Monitoring
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station JB-T9-P2-0.1 (Phase II Tributary)
Percent of Total (%)
Percent Cumulative Frequency (%)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
100
90
80
70
60
50
40
30
20
10
0
< 0.004
0.004 - 0.06
0.062-2
2 - 16
16-64
64-256
>256
bedrock
Particle Size (mm)
% of Total
Historic % of Total
Total Cumulative Frequency (%)
Historic Cumulative Frequency (%)

Jay Peak Water Quality Monitoring Plan 2018
Substrate Sampling Summary
Sample Location: JB-T9-0.1
Sampling Date: October 8, 2019
Samplers: TB, CS

Station Habitat Observations	Sub-1
Canopy cover:	70%
Embeddedness:	20%
Bank stability:	Fair

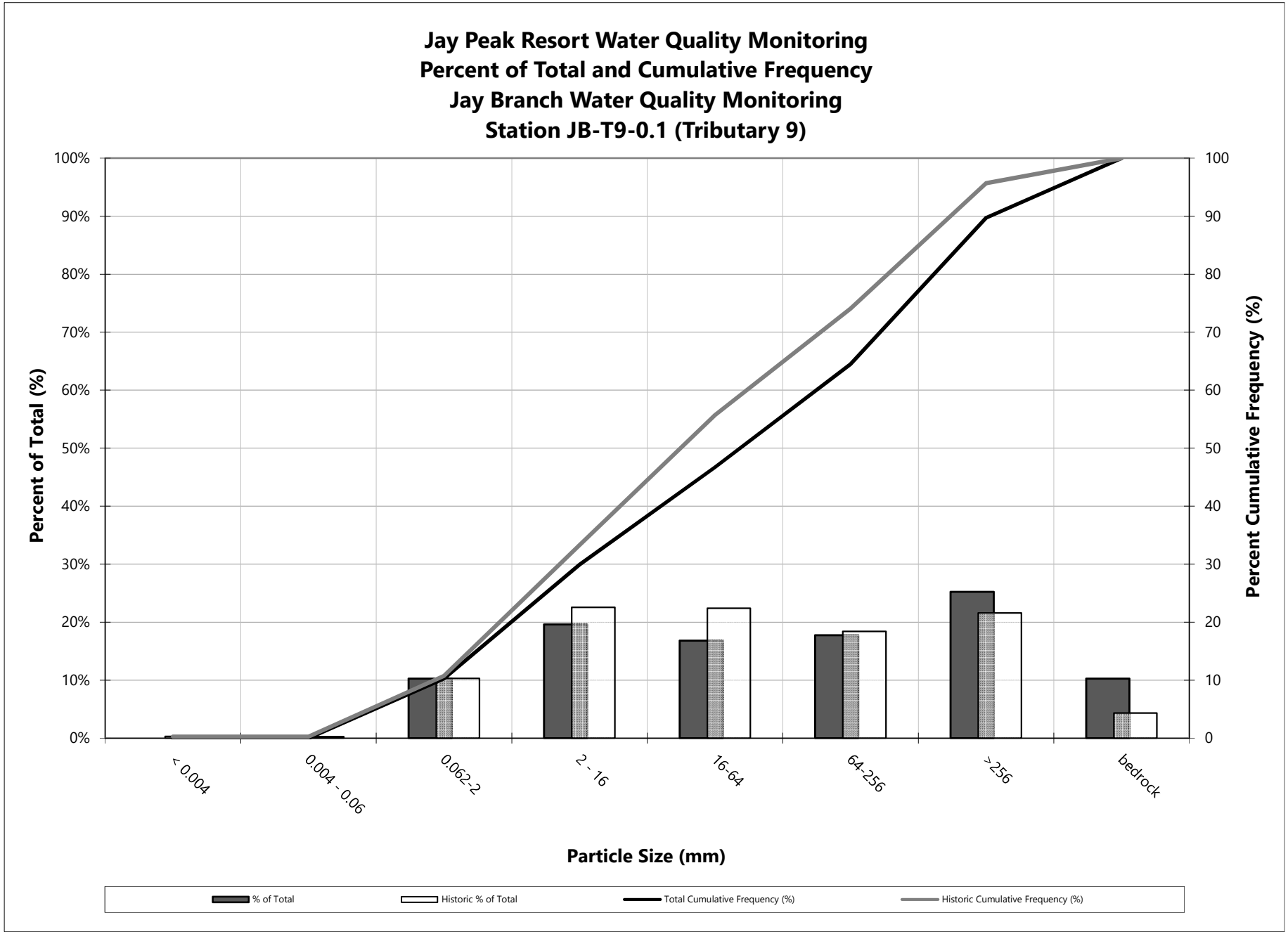
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	11	10%	11	10
Gravel	2 - 16	21	20%	32	30
Coarse gravel	16-64	18	17%	50	47
Cobble	64-256	19	18%	69	64
Boulder	>256	27	25%	96	90
Bedrock	bedrock	11	10%	107	100
	Sample Size (n)	107	100%		
	Longitudinal Distance (ft)	0'-100'			

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

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	40	9	6	15

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

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	16	52	-	-	-	-	-


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 2018
Substrate Sampling Summary
Sample Location: SMB-T3-0.8
Sampling Date: October 8, 2018
Samplers: TB, CS
Prepared by VHB on: January 7, 2019

Station Habitat Observations	Sub-1
Canopy cover:	90%
Embeddedness:	20%
Bank stability:	Very Good

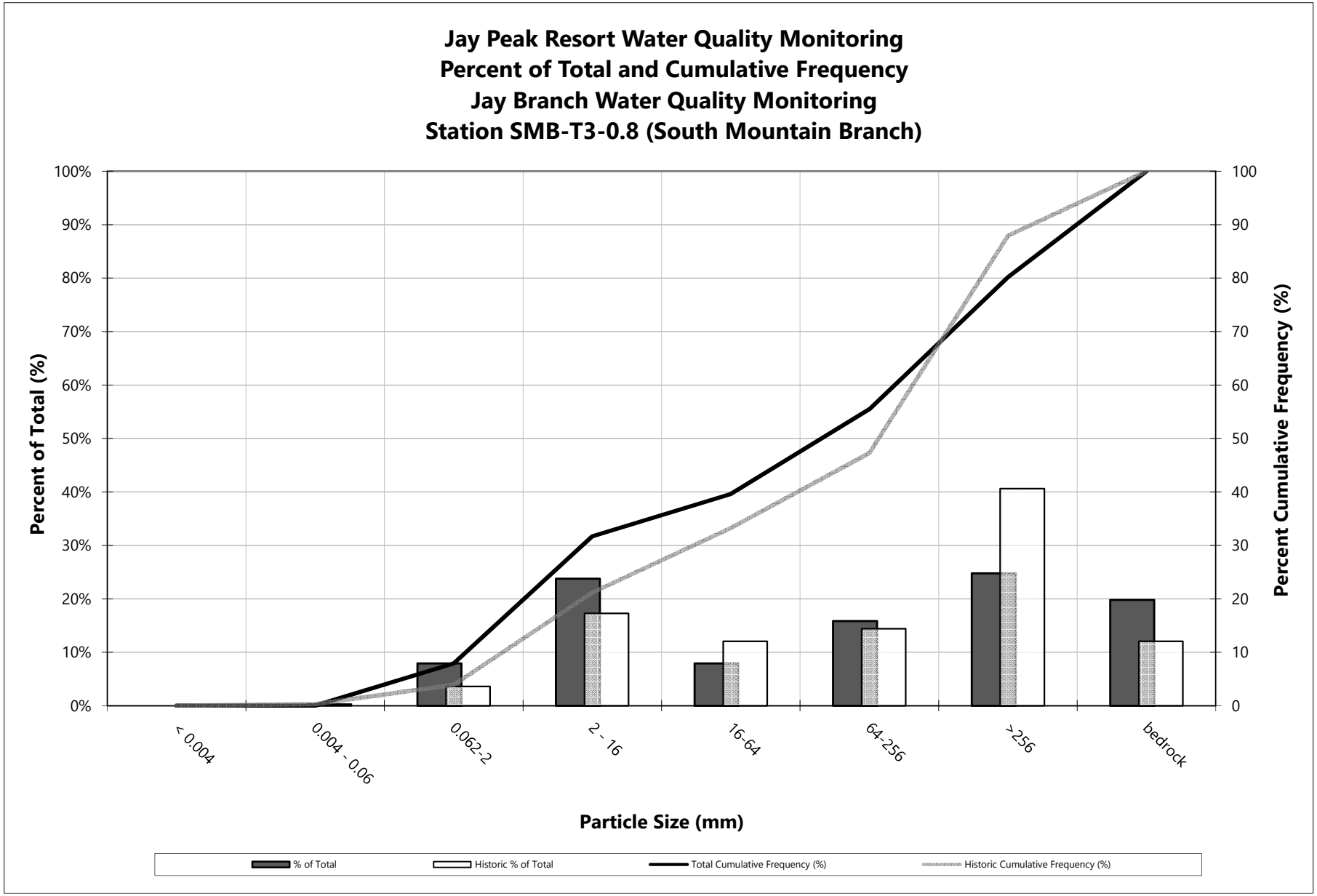
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	8	8%	8	8
Gravel	2 - 16	24	24%	32	32
Coarse gravel	16-64	8	8%	40	40
Cobble	64-256	16	16%	56	55
Boulder	>256	25	25%	81	80
Bedrock	bedrock	20	20%	101	100
	Sample Size (n)	101	100%		
	Longitudinal Distance (ft)	0'-100'			

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

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	19	6	13	29

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

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	7	60	-	-	-	-	-



\\vhb\gbl\proj\SBurlington\57201.12 JPR 18-19 WQMP\tech\Biomonitoring\Jay Pebble Counts.xlsx, 2/27/2019

Jay Peak Water Quality Monitoring Plan 2018
Substrate Sampling Summary
Sample Location: SMB-T3-0.5
Sampling Date: September 14, 2018
Samplers: TB
Prepared by VHB on: January 7, 2019

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

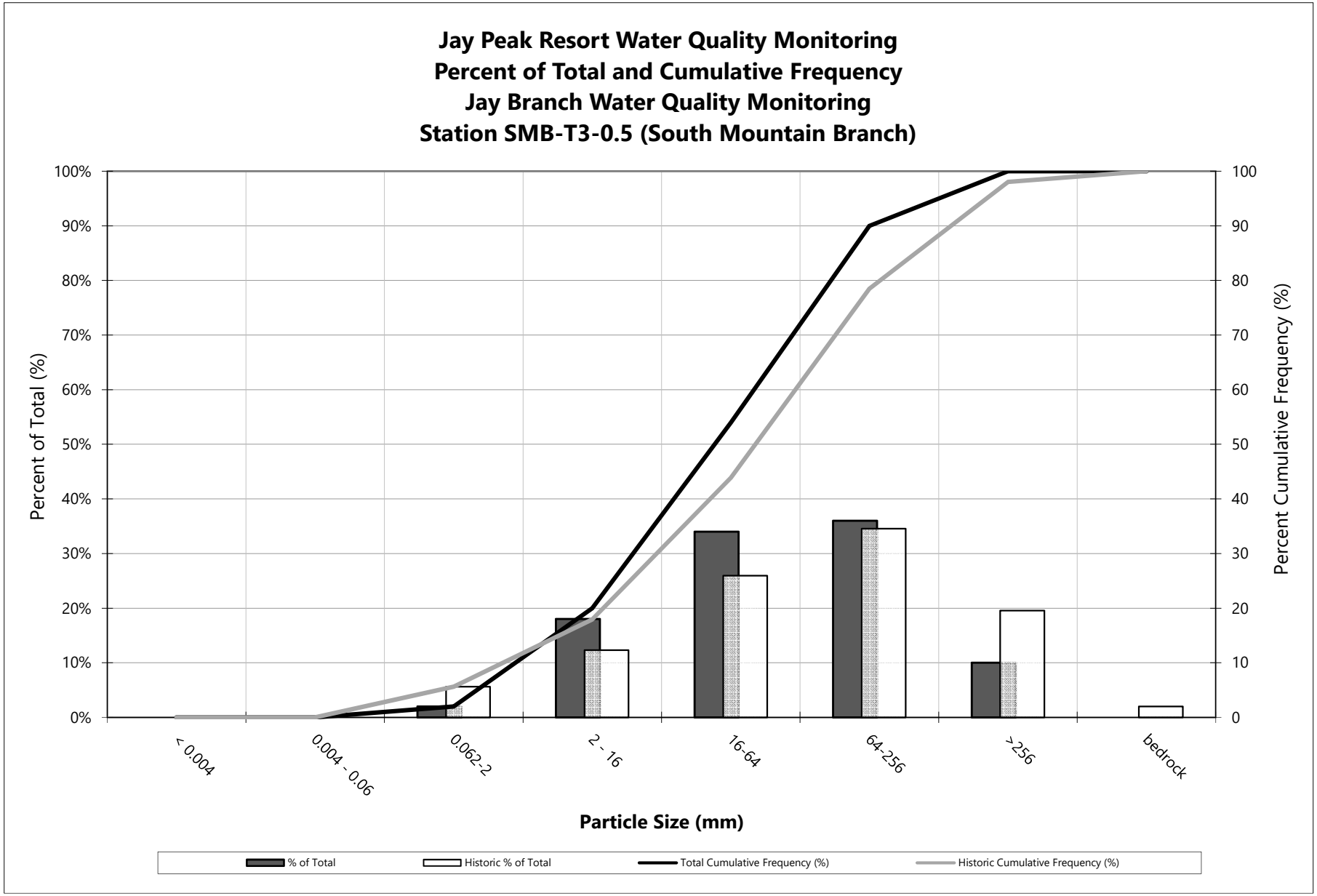
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	2	2%	2	2
Gravel	2 - 16	18	18%	20	20
Coarse gravel	16-64	34	34%	54	54
Cobble	64-256	36	36%	90	90
Boulder	>256	10	10%	100	100
Bedrock	bedrock	0	0%	100	100
	Sample Size (n)	100	100%		
	Longitudinal Distance (ft)	0'-100'			

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

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

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

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


Jay Peak Resort Water Quality Monitoring
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station SMB-T3-0.5 (South Mountain Branch)
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 2018
Substrate Sampling Summary
Sample Location: SMB-T3-0.1
Sampling Date: October 8, 2018
Samplers: TB, CS
Prepared by VHB on: January 7, 2019

Station Habitat Observations	Sub-1
Canopy cover:	70%
Embeddedness:	40%
Bank stability:	Good

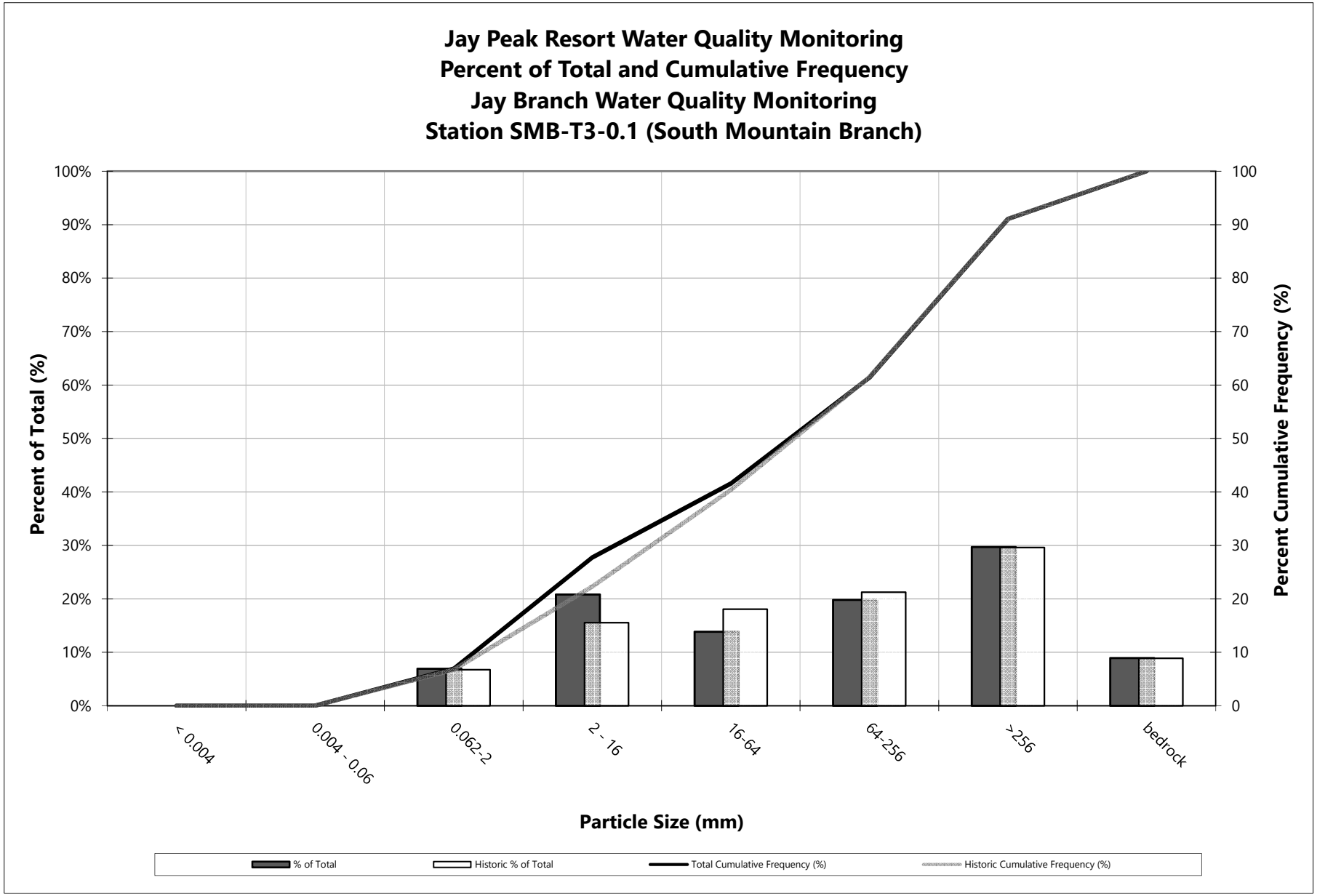
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	7	7%	7	7
Gravel	2 - 16	21	21%	28	28
Coarse gravel	16-64	14	14%	42	42
Cobble	64-256	20	20%	62	61
Boulder	>256	30	30%	92	91
Bedrock	bedrock	9	9%	101	100
	Sample Size (n)	101	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Coarse Gravel
Dominant Size Class	Boulder
% Fines	7%
% Particles < 2 mm	7%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	41	5	8	17

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

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	13	59		-	-	-	-

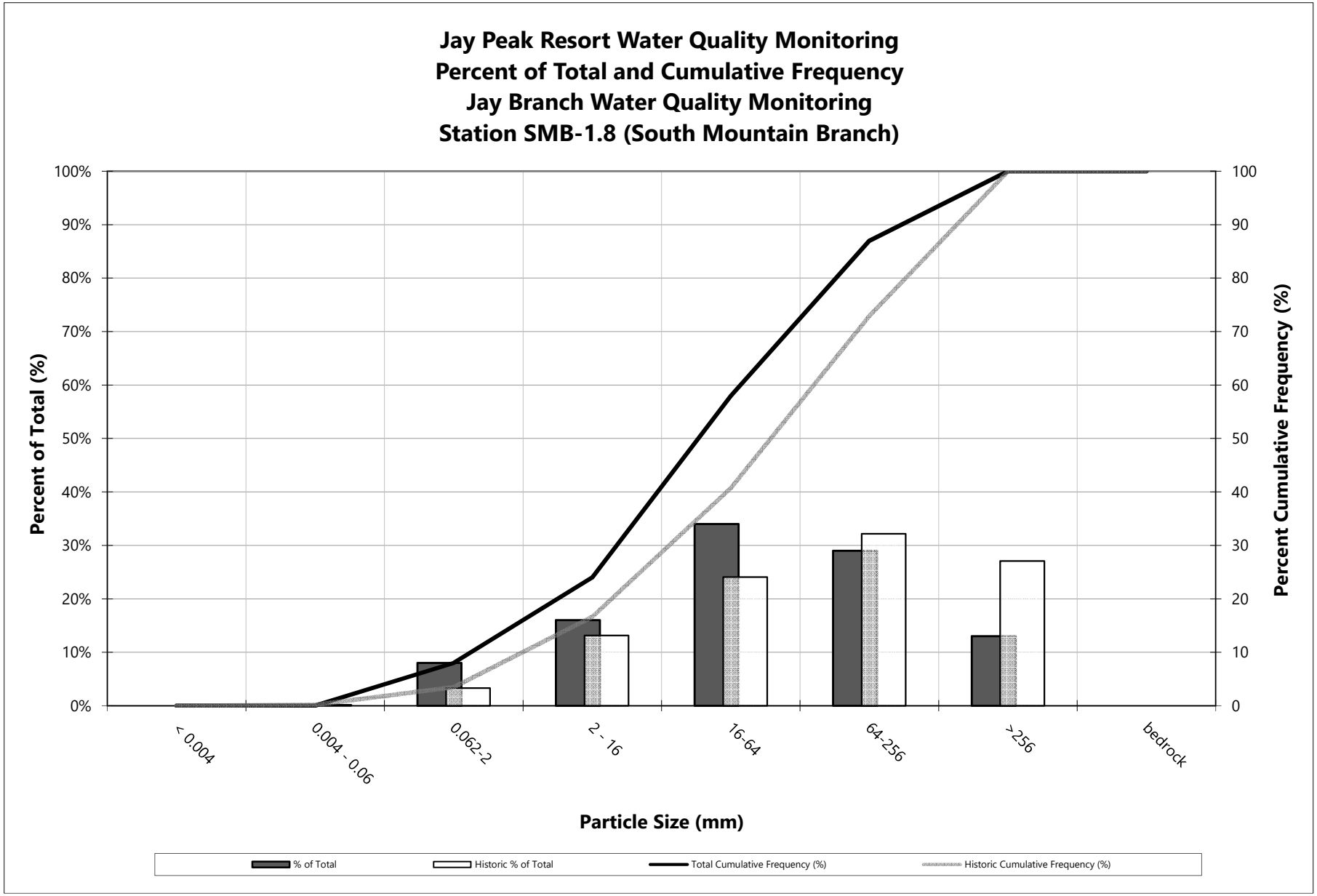

Jay Peak Resort Water Quality Monitoring
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station SMB-T3-0.1 (South Mountain Branch)
Percent of Total (%)
Percent Cumulative Frequency (%)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
100
90
80
70
60
50
40
30
20
10
0
< 0.004
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 2018
Substrate Sampling Summary
Sample Location: SMB-1.8
Sampling Date: September 14, 2018
Samplers: TB

Station Habitat Observations	Sub-1
Canopy cover:	-
Embeddedness:	-
Bank stability:	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	8	8%	8	8
Gravel	2 - 16	16	16%	24	24
Coarse gravel	16-64	34	34%	58	58
Cobble	64-256	29	29%	87	87
Boulder	>256	13	13%	100	100
Bedrock	bedrock	0	0%	100	100
	Sample Size (n)	100	100%		
	Longitudinal Distance (ft)	0'-100'			

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


Jay Peak Resort Water Quality Monitoring
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station SMB-1.8 (South Mountain Branch)
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 2018
Substrate Sampling Summary
Sample Location: SMB-1.2
Sampling Date: October 10, 2018
Samplers: CS
Prepared by VHB on: January 7, 2019

Station Habitat Observations	Sub-1
Canopy cover:	80%
Embeddedness:	25%
Bank stability:	Very Good

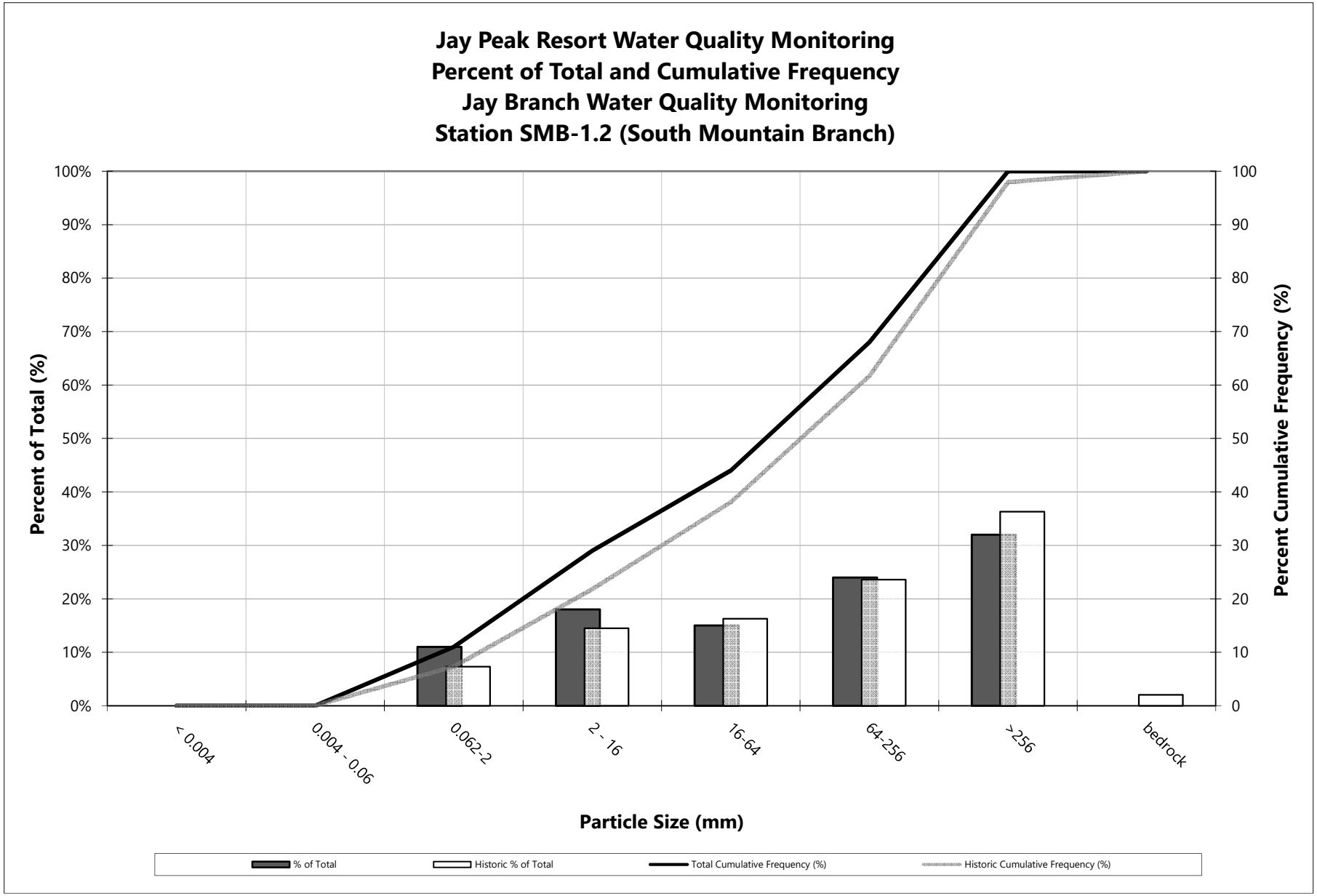
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	11	11%	11	11
Gravel	2 - 16	18	18%	29	29
Coarse gravel	16-64	15	15%	44	44
Cobble	64-256	24	24%	68	68
Boulder	>256	32	32%	100	100
Bedrock	bedrock	0	0%	100	100
	Sample Size (n)	100	100%		
	Longitudinal Distance (ft)	0'-100'			

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

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	48	7	11	6

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

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	7	43	-	-	-	-	-


Jay Peak Resort Water Quality Monitoring
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station SMB-1.2 (South Mountain Branch)
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 (%)

APPENDIX 6

Jay Peak Resort
2018 Kick Net Data Summary (Class B, Small High Gradient Streams)
Prepared by VHB
February 13, 2019

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	455	31	20	62	0.92	0	0.94	62	Meets Class B Criteria	Benchmark station, near Hole 13. Meets Class B Criteria.
JB-9.1 Jay Branch	478	32	21	74	0.78	9	0.97	68	Meets Class B Criteria	Upstream of Hole 10 bridge. Meets Class B Criteria.
JB-8.3 Jay Branch	228	28	19	69	0.93	11	0.96	49	Does Not Meet Class B Criteria	Downstream of confluence with Trib. 9. Does not meet Class B Criteria. New projects in this watershed suspended for 1 year, site assessment and revised BMPs required.
JB-7.3 Jay Branch	312	30	23	72	0.40	1	0.98	50	Meets Class B Criteria	Upstream of Route 242 bridge. Meets Class B Criteria.
JB-T9-0.1 Trib. 9 to Jay Branch	332	32	21	67	1.90	10	0.99	50	Meets Class B Criteria	Upstream of confluence with Jay Branch. Meets Class B Criteria.
SMB-T3-0.8 Trib. 3 to SMB	411	32	21	54	0.60	8	0.95	43	Meets Class B Criteria	Benchmark station, near Wedding Bridge. Meets Class B Criteria.
SMB-T3-0.1 Trib. 3 to SMB	224	23	17	54	0.63	32	0.98	64	Does Not Meet Class B Criteria	Downstream of Route 242 crossing. Does not meet Class B Criteria. New projects in this watershed suspended for 1 year, re-evaluation of WQRP activities required.
SMB-1.2 South Mountain Branch (SMB)	296	27	19	77	0.72	5	0.97	68	Indeterminate *	Upstream of Shallowbrook Road crossing.

Support (Pass)	≥300	≥27	≥16	≥45%	≤4.50	≤12%	≥0.45	≥40%	In accordance with the 2016 Vermont Water Quality Standards, the "Indeterminate + (I+)" range was eliminated from metric scoring. All metrics that meet the threshold are considered supporting aquatic life use for that metric.
Below Threshold (I)	<300	<27	<16	<45%	>4.50	>12%	<0.45	<40%	
Non-Support (Fail)	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%	

* Per email from Aaron Moore (2/13/2019): "SMB 1.2 is very close to receiving a "Good"; the difference between 296 and 300 organisms/m2 is obviously slight. The total richness value while passing is also right at the threshold. Subsequent samples should provide some clarity here, as the % Oligochaeata showed improvement in 2018."

Jay Peak Resort
Kick Net Data - Jay Branch - JB-T13-0.2
Class B, Small High Gradient Stream

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT +C	% PPCS-FG	Outcome/ Biological Integrity
Class B, SHG	≥300	≥27	≥16	≥45	≤4.50	≤12	≥0.45	≥40	
2008 VHBP	469	32	22	63	1.22	0.9	0.94	56	Meets Class B Criteria
2009 VHBP	625	34	23	73	1.34	0.0	0.93	59	Meets Class B Criteria
2010 VHB	642	40	25	78	1.71	0.36	0.89	56	Meets Class B Criteria
2011 VHB	421	35	23	70	0.85	0.1	0.93	46	Meets Class B Criteria
2012 VHB	883	36	25	75	1.13	0.0	0.95	44	Meets Class B Criteria
2013 VHB	872	33	21	70	0.94	0.0	0.92	61	Meets Class B Criteria
2014 VHB	781	36	24	74	1.24	0.0	0.9	65	Meets Class B Criteria
2015 VHB	914	34	21	70	1.03	0.5	0.94	55	Meets Class B Criteria
2016 VHB	874	34	21	70	0.72	0.6	0.96	61	Meets Class B Criteria
2017 VHB	512	35	22	65	0.77	5.0	0.93	64	Meets Class B Criteria
2018 VHB	455	31	20	62	0.92	0.3	0.94	62	Meets Class B Criteria
Metric Scoring Guidelines (Class B)									
Support (Pass)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%	In accordance with the 2016 Vermont Water Quality Standards, the "Indeterminate + (I+)" range was eliminated from metric scoring. All metrics that meet the threshold are considered supporting aquatic life use for that metric.
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 2018 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**Jay Branch**
Station:	**JB-T13-0.2**

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.945723	-72.518770
or VT Site ID:	427813000002	
Date collected:	10/8/2018	
# Reps Collected:	1	
# Rep Picked:	1	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**
Picked By:	CCS
Date Picked:	Jan. 2019
#sq picked:	17
#sq total:	24
Checked By:	CCS
Sorted By:	CCS
Sorted Date:	Jan. 2019

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	38	53.64705882		SCR	N	2	3	107.2941176	160.9411765	1	0
01.03.00.00.006.00.02	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	nitidulus	CCS	A	1	1.411764706		SCR	N	2	3	2.823529412	4.235294118	-	0
01.03.00.00.007.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	PROMORESIA	N/A	sp	CCS	A	3	4.235294118		SCR	N	2	2	8.470588235	8.470588235	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	2	2.823529412		CG	Y	2	2	5.647058824	5.647058824	1	0
02.05.05.00.065.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	ORTHOCLADIUS	N/A	sp	CCS	A	2	2.823529412		CG	Y	3	7	8.470588235	19.76470588	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	2	2.823529412		CG	Y	3	5	8.470588235	14.11764706	1	0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca	CCS	A	5	7.058823529		CG	Y	2	4	14.11764706	28.23529412	1	0
02.05.09.04.000.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	THIENEMANNIMYIA GROUP	N/A	N/A	group	CCS	A	4	5.647058824		PRD	Y	3	6	16.94117647	33.88235294	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	3	4.235294118		PRD	N	2	3	8.470588235	12.70588235	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	3	4.235294118		PRD	N	2	2	8.470588235	8.470588235	1	0
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	2	2.823529412		CG	N	0	0	0	0	1	1
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS	A	1	1.411764706		CG	N	2	4	2.823529412	5.647058824	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	2	2.823529412		CG	N	0	0	0	0	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	2	2.823529412		CG	N	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	10	14.11764706		CG	N	2	1	28.23529412	14.11764706	1	1
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp	CCS	A	2	2.823529412		SHR	N	1	2	2.823529412	5.647058824	1	1
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS	A	1	1.411764706		SCR	N	1	0	1.411764706	0	1	1
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	25	35.29411765		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	13	18.35294118		SRD	N	1	1	18.35294118	18.35294118	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	13	18.35294118		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	1.411764706		PRD	N	3	6	4.235294118	8.470588235	1	1
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS	A	2	2.823529412		PRD	N	0	1	0	2.823529412	1	1
04.16.00.00.001.03.09	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	minor/manistee	minor	CCS	A	4	5.647058824		PRD	N	0	0	0	0	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	5	7.058823529		SCR	N	1	3	7.058823529	21.17647059	1	1
05.01.00.00.000.00.01	PLECOPTERA	CAPNIIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	6	8.470588235		SRD	N	1	3	8.470588235	25.41176471	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	39	55.05882353		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	69	97.41176471		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	35	49.41176471		SRD	N	1	0	49.41176471	0	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	4	5.647058824		PRD	N	1	2	5.647058824	11.29411765	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	21	29.64705882		SRD	N	1	0	29.64705882	0	1	1
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A	N/A	LANTHUS	N/A	sp	CCS	A	1	1.411764706		PRD	N	2	5	2.823529412	7.058823529	1	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	1	1.411764706		CG	N	-	-	-	-	1	0
TOTALS by Rep:										322	454.5882353						**Total BI Score**	350.1176471	416.4705882	**Total Richness**	**Total EPT-R**
GRAND TOTAL:	454.5882353 organisms																**Total # Organisms**	454.5882353	454.5882353		
																	# of Organisms w/o BI	1.411764706	1.411764706	31	
																	Total # Organisms with BI	453.1764706	453.1764706		20
																	Biotic Index	0.77	0.92		

*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
Location 427813000002
Sample Date 10/08/18

2018 Expanded Key	KN-1: Numbers of Organisms										
ID#	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	LEPIDOPTERA	TOTAL
01.03.00.00.006.00.00	53.64705882	0	0	0	0	0	0	0	0	0	
01.03.00.00.006.00.02	1.411764706	0	0	0	0	0	0	0	0	0	
01.03.00.00.007.00.00	4.235294118	0	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	2.823529412	0	0	0	0	0	0	0	0	
02.05.05.00.065.00.00	0	2.823529412	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	2.823529412	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	7.058823529	0	0	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	5.647058824	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	4.235294118	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	4.235294118	0	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	2.823529412	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	1.411764706	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	2.823529412	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	2.823529412	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	14.11764706	0	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	2.823529412	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	1.411764706	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	35.29411765	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	18.35294118	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	18.35294118	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	1.411764706	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	2.823529412	0	0	0	0	0	0	
04.16.00.00.001.03.09	0	0	0	5.647058824	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	7.058823529	0	0	0	0	0	0	
05.01.00.00.000.00.01	0	0	0	0	8.470588235	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	55.05882353	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	97.41176471	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	49.41176471	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	5.647058824	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	29.64705882	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	1.4117647	0	
18.04.00.00.000.00.00	0	0	0	0	0	1.411764706	0	0	0	0	
Total	**59.3**	**29.6**	**24**	**93.2**	**245.6**	**1.41**	**0**	**0**	**1.41**	**0**	**454.6**
Percent	**13.0%**	**6.52%**	**5.28%**	**20.5%**	**54.0%**	**0.311%**	**0%**	**0%**	**0.311%**	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
Location 427813000002
Sample Date 10/08/18

2018 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	53.6471	0	0	0	**53.6471**
01.03.00.00.006.00.02	0	0	0	0	0	0	0	1.41176	0	0	0	**1.41176**
01.03.00.00.007.00.00	0	0	0	0	0	0	0	4.23529	0	0	0	**4.23529**
02.05.05.00.029.00.11	0	2.823529412	0	0	0	0	0	0	0	0	0	**2.82353**
02.05.05.00.065.00.00	0	2.823529412	0	0	0	0	0	0	0	0	0	**2.82353**
02.05.05.00.075.00.00	0	2.823529412	0	0	0	0	0	0	0	0	0	**2.82353**
02.05.05.00.114.01.04	0	7.058823529	0	0	0	0	0	0	0	0	0	**7.05882**
02.05.09.04.000.00.00	0	0	0	0	5.647059	0	0	0	0	0	0	**5.64706**
02.19.00.00.003.00.00	0	0	0	0	4.235294	0	0	0	0	0	0	**4.23529**
02.19.00.00.006.00.00	0	0	0	0	4.235294	0	0	0	0	0	0	**4.23529**
03.04.00.00.004.00.01	0	2.823529412	0	0	0	0	0	0	0	0	0	**2.82353**
03.04.00.00.004.01.00	0	1.411764706	0	0	0	0	0	0	0	0	0	**1.41176**
03.06.00.00.003.00.00	0	2.823529412	0	0	0	0	0	0	0	0	0	**2.82353**
03.06.00.00.005.00.00	0	2.823529412	0	0	0	0	0	0	0	0	0	**2.82353**
03.07.00.00.005.00.00	0	14.11764706	0	0	0	0	0	0	0	0	0	**14.1176**
04.01.00.00.003.00.00	0	0	0	0	0	0	0	0	2.8235294	0	0	**2.82353**
04.03.00.00.002.00.00	0	0	0	0	0	0	0	1.41176	0	0	0	**1.41176**
04.05.01.00.006.00.01	35.29411765	0	0	0	0	0	0	0	0	0	0	**35.2941**
04.07.00.00.001.00.00	0	0	0	0	0	0	0	0	0	18.352941	0	**18.3529**
04.12.00.00.002.00.00	18.35294118	0	0	0	0	0	0	0	0	0	0	**18.3529**
04.14.00.00.005.00.00	0	0	0	0	1.411765	0	0	0	0	0	0	**1.41176**
04.16.00.00.001.02.00	0	0	0	0	2.823529	0	0	0	0	0	0	**2.82353**
04.16.00.00.001.03.09	0	0	0	0	5.647059	0	0	0	0	0	0	**5.64706**
04.20.00.00.001.00.00	0	0	0	0	0	0	0	7.05882	0	0	0	**7.05882**
05.01.00.00.000.00.01	0	0	0	0	0	0	0	0	0	8.4705882	0	**8.47059**
05.02.00.00.006.00.00	0	0	0	0	55.05882	0	0	0	0	0	0	**55.0588**
05.03.00.00.000.00.01	0	0	0	0	0	0	0	0	0	97.411765	0	**97.4118**
05.05.00.00.000.00.01	0	0	0	0	0	0	0	0	0	49.411765	0	**49.4118**
05.07.00.00.007.00.00	0	0	0	0	5.647059	0	0	0	0	0	0	**5.64706**
05.08.00.00.001.00.02	0	0	0	0	0	0	0	0	0	29.647059	0	**29.6471**
06.06.00.00.007.00.00	0	0	0	0	1.411765	0	0	0	0	0	0	**1.41176**
18.04.00.00.000.00.00	0	1.411764706	0	0	0	0	0	0	0	0	0	**1.41176**
Group Total	**53.6**	**40.9**	**0**	**0**	**86.1**	**0**	**0**	**67.8**	**2.82**	**203.3**	**0**	**454.6**
Percent of Sample Total	**11.8%**	**9.01%**	**0%**	**0%**	**18.9%**	**0%**	**0%**	**14.9%**	**0.621%**	**44.7%**	**0%**	**100%**

	Model			Kicknet 1 vs. SHG	
	SHG	MHG	WWMG	**KN-1**	**PPCS**
Col. Gath.	31%	32%	22%	9.0%	29.1%
Col. Filt.	18%	30%	36%	11.80%	65.6%
Predator	19%	13%	7%	18.9%	99.7%
Shred-Det.	15%	4%	2%	44.7%	33.5%
Shred- Herb.	1%	1%	5%	0.62%	62.1%
Scraper	12%	13%	22%	14.91%	80.5%
				PPCS-FG =	**61.7%**

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
Location 427813000002 **Class** SHG
Sample Date 10/08/18 **Sampler** C. Szal

Order	Model			Kicknet 1 vs. Model (SHG)	
	SHG	MHG	WWMG	**%**	**difference**
Coleoptera	8%	6%	13%	13.04%	5.04
Diptera	19%	18%	13%	6.5%	12.5
Ephemeroptera	23%	34%	32%	5.3%	17.7
Plecoptera	21%	8%	8%	54.0%	33.0
Trichoptera	28%	33%	33%	20.5%	7.50
Oligochaeta	0.5%	0.5%	1.0%	0.31%	0.189
Other	0.5%	0.5%	1.0%	0.62%	0.12

Sum diff	76.1
Sum diff * 0.5	38.0
100-(sum diff * 0.5)	62.0
% model affinity	**62.0%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
Location 427813000002
Sample Date 10/08/18
Class SHG
Sampler C. Szal

	KN-1
#EPT organisms	362.8235294
#C organisms	21
EPT/EPT+C	0.945

Biometrics Summary

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
Location 4.27813E+11
Sample Date 10/08/18
Class SHG
Sampler C. Szal

Replicate # Sampling Method	1 KN	Average KN
Biometrics:		
Density/Unit	455	455
Species Richness	31.0	31.0
EPT Richness	20.0	20.0
Old Bio Index (0 to 5)	0.77	0.77
New Bio Index (0 to 10)	0.92	0.92
% dominant taxa	21.4%	21.4%
# dominant taxa	97	
dominant taxa ID	PLECOPTERA	LEUCTRIDAE
EPT/EPT+C	0.945	0.945
EPT/Richness	0.645	0.645
% Model Affinity (orders)	62.0%	62.0%
PPCS - functional groups	61.7%	61.7%
Major Groups:		
Coleoptera (%)	13.04%	13.04%
Diptera (%)	6.5%	6.5%
Ephemeroptera (%)	5.3%	5.3%
Trichoptera (%)	20.5%	20.5%
Plecoptera (%)	54.0%	54.0%
Oligochaeta (%)	0.31%	0.31%
Bivalvia (%)	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%
Odonata (%)	0.31%	0.31%
Other (%)	0.00%	0.00%
Total (%)	100%	100%
Feeding Groups:		
Collector Gatherer (%)	9.0%	9.0%
Collector Filterer (%)	11.8%	11.8%
Predator (%)	18.9%	18.9%
Shredder - Detritus (%)	44.7%	44.7%
Shredder - Herbivore (%)	0.62%	0.62%
Scraper (%)	14.91%	14.91%
Other (%)	0.00%	0.00%
Total (%)	100%	100%

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
Location 427813000002
Sample Date 10/08/18

Latitude 44.945723
Longitude -72.518770
Class B2
Sampler CCS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (1/15/2017)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B2		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	454.6	≥300	Pass	≥400	Pass	≥500	I
Richness	31.0	≥27	Pass	≥31	Pass	≥35	Fail
EPT	20.0	≥16	Pass	≥19	Pass	≥21	I
PMA-O	62.0%	≥45%	Pass	≥55%	Pass	≥65%	I
BI (New 1-10)	0.92	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	0.311%	≤12%	Pass	≤5	Pass	≤2	Pass
EPT/EPT+C	0.945	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
PPCS-FG	61.7%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	Pass
Outcome:		**Biocriteria are met**					
The following metrics do not meet Class B2 thresholds:		NA					

Individual Metric Outcome Guidelines (using the table below)

1) A metric is scored "Pass" when the result meets the threshold requirements
2) A metric is scored "I" when the result is between the threshold level and the non-support level
3) A metric is scored "Fail" when the result is below the non-support requirements

Overall Outcome Guidelines

1) Biocriteria are "met" when all 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 "Fail"
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	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	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	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
(2016 edition)

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

Site Name Jay River Mile _____ USFS____ PROB_____
Site ID JBT130.2 4-1
Date 10·8·18 Time 1150 Crew TB CS
Site Description_____

Town: _____ Stream Order:_____ Drainage Area: _____Km² Elevation:_____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS – set to NAD83:) _____
Weather: Overcast Flow/Weather Previous (2 weeks/2days): Several events last 2 wk., quiet 48 hr
Surrounding Land Use: Forest

SAMPLING INFORMATION
Sampler: CS Gear: K1
Effort Time: __ min Mesh: ____ um
Area: _____ m² Quantitative: Y / N
#Reps: 1 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 10% Filamentous Green _____% and length _____in
Blue Green Tr% Moss 10% Green _____% Other _____%

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

HABITAT OBSERVATIONS
Embeddedness (5) 0-5% Excel (4) 5-25% V Good (3) 25-50% Good (2) 50-75% Fair (1) > 75%Poor Estimate 15
Silt Rating: 3 (0=none, 5= chocolate) CPOM Rating (leaf packs): 3 (0= none,5=high)
Lg Woody Debris (>4"dia) #: 10 /100m (reach)

Habitat Comments

GENERAL WATER TYPE Riffle, Winder, or Other _____ Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 12' (m) Wetted Width: 6' (m) Riffle Depth: 2" (in) Pool Depth: 2' (in) and Obs: _____
Bank Stability: EX VG G F P Velocity estimate (circle): (S) <0.4 ft/sec, (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured:_____ ft/sec
Fish: Bottom Type: Hard – Soft – Mixed Cover Rating: Exc – Very Good – Good – Fair -- Poor

Riparian VEGETATION (both sides, does not need to add up to 100%) Riparian Width (facing upstream) L >100 m, R >100 m
Overstory: Softwood 10 % Hardwood 90 % Understory: Shrub (brush) 30 Grass __% Herbaceous 10 %
Canopy %: 100 90 80 70 60 50 40 30 20 10 0 Overhead: Open, Partly Open, or Closed

WQ Section Sampler: ___ Baseflow or Freshet Flow Present Flow: H – M – L
Meter (type, #)1-_____2-_____3-_____Color_____Color DUP:_____
Annotate? Y / N

Temp Air 45 °C,°F Temp Water 8.0 fpH_____lab pH_____ fCond_____ D.O.%_____ D.Omg/l_____

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

WQ Notes/Comments

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

A lot of gravel moving through.

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

River (Site) JBT 13-0.2 Personnel TB Date 10·8·18

Pebble Count Field Form

Complete % observed substrate if no pebble ct done

Periphyton Cover Observations Date _____

Particle	Millimeters	Inches	% Observed	Transect 1 (100 pebbles)	Tot #	Item %
organic						
Fines	0.062-2	0.002-0.08"				
very fine gravel	2-4	01.08-0.15"		卌 卌 卌 卌 |||		
small gravel	4-8	0.15-0.3"				
medium gravel	8-16	0.3- 0.6"				
coarse gravel	16-32	0.6-1.25"		卌 卌 卌 卌 |||		
very coarse gravel	32-64	1.25-2.5"				
small and medium cobble	64-128	2.5-5"				
large cobble	128-256	5-10"		卌 卌 卌 卌 卌 |		
small boulder	265-512	10-20"		卌 卌 |		
medium boulder	512-1024	20-40"				
large boulder	1024-2048	40-80"		卌 卌 卌 ||		
very large boulder	>2048	>80"				
bedrock				卌		
				TOTALS		

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

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

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

	Other *Macro or Micro*_____Cover Index					
Category	0	1_____	2_____	3_____	4_____	5_____
Tally						

Substrate Comments:

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	0.94	64	Does Not Meet Class B Criteria
2007 DEC	1,872	39	22	62	1.50	20.0	0.95	52	Does Not Meet Class B Criteria
2008 DEC	1,162	37	23	76	1.97	6.40	0.96	71	Meets Class B Criteria
2009 DEC	1,892	46	25	76	1.88	17.0	0.92	66	Does Not Meet Class B Criteria
2010 DEC	1,516	42	25	68	2.29	6.0	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	1.0	46	Does Not Meet Class B Criteria
2013 VHB	828.0	39	24	80	1.09	7.5	0.95	53	Meets Class B Criteria
2014 DEC / VHB	1,071	40	24	68	1.95	17.0	0.93	52	Does Not Meet Class B Criteria
2015 VHB	525	37	26	68	1.40	11	0.95	63	Meets Class B Criteria
2016 VHB	865	33	22	75	1.19	10	0.96	63	Meets Class B Criteria
2017 VHB	430	32	22	72	0.98	8	0.93	50	Meets Class B Criteria
2018 VHB	478	32	21	74	0.78	9	0.97	68	Meets Class B Criteria
Metric Scoring Guidelines (Class B)									
Support (Pass)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%	In accordance with the 2016 Vermont Water Quality Standards, the "Indeterminate + (I+)" range was eliminated from metric scoring. All metrics that meet the threshold are considered supporting aquatic life use for that metric.
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 - VT DEC October 2018 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**Jay Branch**
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:	10/8/2018	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 2019	Jan. 2019
#sq picked:	14	17
#sq total:	24	24
Checked By:	CCS	CSS
Sorted By:	CCS	CSS
Sorted Date:	Jan. 2019	Jan. 2019

Taxonomic Data

Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	Rep1				Rep2			
								ID [1]	QA [2]	Count [3]	Total Sample Count [4]	ID [1]	QA [2]	Count [3]	Total Sample Count [4]
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CCS	A	2	3.42857143	CCS	A	13	18.35294118
01.03.00.00.007.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	PROMORESIA	N/A	sp	CCS			0	CCS	A	1	1.411764706
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A	BEZZIA/PALPOMYIA	BEZZIA	N/A	sp	CCS	A	1	1.71428571	CCS			0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	3	5.14285714	CCS	A	2	2.823529412
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	1	1.71428571	CCS	A	2	2.823529412
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	2	3.42857143	CCS	A	7	9.882352941
02.14.00.00.004.00.00	DIPTERA	SIMULIDAE	N/A	N/A	PROSIMULIUM	N/A	sp	CCS			0	CCS	A	1	1.411764706
02.19.00.00.001.00.00	DIPTERA	TIPULIDAE	N/A	N/A	ANTOCHA	N/A	sp	CCS			0	CCS	A	1	1.411764706
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	4	6.85714286	CCS	A	2	2.823529412
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	1	1.71428571	CCS	A	2	2.823529412
02.19.00.00.019.00.00	DIPTERA	TIPULIDAE	N/A	N/A	MOLOPHILUS	N/A	sp	CCS	A	1	1.71428571	CCS			0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	4	6.85714286	CCS	A	7	9.882352941
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	CENTRELLA/PLAUDITU	PLAUDITUS	N/A	sp	CCS	A	1	1.71428571	CCS	A	2	2.823529412
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	5	8.57142857	CCS	A	26	36.70588235
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS			0	CCS	A	9	12.70588235
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	4	6.85714286	CCS	A	2	2.823529412
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	1	1.71428571	CCS	A	5	7.058823529
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	20	34.2857143	CCS	A	29	40.94117647
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS			0	CCS	A	6	8.470588235
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp	CCS			0	CCS	A	2	2.823529412
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS			0	CCS	A	1	1.411764706
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	alhedra	CCS	A	2	3.42857143	CCS	A	3	4.235294118
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	2	3.42857143	CCS	A	10	14.11764706
04.11.00.00.001.00.00	TRICHOPTERA	ODONTOCERIDAE	N/A	N/A	PSILOTRETA	N/A	sp	CCS			0	CCS	A	1	1.411764706
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	82	140.571429	CCS	A	65	91.76470588
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS			0	CCS	A	2	2.823529412
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	17	29.1428571	CCS	A	8	11.29411765
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS	A	1	1.71428571	CCS	A	1	1.411764706
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS			0	CCS	A	5	7.058823529
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	53	90.8571429	CCS	A	43	60.70588235
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp	CCS	A	4	6.85714286	CCS			0
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	34	58.2857143	CCS	A	27	38.11764706
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	8	13.7142857	CCS	A	4	5.647058824
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata	CCS	A	1	1.71428571	CCS			0
05.07.00.00.006.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	ISOPERLA	N/A	sp	CCS	A	1	1.71428571	CCS			0
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	7	12	CCS	A	2	2.823529412
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	2	3.42857143	CCS			0
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A	N/A	LANTHUS	N/A	sp	CCS			0	CCS	A	1	1.411764706
18.02.00.00.000.00.00	OLIGOCHAETA	NAIDIDAE	N/A	N/A	N/A	N/A	naididae unid	CCS	A	2	3.42857143	CCS	A	2	2.823529412
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	33	56.5714286	CCS	A	18	25.41176471
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A	N/A	N/A	N/A	uid	CCS	A	2	3.42857143	CCS			0
TOTALS by Rep:										301	**516.0**			312	**440.4705882**

GRAND TOTAL: 956.4705882 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

Macroinvertebrate data submittal form - VT DEC October 2018 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**Jay Branch**
Station:	**JB-9.1**

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.939733	-72.502249
or VT Site ID:	427800000091	
Date collected:	10/8/2018	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

							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	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		SCR	N	2	3	6.8571	36.706	10.286	55.059	1	0	1	0
01.03.00.00.007.00.00	COLEOPTERA	ELMIDAE	N/A		SCR	N	2	2	0	2.8235	0	2.8235	-	0	1	0
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A		PRD	N	3	6	5.1429	0	10.286	0	1	0	-	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI		CG	Y	3	4	15.429	8.4706	20.571	11.294	1	0	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	2	3.4286	5.6471	3.4286	5.6471	1	0	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	3	5	10.286	29.647	17.143	49.412	1	0	1	0
02.14.00.00.004.00.00	DIPTERA	SIMULIDAE	N/A		CF	N	1	2	0	1.4118	0	2.8235	-	0	1	0
02.19.00.00.001.00.00	DIPTERA	TIPULIDAE	N/A		CG	N	3	4	0	4.2353	0	5.6471	-	0	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	3	13.714	5.6471	20.571	8.4706	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	2	3.4286	5.6471	3.4286	5.6471	1	0	1	0
02.19.00.00.019.00.00	DIPTERA	TIPULIDAE	N/A		CG	N	3	4	5.1429	0	6.8571	0	1	0	-	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A		CG	N	3	6	20.571	29.647	41.143	59.294	1	1	1	1
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A		SCR	N	2	5	3.4286	5.6471	8.5714	14.118	1	1	1	1
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A		CG	N	0	0	0	0	0	0	1	1	1	1
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A		CG	N	2	4	0	25.412	0	50.824	-	0	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		CG	N	0	0	0	0	0	0	1	1	1	1
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		SCR	N	1	4	1.7143	7.0588	6.8571	28.235	1	1	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		CG	N	0	0	0	0	0	0	1	1	1	1
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A		CG	N	2	1	0	16.941	0	8.4706	-	0	1	1
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A		SHR	N	1	2	0	2.8235	0	5.6471	-	0	1	1
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A		SCR	N	1	0	0	1.4118	0	0	-	0	1	1
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	3	6.8571	8.4706	10.286	12.706	1	1	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A		SRD	N	1	1	3.4286	14.118	3.4286	14.118	1	1	1	1
04.11.00.00.001.00.00	TRICHOPTERA	ODONTOCERIDAE	N/A		SCR	N	0	0	0	0	0	0	-	0	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A		CF	N	0	0	0	0	0	0	1	1	1	1
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A		PRD	N	3	6	0	8.4706	0	16.941	-	0	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	1	2	29.143	11.294	58.286	22.588	1	1	1	1
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	0	1	0	0	1.7143	1.4118	1	1	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A		SCR	N	1	3	0	7.0588	0	21.176	-	0	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A		PRD	N	0	0	0	0	0	0	1	1	1	1
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A		PRD	N	0	0	0	0	0	0	1	1	-	0
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A		SRD	N	0	0	0	0	0	0	1	1	1	1
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A		SRD	N	1	0	13.714	5.6471	0	0	1	1	1	1
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A		PRD	N	0	2	0	0	3.4286	0	1	1	-	0
05.07.00.00.006.00.00	PLECOPTERA	PERLODIDAE	N/A		PRD	N	1	2	1.7143	0	3.4286	0	1	1	-	0
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A		PRD	N	1	2	12	2.8235	24	5.6471	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A		SRD	N	1	0	3.4286	0	0	0	1	1	-	0
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A		PRD	N	2	5	0	2.8235	0	7.0588	-	0	1	0
18.02.00.00.000.00.00	OLIGOCHAETA	NAIDIDAE	N/A		CG	N	-	-	-	-	-	-	1	0	1	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A		CG	N	-	-	-	-	-	-	1	0	1	0
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A		CG	N	-	-	-	-	-	-	1	0	-	0
TOTALS by Rep:								**Total BI Score**	159.43	249.88	253.71	415.06	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
GRAND TOTAL:	956.4705882 organisms							**Total # Organisms**	516	440.47	516	440.47				
								# of Organisms w/o BI	63.429	28.235	63.429	28.235	30		34	
								Total # Organisms with BI	452.57	412.24	452.57	412.24		19		22
								Biotic Index	0.35	0.61	0.56	1.01				

*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 organi

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

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
VT Site ID 427800000091
Sample Date 10/08/2018

2018 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	3.428571429	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	1.714285714	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	5.142857143	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	1.714285714	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	3.428571429	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	6.857142857	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	1.714285714	0	0	0	0	0	0	0	0	
02.19.00.00.019.00.00	0	1.714285714	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	6.857142857	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	1.714285714	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	8.571428571	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	6.857142857	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	1.714285714	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	34.28571429	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	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	0	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	0	0	3.428571429	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	3.428571429	0	0	0	0	0	0	
04.11.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	140.5714286	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	29.14285714	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	1.714285714	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	90.85714286	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	6.857142857	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	58.28571429	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	13.71428571	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	1.714285714	0	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	1.714285714	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	3.428571429	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	0	0	
18.02.00.00.000.00.00	0	0	0	0	0	3.428571429	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	56.57142857	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	3.428571429	0	0	0	0	
Total	**3.428571429**	**22.3**	**60.0**	**178.3**	**189**	**63.43**	**0**	**0**	**0**	**0**	**516.0**
Percent	**1%**	**4.32%**	**11.6%**	**34.6%**	**36.5%**	**12.292%**	**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 10/08/2018

2018 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	18.35294118	0	0	0	0	0	0	0	0	0	
01.03.00.00.007.00.00	1.411764706	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	
02.05.01.00.085.00.05	0	2.823529412	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	2.823529412	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	9.882352941	0	0	0	0	0	0	0	0	
02.14.00.00.004.00.00	0	1.411764706	0	0	0	0	0	0	0	0	
02.19.00.00.001.00.00	0	1.411764706	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	2.823529412	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	2.823529412	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	
03.01.00.00.001.00.09	0	0	9.882352941	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	2.823529412	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	36.70588235	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	12.70588235	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	2.823529412	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	7.058823529	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	40.94117647	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	8.470588235	0	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	2.823529412	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	1.411764706	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	0	0	4.235294118	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	14.11764706	0	0	0	0	0	0	
04.11.00.00.001.00.00	0	0	0	1.411764706	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	91.76470588	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	2.823529412	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	11.29411765	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	1.411764706	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	7.058823529	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	60.70588235	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	38.11764706	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	5.647058824	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	2.823529412	0	0	0	0	0	
05.08.00.00.001.00.02	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	1.411764706	0	
18.02.00.00.000.00.00	0	0	0	0	0	2.823529412	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	25.41176471	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	0	0	0	0	0	
Total	**20**	**24**	**121.4117647**	**138.3529412**	**107.2941176**	**28.23529412**	**0**	**0**	**1.411764706**	**0**	**440.47**
Percent	**4.487%**	**5.45%**	**27.6%**	**31.4%**	**24.4%**	**6.410%**	**0%**	**0%**	**0%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091
Sample Date 10/08/2018

2018 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	3.428571	0		0	0	0	0	0	18.35294	0	
01.03.00.00.007.00.00	0	0	0	0	0	0	0		0	0	0	0	0	1.411765	0	
02.03.00.01.003.00.00	0	0	1.714285714	0	0	0	0		0	0	0	0	0	0	0	
02.05.01.00.085.00.05	5.142857143	0	0	0	0	0	0		2.823529	0	0	0	0	0	0	
02.05.05.00.029.00.11	1.714285714	0	0	0	0	0	0		2.823529	0	0	0	0	0	0	
02.05.05.00.075.00.00	3.428571429	0	0	0	0	0	0		9.882353	0	0	0	0	0	0	
02.14.00.00.004.00.00	0	0	0	0	0	0	0		0	1.411765	0	0	0	0	0	
02.19.00.00.001.00.00	0	0	0	0	0	0	0		1.411765	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	6.857142857	0	0	0	0		0	0	2.823529	0	0	0	0	
02.19.00.00.006.00.00	0	0	1.714285714	0	0	0	0		0	0	2.823529	0	0	0	0	
02.19.00.00.019.00.00	1.714285714	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.01.00.00.001.00.09	6.857142857	0	0	0	0	0	0		9.882353	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	0	0	0	1.714286	0		0	0	0	0	0	2.823529	0	
03.04.00.00.004.00.01	8.571428571	0	0	0	0	0	0		36.70588	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	0	0	0	0	0		12.70588	0	0	0	0	0	0	
03.06.00.00.003.00.00	6.857142857	0	0	0	0	0	0		2.823529	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	1.714286	0		0	0	0	0	0	7.058824	0	
03.06.00.00.005.00.00	34.28571429	0	0	0	0	0	0		40.94118	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	0	0	0	0	0		8.470588	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	0	0	0	0		0	0	0	0	2.823529	0	0	
04.03.00.00.002.00.00	0	0	0	0	0	0	0		0	0	0	0	0	1.411765	0	
04.05.00.00.004.03.02	0	3.428571	0	0	0	0	0		0	4.235294	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	3.428571	0	0	0		0	0	0	14.11765	0	0	0	
04.11.00.00.001.00.00	0	0	0	0	0	0	0		0	0	0	0	0	1.411765	0	
04.12.00.00.002.00.00	0	140.5714	0	0	0	0	0		0	91.76471	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	0	0	0	0		0	0	2.823529	0	0	0	0	
04.16.00.00.001.00.01	0	0	29.14285714	0	0	0	0		0	0	11.29412	0	0	0	0	
04.16.00.00.001.02.00	0	0	1.714285714	0	0	0	0		0	0	1.411765	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	0	0		0	0	0	0	0	7.058824	0	
05.02.00.00.006.00.00	0	0	90.85714286	0	0	0	0		0	0	60.70588	0	0	0	0	
05.02.00.00.091.00.00	0	0	6.857142857	0	0	0	0		0	0	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	58.28571	0	0	0		0	0	0	38.11765	0	0	0	
05.05.00.00.000.00.01	0	0	0	13.71429	0	0	0		0	0	0	5.647059	0	0	0	
05.06.00.00.007.00.01	0	0	1.714285714	0	0	0	0		0	0	0	0	0	0	0	
05.07.00.00.006.00.00	0	0	1.714285714	0	0	0	0		0	0	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	12	0	0	0	0		0	0	2.823529	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	3.428571	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	1.411765	0	0	0	0	
18.02.00.00.000.00.00	3.428571429	0	0	0	0	0	0		2.823529	0	0	0	0	0	0	
18.04.00.00.000.00.00	56.57142857	0	0	0	0	0	0		25.41176	0	0	0	0	0	0	
18.06.00.00.000.00.00	3.428571429	0	0	0	0	0	0		0	0	0	0	0	0	0	
Total	**132**	**144.0**	**154.3**	**78.9**	**0**	**6.86**	**0**	**516**	**156.7**	**97.4**	**86.1**	**57.9**	**2.82**	**39.5**	**0**	**440.5**
Percent	**25.6%**	**27.9%**	**29.9%**	**15.3%**	**0%**	**1.33%**	**0%**	**100%**	**35.6%**	**22.1%**	**19.6%**	**13.1%**	**0.641%**	**8.97%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091
Sample Date 10/08/2018

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%	25.6%	82.5%	35.6%	87.1%
Col. Filt.	18%	30%	36%	27.9%	64.5%	22.1%	81.4%
Predator	19%	13%	7%	29.9%	63.5%	19.6%	97.2%
Shred-Det.	15%	4%	2%	15.3%	98.2%	13.1%	87.6%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.64%	64.1%
Scraper	12%	13%	22%	1.33%	11.07%	8.97%	74.8%
				PPCS-FG =	**53.3%**	**PPCS-FG =**	**82.0%**

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 JB-9.1
Stream Jay Branch
VT Site ID 427800000091
Sample Date 10/08/2018
Class Small, High Gradient, B2
Sampler CCS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	0.66%	7.34	4.49%	3.51
Diptera	19%	18%	13%	4.3%	14.68	5.4%	13.551
Ephemeroptera	23%	34%	32%	11.6%	11.4	27.56%	4.6
Plecoptera	21%	8%	8%	36.5%	15.5	24.4%	3.4
Trichoptera	28%	33%	33%	34.6%	6.6	31.4%	3.4
Oligochaeta	0.5%	0.5%	1.0%	12.29%	11.79	6.41%	5.91
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.32%	0.179
				Sum diff	67.8		34.5
				Sum diff * 0.5	33.9		17.2
				100-(sum diff * 0.5)	66.1		82.8
				% model affinity	**66.1%**		**82.8%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091
Sample Date 10/08/2018
Class Small, High Gradient, B2
Sampler CCS

	KN-1	KN-2
#EPT organisms	426.8571429	367.0588
#C organisms	10.28571429	15.52941
EPT/EPT+C	0.98	0.96

Biometric Summary

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091
Sample Date 10/08/2018
Class Small, High Gradient, B2
Sampler CCS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	516	440	478
Species Richness	30.0	34.0	32.0
EPT Richness	19.0	22.0	20.5
Old Bio Index (0 to 5)	0.35	0.61	0.48
New Bio Index (0 to 10)	0.56	1.01	0.78
% dominant taxa	27.2%	20.8%	24.0%
EPT/EPT+C	0.976	0.959	0.968
EPT/Richness	0.633	0.647	0.641
% Model Affinity (orders)	66.1%	82.8%	74.4%
PPCS - functional groups	53.3%	82.0%	67.7%
Major Groups:			
Coleoptera (%)	0.66%	4.49%	2.58%
Diptera (%)	4.3%	5.4%	4.9%
Ephemeroptera (%)	11.6%	27.56%	19.60%
Trichoptera (%)	34.6%	31.4%	33.0%
Plecoptera (%)	36.5%	24.4%	30.5%
Oligochaeta (%)	12.29%	6.41%	9.35%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.00%	0.32%	0.16%
Other (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	25.6%	35.6%	30.6%
Collector Filterer (%)	27.9%	22.12%	25.0%
Predator (%)	29.9%	19.6%	24.7%
Shredder - Detritus (%)	15.3%	13.1%	14.2%
Shredder - Herbivore (%)	0.00%	0.64%	0.32%
Scraper (%)	1.33%	8.97%	5.15%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Project Jay Peak Resort
Station JB-9.1 **Latitude** 44.939733
Stream Jay Branch **Longitude** -72.502249
Location 427800000091 **Class** Small, High Gradient, B2
Sample Date 10/08/2018 **Sampler** CCS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (1/15/2017)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B2		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	478.2	≥300	Pass	≥400	Pass	≥500	I
Richness	32.0	≥27	Pass	≥31	Pass	≥35	Fail
EPT	20.5	≥16	Pass	≥19	Pass	≥21	I
% PMA-O	74.4%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	0.78	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	9.35%	≤12%	Pass	≤5	Fail	≤2	Fail
EPT/EPT+C	0.968	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	67.7%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	Pass
Outcome:		**Biocriteria are met**					
The following metrics do not meet Class B2 thresholds:		NA					

Individual Metric Outcome Guidelines (using the table below)
1) A metric is scored "Pass" when the result meets the threshold requirements
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 all 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 "Fail"
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
A1	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	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	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
(2016 edition)

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

Site Name Jay River Mile _____ USFS____ PROB_____
Site ID JB9.1 4-2
Date 10.8.18 Time 1230 Crew CS TB
Site Description_____

Town: _____ Stream Order:_____ Drainage Area: _____Km² Elevation:_____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS – set to NAD83:) _____
Weather: Overcast Flow/Weather Previous (2 weeks/2days): Several events last 2 wk, quiet 48 hr.
Surrounding Land Use: Golf course, resort, Forest

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: __ min Mesh: ____ um
Area: _____ 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 Tr % and length _____in
Blue Green Tr% Moss 5 % Green _____% Other _____%

General Trophic Rating: 2 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS
Embeddedness (5) 0-5% Excel (4) 5-25% V Good (3) 25-50% Good (2) 50-75% Fair (1) > 75%Poor Estimate 15
Silt Rating: 3 (0=none, 5= chocolate) CPOM Rating (leaf packs): 3 (0= none,5=high)
Lg Woody Debris (>4"dia) #: 4 /100m (reach)
Habitat Comments More embedded than it initially looks

GENERAL WATER TYPE Riffle, Winder, or Other_____ Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 45' (m) Wetted Width: 25' (m) Riffle Depth: 4-6" (in) Pool Depth: NA (in) and Obs: _____
Bank Stability: EX VG G F P Velocity estimate (circle): (S) <0.4 ft/sec, (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured:_____ ft/sec
Armoured
Fish: Bottom Type: Hard – Soft – Mixed Cover Rating: Exc – Very Good – Good – Fair -- Poor

Riparian VEGETATION (both sides, does not need to add up to 100%) Riparian Width (facing upstream) L 50 m, R 50 m
Overstory: Softwood __% Hardwood 100% Understory: Shrub (brush) 40 Grass 10% Herbaceous 20%
Canopy %: 100 90 80 70 60 50 40 30 20 10 0 Overhead: Open, Partly Open, or Closed

WQ Section Sampler: ___ Baseflow or Freshet Flow Present Flow: H M L
Meter (type, #)1-_____2-_____3-_____Color_____Color DUP:_____
Annotate? Y / N

Temp Air 45 °C,°F Temp Water 8.5 C fpH_____lab pH_____ fCond_____ D.O.%_____ D.Omg/l_____

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

WQ Notes/Comments

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

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

River (Site) JBT 9.1 Personnel TB Date 10/08/18

Pebble Count Field Form

Complete % observed substrate if no pebble ct done

Periphyton Cover Observations Date ______________

Particle	Millimeters	Inches	% Observed	Transect 1 (100 pebbles)	Tot #	Item %
organic						
Fines	0.062-2	0.002-0.08"				
very fine gravel	2-4	01.08-0.15"		卌 卌 ||		
small gravel	4-8	0.15-0.3"				
medium gravel	8-16	0.3- 0.6"				
coarse gravel	16-32	0.6-1.25"		卌 卌 |||		
very coarse gravel	32-64	1.25-2.5"				
small and medium cobble	64-128	2.5-5"		卌 卌 卌 卌 卌 卌		
large cobble	128-256	5-10"		卌 卌 卌 ||		
small boulder	265-512	10-20"		卌 卌 卌 卌 卌		
medium boulder	512-1024	20-40"				
large boulder	1024-2048	40-80"				
very large boulder	>2048	>80"				
bedrock				|||		
				TOTALS		

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

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

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

	Other *Mocro or Micro*__________Cover Index					
Category	0	1________	2______	3_______	4________	5________
Tally						

Substrate Comments:

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	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	22	81	1.58	9	0.97	73	Meets Compliance Year Targets and Class B Criteria
2017 VHB	490	31	21	82	1.63	5	0.94	62	Meets Compliance Year Targets and Class B Criteria
2018 VHB	228	28	19	69	0.93	11	0.96	49	Does Not Meet 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 Compliance Year	≥300	≥28	≥17	(-)	(-)	≤12	(-)	(-)	
2017 Compliance Year	≥300	≥27	≥16	(-)	(-)	≤12	(-)	(-)	

Metric Scoring Guidelines (Class B)

Support (Pass)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%	In accordance with the 2016 Vermont Water Quality Standards, the "Indeterminate + (I+)" range was eliminated from metric scoring. All metrics that meet the threshold are considered supporting aquatic life use for that metric.
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 - VT DEC October 2018 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**Jay Branch**
Station:	**JB-8.3**

Note: a minimum of 25% of sample and no less then 300 animals must be processed; no fewer then 24 qrids (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:	10/10/2018	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 2019	Jan. 2019
#sq picked:	24	24
#sq total:	24	24
Checked By:	CCS	CSS
Sorted By:	CCS	CSS
Sorted Date:	Jan. 2019	Jan. 2019

Taxonomic Data

Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	Rep1				Rep2			
								ID [1]	QA [2]	Count [3]	Total Sample Count [4]	ID [1]	QA [2]	Count [3]	Total Sample Count [4]
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CCS	A	2	2	CCS	A	4	4
01.03.00.00.006.00.02	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	nitidulus	CCS	A	1	1	CCS			0
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A	N/A	ATHERIX	N/A	sp	CCS	A	1	1	CCS	A	1	1
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A	BEZZIA/PALPOMYIA	BEZZIA	N/A	sp	CCS			0	CCS	A	1	1
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS			0	CCS	A	5	5
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	MICROPSEC/TANYTARSUS	MICROPSECTRA	N/A	sp	CCS			0	CCS	A	1	1
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	6	6	CCS	A	2	2
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMU	N/A	sp	CCS			0	CCS	A	1	1
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	4	4	CCS	A	4	4
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	4	4	CCS	A	6	6
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CCS	A	1	1	CCS			0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	6	6	CCS	A	2	2
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	7	7	CCS	A	13	13
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS			0	CCS	A	6	6
03.04.00.00.008.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	TELOGANOPSIS	N/A	deficiens	CCS			0	CCS	A	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	4	4	CCS	A	10	10
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	2	2	CCS	A	4	4
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	29	29	CCS	A	42	42
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	1	1	CCS	A	5	5
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	alhedra	CCS	A	1	1	CCS	A	4	4
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	sparna	CCS			0	CCS	A	3	3
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	7	7	CCS	A	9	9
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	7	7	CCS	A	18	18
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS			0	CCS	A	4	4
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	8	8	CCS	A	4	4
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	3	3	CCS			0
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	38	38	CCS	A	28	28
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp	CCS	A	4	4	CCS	A	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	36	36	CCS	A	23	23
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	2	2	CCS	A	1	1
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata	CCS			0	CCS	A	3	3
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	13	13	CCS	A	9	9
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	1	1	CCS	A	4	4
18.02.00.00.000.00.00	OLIGOCHAETA	NAIDIDAE	N/A	N/A	N/A	N/A	naididae unid	CCS			0	CCS	A	1	1
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	21	21	CCS	A	27	27
TOTALS by Rep:										209	**209**			247	**247**

GRAND TOTAL: 456 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

Macroinvertebrate data submittal form - VT DEC October 2018 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**Jay Branch**
Station:	**JB-8.3**

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.938950	-72.489451
or VT Site ID:	427800000083	
Date collected:	10/10/2018	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

							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	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		SCR	N	2	3	4	8	6	12	1	0	1	0
01.03.00.00.006.00.02	COLEOPTERA	ELMIDAE	N/A		SCR	N	2	3	2	0	3	0	-	0	-	0
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A		PRD	N	3	2	3	3	2	2	1	0	1	0
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A		PRD	N	3	6	0	3	0	6	-	0	1	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI		CG	Y	3	4	0	15	0	20	-	0	1	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI		CG	Y	3	6	0	3	0	6	-	0	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	2	12	4	12	4	1	0	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	3	5	0	3	0	5	-	0	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	3	8	8	12	12	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	2	8	12	8	12	1	0	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A		SRD	N	3	6	3	0	6	0	1	0	-	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A		CG	N	3	6	18	6	36	12	1	1	1	1
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A		CG	N	0	0	0	0	0	0	1	1	1	1
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A		CG	N	2	4	0	12	0	24	-	0	1	1
03.04.00.00.008.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A		CG	N	1	2	0	1	0	2	-	0	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		CG	N	0	0	0	0	0	0	1	1	1	1
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		SCR	N	1	4	2	4	8	16	1	1	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		CG	N	0	0	0	0	0	0	1	1	1	1
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A		CG	N	2	1	2	10	1	5	1	1	1	1
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	3	2	8	3	12	1	1	1	1
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	4	0	6	0	12	-	0	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A		SRD	N	1	1	7	9	7	9	1	1	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A		CF	N	0	0	0	0	0	0	1	1	1	1
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A		PRD	N	3	6	0	12	0	24	-	0	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	1	2	8	4	16	8	1	1	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A		SCR	N	1	3	3	0	9	0	1	1	-	0
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A		PRD	N	0	0	0	0	0	0	1	1	1	1
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A		PRD	N	0	0	0	0	0	0	1	1	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A		SRD	N	0	0	0	0	0	0	1	1	1	1
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A		SRD	N	1	0	2	1	0	0	1	1	1	1
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A		PRD	N	0	2	0	0	0	6	-	0	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A		PRD	N	1	2	13	9	26	18	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A		SRD	N	1	0	1	4	0	0	1	1	1	1
18.02.00.00.000.00.00	OLIGOCHAETA	NAIDIDAE	N/A		CG	N	-	-	-	-	-	-	-	0	1	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep:								**Total BI Score**	98	145	155	227	**Total**	**Total**	**Total**	**Total**
GRAND TOTAL:	456 organisms							**Total # Organisms**	209	247	209	247	**Richness**	**EPT-R**	**Richness**	**EPT-R**
								# of Organisms w/o BI	21	28	21	28	24		32	
								Total # Organisms with BI	188	219	188	219		17		21
								Biotic Index	0.52	0.66	0.82	1.04				

*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 orga

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

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
VT Site ID 427800000083
Sample Date 10/10/2018

2018 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	2	0	0	0	0	0	0	0	0	0	
01.03.00.00.006.00.02	1	0	0	0	0	0	0	0	0	0	
02.01.00.00.001.00.00	0	1	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	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	
02.05.05.00.029.00.11	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	
02.19.00.00.003.00.00	0	4	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	1	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	6	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	7	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	0	0	0	0	0	0	0	0	
03.04.00.00.008.00.01	0	0	0	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	4	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	2	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	29	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	1	0	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	0	0	1	0	0	0	0	0	0	
04.05.00.00.004.03.04	0	0	0	0	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	7	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	7	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	8	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	38	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	4	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	36	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	2	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	0	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	13	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	1	0	0	0	0	0	
18.02.00.00.000.00.00	0	0	0	0	0	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	21	0	0	0	0	
Total	**3**	**16**	**49**	**26**	**94**	**21**	**0**	**0**	**0**	**0**	**209.0**
Percent	**1%**	**7.66%**	**23.4%**	**12.4%**	**45.0%**	**10.0%**	**0%**	**0%**	**0%**	**0%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
VT Site ID 427800000083
Sample Date 10/10/2018

2018 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	4	0	0	0	0	0	0	0	0	0	
01.03.00.00.006.00.02	0	0	0	0	0	0	0	0	0	0	
02.01.00.00.001.00.00	0	1	0	0	0	0	0	0	0	0	
02.03.00.01.003.00.00	0	1	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	5	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	
02.05.05.00.075.00.00	0	1	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	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	
03.01.00.00.001.00.09	0	0	2	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	6	0	0	0	0	0	0	0	
03.04.00.00.008.00.01	0	0	1	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	10	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	42	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	5	0	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	0	0	4	0	0	0	0	0	0	
04.05.00.00.004.03.04	0	0	0	3	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	9	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	4	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	4	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	28	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	1	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	23	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	1	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	3	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	9	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	4	0	0	0	0	0	
18.02.00.00.000.00.00	0	0	0	0	0	1	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	27	0	0	0	0	
Total	**4**	**21**	**83**	**42**	**69**	**28**	**0**	**0**	**0**	**0**	**247**
Percent	**1.62%**	**8.50%**	**33.6%**	**17.0%**	**27.9%**	**11.3%**	**0%**	**0%**	**0%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083
Sample Date 10/10/2018

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	2	0		0	0	0	0	0	4	0	
01.03.00.00.006.00.02	0	0	0	0	0	1	0		0	0	0	0	0	0	0	
02.01.00.00.001.00.00	0	0	1	0	0	0	0		0	0	1	0	0	0	0	
02.03.00.01.003.00.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
02.05.01.00.085.00.05	0	0	0	0	0	0	0		5	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	6	0	0	0	0	0	0		2	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	4	0	0	0	0		0	0	4	0	0	0	0	
02.19.00.00.006.00.00	0	0	4	0	0	0	0		0	0	6	0	0	0	0	
02.19.00.00.016.00.00	0	0	0	1	0	0	0		0	0	0	0	0	0	0	
03.01.00.00.001.00.09	6	0	0	0	0	0	0		2	0	0	0	0	0	0	
03.04.00.00.004.00.01	7	0	0	0	0	0	0		13	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	0	0	0	0	0		6	0	0	0	0	0	0	
03.04.00.00.008.00.01	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
03.06.00.00.003.00.00	4	0	0	0	0	0	0		10	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	4	0	
03.06.00.00.005.00.00	29	0	0	0	0	0	0		42	0	0	0	0	0	0	
03.07.00.00.005.00.00	1	0	0	0	0	0	0		5	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	1	0	0	0	0	0		0	4	0	0	0	0	0	
04.05.00.00.004.03.04	0	0	0	0	0	0	0		0	3	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	7	0	0	0		0	0	0	9	0	0	0	
04.12.00.00.002.00.00	0	7	0	0	0	0	0		0	18	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	0	0	0	0		0	0	4	0	0	0	0	
04.16.00.00.001.00.01	0	0	8	0	0	0	0		0	0	4	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	3	0		0	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	38	0	0	0	0		0	0	28	0	0	0	0	
05.02.00.00.091.00.00	0	0	4	0	0	0	0		0	0	1	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	36	0	0	0		0	0	0	23	0	0	0	
05.05.00.00.000.00.01	0	0	0	2	0	0	0		0	0	0	1	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	0	0	0		0	0	3	0	0	0	0	
05.07.00.00.007.00.00	0	0	13	0	0	0	0		0	0	9	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	
18.02.00.00.000.00.00	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
18.04.00.00.000.00.00	21	0	0	0	0	0	0		27	0	0	0	0	0	0	
Total	**74**	**8**	**72**	**47**	**0**	**8**	**0**	**209**	**116**	**25**	**61**	**37**	**0**	**8**	**0**	**247**
Percent	**35.4%**	**3.83%**	**34.4%**	**22.5%**	**0%**	**3.83%**	**0%**	**100%**	**47.0%**	**10.1%**	**24.7%**	**15.0%**	**0%**	**3.24%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083
Sample Date 10/10/2018

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%	35.4%	87.6%	47.0%	66.0%
Col. Filt.	18%	30%	36%	3.8%	21.3%	10.1%	56.2%
Predator	19%	13%	7%	34.4%	55.2%	24.7%	76.9%
Shred-Det.	15%	4%	2%	22.5%	66.7%	15.0%	99.9%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.00%	0.0%
Scraper	12%	13%	22%	3.83%	31.90%	3.24%	27.0%
				PPCS-FG =	**43.8%**	**PPCS-FG =**	**54.3%**

CG = Collector/Gatherer
CF = Collector/Filterer
PRD = Predator
SRD = Shredder - Detritus
SHR = Shredder - Herbivore
SCR = Scraper

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
VT Site ID 427800000083
Sample Date 10/10/2018
Class Small, High Gradient, B2
Sampler CCS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	1.44%	6.56	1.62%	6.38
Diptera	19%	18%	13%	7.7%	11.34	8.5%	10.498
Ephemeroptera	23%	34%	32%	23.4%	0.4	33.60%	10.6
Plecoptera	21%	8%	8%	45.0%	24.0	27.9%	6.9
Trichoptera	28%	33%	33%	12.4%	15.6	17.0%	11.0
Oligochaeta	0.5%	0.5%	1.0%	10.05%	9.55	11.34%	10.84
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.00%	0.500
				Sum diff	67.9		56.7
				Sum diff * 0.5	34.0		28.4
				100-(sum diff * 0.5)	66.0		71.6
				% model affinity	**66.0%**		**71.6%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083
Sample Date 10/10/2018
Class Small, High Gradient, B2
Sampler CCS

	KN-1	KN-2
#EPT organisms	169	194
#C organisms	6	9
EPT/EPT+C	0.97	0.96

Biometric Summary

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083
Sample Date 10/10/2018
Class Small, High Gradient, B2
Sampler CCS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	209	247	228
Species Richness	24.0	32.0	28.0
EPT Richness	17.0	21.0	19.0
Old Bio Index (0 to 5)	0.52	0.66	0.59
New Bio Index (0 to 10)	0.82	1.04	0.93
% dominant taxa	18.2%	17.0%	17.6%
EPT/EPT+C	0.966	0.956	0.961
EPT/Richness	0.708	0.656	0.679
% Model Affinity (orders)	66.0%	71.6%	68.8%
PPCS - functional groups	43.8%	54.3%	49.1%
Major Groups:			
Coleoptera (%)	1.44%	1.62%	1.53%
Diptera (%)	7.7%	8.5%	8.1%
Ephemeroptera (%)	23.4%	33.60%	28.52%
Trichoptera (%)	12.4%	17.0%	14.7%
Plecoptera (%)	45.0%	27.9%	36.5%
Oligochaeta (%)	10.05%	11.34%	10.69%
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 (%)	35.4%	47.0%	41.2%
Collector Filterer (%)	3.8%	10.12%	7.0%
Predator (%)	34.4%	24.7%	29.6%
Shredder - Detritus (%)	22.5%	15.0%	18.7%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	3.83%	3.24%	3.53%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Project Jay Peak Resort
Station JB-8.3 **Latitude** 44.938950
Stream Jay Branch **Longitude** -72.489451
Location 427800000083 **Class** Small, High Gradient, B2
Sample Date 10/10/2018 **Sampler** CCS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (1/15/2017)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B2		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	228.0	≥300	Fail	≥400	Fail	≥500	Fail
Richness	28.0	≥27	Pass	≥31	Fail	≥35	Fail
EPT	19.0	≥16	Pass	≥19	Pass	≥21	Fail
% PMA-O	68.8%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	0.93	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	10.69%	≤12%	Pass	≤5	Fail	≤2	Fail
EPT/EPT+C	0.961	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	49.1%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	I
Outcome:		**Biocriteria are not met**					
The following metrics do not meet Class B2 thresholds:		Density (Fail)					

Individual Metric Outcome Guidelines (using the table below)
1) A metric is scored "Pass" when the result meets the threshold requirements
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 all 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 "Fail"
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
A1	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	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	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 River Mile _____ USFS___ PROB___
Site ID 4-3 JB8.3 Date 10·8·18 Time 1015 New Site____
Crew T. Byrce C. Szal
Site Description _____

Town: _____ Stream Order: _____ Drainage Area: _____ Km^2 Elevation: _____ ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS --NAD83:) _____
Weather: Overcast Flow/Weather Previous (2 weeks/2days): Several events last 2wk
Surrounding Land Use: Resort Golf Course Forest quiet 48hr

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 50 % Filamentous Green _____ % and length _____ in
Blue Green Tr % Moss 4 % (mainly terrestrial) Green _____ % Other _____ %
Calcareous Deposits _____ % Iron Precipitate _____ %
General Trophic Rating: 1 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS
Embeddedness Estimate 30 % Silt Rating: 2 (0=none, 5= chocolate)
CPOM Rating (leaf packs): 1-2 (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: 20' (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
Fish: *Bottom Type*: Hard -- Soft -- Mixed (Armored) *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) 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 45 °F °C Temp Water 8.5 °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

A lot of gravel movement

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

Site Name JB8.3 Personnel TB Date 10.8.18

Pebble Count Field Form

Complete % observed substrate if no pebble count done.

Particle	Millimeters	%Observed	Transect 1 (100 pebbles)	Tot #	Item %
Clay	<.004				
Silt	.004 -0.6				
Sand	0.06 – 2.0		1111		
Gravel	2.0 -16		卌 卌 卌 卌		
Coarse Gravel	16 – 64		卌 卌 卌 卌 卌 111		
Cobble	64 – 256		卌 卌 卌 卌 卌 11		
Boulder	>256		卌 卌 卌 卌 卌 1		
Bedrock			1		
			TOTALS:		

Periphyton Cover Observations

	Moss Cover Index			
Category	0	1(<5%)	2(5-25%)	3(>25%)
Tally	卌 卌 卌 卌 卌 卌 卌 卌 卌 卌 卌 卌 111	卌 11	卌 卌	111

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

	Micro-Algae Cover Index						
Category	0	1 (slimy)	2 (draw line)	3(.5-1mm)	4(1-5mm)	5(5-20mm)	6(>20mm)
Tally	卌 卌 卌 卌 卌 卌 卌 1 卌 卌 卌 111	卌 卌 卌 卌 卌 卌 11					

	Other *Macro or Micro* _____ Cover Index					
Categoryy	0	1_____	2_____	3_____	4_____	5_____
Tally						

Substrate Comments:

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	98	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 Compliance Year Targets and Class B Criteria
2017 VHB	464	32	24	77	1.37	2.7	0.98	58	Meets Compliance Year Targets and Class B Criteria
2018 VHB	312	30	23	72	0.40	0.67	0.98	50	Meets 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 Compliance Year	≥300	≥28	≥17	(-)	(-)	≤9.5	(-)	(-)	
2017 Compliance Year	≥300	≥27	≥16	(-)	(-)	≤12	(-)	(-)	

Metric Scoring Guidelines (Class B)

Support (Pass)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%	In accordance with the 2016 Vermont Water Quality Standards, the "Indeterminate + (I+)" range was eliminated from metric scoring. All metrics that meet the threshold are considered supporting aquatic life use for that metric.
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 - VT DEC October 2018 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**Jay Branch**
Station:	**JB-7.3**

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

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.942180	-72.473810
or VT Site ID:	427800000073	
Date collected:	10/10/2018	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 2019	Jan. 2019
#sq picked:	21	24
#sq total:	24	24
Checked By:	CCS	CSS
Sorted By:	CCS	CSS
Sorted Date:	Jan. 2019	Jan. 2019

Taxonomic Data

Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	Rep1				Rep2			
								ID [1]	QA [2]	Count [3]	Total Sample Count [4]	ID [1]	QA [2]	Count [3]	Total Sample Count [4]
01.03.00.00.006.00.02	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	nitidulus	CCS			0	CCS	A	1	1
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A	N/A	ATHERIX	N/A	sp	CCS	A	1	1.14285714	CCS	A	1	1
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	4	4.57142857	CCS			0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	MICROPSEC/TANYTARSUS	MICROPSECTRA	N/A	sp	CCS	A	1	1.14285714	CCS			0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	3	3.42857143	CCS	A	1	1
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	5	5.71428571	CCS	A	4	4
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	1	1.14285714	CCS	A	3	3
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	3	3.42857143	CCS	A	2	2
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	ACENTRELLA/PLAUDITUS	PLAUDITUS	N/A	sp	CCS			0	CCS	A	1	1
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	58	66.2857143	CCS	A	58	58
03.04.00.00.008.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	TELOGANOPSIS	N/A	deficiens	CCS	A	1	1.14285714	CCS			0
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	6	6.85714286	CCS	A	5	5
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	1	1.14285714	CCS	A	4	4
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	78	89.1428571	CCS	A	63	63
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	4	4.57142857	CCS	A	3	3
03.14.00.00.001.00.00	EPHEMEROPTERA	AMELETIDAE	N/A	N/A	AMELETUS	N/A	sp	CCS			0	CCS	A	3	3
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp	CCS	A	1	1.14285714	CCS	A	1	1
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS			0	CCS	A	1	1
04.05.00.00.003.00.01	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	DIPLECTRONA	N/A	modesta	CCS	A	1	1.14285714	CCS	A	1	1
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	alhedra	CCS	A	6	6.85714286	CCS	A	2	2
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	sparna	CCS	A	1	1.14285714	CCS	A	2	2
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS			0	CCS	A	4	4
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	70	80	CCS	A	59	59
04.12.00.00.003.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	WORMALDIA	N/A	sp	CCS	A	1	1.14285714	CCS			0
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	3	3.42857143	CCS	A	3	3
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	invaria grp	invaria grp	CCS	A	1	1.14285714	CCS			0
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	4	4.57142857	CCS	A	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	29	33.1428571	CCS	A	38	38
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp	CCS	A	4	4.57142857	CCS	A	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	7	8	CCS	A	2	2
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	3	3.42857143	CCS			0
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata	CCS			0	CCS	A	1	1
05.07.00.00.006.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	ISOPERLA	N/A	sp	CCS			0	CCS	A	2	2
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	4	4.57142857	CCS	A	4	4
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	2	2.28571429	CCS	A	2	2
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	2	2.28571429	CCS	A	1	1
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A	N/A	N/A	N/A	uid	CCS	A	1	1.14285714	CCS			0
TOTALS by Rep:										306	**349.7**			274	**274**

GRAND TOTAL: 623.7142857 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

Macroinvertebrate data submittal form - VT DEC October 2018 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**Jay Branch**
Station:	**JB-7.3**

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.942180	-72.473810
or VT Site ID:	427800000073	
Date collected:	10/10/2018	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

							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	NOTES	FFG	Chiro	Old BI	New BI	KN-1	KN-2	KN-1	KN-2	KN-1	KN-1	KN-2	KN-2
01.03.00.00.006.00.02	COLEOPTERA	ELMIDAE	N/A		SCR	N	2	3	0	2	0	3	-	0	1	0
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A		PRD	N	3	2	3.4286	3	2.2857	2	1	0	1	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI		CG	Y	3	4	13.714	0	18.286	0	1	0	-	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI		CG	Y	3	6	3.4286	0	6.8571	0	1	0	-	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	2	6.8571	2	6.8571	2	1	0	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	3	11.429	8	17.143	12	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	2	2.2857	6	2.2857	6	1	0	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A		CG	N	3	6	10.286	6	20.571	12	1	1	1	1
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A		SCR	N	2	5	0	2	0	5	-	0	1	1
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A		CG	N	0	0	0	0	0	0	1	1	1	1
03.04.00.00.008.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A		CG	N	1	2	1.1429	0	2.2857	0	1	1	-	0
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		CG	N	0	0	0	0	0	0	1	1	1	1
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		SCR	N	1	4	1.1429	4	4.5714	16	1	1	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		CG	N	0	0	0	0	0	0	1	1	1	1
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A		CG	N	2	1	9.1429	6	4.5714	3	1	1	1	1
03.14.00.00.001.00.00	EPHEMEROPTERA	AMELETIDAE	N/A		CG	N	0	0	0	0	0	0	-	0	1	1
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A		SHR	N	1	2	1.1429	1	2.2857	2	1	1	1	1
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A		SCR	N	1	0	0	1	0	0	-	0	1	1
04.05.00.00.003.00.01	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	0	0	0	0	0	0	1	1	1	1
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	3	13.714	4	20.571	6	1	1	1	1
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	4	2.2857	4	4.5714	8	1	1	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A		SRD	N	1	1	0	4	0	4	-	0	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A		CF	N	0	0	0	0	0	0	1	1	1	1
04.12.00.00.003.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A		CF	N	0	0	0	0	0	0	1	1	-	0
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	1	2	3.4286	3	6.8571	6	1	1	1	1
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	1	1	1.1429	0	1.1429	0	1	1	-	0
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A		SCR	N	1	3	4.5714	1	13.714	3	1	1	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A		PRD	N	0	0	0	0	0	0	1	1	1	1
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A		PRD	N	0	0	0	0	0	0	1	1	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A		SRD	N	0	0	0	0	0	0	1	1	1	1
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A		SRD	N	1	0	3.4286	0	0	0	1	1	-	0
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A		PRD	N	0	2	0	0	0	2	-	0	1	1
05.07.00.00.006.00.00	PLECOPTERA	PERLODIDAE	N/A		PRD	N	1	2	0	2	0	4	-	0	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A		PRD	N	1	2	4.5714	4	9.1429	8	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A		SRD	N	1	0	2.2857	2	0	0	1	1	1	1
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A		CG	N	-	-	-	-	-	-	1	0	1	0
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A		CG	N	-	-	-	-	-	-	1	0	-	0
TOTALS by Rep:								**Total BI Score**	99.429	65	144	104	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
GRAND TOTAL:	623.7142857 organisms							**Total # Organisms**	349.71	274	349.71	274				
								# of Organisms w/o BI	3.4286	1	3.4286	1	30		30	
								Total # Organisms with BI	346.29	273	346.29	273		22		24
								Biotic Index	0.29	0.24	0.42	0.38				

*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 wer

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

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
VT Site ID 427800000073
Sample Date 10/10/2018

2018 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.02	0	0	0	0	0	0	0	0	0	0	
02.01.00.00.001.00.00	0	1.142857143	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	4.571428571	0	0	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	1.142857143	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	3.428571429	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	5.714285714	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	1.142857143	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	3.428571429	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	66.28571429	0	0	0	0	0	0	0	
03.04.00.00.008.00.01	0	0	1.142857143	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	6.857142857	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	1.142857143	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	89.14285714	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	4.571428571	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	1.142857143	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	0	0	0	0	0	0	0	
04.05.00.00.003.00.01	0	0	0	1.142857143	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	0	0	6.857142857	0	0	0	0	0	0	
04.05.00.00.004.03.04	0	0	0	1.142857143	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	80	0	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	1.142857143	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	3.428571429	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	1.142857143	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	4.571428571	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	33.14285714	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	4.571428571	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	3.428571429	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	4.571428571	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	2.285714286	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	2.285714286	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	1.142857143	0	0	0	0	
Total	**0**	**17.1**	**172.6**	**100.6**	**56**	**3.43**	**0**	**0**	**0**	**0**	**349.7**
Percent	**0%**	**4.90%**	**49.3%**	**28.8%**	**16.0%**	**0.980%**	**0%**	**0%**	**0%**	**0%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
VT Site ID 427800000073
Sample Date 10/10/2018

2018 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.02	1	0	0	0	0	0	0	0	0	0	
02.01.00.00.001.00.00	0	1	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	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	
02.19.00.00.003.00.00	0	4	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	
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	1	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	58	0	0	0	0	0	0	0	
03.04.00.00.008.00.01	0	0	0	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	4	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	63	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	3	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	1	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	1	0	0	0	0	0	0	
04.05.00.00.003.00.01	0	0	0	1	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	0	0	2	0	0	0	0	0	0	
04.05.00.00.004.03.04	0	0	0	2	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	4	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	59	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	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	1	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	38	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	1	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	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	0	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	2	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	4	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	2	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	1	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	0	0	0	0	0	
Total	**1**	**9**	**139**	**74**	**50**	**1**	**0**	**0**	**0**	**0**	**274**
Percent	**0.365%**	**3.28%**	**50.7%**	**27.0%**	**18.2%**	**0.365%**	**0%**	**0%**	**0%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073
Sample Date 10/10/2018

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
01.03.00.00.006.00.02	0	0	0	0	0	0	0		0	0	0	0	0	1	0	
02.01.00.00.001.00.00	0	0	1.142857143	0	0	0	0		0	0	1	0	0	0	0	
02.05.01.00.085.00.05	4.571428571	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.03.02.121.00.00	1.142857143	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.029.00.11	3.428571429	0	0	0	0	0	0		1	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	5.714285714	0	0	0	0		0	0	4	0	0	0	0	
02.19.00.00.006.00.00	0	0	1.142857143	0	0	0	0		0	0	3	0	0	0	0	
03.01.00.00.001.00.09	3.428571429	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	0	0		0	0	0	0	0	1	0	
03.04.00.00.004.00.01	66.28571429	0	0	0	0	0	0		58	0	0	0	0	0	0	
03.04.00.00.008.00.01	1.142857143	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.06.00.00.003.00.00	6.857142857	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	1.142857	0		0	0	0	0	0	4	0	
03.06.00.00.005.00.00	89.14285714	0	0	0	0	0	0		63	0	0	0	0	0	0	
03.07.00.00.005.00.00	4.571428571	0	0	0	0	0	0		3	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	0	0	0	0	0		3	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	0	1.142857	0	0		0	0	0	0	1	0	0	
04.03.00.00.002.00.00	0	0	0	0	0	0	0		0	0	0	0	0	1	0	
04.05.00.00.003.00.01	0	1.142857	0	0	0	0	0		0	1	0	0	0	0	0	
04.05.00.00.004.03.02	0	6.857143	0	0	0	0	0		0	2	0	0	0	0	0	
04.05.00.00.004.03.04	0	1.142857	0	0	0	0	0		0	2	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	0	0	0	0		0	0	0	4	0	0	0	
04.12.00.00.002.00.00	0	80	0	0	0	0	0		0	59	0	0	0	0	0	
04.12.00.00.003.00.00	0	1.142857	0	0	0	0	0		0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	3.428571429	0	0	0	0		0	0	3	0	0	0	0	
04.16.00.00.001.01.00	0	0	1.142857143	0	0	0	0		0	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	4.571429	0		0	0	0	0	0	1	0	
05.02.00.00.006.00.00	0	0	33.14285714	0	0	0	0		0	0	38	0	0	0	0	
05.02.00.00.091.00.00	0	0	4.571428571	0	0	0	0		0	0	1	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	8	0	0	0		0	0	0	2	0	0	0	
05.05.00.00.000.00.01	0	0	0	3.428571	0	0	0		0	0	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	0	0	0		0	0	2	0	0	0	0	
05.07.00.00.007.00.00	0	0	4.571428571	0	0	0	0		0	0	4	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	2.285714	0	0	0		0	0	0	2	0	0	0	
18.04.00.00.000.00.00	2.285714286	0	0	0	0	0	0		1	0	0	0	0	0	0	
18.06.00.00.000.00.00	1.142857143	0	0	0	0	0	0		0	0	0	0	0	0	0	
Total	**184**	**90.3**	**54.9**	**13.7**	**1.14**	**5.71**	**0**	**349.7**	**136**	**64**	**57**	**8**	**1**	**8**	**0**	**274**
Percent	**52.6%**	**25.8%**	**15.7%**	**3.92%**	**0.327%**	**1.63%**	**0%**	**100%**	**49.6%**	**23.4%**	**20.8%**	**2.92%**	**0.365%**	**2.92%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073
Sample Date 10/10/2018

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%	52.6%	58.9%	49.6%	62.5%
Col. Filt.	18%	30%	36%	25.8%	69.7%	23.4%	77.1%
Predator	19%	13%	7%	15.7%	82.6%	20.8%	91.3%
Shred-Det.	15%	4%	2%	3.9%	26.1%	2.9%	19.5%
Shred- Herb.	1%	1%	5%	0.33%	32.7%	0.36%	36.5%
Scraper	12%	13%	22%	1.63%	13.62%	2.92%	24.3%
				PPCS-FG =	**47.3%**	**PPCS-FG =**	**51.9%**

CG = Collector/Gatherer
CF = Collector/Filterer
PRD = Predator
SRD = Shredder - Detritus
SHR = Shredder - Herbivore
SCR = Scraper

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
VT Site ID 427800000073
Sample Date 10/10/2018
Class Small, High Gradient, B2
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	0.36%	7.64
Diptera	19%	18%	13%	4.9%	14.10	3.3%	15.715
Ephemeroptera	23%	34%	32%	49.3%	26.3	50.73%	27.7
Plecoptera	21%	8%	8%	16.0%	5.0	18.2%	2.8
Trichoptera	28%	33%	33%	28.8%	0.8	27.0%	1.0
Oligochaeta	0.5%	0.5%	1.0%	0.98%	0.48	0.36%	0.14
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.00%	0.500
				Sum diff	55.2		55.5
				Sum diff * 0.5	27.6		27.7
				100-(sum diff * 0.5)	72.4		72.3
				% model affinity	**72.4%**		**72.3%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073
Sample Date 10/10/2018
Class Small, High Gradient, B2
Sampler CCS

	KN-1	KN-2
#EPT organisms	329.1428571	263
#C organisms	9.142857143	1
EPT/EPT+C	0.97	1.00

Biometric Summary

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073
Sample Date 10/10/2018
Class Small, High Gradient, B2
Sampler CCS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	350	274	312
Species Richness	30.0	30.0	30.0
EPT Richness	22.0	24.0	23.0
Old Bio Index (0 to 5)	0.29	0.24	0.26
New Bio Index (0 to 10)	0.42	0.38	0.40
% dominant taxa	25.5%	23.0%	24.2%
EPT/EPT+C	0.973	0.996	0.985
EPT/Richness	0.733	0.800	0.767
% Model Affinity (orders)	72.4%	72.3%	72.3%
PPCS - functional groups	47.3%	51.9%	49.6%
Major Groups:			
Coleoptera (%)	0.00%	0.36%	0.18%
Diptera (%)	4.9%	3.3%	4.1%
Ephemeroptera (%)	49.3%	50.73%	50.04%
Trichoptera (%)	28.8%	27.0%	27.9%
Plecoptera (%)	16.0%	18.2%	17.1%
Oligochaeta (%)	0.98%	0.36%	0.67%
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 (%)	52.6%	49.6%	51.1%
Collector Filterer (%)	25.8%	23.36%	24.6%
Predator (%)	15.7%	20.8%	18.2%
Shredder - Detritus (%)	3.9%	2.9%	3.4%
Shredder - Herbivore (%)	0.33%	0.36%	0.35%
Scraper (%)	1.63%	2.92%	2.28%
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, B2
Sample Date 10/10/2018 **Sampler** CCS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (1/15/2017)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B2		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	311.9	≥300	Pass	≥400	Fail	≥500	Fail
Richness	30.0	≥27	Pass	≥31	Fail	≥35	Fail
EPT	23.0	≥16	Pass	≥19	Pass	≥21	Pass
% PMA-O	72.3%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	0.40	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	0.67%	≤12%	Pass	≤5	Pass	≤2	Pass
EPT/EPT+C	0.985	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	49.6%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	I
Outcome:		**Biocriteria are met**					
The following metrics do not meet Class B2 thresholds:		NA					

Individual Metric Outcome Guidelines (using the table below)
1) A metric is scored "Pass" when the result meets the threshold requirements
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 all 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 "Fail"
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
A1	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	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	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
(2016 edition)

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

Site Name Jay River Mile _____ USFS____ PROB_____
Site ID 4-4a JB-7.3
Date 10.10.18 Time 1300 Crew CS
Site Description_____

Town: _____ Stream Order:_____ Drainage Area: _____Km² Elevation:_____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS – set to NAD83:) _____
Weather: Sunny Flow/Weather Previous (2 weeks/2days): Event last wk., light rain yesterday
Surrounding Land Use: Resort, residential, road, forest

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: __ min Mesh: ____ um
Area: _____ 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 2 % Green _____% Other _____%
Terrestrial
General Trophic Rating: 2 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS
Embeddedness (5) 0-5% Excel (4) 5-25% V Good (3) 25-50% Good (2) 50-75% Fair (1) > 75%Poor Estimate 20
Silt Rating: 3 (0=none, 5= chocolate) CPOM Rating (leaf packs): 1 (0= none,5=high)
Lg Woody Debris (>4"dia) #: 7 /100m (reach)

Habitat Comments

GENERAL WATER TYPE Riffle, Winder, or Other _____ Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 40' (m) Wetted Width: 20' (m) Riffle Depth: 4-6" (in) Pool Depth: NA (in) and Obs: _____
Bank Stability: EX VG G F P Velocity estimate (circle): (S) <0.4 ft/sec, (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured:_____ ft/sec
well armored
Fish: Bottom Type: Hard – Soft – Mixed Cover Rating: Exc – Very Good – Good – Fair -- Poor

Riparian VEGETATION (both sides, does not need to add up to 100%) Riparian Width (facing upstream) L>100m, R>100m
Overstory: Softwood 30% Hardwood 70% Understory: Shrub (brush) 70 Grass __% Herbaceous 20%
Canopy %: 100 90 80 70 60 50 40 30 20 10 0 Overhead: Open, Partly Open, or Closed
leaves 70% on

WQ Section Sampler: ___ Baseflow or Freshet Flow Present Flow: H / M – L
Meter (type, #)1-_____2-_____3-_____Color_____Color DUP:_____
Annotate? Y / N

Temp Air 75 °C,°F Temp Water 14 °C fpH_____lab pH_____ fCond_____ D.O.%_____ D.Omg/l_____

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

WQ Notes/Comments

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

A – Pollution: Sludge | Sawdust | Paper Fiber | Sand | Silt | Sewage | Oily Sheen | Trash | Iron | Scum | None
B – Water Clarity: Clear | Slightly Turbid | Moderately Turbid | Very Turbid | Secci Tube_____mm
C – Water Color: Clear | Green Milky | Brown (Tannic) L M H | Gray | Metallic | Reddish
D – Odors: None | Musty | Fishy | Sewage | Manure | Sulfur(eggs) | Oily/gas
Aquatic Biota Observed:

A lot of sand between rocks
very little CPOM

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

River (Site) 4-4 Personnel CS Date 10·10·18

Pebble Count Field Form

Complete % observed substrate if no pebble ct done

Periphyton Cover Observations Date

Particle	Millimeters	Inches	% Observed	Transect 1 (100 pebbles)	Tot #	Item %
organic						
Fines	0.062-2	0.002-0.08"	S	III		
very fine gravel	2-4	01.08-0.15"				
small gravel	4-8	0.15-0.3"	G	~~IIII~~ ~~IIII~~		
medium gravel	8-16	0.3- 0.6"				
coarse gravel	16-32	0.6-1.25"	CG	~~IIII~~ ~~IIII~~ ~~IIII~~ II		
very coarse gravel	32-64	1.25-2.5"				
small and medium cobble	64-128	2.5-5"	C	~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ IIII		
large cobble	128-256	5-10"				
small boulder	265-512	10-20"	B	~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ II		
medium boulder	512-1024	20-40"				
large boulder	1024-2048	40-80"				
very large boulder	>2048	>80"	BR	II		
bedrock						
				TOTALS		

	Moss Cover Index			
Category	0	1(<5%)	2(5-25%)	3(>25%)
Tally	~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~	~~IIII~~ III	~~IIII~~	I

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

	Micro-Algae Cover Index						
Category	0	1 (slimy)	2 (draw line)	3(.5-1mm)	4(1-5mm)	5(5-20mm)	6(>20mm)
Tally	~~IIII~~ I	~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ I					

	Other *Macro* or *Micro*_____Cover Index					
Category	0	1_____	2_____	3_____	4_____	5_____
Tally						

Substrate Comments:

Jay Peak Resort
Kick Net Data - Tributary 9 to Jay Branch - JB-T9-0.1
Class B, Small High Gradient Stream

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B, SHG	≥300	≥27	≥16	≥45	≤4.50	≤12	≥0.45	≥40	
2004 PIO	200	24	14	44	4.61	0	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	0.88	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	0.92	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	1.96	21	0.93	54	Does Not Meet Class B Criteria
2013 VHB	157	30	19.5	74	2.07	14	0.91	58	Does Not Meet Class B Criteria
2014 VHB	168	27	15	63	1.49	15	0.96	54	Does Not Meet Interim Targets
2015 VHB	209	32	16	60	3.33	27	0.92	67	Meets 1 of 4 Interim Targets
2016 VHB	373	30	21	82	1.16	4	1.00	56	Meets Compliance Year Targets and Class B Criteria
2017 VHB	333	39	25	74	1.93	6	0.98	63	Meets Compliance Year Targets and Class B Criteria
2018 VHB	332	32	21	67	1.90	10	0.99	50	Meets Class B Criteria

2014 Interim Targets	>200	≥28	≥17	(-)	(-)	≤12	(-)	(-)	Per 2014 WQRP, Appendix 4 (01/16/2015)
2015 Interim Targets	>250	≥28	≥17	(-)	(-)	≤12	(-)	(-)	
2016 Compliance Year	≥300	≥28	≥17	(-)	(-)	≤12	(-)	(-)	
2017 Compliance Year	≥300	≥27	≥16	(-)	(-)	≤12	(-)	(-)	

Metric Scoring Guidelines (Class B)

Support (Pass)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%	In accordance with the 2016 Vermont Water Quality Standards, the "Indeterminate + (I+)" range was eliminated from metric scoring. All metrics that meet the threshold are considered supporting aquatic life use for that metric.
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 2018 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**Jay Branch - Trib 9**
Station:	**JB-T9-0.1**

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.938650	-72.491635
or VT Site ID:	427809000001	
Date collected:	10/8/2018	
# Reps Collected:	1	
# Rep Picked:	1	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**
Picked By:	CCS
Date Picked:	Jan. 2019
#sq picked:	22
#sq total:	24
Checked By:	CCS
Sorted By:	CCS
Sorted Date:	Jan. 2019

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
01.03.00.00.006.00.02	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	nitidulus	CCS	A	33	36		SCR	N	2	3	72	108	1	0
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CCS	A	28	30.54545455		SCR	N	2	3	61.09090909	91.63636364	--	0
01.03.00.00.007.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	PROMORESIA	N/A	sp	CCS	A	1	1.090909091		SCR	N	2	2	2.181818182	2.181818182	1	0
01.05.00.00.002.00.00	COLEOPTERA	PSEPHENIDAE	N/A	N/A	PSEPHENUS	N/A	sp	CCS	A	1	1.090909091		SCR	N	2	4	2.181818182	4.363636364	1	0
02.05.09.04.000.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	THIENEMANNIMYIA GROUP	N/A	N/A	group	CCS	A	1	1.090909091		PRD	Y	3	6	3.272727273	6.545454545	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	3	3.272727273		PRD	N	2	3	6.545454545	9.818181818	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	5	5.454545455		PRD	N	2	2	10.90909091	10.90909091	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CCS	A	3	3.272727273		SRD	N	3	6	9.818181818	19.63636364	1	0
02.19.00.00.019.00.00	DIPTERA	TIPULIDAE	N/A	N/A	MOLOPHILUS	N/A	sp	CCS	A	1	1.090909091		CG	N	3	4	3.272727273	4.363636364	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	5	5.454545455		CG	N	3	6	16.36363636	32.72727273	1	1
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	ACENTRELLA/PLAUDITUS	PLAUDITUS	N/A	sp	CCS	A	2	2.181818182		SCR	N	2	5	4.363636364	10.90909091	1	1
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	1	1.090909091		CG	N	0	0	0	0	1	1
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS	A	1	1.090909091		CG	N	2	4	2.181818182	4.363636364	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	3	3.272727273		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	5	5.454545455		SCR	N	1	4	5.454545455	21.81818182	1	1
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	5	5.454545455		CG	N	2	1	10.90909091	5.454545455	1	1
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS	A	2	2.181818182		SCR	N	1	0	2.181818182	0	1	1
04.05.00.00.003.00.01	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	DIPLECTRONA	N/A	modesta	CCS	A	29	31.63636364		CF	N	0	0	0	0	1	1
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	alhedra	CCS	A	40	43.63636364		CF	N	2	3	87.27272727	130.9090909	1	1
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	sparna	CCS	A	8	8.727272727		CF	N	2	4	17.45454545	34.90909091	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	1	1.090909091		SRD	N	1	1	1.090909091	1.090909091	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	30	32.72727273		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	2	2.181818182		PRD	N	3	6	6.545454545	13.09090909	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	2	2.181818182		PRD	N	1	2	2.181818182	4.363636364	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	26	28.36363636		PRD	N	0	0	0	0	1	1
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp	CCS	A	1	1.090909091		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	7	7.636363636		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	14	15.27272727		SRD	N	1	0	15.27272727	0	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	2	2.181818182		PRD	N	1	2	2.181818182	4.363636364	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	6	6.545454545		SRD	N	1	0	6.545454545	0	1	1
12.08.00.00.002.00.00	GASTROPODA	PHYSIDAE	N/A	N/A	PHYSA	N/A	sp	CCS	A	5	5.454545455		CG	N	4	8	21.81818182	43.63636364	1	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	26	28.36363636		CG	N	-	-	-	-	1	0
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A	N/A	N/A	N/A	uid	CCS	A	5	5.454545455		CG	N	-	-	-	-	1	0
TOTALS by Rep:										304	331.6363636									
GRAND TOTAL:	331.6363636 organisms																			

Total BI Score	373.0909091	565.0909091	**Total Richness**	**Total EPT-R**
Total # Organisms	331.6363636	331.6363636		
# of Organisms w/o BI	33.81818182	33.81818182	32	
Total # Organisms with BI	297.8181818	297.8181818		21
Biotic Index	1.25	1.90		

*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 Jay Branch - Trib 9
Location 427809000001
Sample Date 10/08/18

2018 Expanded Key	KN-1: Numbers of Organisms											
ID#	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	LEPIDOPTERA	OTHER	TOTAL
01.03.00.00.006.00.02	36	0	0	0	0	0	0	0	0	0	0	
01.03.00.00.006.00.00	30.54545455	0	0	0	0	0	0	0	0	0	0	
01.03.00.00.007.00.00	1.090909091	0	0	0	0	0	0	0	0	0	0	
01.05.00.00.002.00.00	1.090909091	0	0	0	0	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	1.090909091	0	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	3.272727273	0	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	5.454545455	0	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	3.272727273	0	0	0	0	0	0	0	0	0	
02.19.00.00.019.00.00	0	1.090909091	0	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	5.454545455	0	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	2.181818182	0	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	1.090909091	0	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	1.090909091	0	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	3.272727273	0	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	5.454545455	0	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	5.454545455	0	0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	2.181818182	0	0	0	0	0	0	0	
04.05.00.00.003.00.01	0	0	0	31.63636364	0	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	0	0	43.63636364	0	0	0	0	0	0	0	
04.05.00.00.004.03.04	0	0	0	8.727272727	0	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	1.090909091	0	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	32.72727273	0	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	2.181818182	0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	2.181818182	0	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	28.36363636	0	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	1.090909091	0	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	7.636363636	0	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	15.27272727	0	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	2.181818182	0	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	6.545454545	0	0	0	0	0	0	
12.08.00.00.002.00.00	0	0	0	0	0	0	0	0	0	0	5.454545455	
18.04.00.00.000.00.00	0	0	0	0	0	28.36363636	0	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	5.454545455	0	0	0	0	0	
Total	**68.7**	**14.2**	**24**	**124.4**	**61.1**	**33.8**	**0**	**0**	**0**	**0**	**5.45**	**331.6**
Percent	**20.7%**	**4.28%**	**7.24%**	**37.5%**	**18.4%**	**10.2%**	**0%**	**0%**	**0%**	**0%**	**1.64%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-T9-0.1
Stream Jay Branch - Trib 9
Location 427809000001
Sample Date 10/08/18

2018 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
01.03.00.00.006.00.02	0	0	0	0	0	0	0	36	0	0	0	**36**
01.03.00.00.006.00.00	0	0	0	0	0	0	0	30.5455	0	0	0	**30.5455**
01.03.00.00.007.00.00	0	0	0	0	0	0	0	1.09091	0	0	0	**1.09091**
01.05.00.00.002.00.00	0	0	0	0	0	0	0	1.09091	0	0	0	**1.09091**
02.05.09.04.000.00.00	0	0	0	0	1.090909	0	0	0	0	0	0	**1.09091**
02.19.00.00.003.00.00	0	0	0	0	3.272727	0	0	0	0	0	0	**3.27273**
02.19.00.00.006.00.00	0	0	0	0	5.454545	0	0	0	0	0	0	**5.45455**
02.19.00.00.016.00.00	0	0	0	0	0	0	0	0	0	3.2727273	0	**3.27273**
02.19.00.00.019.00.00	0	1.090909091	0	0	0	0	0	0	0	0	0	**1.09091**
03.01.00.00.001.00.09	0	5.454545455	0	0	0	0	0	0	0	0	0	**5.45455**
03.01.00.02.007.00.00	0	0	0	0	0	0	0	2.18182	0	0	0	**2.18182**
03.04.00.00.004.00.01	0	1.090909091	0	0	0	0	0	0	0	0	0	**1.09091**
03.04.00.00.004.01.00	0	1.090909091	0	0	0	0	0	0	0	0	0	**1.09091**
03.06.00.00.003.00.00	0	3.272727273	0	0	0	0	0	0	0	0	0	**3.27273**
03.06.00.00.004.00.00	0	0	0	0	0	0	0	5.45455	0	0	0	**5.45455**
03.07.00.00.005.00.00	0	5.454545455	0	0	0	0	0	0	0	0	0	**5.45455**
04.03.00.00.002.00.00	0	0	0	0	0	0	0	2.18182	0	0	0	**2.18182**
04.05.00.00.003.00.01	31.63636364	0	0	0	0	0	0	0	0	0	0	**31.6364**
04.05.00.00.004.03.02	43.63636364	0	0	0	0	0	0	0	0	0	0	**43.6364**
04.05.00.00.004.03.04	8.727272727	0	0	0	0	0	0	0	0	0	0	**8.72727**
04.07.00.00.001.00.00	0	0	0	0	0	0	0	0	0	1.0909091	0	**1.09091**
04.12.00.00.002.00.00	32.72727273	0	0	0	0	0	0	0	0	0	0	**32.7273**
04.14.00.00.005.00.00	0	0	0	0	2.181818	0	0	0	0	0	0	**2.18182**
04.16.00.00.001.00.01	0	0	0	0	2.181818	0	0	0	0	0	0	**2.18182**
05.02.00.00.006.00.00	0	0	0	0	28.36364	0	0	0	0	0	0	**28.3636**
05.02.00.00.091.00.00	0	0	0	0	1.090909	0	0	0	0	0	0	**1.09091**
05.03.00.00.000.00.01	0	0	0	0	0	0	0	0	0	7.6363636	0	**7.63636**
05.05.00.00.000.00.01	0	0	0	0	0	0	0	0	0	15.272727	0	**15.2727**
05.07.00.00.007.00.00	0	0	0	0	2.181818	0	0	0	0	0	0	**2.18182**
05.08.00.00.001.00.02	0	0	0	0	0	0	0	0	0	6.5454545	0	**6.54545**
12.08.00.00.002.00.00	0	5.454545455	0	0	0	0	0	0	0	0	0	**5.45455**
18.04.00.00.000.00.00	0	28.36363636	0	0	0	0	0	0	0	0	0	**28.3636**
18.06.00.00.000.00.00	0	5.454545455	0	0	0	0	0	0	0	0	0	**5.45455**
Group Total	**116.7**	**56.7**	**0**	**0**	**45.8**	**0**	**0**	**78.5**	**0**	**33.8**	**0**	**331.6**
Percent of Sample Total	**35.2%**	**17.1%**	**0%**	**0%**	**13.8%**	**0%**	**0%**	**23.7%**	**0%**	**10.2%**	**0%**	**100%**

	Model			Kicknet 1 vs. SHG	
	SHG	MHG	WWMG	**KN-1**	**PPCS**
Col. Gath.	31%	32%	22%	17.1%	55.2%
Col. Filt.	18%	30%	36%	35.20%	51.1%
Predator	19%	13%	7%	13.8%	72.7%
Shred-Det.	15%	4%	2%	10.2%	68.0%
Shred- Herb.	1%	1%	5%	0.00%	0.0%
Scraper	12%	13%	22%	23.68%	50.7%
				PPCS-FG =	**49.6%**

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station JB-T9-0.1
Stream Jay Branch - Trib 9
Location 427809000001 **Class** SHG
Sample Date 10/08/18 **Sampler** C. Szal

Order	Model			Kicknet 1 vs. Model (SHG)	
	SHG	MHG	WWMG	**%**	**difference**
Coleoptera	8%	6%	13%	20.72%	12.72
Diptera	19%	18%	13%	4.3%	14.7
Ephemeroptera	23%	34%	32%	7.2%	15.8
Plecoptera	21%	8%	8%	18.4%	2.6
Trichoptera	28%	33%	33%	37.5%	9.50
Oligochaeta	0.5%	0.5%	1.0%	10.20%	9.697
Other	0.5%	0.5%	1.0%	1.64%	1.14

Sum diff	66.1
Sum diff * 0.5	33.1
100-(sum diff * 0.5)	66.9
% model affinity	**66.9%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-T9-0.1
Stream Jay Branch - Trib 9
Location 427809000001
Sample Date 10/08/18
Class SHG
Sampler C. Szal

	KN-1
#EPT organisms	209.4545455
#C organisms	1
EPT/EPT+C	0.995

Biometrics Summary

Project Jay Peak Resort
Station JB-T9-0.1
Stream Jay Branch - Trib 9
Location 427809000001
Sample Date 10/08/18
Class SHG
Sampler C. Szal

Replicate # Sampling Method	1 KN	Average KN
Biometrics:		
Density/Unit	332	332
Species Richness	32.0	32.0
EPT Richness	21.0	21.0
Old Bio Index (0 to 5)	1.25	1.25
New Bio Index (0 to 10)	1.90	1.90
% dominant taxa	13.2%	13.2%
# dominant taxa	44	
dominant taxa ID	TRICHOPTERA	HYDROPSYCHIDAE
EPT/EPT+C	0.995	0.995
EPT/Richness	0.656	0.656
% Model Affinity (orders)	66.9%	66.9%
PPCS - functional groups	49.6%	49.6%
Major Groups:		
Coleoptera (%)	20.72%	20.72%
Diptera (%)	4.3%	4.3%
Ephemeroptera (%)	7.2%	7.2%
Trichoptera (%)	37.5%	37.5%
Plecoptera (%)	18.4%	18.4%
Oligochaeta (%)	10.20%	10.20%
Bivalvia (%)	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%
Odonata (%)	0.00%	0.00%
Other (%)	1.64%	1.64%
Total (%)	100%	100%
Feeding Groups:		
Collector Gatherer (%)	17.1%	17.1%
Collector Filterer (%)	35.2%	35.2%
Predator (%)	13.8%	13.8%
Shredder - Detritus (%)	10.2%	10.2%
Shredder - Herbivore (%)	0.00%	0.00%
Scraper (%)	23.68%	23.68%
Other (%)	0.00%	0.00%
Total (%)	100%	100%

Project Jay Peak Resort
Station JB-T9-0.1
Stream Jay Branch - Trib 9
Location 427809000001
Sample Date 10/08/18

Latitude 44.938650
Longitude -72.491635
Class B2
Sampler CCS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (1/15/2017)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B2		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	331.6	≥300	Pass	≥400	Fail	≥500	Fail
Richness	32.0	≥27	Pass	≥31	Pass	≥35	Fail
EPT	21.0	≥16	Pass	≥19	Pass	≥21	Pass
PMA-O	66.9%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	1.90	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	10.2%	≤12%	Pass	≤5	Fail	≤2	Fail
EPT/EPT+C	0.995	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
PPCS-FG	49.6%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	I
Outcome:		**Biocriteria are met**					
The following metrics do not meet Class B2 thresholds:		NA					

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

Overall Outcome Guidelines
1) Biocriteria are "met" when all 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 "Fail"
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	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	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	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
(2016 edition)

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

Site Name Jay River Mile _____ USFS____ PROB_____
Site ID JB-T9 0.1 3-1
Date 10·8·18 Time 1050 Crew CS TB
Site Description_____

Town: _____ Stream Order:_____ Drainage Area: _____Km² Elevation:_____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS – set to NAD83:) _____
Weather: Overcast Flow/Weather Previous (2 weeks/2days): Several events last 2 wk., quiet 48 hr
Surrounding Land Use: Resort, golf course, forest

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: __ min Mesh: ____ um
Area: _____ m² Quantitative: Y / N
#Reps: 1 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 Tr% Moss Tr % Green _____% Other _____%
Terrestrial
General Trophic Rating: 1 (0=oligo, 5=Eutroph)

Not enough space - very dry summer

HABITAT OBSERVATIONS
Embeddedness (S) 0-S% Excel (4) 5-25% V Good (3) 25-50% Good (2) 50-75% Fair (1) > 7S%Poor Estimate 30
Silt Rating: 3-4 (0=none, S= chocolate) CPOM Rating (leaf packs): 2 (0= none,S=high)
Lg Woody Debris (>4"dia) #: 4 /100m (reach)

Habitat Comments

GENERAL WATER TYPE Riffle, Winder, or Other _____ Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 16' (m) Wetted Width: 10' (m) Riffle Depth: 1-2" (in) Pool Depth: NA (in) and Obs: _____
Bank Stability: EX VG G F P Velocity estimate (circle): (S) <0.4 ft/sec, (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured:_____ ft/sec
Fish: Bottom Type: Hard – Soft – Mixed Cover Rating: Exc – Very Good – Good – Fair -- Poor

Riparian VEGETATION (both sides, does not need to add up to 100%) Riparian Width (facing upstream) L>100m, R>100m
Overstory: Softwood 10% Hardwood 90% Understory: Shrub (brush) 30 Grass 10% Herbaceous 20%
Canopy %: 100 90 80 70 60 50 40 30 20 10 0 Overhead: Open, Partly Open, or Closed
Leave 50% on

WQ Section Sampler: ___ Baseflow or Freshet Flow Present Flow: H / M / L
Meter (type, #)1-_____2-_____3-_____Color_____Color DUP:_____
Annotate? Y / N

Temp Air 45 °C,°F Temp Water 9.5 C fpH_____lab pH_____ fCond_____ D.O.%_____ D.Omg/l_____

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

WQ Notes/Comments

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

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

River (Site) JB-T9-0.1 Personnel TB Date 10·8·18

Pebble Count Field Form

Complete % observed substrate if no pebble ct done

Periphyton Cover Observations Date

Particle	Millimeters	Inches	% Observed	Transect 1 (100 pebbles)	Tot #	Item %
organic						
Fines	0.062-2	0.002-0.08"		5 5 1		
very fine gravel	2-4	01.08-0.15"		5 5 5 1111		
small gravel	4-8	0.15-0.3"				
medium gravel	8-16	0.3- 0.6"		11		
coarse gravel	16-32	0.6-1.25"		5 5 5		
very coarse gravel	32-64	1.25-2.5"		111		
small and medium cobble	64-128	2.5-5"		5 5 1		
large cobble	128-256	5-10"		5 111		
small boulder	265-512	10-20"		5 51		
medium boulder	512-1024	20-40"		111		
large boulder	1024-2048	40-80"		5 111		
very large boulder	>2048	>80"		5		
bedrock				5 5 1		
				TOTALS		

	Moss Cover Index			
Category	0	1(<5%)	2(5-25%)	3(>25%)
Tally	5 5 5 5 5 5 5 5	5 1111	5 1	5 5 5

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

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

	Other *Mocro or Micro*_____Cover Index					
Category	0	1_____	2_____	3_____	4_____	5_____
Tally						

Substrate Comments:

Jay Peak Resort
Kick Net Data -South Mountain Branch - 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	5.1	0.91	35	Meets Class B Criteria *
2017 VHB	392	31	21	58	0.90	5.6	0.92	35	Meets Class B Criteria *
2018 VHB	411	32	21	54	0.60	8.2	0.95	43	Meets Class B Criteria

Metric Scoring Guidelines (Class B)

Support (Pass)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%	In accordance with the 2016 Vermont Water Quality Standards, the "Indeterminate + (I+)" range was eliminated from metric scoring. All metrics that meet the threshold are considered supporting aquatic life use for that metric.
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 - VT DEC October 2018 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**South Mountain Branch**
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:	10/8/2018	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 2019	Jan. 2019
#sq picked:	16	22
#sq total:	24	24
Checked By:	CCS	CSS
Sorted By:	CCS	CSS
Sorted Date:	Jan. 2019	Jan. 2019

Taxonomic Data

Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	Rep1				Rep2			
								ID [1]	QA [2]	Count [3]	Total Sample Count [4]	ID [1]	QA [2]	Count [3]	Total Sample Count [4]
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CCS	A	1	1.5	CCS	A	3	3.27272727
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	1	1.5	CCS			0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	MICROPSEC/TANYTARSUS	MICROPSECTRA	N/A	sp	CCS	A	1	1.5	CCS	A	1	1.09090909
02.05.05.00.005.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	BRILLIA	N/A	sp	CCS			0	CCS	A	3	3.27272727
02.05.05.00.068.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARACHAETOCLADIUS	N/A	sp	CCS			0	CCS	A	2	2.18181818
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	1	1.5	CCS	A	2	2.18181818
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca	CCS	A	2	3	CCS	A	6	6.54545455
02.05.09.04.000.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	THIENEMANNIMYIA GROUP	N/A	N/A	group	CCS			0	CCS	A	9	9.81818182
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS			0	CCS	A	1	1.09090909
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	4	6	CCS	A	8	8.72727273
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CCS			0	CCS	A	2	2.18181818
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	1	1.5	CCS			0
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	ACENTRELLA/PLAUDITUS	PLAUDITUS	N/A	sp	CCS	A	2	3	CCS			0
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	6	9	CCS	A	1	1.09090909
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EURYLOPHELLA	N/A	funeralis	CCS	A	4	6	CCS	A	1	1.09090909
03.04.00.00.008.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	TELOGANOPSIS	N/A	deficiens	CCS	A	2	3	CCS			0
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	5	7.5	CCS	A	19	20.7272727
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS			0	CCS	A	1	1.09090909
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS			0	CCS	A	3	3.27272727
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	2	3	CCS			0
03.14.00.00.001.00.00	EPHEMEROPTERA	AMELETIDAE	N/A	N/A	AMELETUS	N/A	sp	CCS	A	1	1.5	CCS	A	2	2.18181818
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp	CCS	A	7	10.5	CCS	A	4	4.36363636
04.05.00.00.003.00.01	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	DIPLECTRONA	N/A	modesta	CCS			0	CCS	A	4	4.36363636
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	4	6	CCS	A	2	2.18181818
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	24	36	CCS	A	31	33.8181818
04.11.00.00.001.00.00	TRICHOPTERA	ODONTOCERIDAE	N/A	N/A	PSILOTRETA	N/A	sp	CCS	A	1	1.5	CCS			0
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	9	13.5	CCS	A	3	3.27272727
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	1	1.5	CCS			0
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	4	6	CCS	A	6	6.54545455
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	invaria grp	invaria grp	CCS			0	CCS	A	4	4.36363636
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS			0	CCS	A	1	1.09090909
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A	N/A	NEOPHYLAX	N/A	sp	CCS			0	CCS	A	2	2.18181818
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	55	82.5	CCS	A	56	61.0909091
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp	CCS			0	CCS	A	1	1.09090909
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	145	217.5	CCS	A	101	110.181818
05.04.00.00.007.00.00	PLECOPTERA	NEMOURIDAE	N/A	N/A	SOYEDINA	N/A	sp	CCS	A	1	1.5	CCS			0
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	1	1.5	CCS	A	1	1.09090909
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	2	3	CCS	A	7	7.63636364
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	1	1.5	CCS	A	3	3.27272727
16.01.00.00.001.00.00	NEMATOMORPHA	GORDIIDAE	N/A	N/A	GORDIUS	N/A	SP	CCS	A	1	1.5	CCS			0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	35	52.5	CCS	A	13	14.1818182
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A	N/A	N/A	N/A	uid	CCS	A	1	1.5	CCS	A	3	3.27272727
TOTALS by Rep:										325	**487.5**			306	**333.818182**

GRAND TOTAL: 821.3181818 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

Macroinvertebrate data submittal form - VT DEC October 2018 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**South Mountain Branch**
Station:	**SMB-T3-0.8**

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.928484	-72.507207
or VT Site ID:	427807030008	
Date collected:	10/8/2018	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

							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	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		SCR	N	2	3	3	6.5455	4.5	9.8182	1	0	1	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI		CG	Y	3	4	4.5	0	6	0	1	0	-	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI		CG	Y	3	6	4.5	3.2727	9	6.5455	1	0	1	0
02.05.05.00.005.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		SRD	Y	3	5	0	9.8182	0	16.364	-	0	1	0
02.05.05.00.068.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	2	0	4.3636	0	4.3636	-	0	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	3	5	4.5	6.5455	7.5	10.909	1	0	1	0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	4	6	13.091	12	26.182	1	0	1	0
02.05.09.04.000.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI		PRD	Y	3	6	0	29.455	0	58.909	-	0	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	3	0	2.1818	0	3.2727	-	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	2	12	17.455	12	17.455	1	0	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A		SRD	N	3	6	0	6.5455	0	13.091	-	0	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A		CG	N	3	6	4.5	0	9	0	1	1	-	0
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A		SCR	N	2	5	6	0	15	0	1	1	-	0
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A		CG	N	0	0	0	0	0	0	1	1	1	1
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A		SRD	N	1	0	6	1.0909	0	0	1	1	1	1
03.04.00.00.008.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A		CG	N	1	2	3	0	6	0	1	1	-	0
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		CG	N	0	0	0	0	0	0	1	1	1	1
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		SCR	N	1	4	0	1.0909	0	4.3636	-	0	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		CG	N	0	0	0	0	0	0	-	0	1	1
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A		CG	N	2	1	6	0	3	0	1	1	-	0
03.14.00.00.001.00.00	EPHEMEROPTERA	AMELETIDAE	N/A		CG	N	0	0	0	0	0	0	1	1	1	1
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A		SHR	N	1	2	10.5	4.3636	21	8.7273	1	1	1	1
04.05.00.00.003.00.01	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	0	0	0	0	0	0	-	0	1	1
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE		CF	N	0	0	0	0	0	0	1	1	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A		SRD	N	1	1	36	33.818	36	33.818	1	1	1	1
04.11.00.00.001.00.00	TRICHOPTERA	ODONTOCERIDAE	N/A		SCR	N	0	0	0	0	0	0	1	1	-	0
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A		CF	N	0	0	0	0	0	0	1	1	1	1
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A		PRD	N	3	6	4.5	0	9	0	1	1	-	0
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	1	2	6	6.5455	12	13.091	1	1	1	1
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	1	1	0	4.3636	0	4.3636	-	0	1	1
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	0	1	0	0	0	1.0909	-	0	1	1
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A		SCR	N	2	3	0	4.3636	0	6.5455	-	0	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A		PRD	N	0	0	0	0	0	0	1	1	1	1
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A		PRD	N	0	0	0	0	0	0	-	0	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A		SRD	N	0	0	0	0	0	0	1	1	1	1
05.04.00.00.007.00.00	PLECOPTERA	NEMOURIDAE	N/A		SRD	N	0	0	0	0	0	0	1	1	-	0
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A		SRD	N	1	0	1.5	1.0909	0	0	1	1	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A		PRD	N	1	2	3	7.6364	6	15.273	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A		SRD	N	1	0	1.5	3.2727	0	0	1	1	1	1
16.01.00.00.001.00.00	NEMATOMORPHA	GORDIIDAE	N/A		-	N	-	-	-	-	-	-	1	0	-	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A		CG	N	-	-	-	-	-	-	1	0	1	0
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep:							**Total BI Score**		123	166.91	168	254.18	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
GRAND TOTAL:	821.3181818 organisms						**Total # Organisms**		487.5	333.82	487.5	333.82				
							# of Organisms w/o BI		55.5	17.455	55.5	17.455	30		33	
							Total # Organisms with BI		432	316.36	432	316.36		21		21
							Biotic Index		0.28	0.53	0.39	0.80				

*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 ide

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

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-T3-0.8
Stream South Mountain Branch
VT Site ID 427807030008
Sample Date 10/08/2018

2018 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	1.5	0	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	1.5	0	0	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	1.5	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	
02.05.05.00.068.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	1.5	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	3	0	0	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	0	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	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	
03.01.00.00.001.00.09	0	0	1.5	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	9	0	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	6	0	0	0	0	0	0	0	
03.04.00.00.008.00.01	0	0	3	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	0	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	3	0	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	1.5	0	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	10.5	0	0	0	0	0	0	
04.05.00.00.003.00.01	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	36	0	0	0	0	0	0	
04.11.00.00.001.00.00	0	0	0	1.5	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	13.5	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	1.5	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	6	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	0	0	0	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	82.5	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	217.5	0	0	0	0	0	
05.04.00.00.007.00.00	0	0	0	0	1.5	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	1.5	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	3	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	1.5	0	0	0	0	0	
16.01.00.00.001.00.00	0	0	0	0	0	0	0	0	0	1.5	
18.04.00.00.000.00.00	0	0	0	0	0	52.5	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	1.5	0	0	0	0	
Total	**1.50**	**13.5**	**34.5**	**75.0**	**308**	**54.0**	**0**	**0**	**0**	**1.50**	**487.5**
Percent	**0.308%**	**2.77%**	**7.08%**	**15.4%**	**63.1%**	**11.1%**	**0%**	**0%**	**0%**	**0.308%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-T3-0.8
Stream South Mountain Branch
VT Site ID 427807030008
Sample Date 10/08/2018

2018 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	3.272727273	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	1.090909091	0	0	0	0	0	0	0	0	
02.05.05.00.005.00.00	0	3.272727273	0	0	0	0	0	0	0	0	
02.05.05.00.068.00.00	0	2.181818182	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	2.181818182	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	6.545454545	0	0	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	9.818181818	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	1.090909091	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	8.727272727	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	2.181818182	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	
03.01.00.02.007.00.00	0	0	0	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	1.090909091	0	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	1.090909091	0	0	0	0	0	0	0	
03.04.00.00.008.00.01	0	0	0	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	20.72727273	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	1.090909091	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	3.272727273	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	2.181818182	0	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	4.363636364	0	0	0	0	0	0	
04.05.00.00.003.00.01	0	0	0	4.363636364	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	2.181818182	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	33.81818182	0	0	0	0	0	0	
04.11.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	3.272727273	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	6.545454545	0	0	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	4.363636364	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	1.090909091	0	0	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	2.181818182	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	61.09090909	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	1.090909091	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	110.1818182	0	0	0	0	0	
05.04.00.00.007.00.00	0	0	0	0	0	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	1.090909091	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	7.636363636	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	3.272727273	0	0	0	0	0	
16.01.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	14.18181818	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	3.272727273	0	0	0	0	
Total	**3**	**37.1**	**29.5**	**62.18181818**	**184.36**	**17.45454545**	**0**	**0**	**0**	**0.0**	**333.8**
Percent	**0.98%**	**11.11%**	**8.8%**	**18.6%**	**55.23%**	**5%**	**0%**	**0%**	**0%**	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-T3-0.8
Stream South Mountain Branch
Location 427807030008
Sample Date 10/08/2018

2018 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	1.5	0		0	0	0	0	0	3.272727	0	
02.05.01.00.085.00.05	1.5	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.03.02.121.00.00	1.5	0	0	0	0	0	0		1.090909	0	0	0	0	0	0	
02.05.05.00.005.00.00	0	0	0	0	0	0	0		0	0	0	3.272727	0	0	0	
02.05.05.00.068.00.00	0	0	0	0	0	0	0		2.181818	0	0	0	0	0	0	
02.05.05.00.075.00.00	1.5	0	0	0	0	0	0		2.181818	0	0	0	0	0	0	
02.05.05.00.114.01.04	3	0	0	0	0	0	0		6.545455	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	0	0	0	0	0	0		0	0	9.818182	0	0	0	0	
02.19.00.00.003.00.00	0	0	0	0	0	0	0		0	0	1.090909	0	0	0	0	
02.19.00.00.006.00.00	0	0	6	0	0	0	0		0	0	8.727273	0	0	0	0	
02.19.00.00.016.00.00	0	0	0	0	0	0	0		0	0	0	2.181818	0	0	0	
03.01.00.00.001.00.09	1.5	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	0	0	0	3	0		0	0	0	0	0	0	0	
03.04.00.00.004.00.01	9	0	0	0	0	0	0		1.090909	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	0	6	0	0	0		0	0	0	1.090909	0	0	0	
03.04.00.00.008.00.01	3	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.06.00.00.003.00.00	7.5	0	0	0	0	0	0		20.72727	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	0	0		0	0	0	0	0	1.090909	0	
03.06.00.00.005.00.00	0	0	0	0	0	0	0		3.272727	0	0	0	0	0	0	
03.07.00.00.005.00.00	3	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.14.00.00.001.00.00	1.5	0	0	0	0	0	0		2.181818	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	0	10.5	0	0		0	0	0	0	4.363636	0	0	
04.05.00.00.003.00.01	0	0	0	0	0	0	0		0	4.363636	0	0	0	0	0	
04.05.01.00.006.00.01	0	6	0	0	0	0	0		0	2.181818	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	36	0	0	0		0	0	0	33.81818	0	0	0	
04.11.00.00.001.00.00	0	0	0	0	0	1.5	0		0	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	13.5	0	0	0	0	0		0	3.272727	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	1.5	0	0	0	0		0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	6	0	0	0	0		0	0	6.545455	0	0	0	0	
04.16.00.00.001.01.00	0	0	0	0	0	0	0		0	0	4.363636	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	0	0	0	0		0	0	1.090909	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	0	0	0	0		0	0	0	0	0	2.181818	0	
05.02.00.00.006.00.00	0	0	82.5	0	0	0	0		0	0	61.09091	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	0	0	0		0	0	1.090909	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	217.5	0	0	0		0	0	0	110.1818	0	0	0	
05.04.00.00.007.00.00	0	0	0	1.5	0	0	0		0	0	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	1.5	0	0	0		0	0	0	1.090909	0	0	0	
05.07.00.00.007.00.00	0	0	3	0	0	0	0		0	0	7.636364	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	1.5	0	0	0		0	0	0	3.272727	0	0	0	
16.01.00.00.001.00.00	0	0	0	0	0	0	1.5		0	0	0	0	0	0	0	
18.04.00.00.000.00.00	52.5	0	0	0	0	0	0		14.18182	0	0	0	0	0	0	
18.06.00.00.000.00.00	1.5	0	0	0	0	0	0		3.272727	0	0	0	0	0	0	
Total	**87**	**19.5**	**99.0**	**264.0**	**11**	**6.00**	**1.5**	**488**	**56.7**	**9.8**	**101.5**	**154.9**	**4.36**	**6.5**	**0.0**	**333.8**
Percent	**17.8%**	**4.0%**	**20.3%**	**54.2%**	**2%**	**1.23%**	**0%**	**100%**	**17.0%**	**2.9%**	**30.4%**	**46.4%**	**1.307%**	**1.96%**	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-T3-0.8
Stream South Mountain Branch
Location 427807030008
Sample Date 10/08/2018

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%	17.8%	57.6%	17.0%	54.8%
Col. Filt.	18%	30%	36%	4.0%	22.2%	2.9%	16.3%
Predator	19%	13%	7%	20.3%	93.6%	30.4%	62.5%
Shred-Det.	15%	4%	2%	54.2%	27.7%	46.4%	32.3%
Shred- Herb.	1%	1%	5%	2.15%	46.4%	1.31%	76.5%
Scraper	12%	13%	22%	1.23%	10.26%	1.96%	16.3%
				PPCS-FG =	**43.0%**	**PPCS-FG =**	**43.1%**

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 SMB-T3-0.8
Stream South Mountain Branch
VT Site ID 427807030008
Sample Date 10/08/2018
Class Small, High Gradient, B2
Sampler CCS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	0.31%	7.69	0.98%	7.02
Diptera	19%	18%	13%	2.8%	16.23	11.1%	7.889
Ephemeroptera	23%	34%	32%	7.1%	15.9	8.82%	14.2
Plecoptera	21%	8%	8%	63.1%	42.1	55.2%	34.2
Trichoptera	28%	33%	33%	15.4%	12.6	18.6%	9.4
Oligochaeta	0.5%	0.5%	1.0%	11.08%	10.58	5.23%	4.73
Other	0.5%	0.5%	1.0%	0.31%	0.192	0.00%	0.500
				Sum diff	105.3		77.9
				Sum diff * 0.5	52.7		39.0
				100-(sum diff * 0.5)	47.3		61.0
				% model affinity	**47.3%**		**61.0%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station SMB-T3-0.8
Stream South Mountain Branch
Location 427807030008
Sample Date 10/08/2018
Class Small, High Gradient, B2
Sampler CCS

	KN-1	KN-2
#EPT organisms	417	276
#C organisms	7.5	25.09091
EPT/EPT+C	0.98	0.92

Biometric Summary

Project Jay Peak Resort
Station SMB-T3-0.8
Stream South Mountain Branch
Location 427807030008
Sample Date 10/08/2018
Class Small, High Gradient, B2
Sampler CCS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	488	334	411
Species Richness	30.0	33.0	31.5
EPT Richness	21.0	21.0	21.0
Old Bio Index (0 to 5)	0.28	0.53	0.41
New Bio Index (0 to 10)	0.39	0.80	0.60
% dominant taxa	44.6%	33.0%	38.8%
EPT/EPT+C	0.982	0.917	0.949
EPT/Richness	0.700	0.636	0.667
% Model Affinity (orders)	47.3%	61.0%	54.2%
PPCS - functional groups	43.0%	43.1%	43.0%
Major Groups:			
Coleoptera (%)	0.31%	0.98%	0.64%
Diptera (%)	2.8%	11.1%	6.9%
Ephemeroptera (%)	7.1%	8.82%	7.95%
Trichoptera (%)	15.4%	18.6%	17.0%
Plecoptera (%)	63.1%	55.2%	59.2%
Oligochaeta (%)	11.08%	5.23%	8.15%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.00%	0.00%	0.00%
Other (%)	0.31%	0.00%	0.15%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	17.8%	17.0%	17.4%
Collector Filterer (%)	4.0%	2.94%	3.5%
Predator (%)	20.3%	30.4%	25.3%
Shredder - Detritus (%)	54.2%	46.4%	50.3%
Shredder - Herbivore (%)	2.15%	1.31%	1.73%
Scraper (%)	1.23%	1.96%	1.60%
No FG Designation (%)	0.31%	0.00%	0.15%
Total (%)	100%	100%	100%

Project Jay Peak Resort
Station SMB-T3-0.8 **Latitude** 44.928484
Stream South Mountain Branch **Longitude** -72.507207
Location 427807030008 **Class** Small, High Gradient, B2
Sample Date 10/08/2018 **Sampler** CCS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (1/15/2017)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B2		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	410.7	≥300	Pass	≥400	Pass	≥500	Fail
Richness	31.5	≥27	Pass	≥31	Pass	≥35	Fail
EPT	21.0	≥16	Pass	≥19	Pass	≥21	Pass
% PMA-O	54.2%	≥45%	Pass	≥55%	I	≥65%	Fail
BI (New 1-10)	0.60	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	8.2%	≤12%	Pass	≤5	Fail	≤2	Fail
EPT/EPT+C	0.95	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	43.0%	≥ 40%	Pass	≥ 45%	I	≥ 50%	Fail
Outcome:		**Biocriteria are met**					
The following metrics do not meet Class B2 thresholds:		NA					

Individual Metric Outcome Guidelines (using the table below)
1) A metric is scored "Pass" when the result meets the threshold requirements
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 all 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 "Fail"
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
A1	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	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	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
(2016 edition)

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

Site Name Jay River Mile _____ USFS____ PROB_____
Site ID SMBT308 Arbor
Date 10.8.18 Time 1345 Crew CS TB
Site Description_____

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

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: __ min Mesh: ____ um
Area: _____ m² Quantitative: Y / N
#Reps: ____ Comp/rep: _____

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 70% Filamentous Green _____% and length _____in
Blue Green Tr% Moss 5 % Green _____% Other _____%
mainly terrestrial
General Trophic Rating: 0 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS
Embeddedness (5) 0-5% Excel (4) 5-25% V Good (3) 25-50% Good (2) 50-75% Fair (1) > 75%Poor Estimate 20
Silt Rating: 3 (0=none, 5= chocolate) CPOM Rating (leaf packs): 4 (0= none,5=high)
Lg Woody Debris (>4"dia) #: 8 /100m (reach)

Habitat Comments

GENERAL WATER TYPE Riffle, Winder, or Other Fall & pool Channelized: Y / N Upstream Dam: Y / N ___mi
B.F.Width: 25' (~~m~~) Wetted Width: 10' (~~m~~) Riffle Depth: 4" (~~in~~) Pool Depth: 3' (~~in~~) and Obs: _____
Bank Stability: EX VG G F P Velocity estimate (circle): (S) <0.4 ft/sec, (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured:_____ ft/sec
Fish: Bottom Type: Hard – Soft – Mixed Cover Rating: Exc – Very Good – Good – Fair -- Poor

Riparian VEGETATION (both sides, does not need to add up to 100%) Riparian Width (facing upstream) L 20 m, R 20 m
Overstory: Softwood 10 % Hardwood 90 % Understory: Shrub (brush) 10 Grass __% Herbaceous 10 %
Canopy %: 100 90 80 70 60 50 40 30 20 10 0 Overhead: Open, Partly Open, or Closed
Leaves 30% off, still good cover

WQ Section Sampler: ___ Baseflow or Freshet flow Present Flow: H - M – L
Meter (type, #)1-_____2-_____3-_____Color_____Color DUP:_____
Annotate? Y / N

Temp Air 42 °C,°F Temp Water 8 °C fpH_____lab pH_____ fCond_____ D.O.%_____ D.Omg/l_____

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

WQ Notes/Comments

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

A lot of sand & gravel on the move

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

River (Site) SMB-T3-0.8 Personnel TB Date 10/08/18

Pebble Count Field Form

Complete % observed substrate if no pebble ct done

Periphyton Cover Observations Date _____

Particle	Millimeters	Inches	% Observed	Transect 1 (100 pebbles)	Tot #	Item %
organic						
Fines	0.062-2	0.002-0.08"		5 III		
very fine gravel	2-4	01.08-0.15"		5 5 5 III		
small gravel	4-8	0.15-0.3"		5 I		
medium gravel	8-16	0.3- 0.6"				
coarse gravel	16-32	0.6-1.25"		5 III		
very coarse gravel	32-64	1.25-2.5"				
small and medium cobble	64-128	2.5-5"		III		
large cobble	128-256	5-10"		5 5 III		
small boulder	265-512	10-20"		5 5 III		
medium boulder	512-1024	20-40"				
large boulder	1024-2048	40-80"		5 II		
very large boulder	>2048	>80"		5		
bedrock				5 5 5 5		
				TOTALS		

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

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

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

	Other *Macro or Micro*_____Cover Index					
Category	0	1_____	2_____	3_____	4_____	5_____
Tally						

Substrate Comments:

[\\vtdata\dept\EV\Resources\Biomonitoring\lotic_benthos_fieldsheet-2016.docx]

Jay Peak Resort

Kick Net Data - South Mountain Branch - SMB-T3-0.1

Class B, Small High Gradient Stream

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT +C	% PPCS-FG	Outcome/ Biological Integrity
Class B, SHG	≥300	≥27	≥16	≥45	≤4.50	≤12	≥0.45	≥40	
2012 DEC	259	35	22	67	0.93	21	0.93	57	Does Not Meet Class B Criteria/Fair-Poor
2013 VHB	133	22	15	58	1.04	30	0.93	50	Does Not Meet Class B Criteria
2014 VHB	361	27	19	58	0.71	18	0.96	46	Meets All Interim Targets
2015 VHB	218	21	14	46	0.71	37	0.98	42	Meets 1 of 4 Interim Targets
2016 VHB	206	26	19	58	0.93	30	0.97	54	Does Not Meet Class B Criteria, Meets 1 of 4 Interim Targets
2017 VHB	178	23	17	64	0.81	20	0.97	54	Does Not Meet Class B Criteria, Meets 1 of 4 Compliance Year Targets
2018 VHB	224	23	17	54	0.63	32	0.98	64	Does Not Meet Class B Criteria

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	(-)	(-)	
2017 Compliance Year	≥300	≥27	≥16	(-)	(-)	≤12	(-)	(-)	

Metric Scoring Guidelines (Class B)

Support (Pass)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%	In accordance with the 2016 Vermont Water Quality Standards, the "Indeterminate + (I+)" range was eliminated from metric scoring. All metrics that meet the threshold are considered supporting aquatic life use for that metric.
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 - VT DEC October 2018 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**South Mountain Branch**
Station:	**SMB-T3-0.1**

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

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.928768	-72.494217
or VT Site ID:	427807030001	
Date collected:	10/8/2018	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 2019	Jan. 2019
#sq picked:	24	24
#sq total:	24	24
Checked By:	CCS	CSS
Sorted By:	CCS	CSS
Sorted Date:	Jan. 2019	Jan. 2019

Taxonomic Data

Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	Rep1				Rep2			
								ID [1]	QA [2]	Count [3]	Total Sample Count [4]	ID [1]	QA [2]	Count [3]	Total Sample Count [4]
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CCS			0	CCS	A	1	1
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A	N/A	ATHERIX	N/A	sp	CCS	A	1	1	CCS			0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	2	2	CCS	A	1	1
02.05.09.04.000.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	THIENEMANNIMYIA GROUP	N/A	N/A	group	CCS	A	1	1	CCS	A	1	1
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	2	2	CCS	A	2	2
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	5	5	CCS	A	4	4
02.19.00.00.019.00.00	DIPTERA	TIPULIDAE	N/A	N/A	MOLOPHILUS	N/A	sp	CCS	A	2	2	CCS			0
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	ACENTRELLA/PLAUDITUS	PLAUDITUS	N/A	sp	CCS	A	3	3	CCS			0
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS			0	CCS	A	1	1
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS			0	CCS	A	1	1
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EURYLOPHELLA	N/A	funeralis	CCS			0	CCS	A	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	8	8	CCS	A	14	14
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	1	1	CCS	A	3	3
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp	CCS			0	CCS	A	2	2
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	alhedra	CCS	A	2	2	CCS	A	3	3
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	sparna	CCS	A	2	2	CCS			0
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	4	4	CCS	A	14	14
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	32	32	CCS	A	26	26
04.12.00.00.003.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	WORMALDIA	N/A	sp	CCS			0	CCS	A	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	1	1	CCS	A	1	1
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A	N/A	NEOPHYLAX	N/A	sp	CCS			0	CCS	A	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	1	1	CCS	A	3	3
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	24	24	CCS	A	27	27
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	28	28	CCS	A	28	28
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	4	4	CCS	A	6	6
05.07.00.00.006.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	ISOPERLA	N/A	sp	CCS			0	CCS	A	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	3	3	CCS	A	12	12
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	15	15	CCS	A	8	8
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	79	79	CCS	A	65	65
TOTALS by Rep:										220	**220**			227	**227**

GRAND TOTAL: 447 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

Macroinvertebrate data submittal form - VT DEC October 2018 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**South Mountain Branch**
Station:	**SMB-T3-0.1**

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.928768	-72.494217
or VT Site ID:	427807030001	
Date collected:	10/8/2018	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

							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	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		SCR	N	2	3	0	2	0	3	-	0	1	0
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A		PRD	N	3	2	3	0	2	0	1	0	-	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	2	4	2	4	2	1	0	1	0
02.05.09.04.000.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI		PRD	Y	3	6	3	3	6	6	1	0	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	3	4	4	6	6	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	2	10	8	10	8	1	0	1	0
02.19.00.00.019.00.00	DIPTERA	TIPULIDAE	N/A		CG	N	3	4	6	0	8	0	1	0	-	0
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A		SCR	N	2	5	6	0	15	0	1	1	-	0
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A		CG	N	0	0	0	0	0	0	-	0	1	1
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A		CG	N	2	4	0	2	0	4	-	0	1	1
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A		SRD	N	1	0	0	1	0	0	-	0	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		CG	N	0	0	0	0	0	0	1	1	1	1
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		SCR	N	1	4	1	3	4	12	1	1	1	1
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A		SHR	N	1	2	0	2	0	4	-	0	1	1
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	3	4	6	6	9	1	1	1	1
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	4	4	0	8	0	1	1	-	0
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A		SRD	N	1	1	4	14	4	14	1	1	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A		CF	N	0	0	0	0	0	0	1	1	1	1
04.12.00.00.003.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A		CF	N	0	0	0	0	0	0	-	0	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	1	2	1	1	2	2	1	1	1	1
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A		SCR	N	2	3	0	2	0	3	-	0	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A		SCR	N	1	3	1	3	3	9	1	1	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A		PRD	N	0	0	0	0	0	0	1	1	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A		SRD	N	0	0	0	0	0	0	1	1	1	1
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A		SRD	N	1	0	4	6	0	0	1	1	1	1
05.07.00.00.006.00.00	PLECOPTERA	PERLODIDAE	N/A		PRD	N	1	2	0	1	0	2	-	0	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A		PRD	N	1	2	3	12	6	24	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A		SRD	N	1	0	15	8	0	0	1	1	1	1
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep:								**Total BI Score**	73	80	84	108	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
GRAND TOTAL:		447 organisms						**Total # Organisms**	220	227	220	227				
								# of Organisms w/o BI	79	65	79	65	21		25	
								Total # Organisms with BI	141	162	141	162		14		19
								Biotic Index	0.52	0.49	0.60	0.67				

*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

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

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch
VT Site ID 427807030001
Sample Date 10/08/2018

2018 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	
02.01.00.00.001.00.00	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	
02.05.09.04.000.00.00	0	1	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	2	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	
02.19.00.00.019.00.00	0	2	0	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	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	
03.04.00.00.005.00.02	0	0	0	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	8	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	1	0	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	0	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	0	0	2	0	0	0	0	0	0	
04.05.00.00.004.03.04	0	0	0	2	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	4	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	32	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	1	0	0	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	0	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	24	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	28	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	4	0	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	0	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	3	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	79	0	0	0	0	
Total	**0.00**	**13.0**	**12.0**	**42.0**	**74**	**79.0**	**0**	**0**	**0**	**0.00**	**220.0**
Percent	**0.000%**	**5.91%**	**5.45%**	**19.1%**	**33.6%**	**35.9%**	**0%**	**0%**	**0%**	**0.000%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch
VT Site ID 427807030001
Sample Date 10/08/2018

2018 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	
02.01.00.00.001.00.00	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	
02.05.09.04.000.00.00	0	1	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	2	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	
02.19.00.00.019.00.00	0	0	0	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	1	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	1	0	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	1	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	3	0	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	2	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	0	0	3	0	0	0	0	0	0	
04.05.00.00.004.03.04	0	0	0	0	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	14	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	26	0	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	1	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	3	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	27	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	28	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	6	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	12	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	8	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	65	0	0	0	0	
Total	**1**	**8.0**	**20.0**	**51**	**82.00**	**65**	**0**	**0**	**0**	**0.0**	**227.0**
Percent	**0.44%**	**3.52%**	**8.8%**	**22.5%**	**36.12%**	**29%**	**0%**	**0%**	**0%**	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch
Location 427807030001
Sample Date 10/08/2018

2018 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	
02.01.00.00.001.00.00	0	0	1	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.029.00.11	2	0	0	0	0	0	0		1	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	0	1	0	0	0	0		0	0	1	0	0	0	0	
02.19.00.00.003.00.00	0	0	2	0	0	0	0		0	0	2	0	0	0	0	
02.19.00.00.006.00.00	0	0	5	0	0	0	0		0	0	4	0	0	0	0	
02.19.00.00.019.00.00	2	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	0	0	0	3	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	
03.04.00.00.004.01.00	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	0	0	0	0	0		0	0	0	1	0	0	0	
03.06.00.00.003.00.00	8	0	0	0	0	0	0		14	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	1	0		0	0	0	0	0	3	0	
04.01.00.00.003.00.00	0	0	0	0	0	0	0		0	0	0	0	2	0	0	
04.05.00.00.004.03.02	0	2	0	0	0	0	0		0	3	0	0	0	0	0	
04.05.00.00.004.03.04	0	2	0	0	0	0	0		0	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	4	0	0	0		0	0	0	14	0	0	0	
04.12.00.00.002.00.00	0	32	0	0	0	0	0		0	26	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	0	0	0	0		0	1	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	1	0	0	0	0		0	0	1	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	0	0	0	0		0	0	0	0	0	1	0	
04.20.00.00.001.00.00	0	0	0	0	0	1	0		0	0	0	0	0	3	0	
05.02.00.00.006.00.00	0	0	24	0	0	0	0		0	0	27	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	28	0	0	0		0	0	0	28	0	0	0	
05.05.00.00.000.00.01	0	0	0	4	0	0	0		0	0	0	6	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	3	0	0	0	0		0	0	12	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	15	0	0	0		0	0	0	8	0	0	0	
18.04.00.00.000.00.00	79	0	0	0	0	0	0		65	0	0	0	0	0	0	
Total	**91**	**36.0**	**37.0**	**51.0**	**0**	**5.00**	**0**	**220**	**82.0**	**30.0**	**48.0**	**57.0**	**2.00**	**8.0**	**0.0**	**227.0**
Percent	**41.4%**	**16.4%**	**16.8%**	**23.2%**	**0%**	**2.27%**	**0%**	**100%**	**36.1%**	**13.2%**	**21.1%**	**25.1%**	**0.881%**	**3.52%**	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch
Location 427807030001
Sample Date 10/08/2018

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%	41.4%	74.9%	36.1%	85.8%
Col. Filt.	18%	30%	36%	16.4%	90.9%	13.2%	73.4%
Predator	19%	13%	7%	16.8%	88.5%	21.1%	89.9%
Shred-Det.	15%	4%	2%	23.2%	64.7%	25.1%	59.7%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.88%	88.1%
Scraper	12%	13%	22%	2.27%	18.94%	3.52%	29.4%
				PPCS-FG =	**56.3%**	**PPCS-FG =**	**71.1%**

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 SMB-T3-0.1
Stream South Mountain Branch
VT Site ID 427807030001
Sample Date 10/08/2018
Class Small, High Gradient, B2
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	0.44%	7.56
Diptera	19%	18%	13%	5.9%	13.09	3.5%	15.476
Ephemeroptera	23%	34%	32%	5.5%	17.5	8.81%	14.2
Plecoptera	21%	8%	8%	33.6%	12.6	36.1%	15.1
Trichoptera	28%	33%	33%	19.1%	8.9	22.5%	5.5
Oligochaeta	0.5%	0.5%	1.0%	35.91%	35.41	28.63%	28.13
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.00%	0.500
				Sum diff	96.1		86.5
				Sum diff * 0.5	48.0		43.3
				100-(sum diff * 0.5)	52.0		56.7
				% model affinity	**52.0%**		**56.7%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch
Location 427807030001
Sample Date 10/08/2018
Class Small, High Gradient, B2
Sampler CCS

	KN-1	KN-2
#EPT organisms	128	153
#C organisms	3	2
EPT/EPT+C	0.98	0.99

Biometric Summary

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch
Location 427807030001
Sample Date 10/08/2018
Class Small, High Gradient, B2
Sampler CCS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	220	227	224
Species Richness	21.0	25.0	23.0
EPT Richness	14.0	19.0	16.5
Old Bio Index (0 to 5)	0.52	0.49	0.51
New Bio Index (0 to 10)	0.60	0.67	0.63
% dominant taxa	35.9%	28.6%	32.3%
EPT/EPT+C	0.977	0.987	0.982
EPT/Richness	0.667	0.760	0.717
% Model Affinity (orders)	52.0%	56.7%	54.3%
PPCS - functional groups	56.3%	71.1%	63.7%
Major Groups:			
Coleoptera (%)	0.00%	0.44%	0.22%
Diptera (%)	5.9%	3.5%	4.7%
Ephemeroptera (%)	5.5%	8.81%	7.13%
Trichoptera (%)	19.1%	22.5%	20.8%
Plecoptera (%)	33.6%	36.1%	34.9%
Oligochaeta (%)	35.91%	28.63%	32.27%
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 (%)	41.4%	36.1%	38.7%
Collector Filterer (%)	16.4%	13.22%	14.8%
Predator (%)	16.8%	21.1%	19.0%
Shredder - Detritus (%)	23.2%	25.1%	24.1%
Shredder - Herbivore (%)	0.00%	0.88%	0.44%
Scraper (%)	2.27%	3.52%	2.90%
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 **Longitude** -72.494217
Location 427807030001 **Class** Small, High Gradient, B2
Sample Date 10/08/2018 **Sampler** CCS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (1/15/2017)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B2		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	223.5	≥300	Fail	≥400	Fail	≥500	Fail
Richness	23.0	≥27	Fail	≥31	Fail	≥35	Fail
EPT	16.5	≥16	Pass	≥19	Fail	≥21	Fail
% PMA-O	54.3%	≥45%	Pass	≥55%	I	≥65%	Fail
BI (New 1-10)	0.63	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	32.27%	≤12%	Fail	≤5	Fail	≤2	Fail
EPT/EPT+C	0.98	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	63.7%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	Pass
Outcome:		**Biocriteria are not met**					
The following metrics do not meet Class B2 thresholds:		Density (Fail), Richness (Fail), % Oligo (Fail)					

Individual Metric Outcome Guidelines (using the table below)
1) A metric is scored "Pass" when the result meets the threshold requirements
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 all 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 "Fail"
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
A1	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	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	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
(2016 edition)

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

Site Name Jay _____ River Mile _____ USFS____ PROB_____
Site ID SMB T3 0.1 106
Date 10.8.18 Time 1450 Crew CS TB
Site Description_____

Town: _____ Stream Order:_____ Drainage Area: _____Km² Elevation:_____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS – set to NAD83:) _____
Weather: overcast Flow/Weather Previous (2 weeks/2days): Several events last 2 wk., quiet 48 hr
Surrounding Land Use: Resort Forest

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

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 60% Filamentous Green _____% and length _____in
Blue Green Tr% Moss 2 % Green _____% Other _____%

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

HABITAT OBSERVATIONS
Embeddedness (5) 0-5% Excel (4) 5-25% V Good (3) 25-50% Good (2) 50-75% Fair (1) > 75%Poor Estimate 40
Silt Rating: 3-4 (0=none, 5= chocolate) CPOM Rating (leaf packs): 0-1 (0= none,5=high)
Lg Woody Debris (>4"dia) #: 3 /100m (reach)

Habitat Comments

GENERAL WATER TYPE Riffle, Winder, or Other Fall & pool Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 35' (m) Wetted Width: 10' (m) Riffle Depth: 2-4" (in) Pool Depth: 2' (in) and Obs: _____
Bank Stability: EX VG G F P Velocity estimate (circle): (S) <0.4 ft/sec, (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured:_____ ft/sec
Armored
Fish: Bottom Type: Hard – Soft – Mixed Cover Rating: Exc – Very Good – Good – Fair -- Poor

Riparian VEGETATION (both sides, does not need to add up to 100%) Riparian Width (facing upstream) L>100m, R>100m
Overstory: Softwood 10% Hardwood 90% Understory: Shrub (brush) 30 Grass __% Herbaceous 10 %
Canopy %: 100 90 80 70 60 50 40 30 20 10 0 Overhead: Open, Partly Open or Closed

WQ Section Sampler: ___ Baseflow or Freshet Flow Present Flow: H - M - L
Meter (type, #)1-_____2-_____3-_____Color_____Color DUP:_____
Annotate? Y / N

Temp Air 4.5°C,°F Temp Water 8.5C fpH_____lab pH_____ fCond_____ D.O.%_____ D.Omg/l_____

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

WQ Notes/Comments

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

A – Pollution: Sludge | Sawdust | Paper Fiber | Sand | Silt | Sewage | Oily Sheen | Trash | Iron | Scum | None
B – Water Clarity: Clear | Slightly Turbid | Moderately Turbid | Very Turbid | Secci Tube_____mm
C – Water Color: Clear | Green Milky | Brown (Tannic) L M H | Gray | Metallic | Reddish
D – Odors: None | Musty | Fishy | Sewage | Manure | Sulfur(eggs) | Oily/gas
Aquatic Biota Observed:

Hard to kick because substrate is locked down w/sand

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

River (Site) SMB T3 0.1 Personnel TB Date 10/08/19

Pebble Count Field Form

Complete % observed substrate if no pebble ct done

Periphyton Cover Observations Date _____

Particle	Millimeters	Inches	% Observed	Transect 1 (100 pebbles)	Tot #	Item %
organic						
Fines	0.062-2	0.002-0.08"		卌 ||		
very fine gravel	2-4	01.08-0.15"		卌 卌		
small gravel	4-8	0.15-0.3"		卌 |		
medium gravel	8-16	0.3- 0.6"		卌		
coarse gravel	16-32	0.6-1.25"		卌 卌 |		
very coarse gravel	32-64	1.25-2.5"		|||		
small and medium cobble	64-128	2.5-5"		卌 卌 ||		
large cobble	128-256	5-10"		卌 |||		
small boulder	265-512	10-20"		卌 ||		
medium boulder	512-1024	20-40"		||||		
large boulder	1024-2048	40-80"		卌 卌 卌 ||||		
very large boulder	>2048	>80"				
bedrock				卌 ||||		
				TOTALS		

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

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

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

	Other *Mocro or Micro*_____Cover Index					
Category	0	1_____	2_____	3_____	4_____	5_____
Tally						

Substrate Comments:

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	12.1	0.98	58	Does Not Meet Class B Criteria/Fair
2013 VHB	239	26	18	61	0.81	22.6	0.96	49	Does Not Meet Class B Criteria/Fair
2014 VHB	354	27	20	71	0.71	13.31	0.99	63	Indeterminate
2015 VHB	339	27	18	54	0.62	17.1	0.96	44	Does Not Meet Class B Criteria/Fair
2016 VHB	307	27	18	59	0.86	18.1	0.95	49	Does Not Meet Class B Criteria
2017 VHB	288	33	22	75	1.20	13.8	0.92	61	Does Not Meet Class B Criteria
2018 VHB	296	27	19	77	0.68	5.0	0.97	68	Indeterminate*

Metric Scoring Guidelines (Class B)

Support (Pass)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%	In accordance with the 2016 Vermont Water Quality Standards, the "Indeterminate + (I+)" range was eliminated from metric scoring. All metrics that meet the threshold are considered supporting aquatic life use for that metric.
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 Aaron Moore (2/13/2019): "SMB 1.2 is very close to receiving a "Good"; the difference between 296 and 300 organisms/m2 is obviously slight. The total richness value while passing is also right at the threshold. Subsequent samples should provide some clarity here, as the % Oligochaeata showed improvement in 2018."

Macroinvertebrate data submittal form - VT DEC October 2018 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**South Mountain Branch**
Station:	**SMB-1.2**

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

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.938327	-72.479061
or VT Site ID:	427807000012	
Date collected:	10/8/2018	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 2019	Jan. 2019
#sq picked:	24	22
#sq total:	24	24
Checked By:	CCS	CSS
Sorted By:	CCS	CSS
Sorted Date:	Jan. 2019	Jan. 2019

Taxonomic Data

Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	Rep1 ID [1]	Rep1 QA [2]	Rep1 Count [3]	Rep1 Total Sample Count [4]	Rep2 ID [1]	Rep2 QA [2]	Rep2 Count [3]	Rep2 Total Sample Count [4]
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CCS	A	2	2	CCS			0
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A	N/A	ATHERIX	N/A	sp	CCS			0	CCS	A	1	1.090909091
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS			0	CCS	A	2	2.181818182
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	MICROPSEC/TANYTARSUS	MICROPSECTRA	N/A	sp	CCS	A	3	3	CCS	A	1	1.090909091
02.05.05.00.005.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	BRILLIA	N/A	sp	CCS	A	1	1	CCS			0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	2	2	CCS	A	2	2.181818182
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	3	3	CCS			0
02.05.09.04.000.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	THIENEMANNIMYIA GROUP	N/A	N/A	group	CCS	A	3	3	CCS			0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	2	2	CCS	A	1	1.090909091
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	9	9	CCS			0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	1	1	CCS	A	2	2.181818182
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	4	4	CCS	A	10	10.90909091
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS	A	5	5	CCS	A	1	1.090909091
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	10	10	CCS	A	7	7.636363636
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	5	5	CCS	A	25	27.27272727
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	43	43	CCS	A	36	39.27272727
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS			0	CCS	A	1	1.090909091
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS			0	CCS	A	1	1.090909091
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	alhedra	CCS	A	1	1	CCS	A	1	1.090909091
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	1	1	CCS			0
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	4	4	CCS	A	5	5.454545455
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	67	67	CCS	A	56	61.09090909
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	5	5	CCS	A	2	2.181818182
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	7	7	CCS	A	8	8.727272727
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	34	34	CCS	A	37	40.36363636
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp	CCS	A	1	1	CCS	A	1	1.090909091
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	37	37	CCS	A	38	41.45454545
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS			0	CCS	A	8	8.727272727
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata	CCS			0	CCS	A	2	2.181818182
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	6	6	CCS	A	10	10.90909091
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	5	5	CCS	A	17	18.54545455
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	7	7	CCS	A	20	21.81818182
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A	N/A	N/A	N/A	uid	CCS	A	1	1	CCS	A	1	1.090909091
TOTALS by Rep:										269	**269.0**			296	**322.909091**

GRAND TOTAL: 591.9090909 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

Macroinvertebrate data submittal form - VT DEC October 2018 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**South Mountain Branch**
Station:	**SMB-1.2**

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.938327	-72.479061
or VT Site ID:	427807000012	
Date collected:	10/8/2018	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

							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	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		SCR	N	2	3	4	0	6	0	1	0	-	0
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A		PRD	N	3	2	0	3.2727	0	2.1818	-	0	1	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI		CG	Y	3	4	0	6.5455	0	8.7273	-	0	1	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI		CG	Y	3	6	9	3.2727	18	6.5455	1	0	1	0
02.05.05.00.005.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		SRD	Y	3	5	3	0	5	0	1	0	-	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	2	4	4.3636	4	4.3636	1	0	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	3	5	9	0	15	0	1	0	-	0
02.05.09.04.000.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI		PRD	Y	3	6	9	0	18	0	1	0	-	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	3	4	2.1818	6	3.2727	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	2	18	0	18	0	1	0	-	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A		CG	N	3	6	3	6.5455	6	13.091	1	1	1	1
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A		CG	N	0	0	0	0	0	0	1	1	1	1
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A		CG	N	2	4	10	2.1818	20	4.3636	1	1	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		CG	N	0	0	0	0	0	0	1	1	1	1
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		SCR	N	1	4	5	27.273	20	109.09	1	1	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		CG	N	0	0	0	0	0	0	1	1	1	1
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A		CG	N	2	1	0	2.1818	0	1.0909	-	0	1	1
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A		SCR	N	1	0	0	1.0909	0	0	-	0	1	1
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	3	2	2.1818	3	3.2727	1	1	1	1
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE		CF	N	0	0	0	0	0	0	1	1	-	0
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A		SRD	N	1	1	4	5.4545	4	5.4545	1	1	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A		CF	N	0	0	0	0	0	0	1	1	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	1	2	5	2.1818	10	4.3636	1	1	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A		SCR	N	1	3	7	8.7273	21	26.182	1	1	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A		PRD	N	0	0	0	0	0	0	1	1	1	1
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A		PRD	N	0	0	0	0	0	0	1	1	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A		SRD	N	0	0	0	0	0	0	1	1	1	1
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A		SRD	N	1	0	0	8.7273	0	0	-	0	1	1
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A		PRD	N	0	2	0	0	0	4.3636	-	0	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A		PRD	N	1	2	6	10.909	12	21.818	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A		SRD	N	1	0	5	18.545	0	0	1	1	1	1
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A		CG	N	-	-	-	-	-	-	1	0	1	0
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep:								**Total BI Score**	107	115.64	186	218.18	**Total**	**Total**	**Total**	**Total**
GRAND TOTAL:	591.9090909 organisms							**Total # Organisms**	269	322.91	269	322.91	**Richness**	**EPT-R**	**Richness**	**EPT-R**
								# of Organisms w/o BI	8	22.909	8	22.909	27		27	
								Total # Organisms with BI	261	300	261	300		17		20
								Biotic Index	0.41	0.39	0.71	0.73				

*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 ider

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

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
VT Site ID 427807000012
Sample Date 10/08/2018

2018 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	2	0	0	0	0	0	0	0	0	0	
02.01.00.00.001.00.00	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	
02.05.03.02.121.00.00	0	3	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	
02.05.05.00.029.00.11	0	2	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	
02.05.09.04.000.00.00	0	3	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	2	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	1	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	4	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	5	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	10	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	43	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	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	
04.05.00.00.004.03.02	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	4	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	67	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	5	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	7	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	34	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	1	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	37	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	0	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	6	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	5	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	7	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	1	0	0	0	0	
Total	**2.00**	**23.0**	**68.0**	**85.0**	**83**	**8.00**	**0**	**0**	**0**	**0**	**269.0**
Percent	**0.743%**	**8.55%**	**25.3%**	**31.6%**	**30.9%**	**2.97%**	**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 10/08/2018

2018 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	
02.01.00.00.001.00.00	0	1.090909091	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	2.181818182	0	0	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	1.090909091	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	
02.05.05.00.029.00.11	0	2.181818182	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	
02.05.09.04.000.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	1.090909091	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	0	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	2.181818182	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	10.90909091	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	1.090909091	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	7.636363636	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	27.27272727	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	39.27272727	0	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	1.090909091	0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	1.090909091	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	0	0	1.090909091	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	5.454545455	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	61.09090909	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	2.181818182	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	8.727272727	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	40.36363636	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	1.090909091	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	41.45454545	0	0	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	8.727272727	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	2.181818182	0	0	0	0	0	
05.07.00.00.007.00.00	0	0	0	0	10.90909091	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	18.54545455	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	21.81818182	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	1.090909091	0	0	0	0	
Total	**0**	**7.64**	**89.5**	**79.6**	**123.3**	**22.9**	**0**	**0**	**0**	**0**	**322.9**
Percent	**0%**	**2.36%**	**27.7%**	**24.7%**	**38.2%**	**7.09%**	**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 10/08/2018

2018 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	2	0		0	0	0	0	0	0	0	
02.01.00.00.001.00.00	0	0	0	0	0	0	0		0	0	1.090909	0	0	0	0	
02.05.01.00.085.00.05	0	0	0	0	0	0	0		2.181818	0	0	0	0	0	0	
02.05.03.02.121.00.00	3	0	0	0	0	0	0		1.090909	0	0	0	0	0	0	
02.05.05.00.005.00.00	0	0	0	1	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.029.00.11	2	0	0	0	0	0	0		2.181818	0	0	0	0	0	0	
02.05.05.00.075.00.00	3	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	0	3	0	0	0	0		0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	2	0	0	0	0		0	0	1.090909	0	0	0	0	
02.19.00.00.006.00.00	0	0	9	0	0	0	0		0	0	0	0	0	0	0	
03.01.00.00.001.00.09	1	0	0	0	0	0	0		2.181818	0	0	0	0	0	0	
03.04.00.00.004.00.01	4	0	0	0	0	0	0		10.90909	0	0	0	0	0	0	
03.04.00.00.004.01.00	5	0	0	0	0	0	0		1.090909	0	0	0	0	0	0	
03.06.00.00.003.00.00	10	0	0	0	0	0	0		7.636364	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	5	0		0	0	0	0	0	27.27273	0	
03.06.00.00.005.00.00	43	0	0	0	0	0	0		39.27273	0	0	0	0	0	0	
03.07.00.00.005.00.00	0	0	0	0	0	0	0		1.090909	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	1.090909	0	
04.05.00.00.004.03.02	0	1	0	0	0	0	0		0	1.090909	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	4	0	0	0		0	0	0	5.454545	0	0	0	
04.12.00.00.002.00.00	0	67	0	0	0	0	0		0	61.09091	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	5	0	0	0	0		0	0	2.181818	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	7	0		0	0	0	0	0	8.727273	0	
05.02.00.00.006.00.00	0	0	34	0	0	0	0		0	0	40.36364	0	0	0	0	
05.02.00.00.091.00.00	0	0	1	0	0	0	0		0	0	1.090909	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	37	0	0	0		0	0	0	41.45455	0	0	0	
05.05.00.00.000.00.01	0	0	0	0	0	0	0		0	0	0	8.727273	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	0	0	0		0	0	2.181818	0	0	0	0	
05.07.00.00.007.00.00	0	0	6	0	0	0	0		0	0	10.90909	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	5	0	0	0		0	0	0	18.54545	0	0	0	
18.04.00.00.000.00.00	7	0	0	0	0	0	0		21.81818	0	0	0	0	0	0	
18.06.00.00.000.00.00	1	0	0	0	0	0	0		1.090909	0	0	0	0	0	0	
Total	**79.0**	**69.0**	**60.0**	**47.0**	**0**	**14.0**	**0**	**269**	**90.5**	**62.2**	**58.9**	**74.2**	**0**	**37.1**	**0**	**322.9**
Percent	**29.4%**	**25.7%**	**22.3%**	**17.5%**	**0%**	**5.20%**	**0%**	**100%**	**28.0%**	**19.3%**	**18.2%**	**23.0%**	**0%**	**11.5%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
Location 427807000012
Sample Date 10/08/2018

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%	29.4%	94.7%	28.0%	90.5%
Col. Filt.	18%	30%	36%	25.7%	70.2%	19.3%	93.5%
Predator	19%	13%	7%	22.3%	85.2%	18.2%	96.0%
Shred-Det.	15%	4%	2%	17.5%	85.9%	23.0%	65.3%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.00%	0.0%
Scraper	12%	13%	22%	5.20%	43.37%	11.49%	95.7%
				PPCS-FG =	**63.2%**	**PPCS-FG =**	**73.5%**

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
Sample Date 10/08/2018
Class Small, High Gradient, B2
Sampler CCS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	0.74%	7.26	0.00%	8.00
Diptera	19%	18%	13%	8.6%	10.45	2.4%	16.635
Ephemeroptera	23%	34%	32%	25.3%	2.3	27.70%	4.7
Plecoptera	21%	8%	8%	30.9%	9.9	38.2%	17.2
Trichoptera	28%	33%	33%	31.6%	3.6	24.7%	3.3
Oligochaeta	0.5%	0.5%	1.0%	2.97%	2.47	7.09%	6.59
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.00%	0.500
				Sum diff	36.4		56.9
				Sum diff * 0.5	18.2		28.5
				100-(sum diff * 0.5)	81.8		71.5
				% model affinity	**81.8%**		**71.5%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
Location 427807000012
Sample Date 10/08/2018
Class Small, High Gradient, B2
Sampler CCS

	KN-1	KN-2
#EPT organisms	236	292.3636
#C organisms	12	5.454545
EPT/EPT+C	0.95	0.98

Biometric Summary

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
Location 427807000012
Sample Date 10/08/2018
Class Small, High Gradient, B2
Sampler CCS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	269	323	296
Species Richness	27.0	27.0	27.0
EPT Richness	17.0	20.0	18.5
Old Bio Index (0 to 5)	0.41	0.39	0.40
New Bio Index (0 to 10)	0.71	0.73	0.72
% dominant taxa	24.9%	18.9%	21.9%
EPT/EPT+C	0.952	0.982	0.967
EPT/Richness	0.630	0.741	0.685
% Model Affinity (orders)	81.8%	71.5%	76.7%
PPCS - functional groups	63.2%	73.5%	68.4%
Major Groups:			
Coleoptera (%)	0.74%	0.00%	0.37%
Diptera (%)	8.6%	2.4%	5.5%
Ephemeroptera (%)	25.3%	27.70%	26.49%
Trichoptera (%)	31.6%	24.7%	28.1%
Plecoptera (%)	30.9%	38.2%	34.5%
Oligochaeta (%)	2.97%	7.09%	5.03%
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 (%)	29.4%	28.0%	28.7%
Collector Filterer (%)	25.7%	19.26%	22.5%
Predator (%)	22.3%	18.2%	20.3%
Shredder - Detritus (%)	17.5%	23.0%	20.2%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	5.20%	11.49%	8.35%
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 **Class** Small, High Gradient, B2
Sample Date 10/08/2018 **Sampler** CCS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (1/15/2017)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B2		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	296.0	≥300	I	≥400	Fail	≥500	Fail
Richness	27.0	≥27	Pass	≥31	Fail	≥35	Fail
EPT	18.5	≥16	Pass	≥19	I	≥21	Fail
% PMA-O	76.7%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	0.72	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	5.03%	≤12%	Pass	≤5	I	≤2	Fail
EPT/EPT+C	0.97	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	68.4%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	Pass
Outcome:		**Indeterminate**					
The following metrics do not meet Class B2 thresholds:		Density (I)					

Individual Metric Outcome Guidelines (using the table below)
1) A metric is scored "Pass" when the result meets the threshold requirements
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 all 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 "Fail"
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
A1	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	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	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
(2016 edition)

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

Site Name Jay River Mile _____ USFS____ PROB_____
Site ID SMB1.2 107
Date 10·10·18 Time 1405 Crew CS
Site Description_____

Town: _____ Stream Order:_____ Drainage Area: _____Km² Elevation:_____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS – set to NAD83:) _____
Weather: Sunny Flow/Weather Previous (2 weeks/2days): Event last wk, light rain yesterday
Surrounding Land Use: Resort, residential, road, forest

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

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 70% Filamentous Green _____% and length _____in
Blue Green __% Moss 10 % Green _____% Other _____%
Terrestrial
General Trophic Rating: 2 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS
Embeddedness (5) 0-5% Excel (4) 5-25% V Good (3) 25-50% Good (2) 50-75% Fair (1) > 75%Poor Estimate 25
Silt Rating: 3 (0=none, 5= chocolate) CPOM Rating (leaf packs): 1-2 (0= none,5=high)
Lg Woody Debris (>4"dia) #: 6 /100m (reach)

Habitat Comments

GENERAL WATER TYPE Riffle, Winder, or Other _____ Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 24' (m) Wetted Width: 12' (m) Riffle Depth: 2-4 (in) Pool Depth: NA (in) and Obs: _____
Bank Stability: EX VG G F P Velocity estimate (circle): (S) <0.4 ft/sec, (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured:_____ ft/sec BR riprapped also natural armour
Fish: Bottom Type: Hard – Soft – Mixed Cover Rating: Exc – Very Good – Good – Fair -- Poor

Riparian VEGETATION (both sides, does not need to add up to 100%) Riparian Width (facing upstream) L 20 m, R 30 m
Overstory: Softwood 10 % Hardwood 90 % Understory: Shrub (brush) 10 Grass __% Herbaceous 20 %
Canopy %: 100 90 80 70 60 50 40 30 20 10 0 Overhead: Open, Partly Open, or Closed
in summer in summer

WQ Section Sampler: ___ Baseflow or Freshet Flow Present Flow: H M L
Meter (type, #)1-_____2-_____3-_____Color_____Color DUP:_____
Annotate? Y / N

Temp Air 75 °C,°F Temp Water 14.5 °C fpH_____lab pH_____ fCond_____ D.O.%_____ D.Omg/l_____

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

WQ Notes/Comments

SITE SKETCH & GENERAL OBSERVATIONS (circle those that apply)

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:

A lot of sand and gravel, not much CPOM not much good kicknetting area

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

River (Site) Jay 107 Personnel CS Date 10·10·18

Pebble Count Field Form

Complete % observed substrate if no pebble ct done

Periphyton Cover Observations Date

Particle	Millimeters	Inches	% Observed	Transect 1 (100 pebbles)	Tot #	Item %
organic						
Fines	0.062-2	0.002-0.08"	S	𝍸 𝍸 I		
very fine gravel	2-4	01.08-0.15"	G	𝍸 𝍸 𝍸 III		
small gravel	4-8	0.15-0.3"				
medium gravel	8-16	0.3- 0.6"	CG	𝍸 𝍸 𝍸		
coarse gravel	16-32	0.6-1.25"				
very coarse gravel	32-64	1.25-2.5"				
small and medium cobble	64-128	2.5-5"	C	𝍸 𝍸 𝍸 𝍸 IIII		
large cobble	128-256	5-10"				
small boulder	265-512	10-20"	B	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 II		
medium boulder	512-1024	20-40"				
large boulder	1024-2048	40-80"				
very large boulder	>2048	>80"				
bedrock			BR			
				TOTALS		

	Moss Cover Index			
Category	0	1(<5%)	2(5-25%)	3(>25%)
Tally	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 III	𝍸 II	𝍸 𝍸 I	𝍸 I

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

	Micro-Algae Cover Index						
Category	0	1 (slimy)	2 (draw line)	3(.5-1mm)	4(1-5mm)	5(5-20mm)	6(>20mm)
Tally	𝍸 II	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 III					

	Other *Macro or Micro*_____Cover Index					
Category	0	1_____	2_____	3_____	4_____	5_____
Tally						

Substrate Comments: