Water Quality Monitoring Plan
2019 Performance Report

JAY PEAK RESORT

Jay, Vermont

Prepared for **Jay Peak Resort**
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Jay, Vermont 05859

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1.0 Introduction

On behalf of Jay Peak Resort ("JPR" or the "Resort"), VHB has prepared this annual "Water Quality Monitoring Plan Performance Report" ("WQMP"). The WQMP was prepared pursuant to the JPR "Water Quality Remediation Plan" ("WQRP") and includes a record, analysis, and an evaluation of water quality monitoring ("WQM") data collected during the 2019 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). As of 2017, the Jay Branch and Tributary 9 to Jay Branch stations have reached attainment and were removed from the 303(d) list of impaired waters in 2018.

In accordance with the Settlement Agreement and the Revised 2014 WQRP, the results of the 2019 biomonitoring are discussed in Section 5.6 and the supporting data and calculations are included in Appendix 6.

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 Vermont Route 242 ("Route 242") before converging with Jay Branch. The area north and west of 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 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 provides 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 2019 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 2019 Monitoring Station Locations, Activities, and Frequency

Stream	Water Quality Monitoring Station Name	Water Chemistry						Substrate	Biomonitoring
		Winter Melt*		Baseflow		Event Flow		9/18/19, 9/25/19 and 9/26/19	
		4/18/19	5/02/19	8/22/19	9/18/19	9/04/19	9/11/19		
Tributary 13 to Jay Branch (reference)	JB-T13-0.2	x	x	x	x	x	x	x	x
Jay Branch	JB-9.1	x	x	x	x	x	x	x	x
	JB-8.3	x	x	x	x	x	x	x	x
	JB-7.3	x	x	x	x	x	x	x	x
Phase I Trib.	JB-T9-P1-0.1	x	x	x	x	x	x	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-T3-0.3							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, 12 of the 13 WQM stations were monitored for water chemistry in 2019 during baseflow and event flow conditions. A new monitoring location, SMB-T3-0.3, was incorporated into the monitoring plan in summer 2019 to identify the impact of other potential sediment sources that require remediation. This station was specifically intended to isolate potential impacts from two intermittent streams that originate at roadway culverts in the Route 242 right-of-way that flow southerly toward Tributary 3. These stream channels were found to be actively eroding and contributing excess sediment to Tributary 3. This station was not monitored for water chemistry and was limited to macroinvertebrate and substrate analysis only. Water chemistry parameters monitored at the other stations in 2019 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.

Substrate characteristics and aquatic biota ("biomonitoring") were monitored at eight of the thirteen stations in 2019.

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. Following geomorphic changes observed in this reach during the 2018

sampling season, the sampled reach was extended farther downstream to include areas of more suitable habitat for kicknet sampling.

- JB-7.3 is located on the main stem of Jay Branch downstream of all Resort development, upstream from the 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. Sampling at this station was initiated in 2016 to serve as a "reference reach" condition for Tributary 3. 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 Route 242 culvert and represents the majority of the Resort's contribution to Tributary 3. Macroinvertebrate sampling at this station occurred in 2014 and 2015 but has been limited to water chemistry

and substrate samples only since then. This station corresponds to DEC Station 427807030005.

- SMB-T3-0.3 is located on Tributary 3, downslope of Route 242 and represents the conditions within Tributary 3 downstream of the Resort and Route 242. Sampling at this station was initiated in the 2019 monitoring season following an investigative walkover of Tributary 3 to better understand the effects of sediment loading from intermittent tributaries flowing to the South Mountain Branch. This station corresponds to DEC Station 427807030003.
- SMB-T3-0.1 is located on Tributary 3, downslope of Route 242 and represents the conditions within Tributary 3 downstream of the Resort and 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, 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 Route 242 and nearby developed areas. This station corresponds to DEC station 427807000012.

5.0 Monitoring Results

The results from the monitoring conducted in 2019 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 22 and September 18, 2019 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 2019.

The box and whisker plots below provide a summary of the available water chemistry parameters at each monitoring station from 2004 to 2019. 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 2019 data points. A complete summary of 2004 through 2019 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.

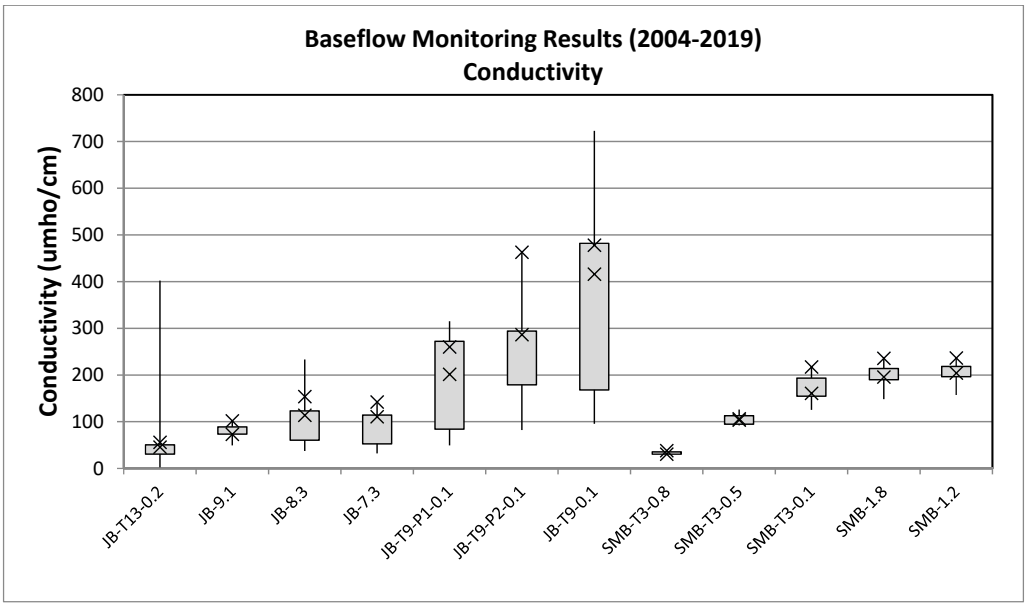

Figure 1: Baseflow Monioring Results for Conductivity

Baseflow conductivity values measured in 2019 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 2019 baseflow monitoring was recorded at JB-T9-0.1 on August 22, 2019 (478 µmho/cm). Using the site-specific regression equation, this value equates

to an approximate chloride concentration of 99 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. 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 Route 242 (SMB-T3-0.1, SMB-1.8 and SMB-1.2) were higher than conductivity values observed upgradient of 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 2018, 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 2019 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.

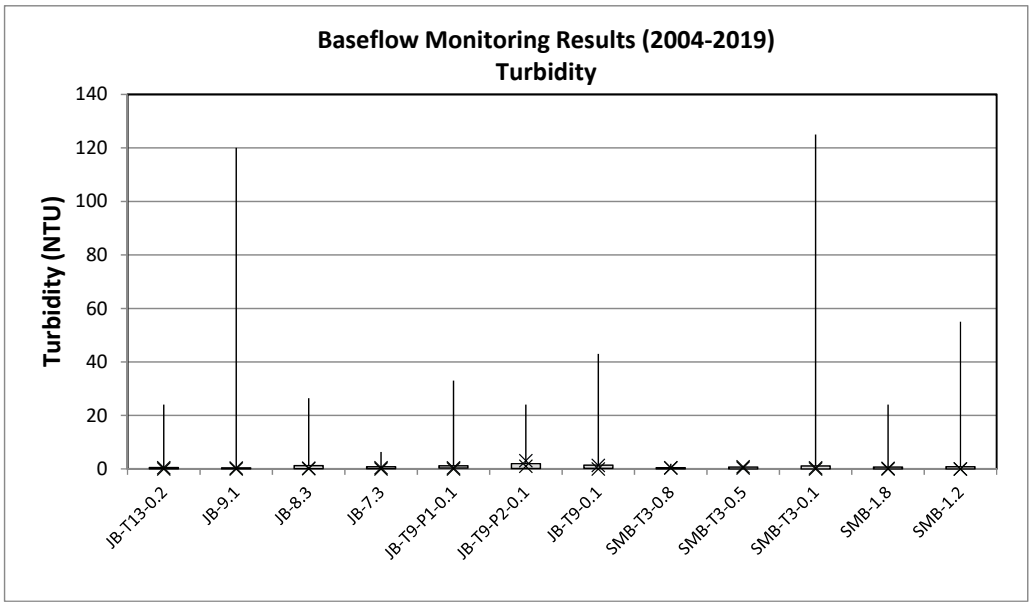

Figure 2: Baseflow Monitoring Results for Turbidity

Baseflow turbidity results for 2019 were within ranges of the period of record for all stations. The maximum sampled value for baseflow turbidity from all sampled stations in 2019 was 3.11 nephelometric turbidity units ("NTU"). The minimum possible value of 0.0 NTU was observed at 1 station during the August 22, 2019 sampling event and at 8 stations during the September 18, 2019 sampling event. This indicates that entrainment of sediment was minimal during baseflow conditions in 2019.

5.1.4 Iron

There were no iron samples collected during the 2019 period, as all samples collected in prior monitoring years have been in compliance with the VWQS criterion of 1 mg/L at all sampled stations under baseflow conditions. However, samples will be collected for laboratory analysis if pH is found to be less than 6.5 s.u. during future base flow sampling.

Baseflow Summary

In 2019 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 Route 242 were higher than stations located upgradient of Route 242 indicating the effects of roadways and non-resort development in the lower portions of this watershed. As indicated by the site-specific regression equation for conductivity and chloride, there is no indication that any streams at the Resort are exceeding the acute or chronic thresholds for chloride in accordance with the VWQS. Conductivity will continue to be monitored to determine if measures are required to mitigate the effects of chloride-based deicers in these areas.

In 2019, 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.

Station JB-T9-P1-0.1 reported a percent oxygen saturation of 61 percent on August 22, 2019, slightly below the 70 percent saturation criteria in the VWQS. During the second round of sampling conducted on September 18, 2019, this station met the VWQS with 84 percent saturation. Both Phase 1 and Phase 2 tributaries had very low flow during the 2019 baseflow sampling. As can be seen in Photographs 1 and 2 below, there was minimal flow at JB-T9-P1-0.1 and minimal flow at JB-T9-P2-0.1 during the August 22, 2019 baseflow sampling. 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-T9-P2-0.1 on September 4.

Photograph 1: Low-flow stream conditions during baseflow sampling event at JB-T9-P1-0.1 on August 22, 2019

Photograph 2: Low-flow stream conditions during baseflow sampling event at JB-T9-P2-0.1 on August 22, 2019

5.2 Event Flow Water Chemistry Analysis

Event flow water chemistry samples were collected during rainfall events on September 4 and September 11, 2019, 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 2019). 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 2019 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 12 monitoring stations in 2019.

Rainfall recorded by the on-site rain gauge weather station totaled 0.60 inches during the rainfall event of September 4, 2019 and 0.66 inches during the September 11, 2019 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.

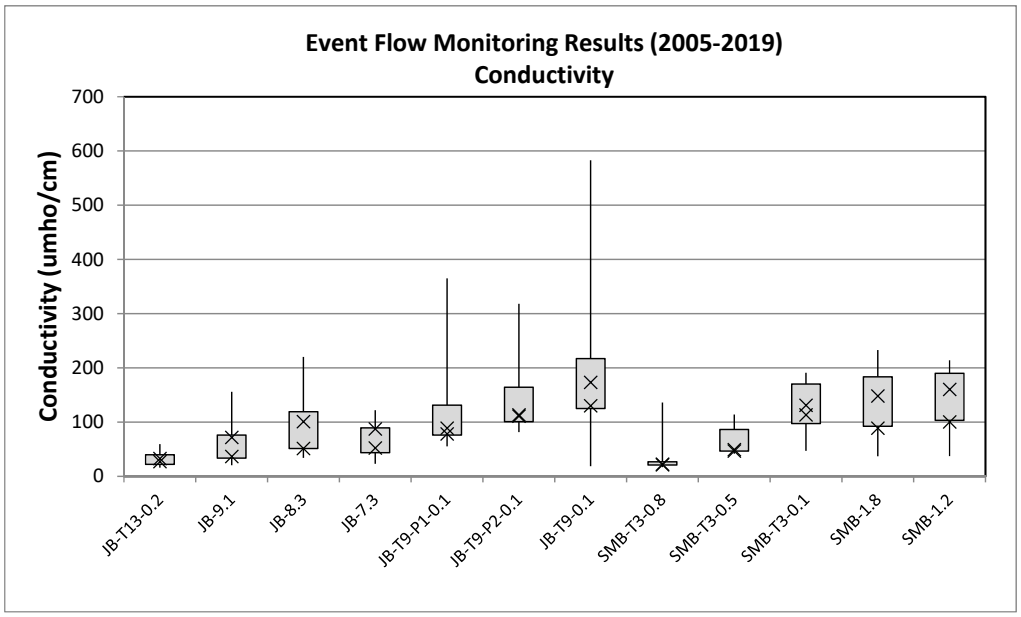

Figure 3: Event Flow Monitoring Results for Conductivity

Storm event conductivity values measured in 2019 were within ranges from the period of record. In 2019, conductivity values were generally higher during the September 4 sampling event when compared to the September 11 event. For 2019, the maximum conductivity value was observed in Station JB-T9-0.1 on September 4 (173.1 µmho/cm). Using the site-specific regression equation, this value equates to an approximate chloride concentration of 30.8 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 2019, 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 Route 242 (SMB-T3-0.1, SMB-1.8 and SMB-1.2) were higher than stations of Tributary 3 located upgradient of 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. Observations recorded at all monitoring stations, including the reference station (JB-T13-0.2) in 2019 had event flow pH values that were within the acceptable VWQS range of 6.5 to 8.5 standard units.

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.

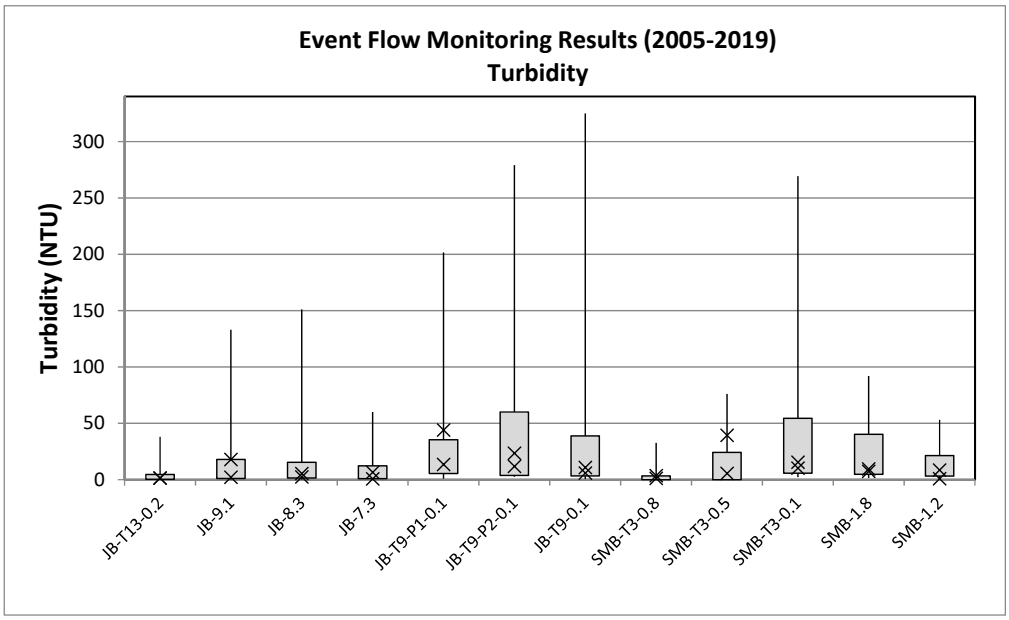

Figure 4: Event Flow Monitoring Results for Turbidity

Event flow turbidity results for 2019 were variable, where 7 of the 12 stations exhibited higher readings during the September 4, 2019 event compared to the September 11, 2019 event. Station JB-T9-P1-0.1 exhibited the maximum turbidity value observed during this period, exceeding the

25 NTU construction action level on that date. In addition, station SMB-T3-0.5 reported a turbidity value of 39 NTU, above the 25 NTU construction action level on the September 11 event. 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 Route 242 (SMB-T3-0.1 and SMB-1.8) were generally higher than stations of Tributary 3 located upgradient of Route 242 (SMB-T3-0.5 and SMB-T3-0.8).

5.2.4 Iron

There were no iron samples collected during the 2019 period, as samples collected in prior monitoring years have been in compliance with the VWQS criterion of 1 mg/L at all sampled stations under event flow conditions. However, samples will be collected for laboratory analysis if pH is found to be less than 6.5 s.u. during future event flow sampling.

Based on the period of record, exceedances of iron in past monitoring occurred periodically in some of the smaller streams around the Resort. However, because they are limited to periodic event flow samples and do not appear to affect baseflow conditions, no additional investigation of iron seeps and other potential sources is proposed at this time.

Event Flow Summary

In 2019, 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). 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 comparable to the range observed over the period of record with generally higher values than the other Jay Branch stations. Additionally, conductivity values were still below the 500 µmho/cm requirement for conducting

additional chloride sampling. With the exception of one sample at SMB-T3-0.5, stations along Tributary 3 and the South Mountain Branch located downgradient of Route 242 generally exhibited higher conductivity and turbidity values than stations of Tributary 3 located upgradient of Route 242, however, were within range of the period of record. The increased conductivity results may reflect annual variations in salt usage based on the severity of the preceding winter.

In 2019, pH values were within the acceptable VWQS range during event flow conditions at all stations.

5.3 Winter Melt Water Chemistry Analysis

Winter melt water chemistry samples were collected on April 18 and May 2, 2019, 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 2019. 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 2019 data points. A complete summary of 2008 through 2019 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.

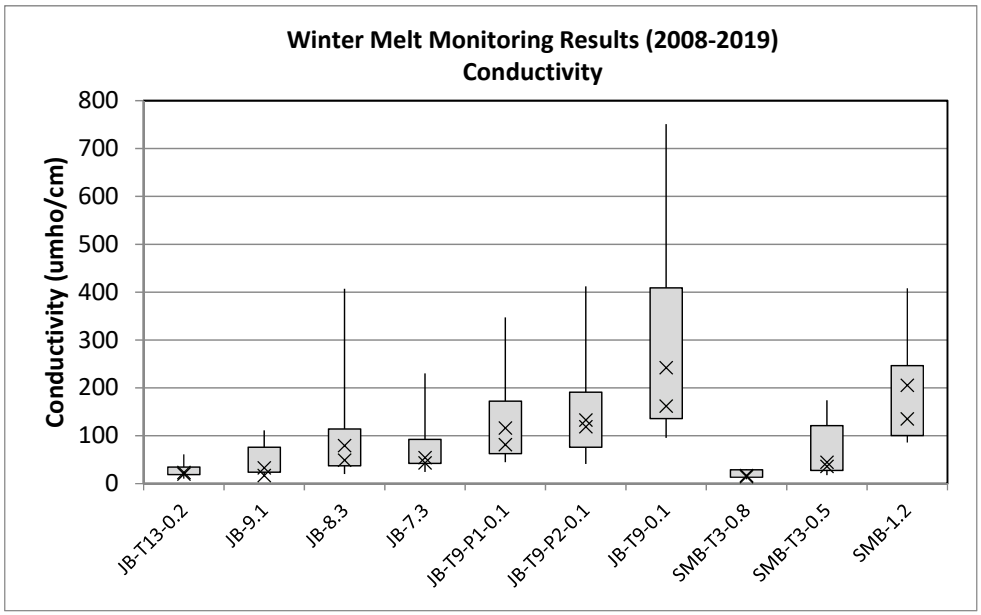

Figure 5: Winter Melt Monitoring Results for Conductivity

Conductivity values during both April 18 and May 2, 2019 sampling events were within ranges from the period of record. In 2019, the maximum conductivity value was observed at Station JB-T9-0.1 on April 18 (242 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 and would correspond to 46 mg/L of chloride using the site specific regression equation.

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 2019 were below the acceptable VWQS range of 6.5 to 8.5 s.u at all stations on April 18. These values are some of 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. Winter melt pH values were not within the acceptable VWQS range on May 2 for only 3 of the 10 sampled stations, including JB-T9-P1-0.1, JB-T9-P2-0.1, and SMB-T3-0.5.

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.

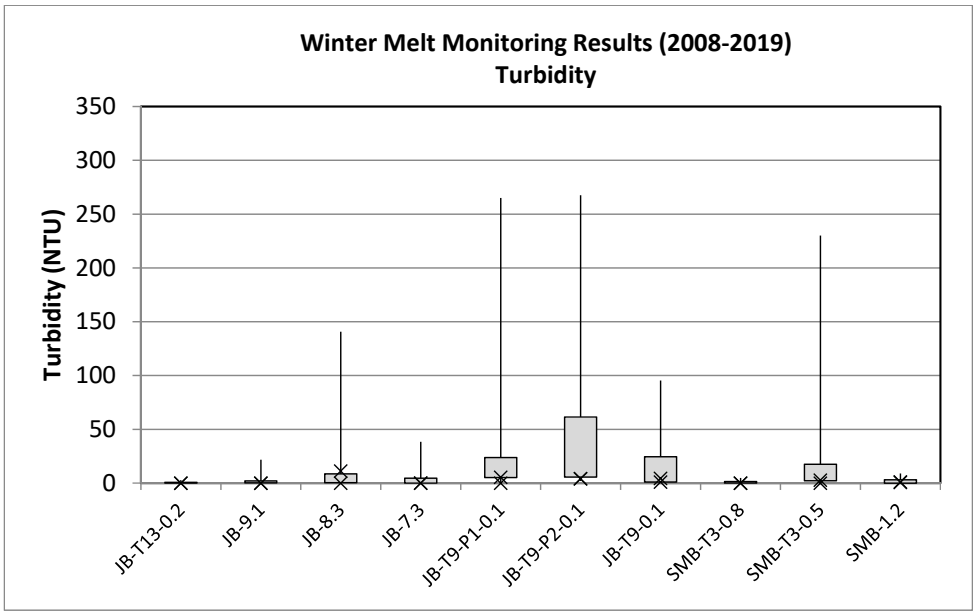

Figure 6: Winter Melt Monitoring Results for Turbidity

Winter melt turbidity results for 2019 were within range and were relatively low when compared to the period of record. During the May 2 event, station JB-8.3 exhibited the highest turbidity value observed in 2019 as compared to other stations but was 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 2018. All stations in 2019 exhibited turbidity values that were within the distribution of turbidity values throughout the period, and all samples were recorded below the construction action level of 25 NTU.

Winter Melt Summary

In 2019, 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 Tributary 9 (JB-T9-P1-0.1 and JB-T9-P2-0.1). All conductivity observations in 2019 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 2019, pH values were below the acceptable VWQS range during winter melt conditions at all stations on April 18, while pH values were within the acceptable VWQS range on May 2, except for JB-T9-P1-0.1, JB-T9-P2-0.1, and SMB-T3-0.5, which recorded pH values of 6.4, 6.1 and 6.1.

All turbidity observations in 2019 were below the 25 NTU construction action level during winter melt sampling on April 18 and May 2.

5.4 Supplemental Turbidity Monitoring

Supplemental turbidity monitoring was completed at multiple locations within the target watersheds between May and November of 2019 (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 25 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), three located on Tributary 3 (T3-01 through T3-03), and 5 located around the Stateside Hotel Stormwater Treatment Practice ("Hotel 3 Basin"). See the map included in Appendix 4 for turbidity station location information.

Sixteen supplemental turbidity monitoring events were completed between May and November 2019 (see event charts included in Appendix 4). Rainfall depths for each event were recorded by Resort staff using the on-site rain gage. Four of these events occurred with antecedent rainfall depths of less than 0.5 inches, six of these events occurred with antecedent rainfall depths between 0.5 and 1 inches, and five 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 396 turbidity measurements were collected during 2019. Of these, only 75 were above the construction action level of 25 NTU. These measurements were taken during 16 wet weather events that occurred between May and November 2019.

The mean turbidity for all samples at each station, with the exception of the Hotel 3 Basin sampling locations, was below the 25 NTU construction action level in 2019. Refer to Appendix 4 for sites with more than one event that exceeded the construction action level of 25 NTU. With the addition of the supplemental turbidity monitoring stations around the Hotel 3 Basin in 2019, JPR and VHB staff identified potential sediment sources associated with the existing treatment practice. Upon further analysis and investigation, it was determined that the high-flow bypass event was scouring the adjacent slope. In addition, it appears that the lack of an outlet header within the gravel wetland may be causing upwelling and sediment resuspension within the pond. Recommendations for retrofits and other improvements are included in Section 6.0 of this report.

5.5 Substrate Analysis

In 2019, 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, SMB-T3-0.3 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 thirteen 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. Refer to Appendix 5 for station habitat observations relevant to substrate embeddedness.

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 2019. 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 2019 and a comparison to historic averages from 2007 to 2019.

Table 2: 2019 Summary of Channel Materials in Jay Branch and Select Tributaries			
Station	**Percent < 2 mm (sands and fines)**	**D50 Particle Size**	**D50 Particle Size Range (mm)**
JB-T13-0.2	0	Coarse Gravel	16 to 64 mm
JB-9.1	2	Cobble	64 to 256 mm
JB-8.3	1	Coarse Gravel	16 to 64 mm
JB-7.3	1	Cobble	64 to 256 mm
JB-T9-0.1	12	Coarse Gravel	16 to 64 mm
SMB-T3-0.8	1	Cobble	64 to 256 mm
SMB-T3-0.3	17	Coarse Gravel	16 to 64 mm
SMB-T3-0.1	5	Cobble	64 to 256 mm
SMB-1.2	11	Coarse Gravel	16 to 64 mm

Since 2018, the median particle size remained the same at seven of the eight historically monitored stations. The median particle size increased from coarse gravel (16 to 64 mm) to cobble (64 to 256 mm) at the compliance station SMB-T3-0.1. The median particle size observed for the new station sampled in 2019, SMB-T3-0.3, was coarse gravel.

Substrate Summary

Substrate embeddedness remained the same as 2018 for seven of the eight stations that were monitored in years past. The median particle size decreased at the compliance station (SMB-T3-0.1), and the median particle size at the new station (SMB-T3-0.3) was observed to be coarse gravel. The most common median particle size for the stations sampled in 2019 was coarse gravel. The percentage of small particles increased at JB-9.1 and JB-T9-0.1. The percentage of small particles decreased at five stations (JB-8.3, JB-7.3, SMB-T3-0.8, and SMB-T3-0.1). The percentage of small particles remained the same at JB-T13-0.2 and SMB-1.2 and was the highest at JB-T9-0.1.

5.6 Biomonitoring

On September 25 and September 26, 2019, kick net sampling per aquatic biota was conducted by VHB in accordance with the DEC protocol (ANR 2004). This biomonitoring occurred at nine 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 three stations on Tributary 3 (SMB-T3-0.1, SMB-T3-0.3 and SMB-T3-0.8). All sampling locations are shown on the Water Quality Monitoring Station Location map in Appendix 1.

Biomonitoring data from 2019 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
2019	1073	36	23	63	1.03	1.3	0.97	54	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. The density of organisms observed in 2019 was the highest 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

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**	
2018	478	32	21	74	0.78	9	0.97	68	Meets Class B Criteria
2019	698	28	20	64	0.77	3	0.98	51	Meets Class B Criteria

[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 fifth 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

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**	
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
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
2019	643	34	24	74	1.24	6	0.97	56	Meets 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 was determined to be 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. 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 within the limits of the reach. Given the physical limitations of the sampling site, the extent of the sampling reach was extended to a suitable location downstream from the boulder cascade near the Trib. 9 confluence to ensure good sample replicates. In turn, the density metric nearly tripled from 2018, and results for all eight biometrics during 2019 were within the established thresholds for meeting Class B criteria, indicating generally high-water quality conditions at JB-8.3.

JB-7.3 (Jay Branch)

Station JB-7.3 is the farthest downstream location sampled on the Jay Branch and is located upstream from the 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

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**	
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
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
2019	356	34	26	72	1.48	8.3	0.99	64	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 2019 were within the established thresholds for meeting Class B criteria, indicating generally high-water quality conditions at JB-7.3. This marks the fourth consecutive year 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
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
2019	433	31	18	65	1.08	2	0.95	43	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 2019 were within the established thresholds for meeting Class B criteria indicating an improvement in water quality at JB-T9-0.1 compared to results dating prior to 2016. This marks the fourth 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
2019	635	32	18	56	0.97	2.5	0.95	**34**	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. Regardless, this site is not experiencing the fingerprint that has historically been seen at the lower sites on Tributary 3 in past years. In summary, this marks the fourth 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 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-T3-0.3 (Tributary 3)

Station SMB-T3-0.3 is located on Tributary 3, downstream of Route 242 and upstream from station SMB-T3-0.1. This is the first year that this station has been sampled. The purpose of this station is to broadly evaluate sedimentation and the macroinvertebrate community in the reach within Tributary 3 between the main culvert under Route 242 and the compliance station at SMB-T3-0.1. Adding the sampling station at this location is the outgrowth from efforts over the last several years to evaluate all reaches of the stream and to isolate potential sediment sources in support of the overall goal of reaching attainment. Table 9 below displays the biometrics for SMB-T3-0.3 for 2019. Charts and graphs of all biometrics evaluated at SMB-T3-0.3 are provided in Appendix 6.

Table 9: Biomonitoring Results
South Mountain Branch – Station SMB-T3-0.3

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**	
2019	**225**	**24**	**15**	65	1.22	11.7	0.95	48	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-T3-0.3 met 5 of the 8 Class B biocriteria in 2019 and did not meet the remaining three. Density, richness, and EPT were below the SHG criterions for these metrics. Percent Oligochaeta passed just below 12% for the SHG criterion for this metric, however, these results suggest excess sediment is still entering the Tributary 3 reach, reducing the overall number of macroinvertebrates and shifting the population toward Oligochaetes.

SMB-T3-0.1 (Tributary 3)

Station SMB-T3-0.1 is located on Tributary 3, downstream of 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 10: 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
2019	**219**	30	21	65	1.35	8	0.97	46	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 7 of the 8 Class B biocriteria in 2019 and did not meet the density metric. Richness improved since 2018. Percent Oligochaeta also decreased by a significant factor, meeting the SHG criterion for this metric for the first year over the period of record. In addition, it is important to note that a large-scale sediment reduction BMP was implemented within this watershed during 2018, as was required by the pre-attainment flow chart (Appendix 4 of the Revised 2014 WQRP). Because this BMP was installed at the end of summer 2018, the sediment reduction that it provides would not have been represented in the biomonitoring results for 2018. However, the improved physical and biological conditions demonstrated in the downstream reach reflect the sediment reductions provided by this BMP over the past year.

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 11: 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
2016	307	27	18	59	0.86	**18.1**	0.95	49	Does Not Meet Class B Criteria

Table 11: 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**	
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
2019	325	33	23	80	1.21	6.6	0.96	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, indicating generally high-water quality conditions at SMB-1.2. This is the first year this station has met all SHG criterion since sampling started at this site in 2012. Percent Oligochaeta met biocriteria in 2019, reaching the second lowest percentage recorded at this station since 2012. The density of organisms observed in 2019 was one of the highest over the period of record for this station. The sampling event with the fewest organisms at this station was observed in 2012, after Tropical Storm Irene passed through Vermont in 2011. 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 12: 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	'19
Tributary 13 (Reference)	JB-T13-0.2	-	-	-	-	**P**	**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**	**P**
	JB-8.3	**P**	F	F	**P**	F	**P**	**P**	F	F	F	F	I	**P**	**P**	F	**P**
	JB-7.3	F	F	F	**P**	**P**	**P**	**P**	F	F	**P**	**P**	I	**P**	**P**	**P**	**P**
Tributary 9	JB-T9-0.1	F	F	F	**P**	**P**	I	F	F	F	F	F	F	**P**	**P**	**P**	**P**
South Mountain Branch	SMB-T3-0.8	-	-	-	-	-	-	-	-	-	-	-	-	**P**	**P**	**P**	**P**
	SMB-T3-0.5	-	-	-	-	-	-	-	-	-	-	**P**	F	-	-	-	-
	SMB-T3-0.3	-	-	-	-	-	-	-	-	-	-	**-**	-	-	**-**	-	F
	SMB-T3-0.1	-	-	-	-	-	-	-	-	F	F	F	F	F	F	F	F
	SMB-1.2	-	-	-	-	-	-	-	-	F	F	I	F	F	F	I	**P**

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

In 2019, seven of the nine sampled stations, JB-T13-0.2 (reference), JB-9.1, JB-8.3, JB-7.3, JB-T9-0.1, SMB-T3-0.8, and SMB-1.2 met the Class B biocriteria. Station SMB-T3-0.8 did not meet the percent PPCS-FG criteria, but based on the other metrics, this station was given an assessment of "Good" by the DEC and would therefore be considered to meet the Class B biocriteria. Two stations (SMB-T3-0.3 and SMB-T3-0.1) did not meet the Class B biocriteria.

6.0 Recommendations for 2020

Recommendations for 2020 highlight the continuing adaptive management approach outlined in the WQRP and reflect challenges or anomalies that were observed during the 2019 monitoring season. Based on the review of the 2019 data, VHB recommends the following updates to the monitoring plan or QAPP.

- Conduct a joint stream walk-over with JPR staff responsible for turbidity monitoring to refresh training on standard operating procedures.
- 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.
- Add an additional supplemental turbidity monitoring station on South Mountain Branch Tributary 3, downgradient of the maintenance shed and just upstream of station T3-03 before discharging through the culvert under Rt. 242; discontinue supplemental turbidity monitoring stations P1-02, P1-04, P1-05, P2-02, P2-03, P2-05, and P2-06, in understanding that Tributary 9 to Jay Branch is passing all biocriteria metrics through implementing BMPs in response to identified sediment sources.

With respect to the non-attainment results at Tributary 3 of South Mountain Branch, VHB recommends the following BMPs as measures to continue improving water quality in the South Mountain Branch.

- Retrofit the existing "Hotel 3" stormwater basin with an improved low flow outlet pipe and additional scour protection stone in front of the bypass culvert inlet to the pond. These measures are intended to minimize potential upwelling and sediment resuspension within the pond and to allow vegetation establishment within the practice. In addition, steepening the side slopes within the basin using stacked stone or gabion baskets, which will increase the detention volume of the pond and will stabilize the slower slopes of the basin to minimize potential sediment sources.
- Retrofit the Mountain Learning Center ("LTH4") stormwater basin that discharges to the VTrans right of way upgradient from the intermittent channels (2019-SC-1 and 2019-SC-2) identified in 2019 field investigations below Route 242, which convey stormwater runoff to Tributary 3 of

South Mountain Branch from the VTrans right-of-way. This work plan has been determined a lower priority by the Resort following the Hotel 3 Basin retrofits previously mentioned.

- Implement bank stabilization and grade control efforts for the intermittent channels mentioned above. The intent is to use low-impact measures to reduce sediment associated with bank erosion and channel incision.
- VTrans will replace two existing 18-inch corrugated metal pipe culverts that convey flows across Route 242 with larger culverts. The replacement structures will better pass larger storm events and minimize erosive forces at the outlet end of the structure.

7.0 Conclusions

Water quality monitoring at Jay Peak Resort was conducted in 2019 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 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 2020 per the terms of the Settlement Agreement for Post-Attainment reaches.

Efforts to reduce sediment loading have resulted in other streams around the Resort reaching attainment and some improvements have been observed at the SMB monitoring compliance station, however, it has not reached attainment. During field investigations conducted in 2019, eroded intermittent channels were identified downgradient from the Resort in other lands owned by VT Forest Parks and Recreation ("FPR"). Because these channels receive flows from the Resort and the VTrans right-of-way, a collaborative effort is underway to make improvements that are intended to minimize sediment loading to Tributary 3. The retrofit projects mentioned in the previous section were identified for implementation within the 2020 construction season, in hopes of improving water quality and sediment loading into Tributary 3. However, given circumstances associated with the COVID-19 pandemic, it is uncertain if these will be completed this year.

As in previous years, an annual meeting or teleconference will provide an opportunity for relevant parties to meet and confer on the status of the Water Quality Remediation Plan implementation and to 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.

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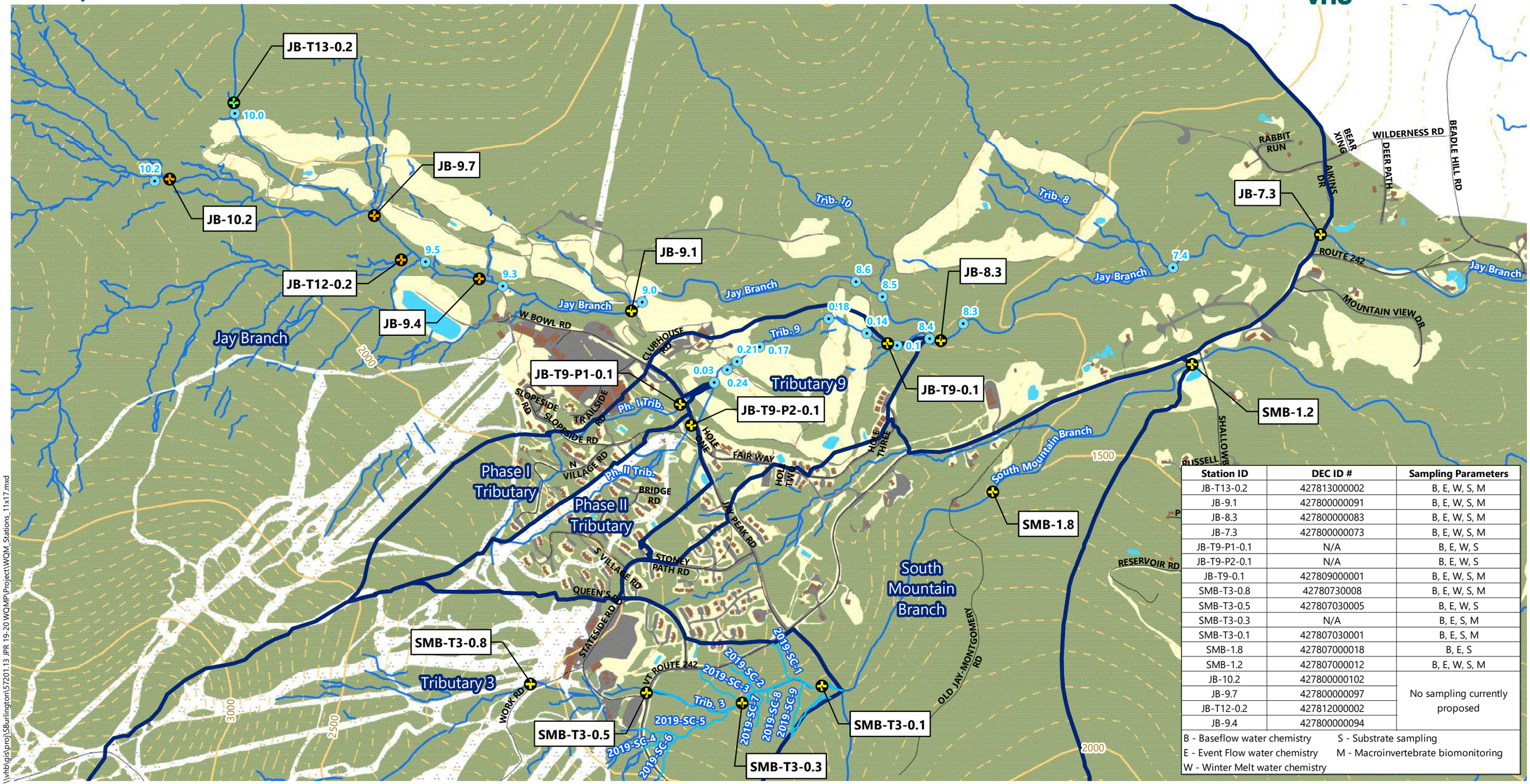
APPENDIX 1

JAY PEAK

vhb

March 02, 2020



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-T3-0.3	N/A	B, E, S, M
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

0 500 1000 2000 Feet

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)
- Stream (VHB, 2019)
- 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 - 2011-2019

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Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Baseflow Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch
Prepared by VHB on: February 27, 2020

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	
8/22/2019	11:57 AM	56	14.9	96		7.8	4.5	0.46		
9/18/2019	11:40 AM	45	8.8	96		8.1	2.2	0.00		

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Baseflow Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch
Prepared by VHB on: February 27, 2020

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)
2019 STATISTICS										
Mean	***	50	12	96	***	7.9	3	0	***	***
Min	***	45	9	96	***	8	2	0	***	***
Max	***	56	15	96	***	8	4	0	***	***
n	***	2	2	2	***	2	2	2	***	***
2004 - 2019 STATISTICS										
Mean	***	54	11.4	88	17.51	7.3	2.5	1.21	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	4.5	24.00	0.340	< 2.5
n	***	33	30	17	22	33	32	35	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 2019
Baseflow Water Chemistry Sampling
Station JB-9.1 (DEC Station 427800000091) Jay Branch
Prepared by VHB on: February 27, 2020

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	0.69	0.085	
9/14/2018	10:18 AM	76	13.7	*101*		7.6	9.0	0.00	0.076	
8/22/2019	11:41 AM	102	15.8	97		8.0	14.8	0.36		
9/18/2019	11:26 AM	73	9.4	101		8.0	8.3	0.00		

2019 STATISTICS										
Mean	***	87	13	99	***	8.0	12	0	***	***
2012 - 2019 STATISTICS										
Mean	***	80	13.1	91	18.50	7.8	8.2	7.69	0.114	< 2
Min	***	49	8.0	78	2.30	7.2	2.5	0.00	0.047	< 1
Max	***	102	16.4	103	37.00	8.6	14.8	120.00	0.410	< 3
n	***	16	16	15	6	16	16	16	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 2019
Baseflow Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch
Prepared by VHB on: February 27, 2020

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
9/5/2013	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	
8/22/2019	11:21 AM	154	16.1	91		7.9	26.4	0.25		
9/18/2019	11:11 AM	113	9.5	99		8.0	17.4	0.07		

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Baseflow Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch
Prepared by VHB on: February 27, 2020

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)
2019 STATISTICS										
Mean	***	134	13	95	***	8.0	22	0	***	***
2004 - 2019 STATISTICS										
Mean	***	101	11.4	93	21.74	7.3	12.5	1.53	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	***	32	30	17	22	32	32	34	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 2019
Baseflow Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch
Prepared by VHB on: February 27, 2020

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	
8/22/2019	10:23 AM	142	16.4	98		7.5	23.8	0.43		
9/18/2019	9:23 AM	111	10.1	106		8.5	16.8	0.00		

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Baseflow Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch
Prepared by VHB on: February 27, 2020

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)
2019 STATISTICS										
Mean	***	126	13	102	***	7.8	20	0	***	***
2004 - 2019 STATISTICS										
Mean	***	89	12.8	94	20.06	7.1	10.34	0.69	0.072	2.2
Min	***	32	3.1	76	3.60	6.2	2.00	0.00	0.020	1
Max	***	142	19.4	115	40.00	8.5	23.84	6.29	0.500	5
n	***	32	29	17	21	32	31	34	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 2019
Baseflow Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary
Prepared by VHB on: February 27, 2020

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
8/22/2013										
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	
8/22/2019	12:20 PM	260	17.4	61		7.9	50.2	0.41		
9/18/2019	12:00 PM	201	10.5	84		7.9	37.1	0.00		

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Baseflow Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary
Prepared by VHB on: February 27, 2020

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)
2019 STATISTICS										
Mean	***	231	14	72	***	7.9	44	0	***	***
2004 - 2019 STATISTICS										
Mean	***	186	12.5	77	29.67	7.3	31.9	2.34	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	***	27	24	12	17	27	26	29	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 2019
Baseflow Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary
Prepared by VHB on: February 27, 2020

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)
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	
8/22/2019	12:29 PM	463	19.6	76		8.3	95.6	3.11		
9/18/2019	12:26 PM	286	11.9	83		8.1	56.1	0.98		

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Baseflow Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary
Prepared by VHB on: February 27, 2020

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)
2019 STATISTICS										
Mean	***	374	16	79	***	7.8	76	2	***	***
2004 - 2019 STATISTICS										
Mean	***	244	13.4	80	54.14	7.8	37.5	2.12	0.059	2.6
Min	***	82	3.2	61	6.60	7.0	7.3	0.00	0.027	1
Max	***	463	20.4	98	80.00	8.3	95.6	24.00	0.220	7
n	***	27	24	14	16	27	26	29	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 2019
Baseflow Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9
Prepared by VHB on: February 27, 2020

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	
8/22/2019	11:09 AM	478	17.1	83		8.0	99.0	1.29		
9/18/2019	11:03 AM	416	10.4	97		8.0	85.1	0.00		

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Baseflow Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9
Prepared by VHB on: February 27, 2020

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)
2019 STATISTICS										
Mean	***	447	14	90	***	8.0	92	1	***	***
2004 - 2019 STATISTICS										
Mean	***	360	12.3	87	37.44	7.3	76	2.35	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	***	33	30	17	22	32	32	35	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 2019
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: February 27, 2020

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	
8/22/2019	1:07 PM	38	13.3	97		8.0	0.5	0.47		
9/18/2019	12:53 PM	30	8.5	100		8.5	< 2.5	0.33		

2019 STATISTICS										
Mean	***	34	10.9	98	***	8.3	1.5	0.40	***	***
2016 - 2019 STATISTICS										
Mean	***	32	11.8	92	***	7.9	2.0	0.44	0.029	***
Min	***	29	8.1	82	***	6.8	0.1	0.00	0.020	***
Max	***	38	14.2	100	***	8.5	2.5	1.91	0.045	***
n	***	8	8	7	***	8	8	8	6	***

Notes:

Blank cells indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

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

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 2019
Baseflow Water Chemistry Sampling
Station SMB-T3-0.5 (DEC Station ID 427807030005), Tributary 3 to South Mountain Branch
Prepared by VHB on: February 27, 2020

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	
8/22/2019	1:17 PM	106	15.0	98		7.6	15.8	0.31		
9/18/2019	1:03 PM	103	9.4	97		8.0	15.2	0.84		

2019 STATISTICS										
Mean	***	105	12	98	***	7.8	15.5	0.58	***	***
2014 - 2019 STATISTICS										
Mean	***	106	13.1	89	21.50	8.2	15.6	0.29	0.081	< 1
Min	***	92	8.9	76	20.00	6.9	12.6	0.00	0.043	< 1
Max	***	126	16.3	98	23.00	8.4	20.2	1.14	0.310	< 1
n	***	12	12	11	2	12	12	12	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 2019
Baseflow Water Chemistry Sampling
Station SMB-T3-0.1 (DEC Station ID 42780730001), Tributary 3 to South Mountain Branch
Prepared by VHB on: February 27, 2020

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	
8/22/2019	12:50 PM	217	16.0	93		8.4	40.7	0.38		
9/18/2019	1:36 PM	160	9.3	96		8.1	27.9	0.00		

2019 STATISTICS										
Mean	***	189	13	94	***	8.2	34.3	0.19	***	***
2012 - 2019 STATISTICS										
Mean	***	174	13.1	91	18.02	7.4	31.0	8.81	0.157	1.8
Min	***	125	7.2	80	4.20	7.3	22	0.00	0.020	1
Max	***	217	17.1	101	31.00	8.4	40.7	125.00	1.200	2.5
n	***	16	16	15	6	16	16	16	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 2019
Baseflow Water Chemistry Sampling
Station SMB-1.8 (DEC Station ID 427807000018), South Mountain Branch
Prepared by VHB on: February 27, 2020

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	
8/22/2019	10:45 AM	235	13.9	99		7.8	44.8	0.19		
9/18/2019	9:46 AM	195	8.5	99		7.7	35.8	0.00		

2019 STATISTICS										
Mean	***	215	11	99	***	7.8	40.28	0.10	***	***
2012 - 2019 STATISTICS										
Mean	***	201	12.1	91	21.37	7.4	37.04	1.90	0.061	1.8
Min	***	148	6.9	77	5.30	7.3	28.00	0.00	0.020	1
Max	***	235	15.3	104	38.00	8.3	44.75	24.00	0.230	2.5
n	***	16	16	15	6	16	16	16	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 2019
Baseflow Water Chemistry Sampling
Station SMB-1.2 (DEC Station ID 427807000012), South Mountain Branch
Prepared by VHB on: February 27, 2020

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	
8/22/2019	10:33 AM	236	14.2	99		7.7	44.9	0.00		
9/18/2019	9:33 AM	204	8.7	99		7.9	37.7	0.00		
2019 STATISTICS										
Mean	***	220	11	99	***	7.8	41.3	0.00	***	***
2012 - 2019 STATISTICS										
Mean	***	204	12.3	92	22.30	7.5	36.0	3.82	0.048	1.9
Min	***	157	6.8	77	4.80	7.4	9.3	0.00	0.020	1
Max	***	236	15.7	104	39.00	8.4	45	55.00	0.170	2.5
n	***	16	16	15	6	16	16	16	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/

APPENDIX 2

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Event Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch
Prepared by VHB on: February 27, 2020

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
10/8/2005	***	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	
9/4/2019	11:05 AM	33	13.0	92		7.8	< 2.5	1.53		
9/11/2019	11:05 AM	27	13.2	98		7.3	< 2.5	1.43		

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Event Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch
Prepared by VHB on: February 27, 2020

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)
2019 STATISTICS										
Mean	***	30	13	95	***	7.5	3	1	***	***
Min	***	27	13	92	***	7	3	1	***	***
Max	***	33	13	98	***	8	3	2	***	***
n	***	2	2	2	***	2	2	2	***	***
2005 - 2019 STATISTICS										
Mean	***	32	11.5	91	11.41	7.0	2.3	4.55	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	< 3.0
n	***	27	25	15	14	26	28	28	14	18

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 2019
Event Water Chemistry Sampling
Station JB-9.1 (DEC Station 427800000091) Jay Branch
Prepared by VHB on: February 27, 2020

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**	
9/5/2012	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	
9/4/2019	10:50 AM	72	13.8	99		7.7	8.1	18.01		
9/11/2019	10:52 AM	37	13.6	100		7.3	0.2	2.23		

2019 STATISTICS										
Mean	***	54	14	100	***	7.4	4	10	***	***
2012 - 2019 STATISTICS										
Mean	***	58	13.4	96	10.70	7.3	5.4	20.17	0.669	< 4
Min	***	21	10.8	79	2.00	6.6	0.2	0.00	0.096	< 2
Max	***	156	15.9	117	31.00	8.6	26.9	133.00	5.500	< 8
n	***	16	16	15	6	14	16	16	14	5

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 2019
Event Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch
Prepared by VHB on: February 27, 2020

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**	
9/30/2005	***	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	
9/4/2019	10:32 AM	101	14.1	99		7.9	14.6	2.49		
9/11/2019	10:37 AM	51	14.0	96		7.4	3.5	5.45		

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Event Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch
Prepared by VHB on: February 27, 2020

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)
2019 STATISTICS										
Mean	***	76	14	97	***	7.6	9	4	***	***
2005 - 2019 STATISTICS										
Mean	***	88	12.5	95	16.17	7.1	11.3	18.81	0.550	50.7
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	***	27	25	15	14	27	26	28	14	18

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 2019
Event Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch
Prepared by VHB on: February 27, 2020

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**	
9/30/2005	***	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	
9/4/2019	9:35 AM	87	14.2	100		7.5	11.6	0.86		
9/11/2019	9:51 AM	52	14.3	99		7.2	3.7	6.67		

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Event Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch
Prepared by VHB on: February 27, 2020

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)
2019 STATISTICS										
Mean	***	70	14	100	***	7.3	8	4	***	***
2005 - 2019 STATISTICS										
Mean	***	67	13.0	96	15.55	7.2	6.87	9.82	0.775	17.0
Min	***	23	6.3	79	2.00	6.8	2.92	0.00	0.037	1
Max	***	122	17.5	107	32.00	8.9	16.32	60.00	6.100	71
n	***	27	25	15	13	26	25	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 2019
Event Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary
Prepared by VHB on: February 27, 2020

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
10/28/2006	***	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	
9/4/2019	11:41 AM	78	15.0	98		7.7	9.6	44.08		
9/11/2019	11:28 AM	89	14.6	97		7.3	11.9	13.51		

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Event Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary
Prepared by VHB on: February 27, 2020

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)
2019 STATISTICS										
Mean	***	83	15	97	***	7.5	11	29	***	***
2006 - 2019 STATISTICS										
Mean	***	119	13.3	91	27.30	7.2	17.5	26.87	1.742	12.3
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	53.0	201.50	7.300	46
n	***	25	24	14	12	24	24	26	13	15

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 2019
Event Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary
Prepared by VHB on: February 27, 2020

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)
VWQS Threshold				**>70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 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	
9/4/2019	11:45 AM	113	15.6	87		7.9	17.4	23.57		
9/11/2019	11:34 AM	111	15.2	95		7.4	16.9	11.80		

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Event Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary
Prepared by VHB on: February 27, 2020

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)
2019 STATISTICS										
Mean	***	112	15	91	***	7.7	17	18	***	***
2006 - 2019 STATISTICS										
Mean	***	141	13.7	89	36.65	6.7	19.4	42.86	1.138	67.4
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	44.0	279.00	6.100	673
n	***	22	21	15	11	21	23	23	14	13

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 2019
Event Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9
Prepared by VHB on: February 27, 2020

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**	
9/30/2005	***	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	
9/4/2019	10:21 AM	173	15.0	91		8.0	30.8	10.90		
9/11/2019	10:29 AM	130	15.3	98		7.4	21.2	5.97		

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Event Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9
Prepared by VHB on: February 27, 2020

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)
2019 STATISTICS										
Mean	***	152	15	95	***	7.6	26	8	***	***
2005 - 2019 STATISTICS										
Mean	***	196	13.4	85	28.60	7.2	37	33.79	2.337	46
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	***	27	25	15	14	27	26	28	14	18

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 2019
Event 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: February 27, 2020

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**	
8/22/2016	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	
9/4/2019	12:28 PM	23	12.4	97		7.8	< 2.5	3.69		
9/11/2019	12:04 PM	21	12.9	96		7.0	< 2.5	1.24		

2019 STATISTICS										
Mean	***	22	12.7	97	***	7.6	2.5	2.47	***	***
2016 - 2019 STATISTICS										
Mean	***	35	12.6	95	***	6.9	4.7	4.72	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	***	9	9	8	***	9	9	9	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/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Event Water Chemistry Sampling
Station SMB-T3-0.5 (DEC Station ID 427807030005), Tributary 3 to South Mountain Branch
Prepared by VHB on: February 27, 2020

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**	
8/13/2014	***									
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	
9/4/2019	12:40 PM	47	13.2	96		7.4	2.5	5.58		
9/11/2019	12:15 PM	49	13.5	98		7.0	3.1	39.41		

2019 STATISTICS										
Mean	***	48	13	97	***	7.3	2.8	22.50	***	***
2014 - 2019 STATISTICS										
Mean	***	65	13.0	94	32.00	6.5	6.7	15.62	0.988	< 7
Min	***	42	11.0	82	32.00	6.4	2.0	0.00	0.092	< 7
Max	***	114	15.4	100	32.00	8.6	17.6	76.03	4.800	< 7
n	***	11	11	10	1	11	11	11	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/

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Event Water Chemistry Sampling
Station SMB-T3-0.1 (DEC Station ID 42780730001), Tributary 3 to South Mountain Branch
Prepared by VHB on: February 27, 2020

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**	
9/5/2012	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	
9/4/2019	12:13 PM	131	14.0	99		7.9	21.4	15.49		
9/11/2019	11:49 AM	113	14.0	96		7.7	17.4	10.30		

2019 STATISTICS										
Mean	***	122	14	98	***	7.7	19.4	12.90	***	***
2012 - 2019 STATISTICS										
Mean	***	127	13.6	93	11.33	-7.3	21.5	41.04	2.183	12.8
Min	***	47	10.6	57	2.00	6.5	10	2.18	0.071	1
Max	***	191	16.5	106	26.00	8.8	32.0	269.30	20.000	43.0
n	***	16	16	15	6	16	16	16	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 2019
Event Water Chemistry Sampling
Station SMB-1.8 (DEC Station ID 427807000018), South Mountain Branch
Prepared by VHB on: February 27, 2020

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**	
9/5/2012	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	
9/4/2019	9:57 AM	148	12.4	96		7.7	25.2	7.43		
9/11/2019	10:07 AM	89	13.5	101		7.2	12.0	9.59		

2019 STATISTICS										
Mean	***	119	13	98	***	7.4	18.58	8.51	***	***
2012 - 2019 STATISTICS										
Mean	***	137	12.9	95	13.07	-7.3	21.53	20.77	1.283	12.3
Min	***	37	10.6	81	2.00	6.6	7.20	1.47	0.020	1
Max	***	233	15.1	101	28.00	8.7	44.17	91.88	5.900	45.0
n	***	16	16	15	6	16	16	16	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 2019
Event Water Chemistry Sampling
Station SMB-1.2 (DEC Station ID 427807000012), South Mountain Branch
Prepared by VHB on: February 27, 2020

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**	
9/5/2012	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	
9/4/2019	9:45 AM	160	12.6	95		7.5	27.9	0.88		
9/11/2019	10:00 AM	100	13.6	102		6.9	14.5	8.56		

2019 STATISTICS										
Mean	***	130	13	98	***	7.1	21.2	4.72	***	***
2012 - 2019 STATISTICS										
Mean	***	140	13.2	96	14.92	7.3	24.4	15.87	0.976	13.2
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	45.0
n	***	16	16	15	6	16	16	16	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/

APPENDIX 3

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Winter Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch
Prepared by VHB on: February 27, 2020

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
2/11/2009	10:30 AM	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	
4/18/2019	12:03 PM	20	2.5	92		5.7	<2.5	0.00	
5/2/2019	4:20 PM	23	3.2	96		6.7	<2.5	0.00	

2019 STATISTICS									
Mean	***	22	2.9	94.0	***	6.0	2.5	0.00	***
2009-2019 STATISTICS									
Mean	***	28	2.6	102	13.78	5.97	3.0	0.43	<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	***	16	16	13	2	16	12	16	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 2019
Winter Water Chemistry Sampling
Station JB-9.1 (DEC Station 427800000091) Jay Branch
Prepared by VHB on: February 27, 2020

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	
4/18/2019	11:11 AM	33	2.1	95		5.7	<2.5	0.00	
5/2/2019	3:56 PM	17	3.0	94		7.3	<2.5	0.00	

2019 STATISTICS									
Mean	***	25	2.6	95	***	6.0	2.5	0.00	***
2008 - 2019 STATISTICS									
Mean	***	48	2.1	102	25.86	6.6	6.8	2.59	<2
Min	***	15	0.0	86	21.00	5.7	1.5	0.00	<2
Max	***	111	5.7	130	37.00	8.6	30.0	21.70	<2
n	***	21	21	13	7	21	17	21	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 2019
Winter Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch
Prepared by VHB on: February 27, 2020

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	
4/18/2019	10:22 AM	79	1.9	92		5.8	9.8	11.25	
5/2/2019	2:52 PM	49	3.8	97		7.4	3.0	0.00	

2019 STATISTICS									
Mean	***	64	2.9	95	***	6.0	6.4	5.63	***
2008 - 2019 STATISTICS									
Mean	***	97	2.5	102	20.87	6.7	18	11.90	2
Min	***	20	0.1	87	9.95	5.8	2.5	0.00	2
Max	***	407	5.7	136	28.00	8.6	77	140.70	2
n	***	23	23	13	8	23	19	22	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 2019
Winter Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch
Prepared by VHB on: February 27, 2020

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
4/18/2014	5:00 PM	89	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	
4/18/2019	9:39 AM	54	2.0	94		5.0	4.2	0.05	
5/2/2019	1:47 PM	43	4.0	98		7.5	1.8	0.00	
2019 STATISTICS									
Mean	***	49	3.0	96	***	5.3	3.0	0.03	***
2014 - 2019 STATISTICS									
Mean	***	77	2.8	101	***	6.0	11.5	4.82	***
Min	***	24	0.9	85	***	5.0	1.8	0.00	***
Max	***	230	5.0	121	***	8.9	50	38.29	***
n	***	12	12	11	***	12	10	12	***

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 2019
Winter Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary
Prepared by VHB on: February 27, 2020

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	
4/18/2019	12:44 PM	116	1.6	93		5.7	18.0	5.42	
5/2/2019	3:31 PM	82	4.0	95		6.4	10.3	0.00	

2019 STATISTICS									
Mean	***	99	2.8	94	***	5.9	14.2	2.71	***
2012-2019 STATISTICS									
Mean	***	127	2.7	98	***	6.7	20.4	37.32	***
Min	***	45	0.1	67	***	5.7	2.1	0.00	***
Max	***	347	8.5	141	***	8.3	82.0	265.00	***
n	***	16	16	13	***	16	10	16	***

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 2019
Winter Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary
Prepared by VHB on: February 27, 2020

	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	
#	4/18/2019	12:50 PM	119	1.7	90		5.9	18.6	4.01	
	5/2/2019	4:38 PM	133	4.3	95		6.1	21.8	4.28	

2019 STATISTICS									
Mean	***	126	3.0	93	***	7.1	20.2	4.15	***
2011 - 2019 STATISTICS									
Mean	***	154	2.9	97	***	6.7	26.5	43.77	***
Min	***	41	0.0	82	***	5.9	4.2	1.86	***
Max	***	412	8.8	126	***	8.4	100	268	***
n	***	17	17	12	***	17	10	17	***

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 2019
Winter Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9
Prepared by VHB on: February 27, 2020

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	
4/18/2019	10:13 AM	242	1.5	96		5.5	46.3	1.00	
5/2/2019	3:09 PM	162	4.8	96		6.7	28.3	4.38	
2019 STATISTICS									
Mean	***	202	3.2	96	***	5.7	37.3	2.7	***
2008 - 2019 STATISTICS									
Mean	***	281	2.7	102	26.1	6.6	69.4	16.92	3
Min	***	95	0.0	83	19.0	5.5	16.3	0.00	3
Max	***	751	7.9	135	41.0	8.9	200	95.27	3
n	***	22	22	0	7	22	18	21	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 2019
Winter Water Chemistry Sampling
Station SMB-T3-0.8, Tributary 3 to South Mountain Branch, upstream from Stateside Hotel
Prepared by VHB on: February 27, 2020

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	
4/18/2019	1:04 PM	17	2.6	90		6.2	<2.5	0.00	
5/2/2019	5:01 PM	15	2.8	95		6.7	<2.5	0.00	
2019 STATISTICS									
Mean	***	16	2.7	92	***	6.3	2.5	0.00	***
2017 - 2019 STATISTICS									
Mean	***	20	3.3	90	***	6.7	2.5	0.85	***
Min	***	9	2.0	82	***	6.2	2.5	0.00	***
Max	***	30	4.8	95	***	8.6	2.5	4.79	***
n	***	6	6	6	***	6	6	6	***

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.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Winter Water Chemistry Sampling
Station SMB-T3-0.5, Tributary 3 to South Mountain Branch
Prepared by VHB on: February 27, 2020

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	
4/18/2019	1:16 PM	45	2.5	91		6.0	2.1	0.00	
5/2/2019	5:15 PM	36	3.0	95		6.1	0.1	2.74	

2019 STATISTICS									
Mean	***	40	2.8	93	***	6.1	1.1	1.37	***
2015 - 2019 STATISTICS									
Mean	***	74	2.7	97	***	6.7	10.7	29.62	***
Min	***	17	0.8	85	***	6.0	0.1	0.00	***
Max	***	174	4.9	130	***	8.5	31.0	230.00	***
n	***	10	10	9	***	10	10	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 2019
Winter Water Chemistry Sampling
Station SMB-1.2, South Mountain Branch
Prepared by VHB on: February 27, 2020

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)*	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
4/27/2013	2:07 PM	158	6.7	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	
4/18/2019	9:49 AM	206	2.4	92		5.3	38.1	0.79	
5/2/2019	2:02 PM	135	4.0	97		7.4	22.3	1.19	

2019 STATISTICS									
Mean	***	170	3.2	95	***	5.6	30.2	0.99	***
2013 - 2019 STATISTICS									
Mean	***	186	3.5	106	***	6.4	33.9	1.84	***
Min	***	86	1.5	86	***	5.3	11.2	0.00	***
Max	***	408	6.7	171	***	8.8	99	8.92	***
n	***	13	13	12	***	13	10	13	***

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/

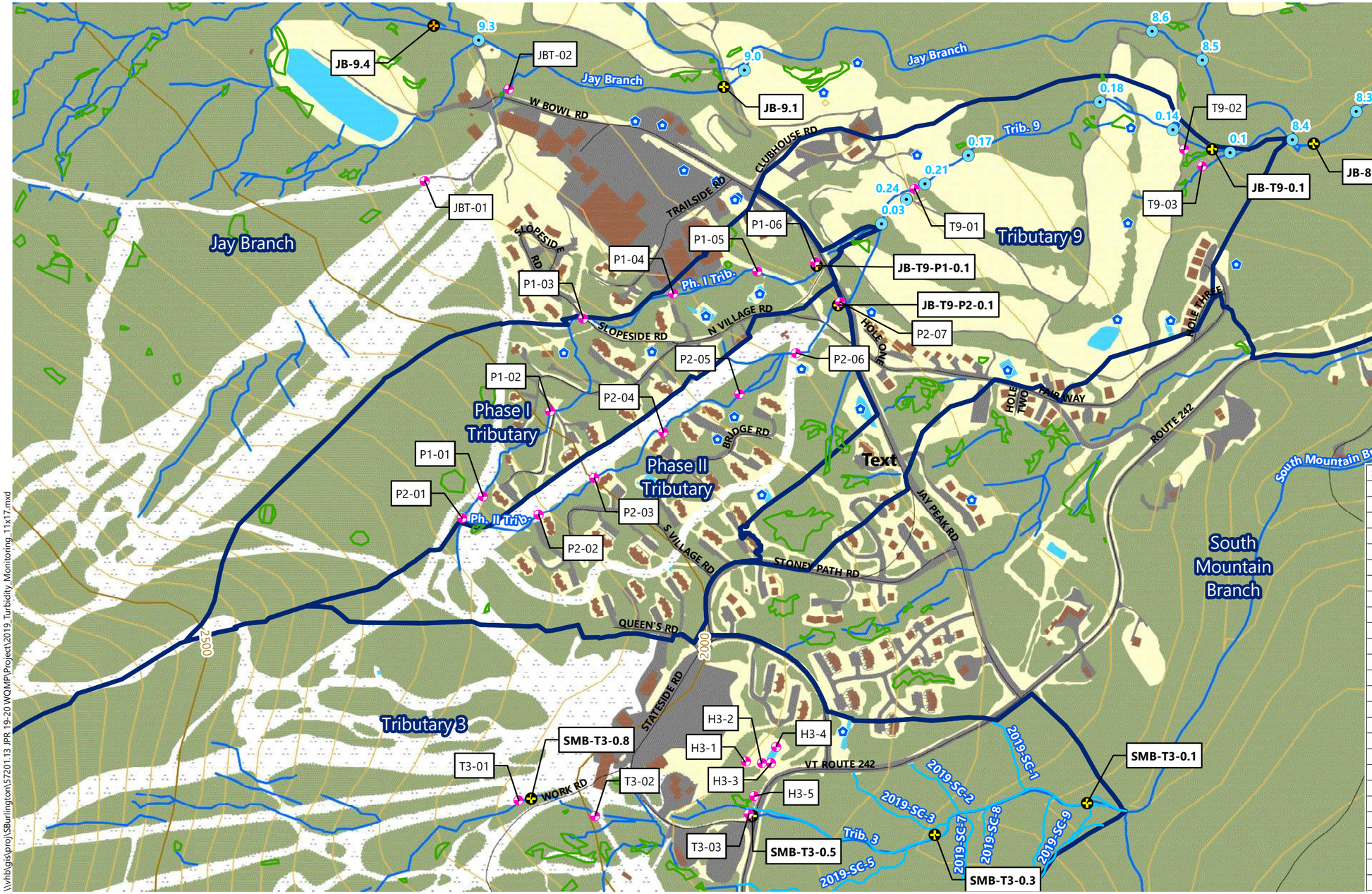
This conversion requires site-specific barometric pressure data which was not recorded in the field.

APPENDIX 4

JAY PEAK

vhb

March 02, 2020



Station ID	Location
P1-01	Phase 1 trib at Queen's Highway culvert; behind 117-120
P1-02	Phase 1 trib at North Village Road culvert, opposite VSF4
P1-03	Phase 1 trib at Slopeside Road
P1-04	Phase 1 trib between 301-308 and parking garage
P1-05	Phase 1 trib upstream from Treatment System 3
P1-06	Phase 1 trib at Jay Peak Road
P2-01	Phase 2 trib at Queen's highway workroad crossing
P2-02	Phase 2 trib at Raccoon Run, behind 129-132
P2-03	Phase 2 trib at Raccon Run, behind 125-128
P2-04	Phase 2 trib at Raccon Run, behind 153-156
P2-05	Phase 2 trib, behind 351-358
P2-06	Phase 2 trib at Grammy Jay crossing
P2-07	Phase 2 trib at Jay Peak Road
JBT-01	Harmony Lane at Ullr's Dream culvert
JBT-02	West Bowl Road downstream from Tram Haus Bridge
T3-01	Trib 3 at Powerliner Trail bridge
T3-02	Trib 3 at work road to Jet Triple Lift
T3-03	Trib 3 at Rt. 242
T9-01	Trib 9 at GC Hole 9 bridge
T9-02	Trib 9 at GC Hole 3 bridge
T9-03	Downtream from GMS2 basin, upstream from Trib 9 confluence
H3-1	H3 Inlet
H3-2	Manhole before ADS Water Quality Unit
H3-3	Manhole After ADS Water Quality Unit
H3-4	SW Pond, between Wetland & Outlet Structure
H3-5	Before Trib 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)

Stream (VHB, 2019)

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 - 2011-2019

\\vhb\gis\proj\SBurlington\57201.13 JPR 19-20 WQMP\Project\2019_Turbidity_Monitoring_11x17.mxd

Jay Peak Resort, Jay Vermont
Water Quality Monitoring Plan 2019
Supplemental Turbidity Monitoring
Prepared by VHB on: March 02, 2020

	Date	Location	5/10	5/14	6/21	7/12	7/17	8/8	9/11	9/24	9/26	10/1	10/2	10/17	10/17
	Rainfall Depth (in)		1.50	0.50	0.83	0.83	0.46	2.16	0.88	0.04	0.54	0.12	2.53	0.75	0.75
	Sampler		JP/CT	JP/CT	CT	CT	CT/Ray	CT	RP	Travis	Travis/Ray	Ryan/Travis	Travis	C/T (AM)	Travis (PM)
	0.02 ntu Standard (start)		0.02	0.02	0.01	0.03	0.20	0.09	0.44	0.02	0.01	0.02	0.02	0.02	0.02
	10 ntu Standard (start)		10.00	10.00	10.05	10.06	10.62	10.10	10.27	10.00	9.64	10.00	10.00	10.00	10.00
	1000 ntu Standard (start)		1000.00	1000.00	999.10	994.60	994.40	1007.00	1010.00	1000.00	1001.00	1000.00	1000.00	1000.00	1000.00
	0.02 ntu Standard (end)		0.00	887.60	0.00	0.00	0.00	0.73	0.26	0.00	0.01	0.00	0.71	0.00	0.57
	10 ntu Standard (end)		10.21	88.70	8.40	10.26	10.06	9.96	10.34	7.94	10.71	57.95	12.65	12.17	12.20
	1000 ntu Standard (end)		994.80	996.70	1000.00	1100.00	1100.00	968.20	1016.00	864.00	1100.00	1100.00	1100.00	1018.00	1054.00
Supplemental Turbidity Monitoring Station	JBT-01	Unnamed Tributary to Jay Branch (JBT-01)	9.32	5.26	2.42	3.22	6.45	4.63	14.81	1.10	0.77	0.80	6.90	14.94	6.10
	JBT-02	Unnamed Tributary to Jay Branch (JBT-02)	56.28	3.74	2.51	5.72	7.58	7.05	12.54	3.18	1.60	1.01	4.96	17.73	4.10
	P1-01	Phase I Tributary (P1-01)	45.17	5.25	3.25	3.34	4.27	3.77	3.22	0.00	0.01	1.64	2.95	3.91	4.22
	P1-02	Phase I Tributary (P1-02)	47.41	7.71	5.76	Dry	10.01	5.31	14.97	5.57	9.40	2.36	3.63	18.01	11.13
	P1-03	Phase I Tributary (P1-03)	72.87	3.30	3.27	5.37	14.42	9.93	21.37	0.00	3.14	10.10	18.64	23.91	9.22
	P1-04	Phase I Tributary (P1-04)	80.21	3.06	7.35	6.81	19.09	7.72	20.55	1.05	2.85	13.95	13.55	26.52	7.14
	P1-05	Phase I Tributary (P1-05)	76.12	4.98	10.31	7.15	9.29	3.31	5.29	2.47	1.29	14.65	5.34	22.83	8.69
	P1-06	Phase I Tributary (P1-06)	42.61	7.41	7.39	8.42	13.13	9.13	3.76	18.07	6.23	19.46	25.80	55.87	46.80
	P2-01	Phase II Tributary (P2-01)	63.28	1.71	9.21	6.63	20.04	10.31	0.59	1.80	0.28	30.10	2.55	13.71	3.46
	P2-02	Phase II Tributary (P2-02)	47.26	5.37	4.08	9.39	26.26	3.70	42.00	0.14	0.59	50.23	8.29	17.16	6.02
	P2-03	Phase II Tributary (P2-03)	37.50	4.38	3.06	4.77	7.67	5.06	9.35	0.08	0.00	21.75	3.45	20.27	8.08
	P2-04	Phase II Tributary (P2-04)	47.04	3.39	6.80	54.59	23.65	4.72	16.04	7.59	0.00	20.65	7.49	23.19	12.76
	P2-05	Phase II Tributary (P2-05)	40.36	6.57	2.55	4.61	4.87	6.49	8.73	0.74	0.17	20.67	2.95	8.42	7.55
	P2-06	Phase II Tributary (P2-06)	39.60	5.11	3.29	8.22	11.31	3.78	8.68	35.70	1.39	14.74	44.81	12.46	33.88
	P2-07	Phase II Tributary (P2-07)	29.17	7.79	4.11	5.17	6.83	5.33	Dry	0.28	Dry	27.02	21.97	52.94	39.75
	T9-01	Tributary 9 to Jay Branch (T9-01)	105.70	7.73	3.76	4.12	7.78	6.91	8.77	1.71	0.00	2.63	38.58	26.68	
	T9-02	Tributary 9 to Jay Branch (T9-02)	115.24	6.19	6.22	6.21	7.96	3.37	10.88	0.93	0.00	28.06	4.55	17.19	
	T9-03	Tributary 9 to Jay Branch (T9-03)	97.50	10.10	2.77	6.98	8.62	7.61	4.26	1.55	0.67	0.27	8.52	4.38	
	SMB-T3-01	Tributary 3 to South Mountain Branch (T3-01)	31.29	2.42	2.36	4.07	0.45	6.61	2.31	0.05	1.61	44.90	7.85	3.92	3.72
	SMB-T3-02	Tributary 3 to South Mountain Branch (T3-02)	31.53	4.31	3.21	5.94	7.17	12.31	3.86	0.18	1.38	98.74	3.32	5.03	7.59
	SMB- T3-03	Tributary 3 to South Mountain Branch (T3-03)	110.03	12.10	6.13	2.96	5.29	7.73	2.25	0.00	0.26	71.20	3.25	3.14	0.35

	H3 Basin 1	Inlet			10.78	66.70	22.15	12.37	13.21	31.46	12.09	7.02	10.53	24.85	
	H3 Basin 2	MH before ADS WQ Unit			13.92	22.90	23.19	16.91	9.02	39.01	37.15	15.44	21.18	29.83	
	H3 Basin 3	MH after ADS WQ Unit			6.30	1.10	19.67	10.17	11.89	116.80	37.07	21.05	18.08	51.20	
	H3 Basin 4	H3 Basin, Between Wetland & OCS			5.12	7.34	24.51	9.02	9.68	89.49	33.62	12.62	186.50	49.46	
	H3 Basin 5	After Outlet, Before Trib 3		3.91	7.30	244.20	181.00	11.77	8.93	212.90	9.10	6.13	15.29	57.88	
	Construction Action Level		25	25	25	25	25	25	25	25	25	25	25	25	25

Notes:
All values reported as NTU
Blank cells indicates no data available
Highlighted cells indicate dry conditions or greater than 25 NTU

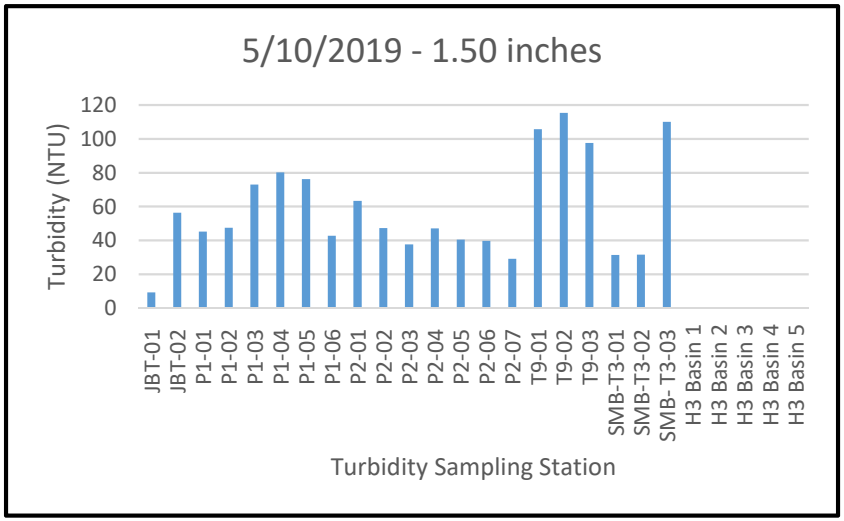
Jay Peak Resort, Jay Vermont
Water Quality Monitoring Plan 2019
Supplemental Turbidity Monitoring
Prepared by VHB on: March 02, 2020

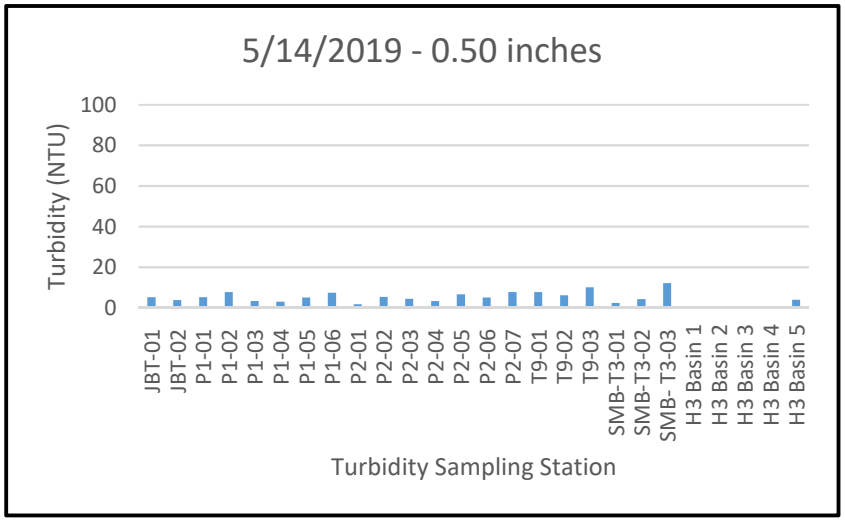
	Date	Location	10/28	10/31	11/1
	Rainfall Depth (in)		1.20	0.33	3.90
	Sampler		Travis	R/L/B	C/B
	0.02 ntu Standard (start)		0.02	0.00	0.00
	10 ntu Standard (start)		10.00	10.86	10.29
	1000 ntu Standard (start)		1000.00	997.40	1007.00
	0.02 ntu Standard (end)		1.50	0.03	0.02
	10 ntu Standard (end)		12.75	9.54	10.53
	1000 ntu Standard (end)		746.30	1100.00	1000.00
Supplemental Turbidity Monitoring Station	JBT-01	Unnamed Tributary to Jay Branch (JBT-01)	1.03	3.53	17.73
	JBT-02	Unnamed Tributary to Jay Branch (JBT-02)	1.03	0.78	22.35
	P1-01	Phase I Tributary (P1-01)	1.06	3.06	4.89
	P1-02	Phase I Tributary (P1-02)	2.98	5.34	7.96
	P1-03	Phase I Tributary (P1-03)	3.58	3.86	69.28
	P1-04	Phase I Tributary (P1-04)	2.13	2.88	97.84
	P1-05	Phase I Tributary (P1-05)	3.08	2.06	160.10
	P1-06	Phase I Tributary (P1-06)	6.41	6.70	3.08
	P2-01	Phase II Tributary (P2-01)	0.00	2.48	13.82
	P2-02	Phase II Tributary (P2-02)	10.45	26.45	4.41
	P2-03	Phase II Tributary (P2-03)	3.85	4.61	12.88
	P2-04	Phase II Tributary (P2-04)	7.89	2.03	10.54
	P2-05	Phase II Tributary (P2-05)	2.27	5.22	14.46
	P2-06	Phase II Tributary (P2-06)	4.29	1.98	36.85
	P2-07	Phase II Tributary (P2-07)	13.23	88.89	6.31
	T9-01	Tributary 9 to Jay Branch (T9-01)	5.08	74.40	27.16
	T9-02	Tributary 9 to Jay Branch (T9-02)	0.21	2.76	11.31
	T9-03	Tributary 9 to Jay Branch (T9-03)	0.05	7.06	115.39
	SMB-T3-01	Tributary 3 to South Mountain Branch (T3-01)	1.79	0.00	12.23
	SMB-T3-02	Tributary 3 to South Mountain Branch (T3-02)	1.06	1.81	71.60
	SMB- T3-03	Tributary 3 to South Mountain Branch (T3-03)	1.15	4.12	55.22

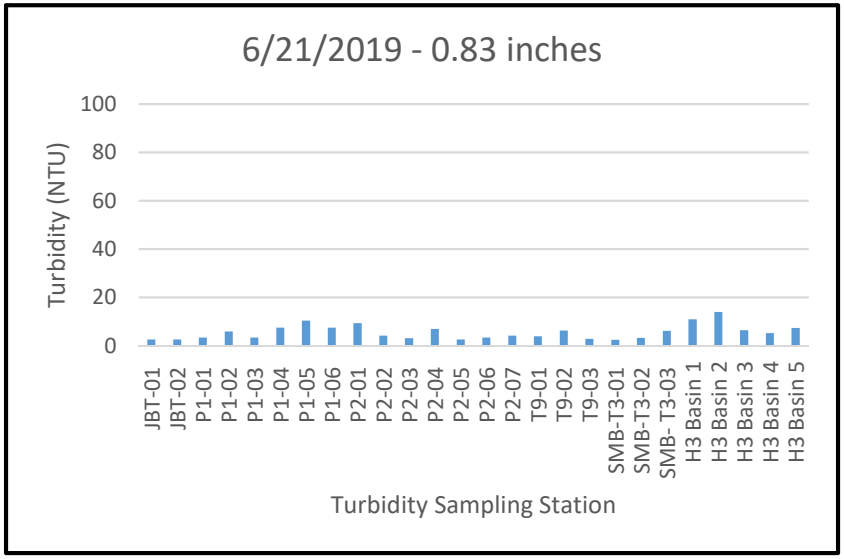
	H3 Basin 1	Inlet	12.08	4.37	71.60
	H3 Basin 2	MH before ADS WQ Unit	15.20	16.97	33.85
	H3 Basin 3	MH after ADS WQ Unit	12.55	13.21	67.28
	H3 Basin 4	H3 Basin, Between Wetland & OCS	51.77	32.38	11.93
	H3 Basin 5	After Outlet, Before Trib 3	55.81	44.12	23.61
	Construction Action Level		25	25	25

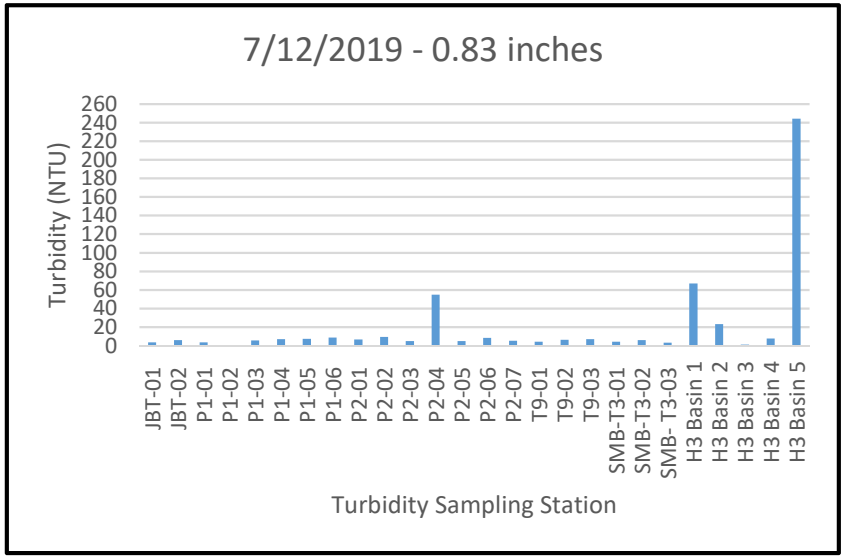
Notes:
All values reported as NTU
Blank cells indicates no data available
Highlighted cells indicate dry conditions or greater than 25 NTU

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Supplemental Turbidity Monitoring - Rainfall Events
Prepared by VHB on: March 02, 2020









Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Supplemental Turbidity Monitoring - Rainfall Events
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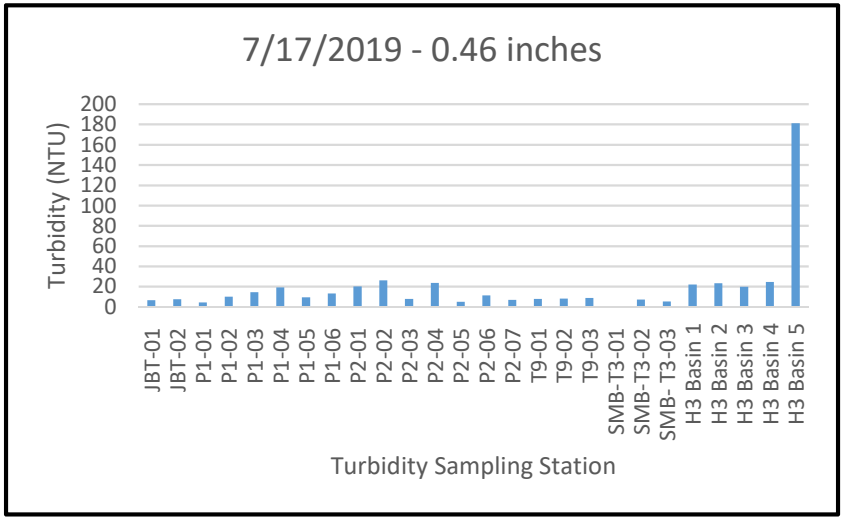
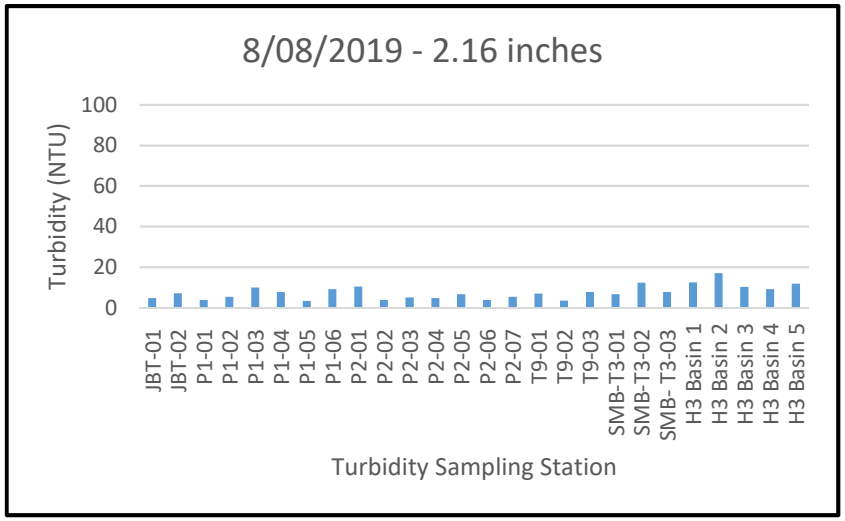
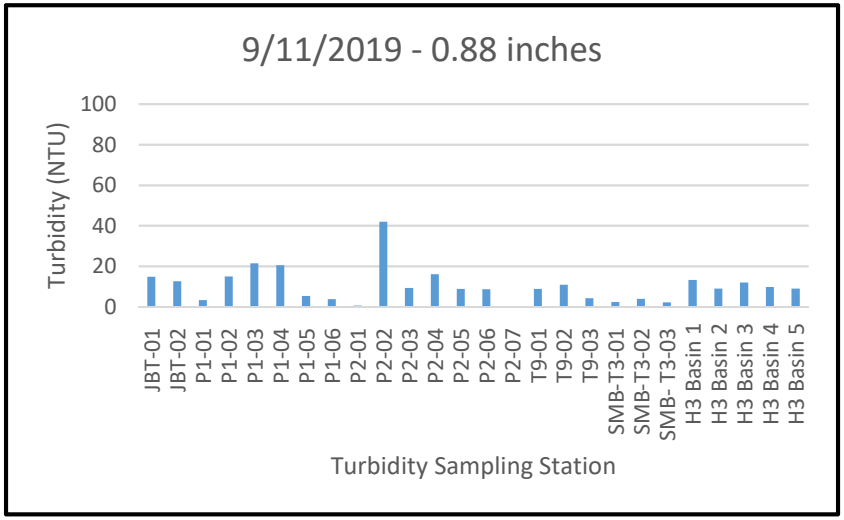
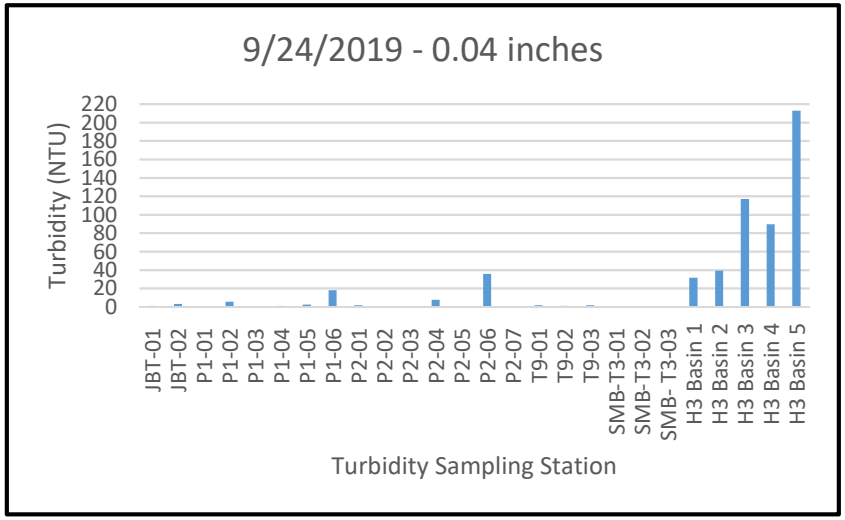
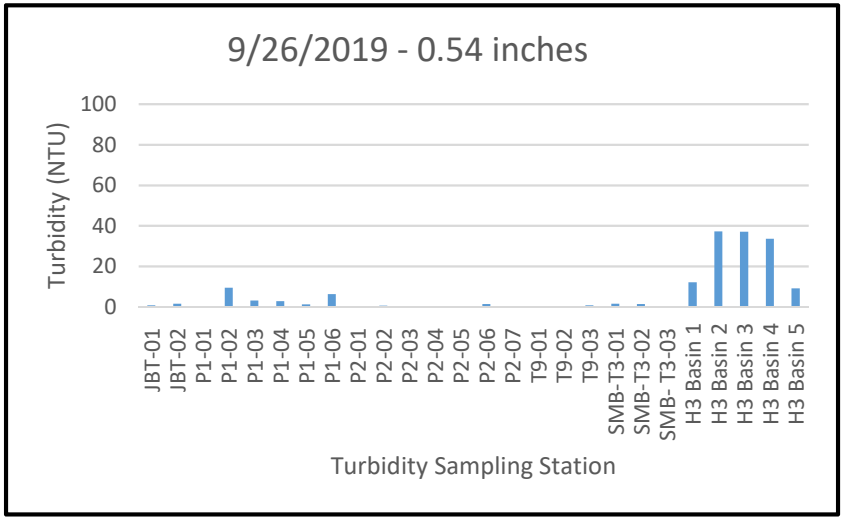


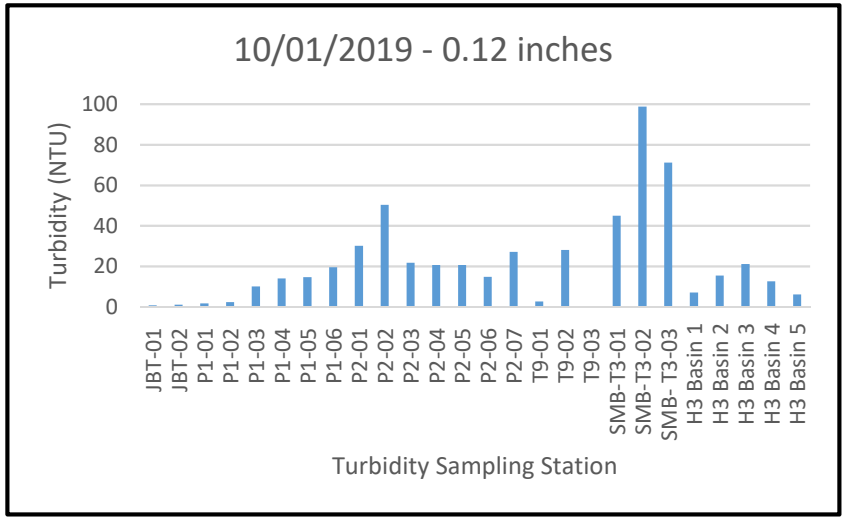


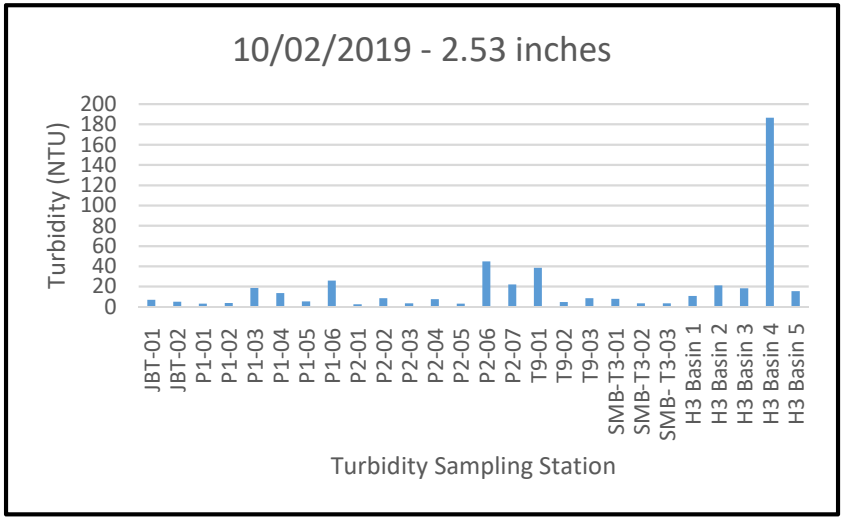


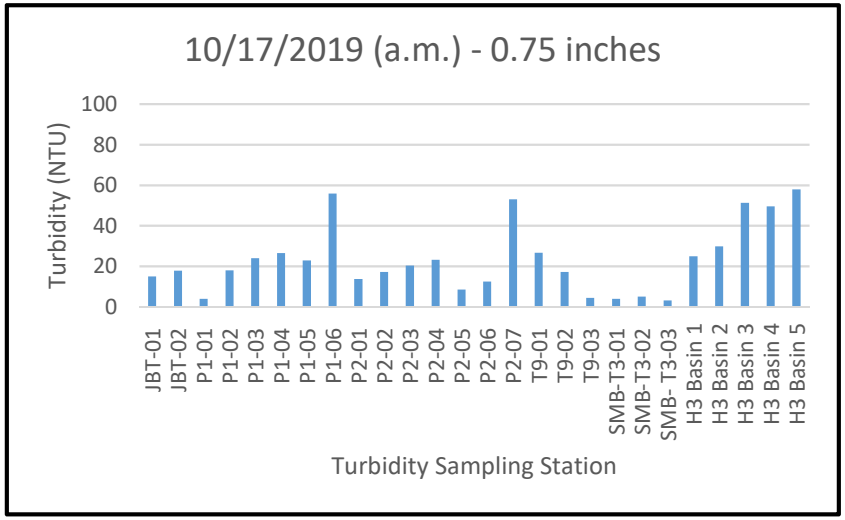


Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Supplemental Turbidity Monitoring - Rainfall Events
Prepared by VHB on: March 02, 2020









Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2019
Supplemental Turbidity Monitoring - Rainfall Events
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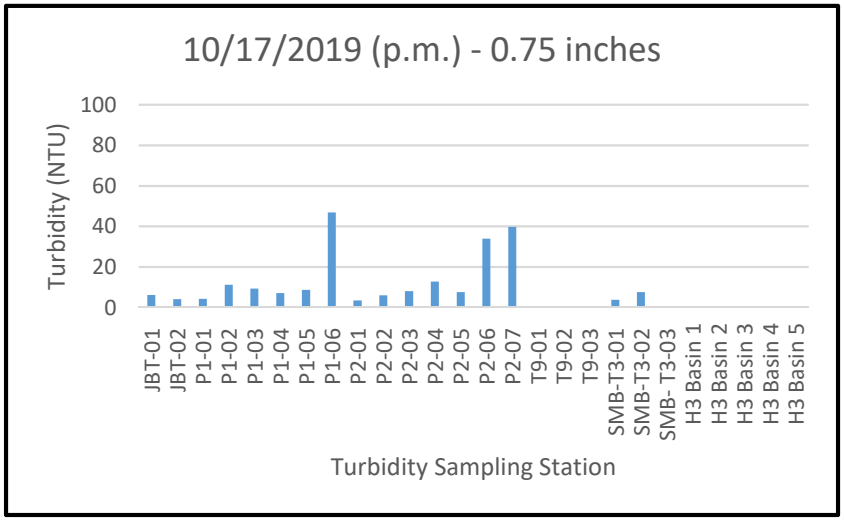

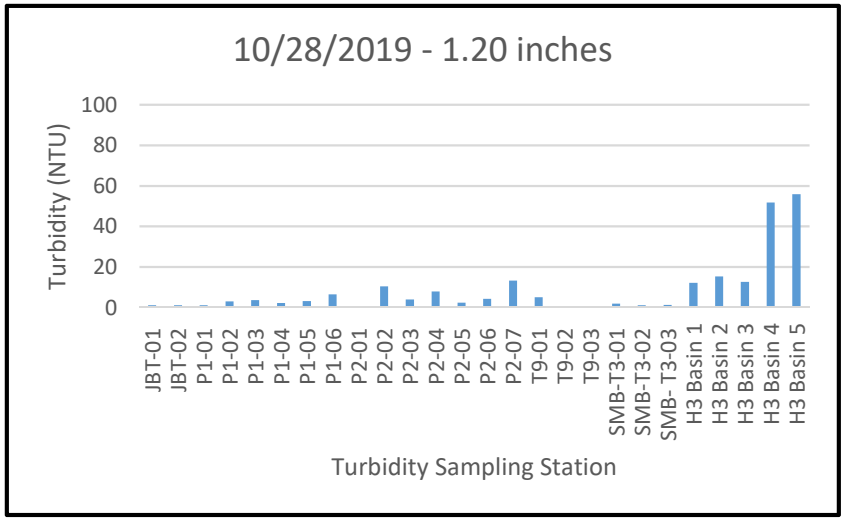

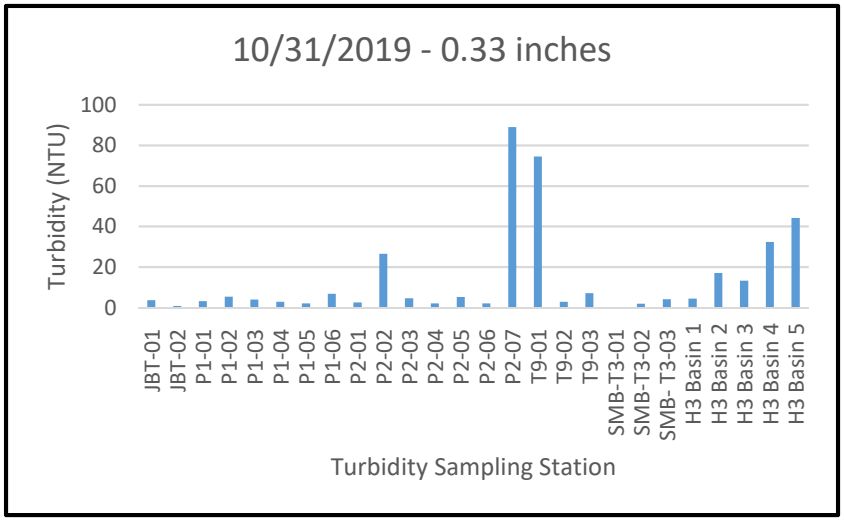

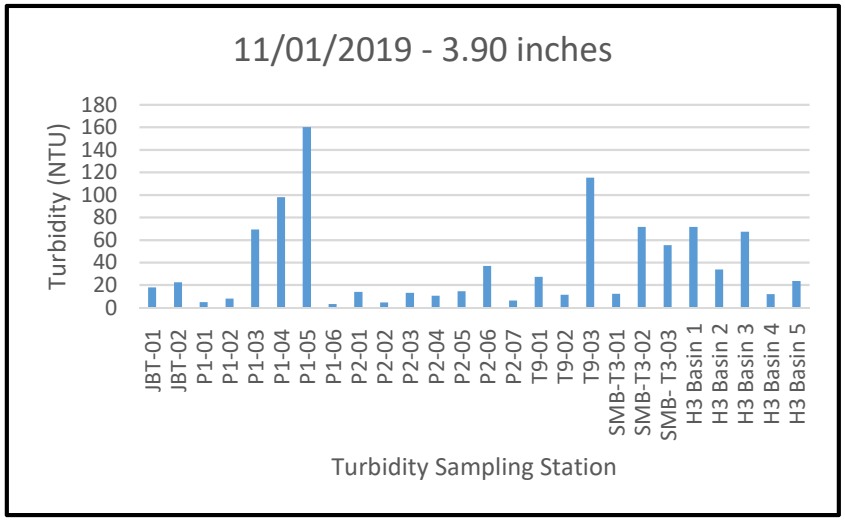

APPENDIX 5

Jay Peak Water Quality Monitoring Plan 2019
Substrate Sampling Summary
Prepared by VHB on: March 02, 2019

Pebble Count and Sediment Monitoring Observations 2004-2019

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
		2019	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
		2019	5-25%	2.0	2.0	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\57201.13 JPR 19-20 WQMP\tech\Biomonitoring\Substrate\Jay Pebble Counts 2019.xl

Jay Peak Water Quality Monitoring Plan 2019
Substrate Sampling Summary
Prepared by VHB on: March 02, 2019

Pebble Count and Sediment Monitoring Observations 2004-2019

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
		2019	5-25%	1.0	1.0	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
		2019	5-25%	1	1	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\57201.13 JPR 19-20 WQMP\tech\Biomonitoring\Substrate\Jay Pebble Counts 2019.xl

Jay Peak Water Quality Monitoring Plan 2019
Substrate Sampling Summary
Prepared by VHB on: March 02, 2019

Pebble Count and Sediment Monitoring Observations 2004-2019

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
		2019	5-25%	5	5	16-64

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
		2019	25-50%	5	5	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
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Jay Peak Water Quality Monitoring Plan 2019
Substrate Sampling Summary
Prepared by VHB on: March 02, 2019

Pebble Count and Sediment Monitoring Observations 2004-2019

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
		2019	5-25%	12	12	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
		2019	5-25%	1	1	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
		2019	5-25%	5	5	16-64

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
South Mountain Branch	SMB-T3-0.3	2019	25-50%	17	17	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
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Jay Peak Water Quality Monitoring Plan 2019
Substrate Sampling Summary
Prepared by VHB on: March 02, 2019

Pebble Count and Sediment Monitoring Observations 2004-2019

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
		2019	5-25%	5	5	64-256

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
South Mountain Branch	SMB-1.8	2012	---	8	8	16-64
		2013	---	1	1	64-256
		2014	5-25%	0	0	64-256
		2015	5-25%	0	0	64-256
		2016	No sample collected			
		2017	No sample collected			
		2018	5-25%	8	8	16-64
		2019	5-25%	1	1	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
		2019	25-50%	11	11	16-64

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

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

Jay Peak Water Quality Monitoring Plan 2019
Substrate Sampling Summary
Sample Location: JB-T13-0.2
Sampling Date: September 25, 2019
Samplers: TGB, CCS
Prepared by VHB on: March 02, 2019

Station Habitat Observations	Sub-1
Canopy cover:	80%
Embeddedness:	5-25%
Bank stability:	Very Good

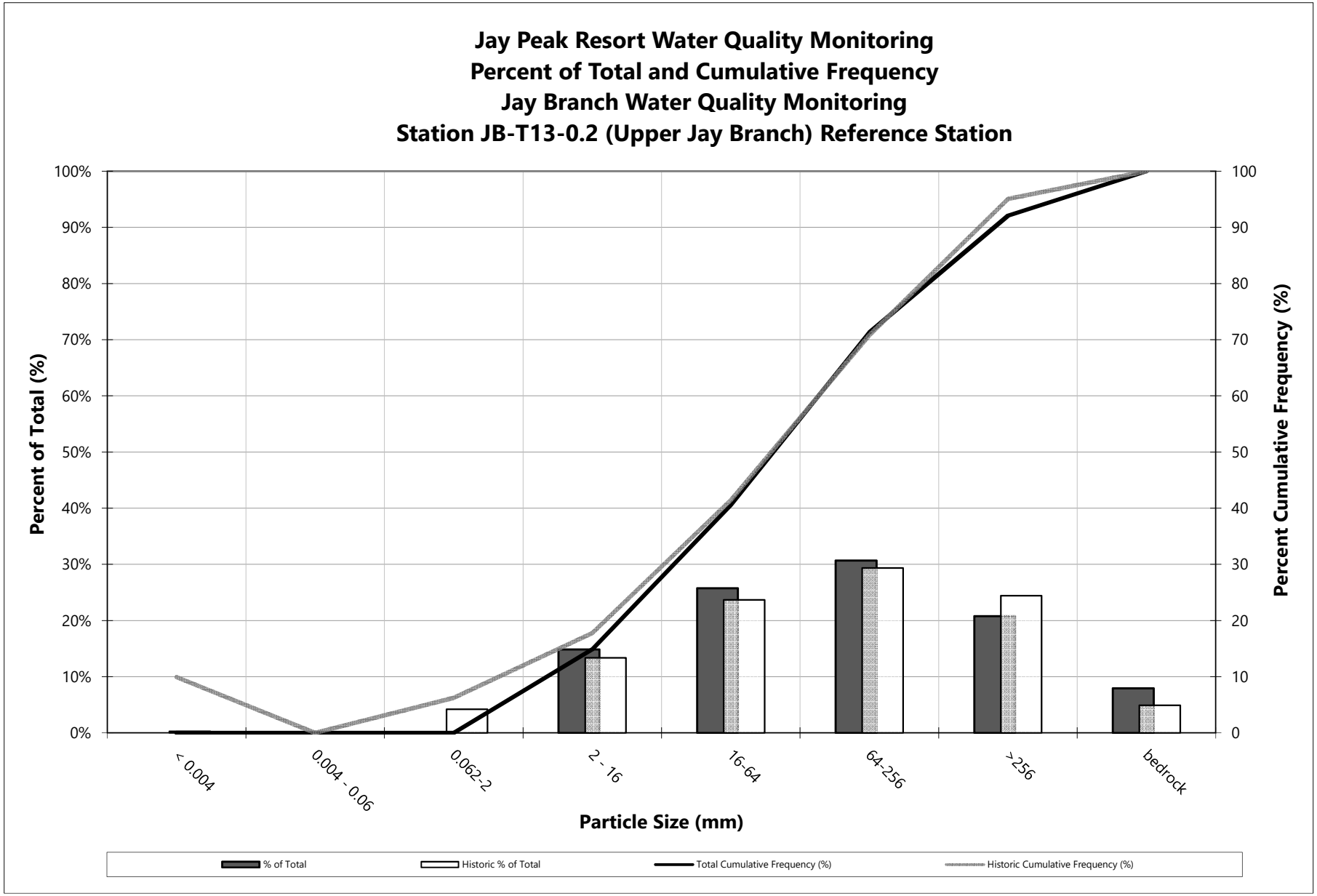
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	0	0%	0	0
Gravel	2 - 16	15	15%	15	15
Coarse gravel	16-64	26	26%	41	41
Cobble	64-256	31	31%	72	71
Boulder	>256	21	21%	93	92
Bedrock	bedrock	8	8%	101	100
	Sample Size (n)	101	100%		
	Longitudinal Distance (ft)	0'-100'			

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

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	56	13	6	9

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	31	3	-	-	-	-



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Jay Peak Water Quality Monitoring Plan 2019
Substrate Sampling Summary
Sample Location: JB-9.1
Sampling Date: September 25, 2019
Samplers: TGB, CCS
Prepared by VHB on: March 02, 2019

Station Habitat Observations	Sub-1
Canopy cover:	30%
Embeddedness:	5-25%
Bank stability:	Very Good

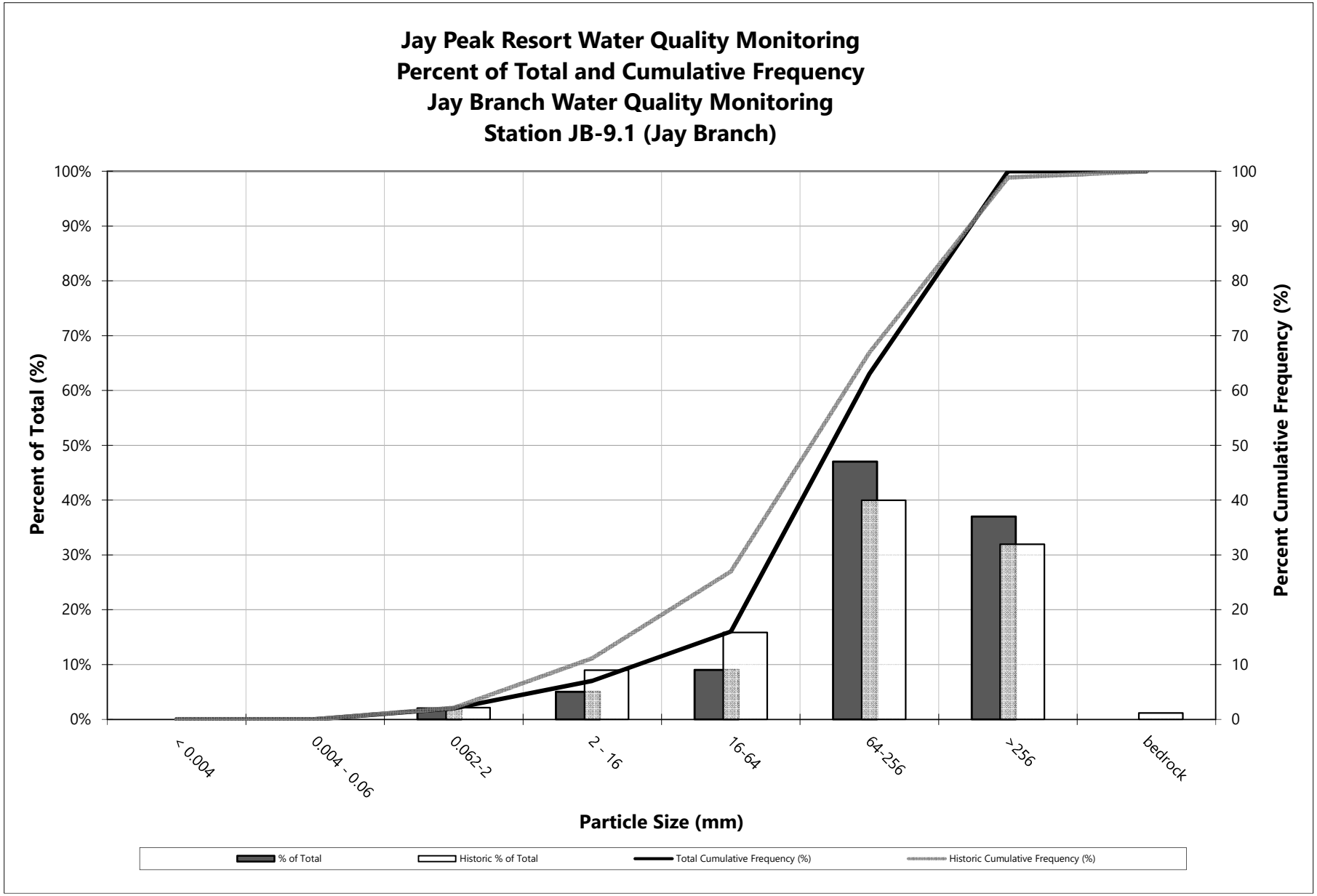
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	2	2%	2	2
Gravel	2 - 16	5	5%	7	7
Coarse gravel	16-64	9	9%	16	16
Cobble	64-256	47	47%	63	63
Boulder	>256	37	37%	100	100
Bedrock	bedrock	0	0%	100	100
	Sample Size (n)	100	100%		
	Longitudinal Distance (ft)	0'-100'			

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

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	53	15	18	7

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	78	13	2	-

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



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Jay Peak Water Quality Monitoring Plan 2019
Substrate Sampling Summary
Sample Location: JB-8.3
Sampling Date: September 26, 2019
Samplers: CCS
Prepared by VHB on: March 02, 2019

Station Habitat Observations	Sub-1
Canopy cover:	70%
Embeddedness:	5-25%
Bank stability:	Very Good

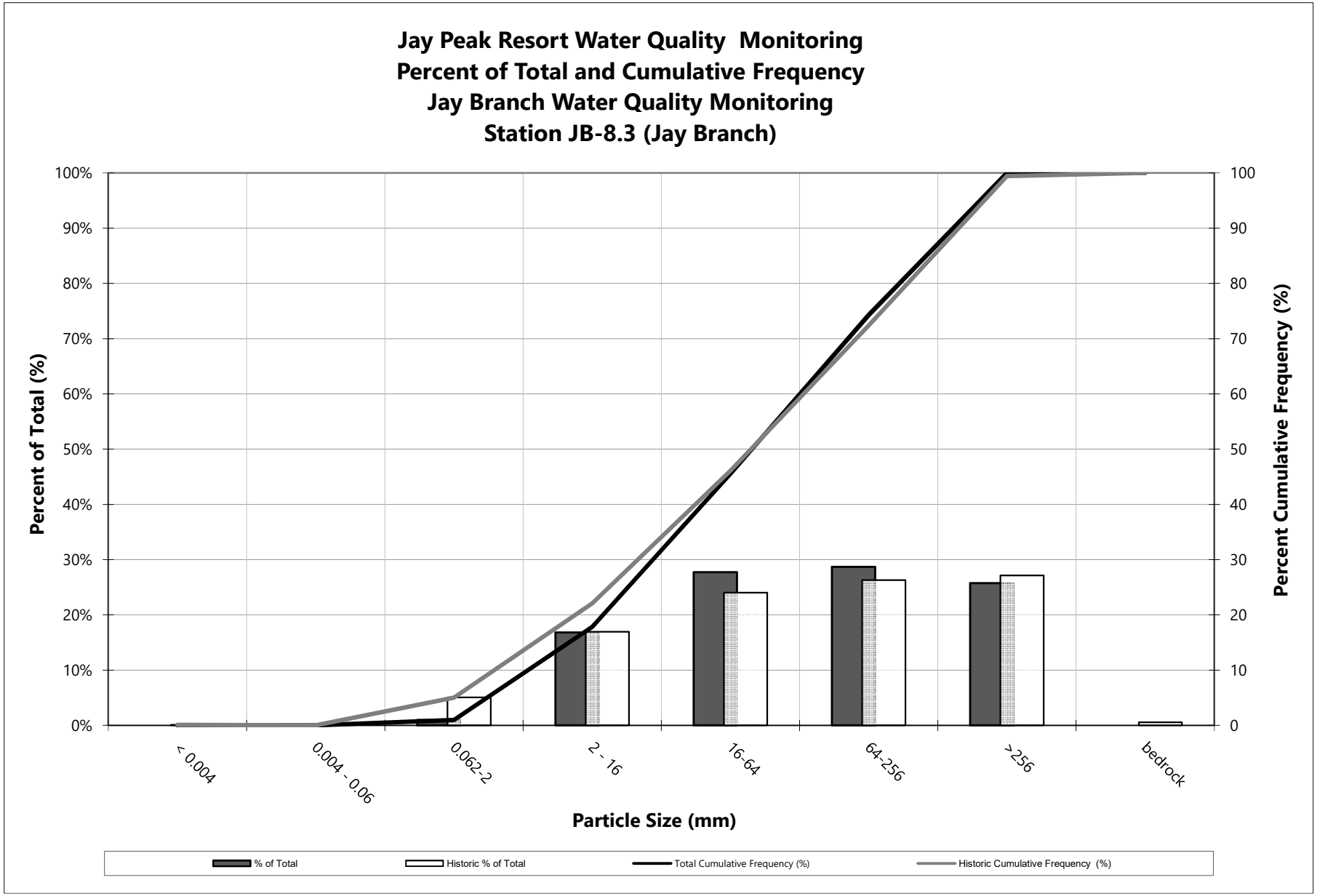
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	1	1%	1	1
Gravel	2 - 16	17	17%	18	18
Coarse gravel	16-64	28	28%	46	46
Cobble	64-256	29	29%	75	74
Boulder	>256	26	26%	101	100
Bedrock	bedrock	0	0%	101	100
	Sample Size (n)	101	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Coarse Gravel
Dominant Size Class	Cobble
% Fines	1%
% Particles < 2 mm	1%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	62	14	4	2

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	3	50	-	-	-	-	-



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Jay Peak Water Quality Monitoring Plan 2019
Substrate Sampling Summary
Sample Location: JB-7.3
Sampling Date: September 26, 2019
Samplers: CSS
Prepared by VHB on: March 02, 2019

Station Habitat Observations	Sub-1
Canopy cover:	90%
Embeddedness:	5-25%
Bank stability:	Very Good

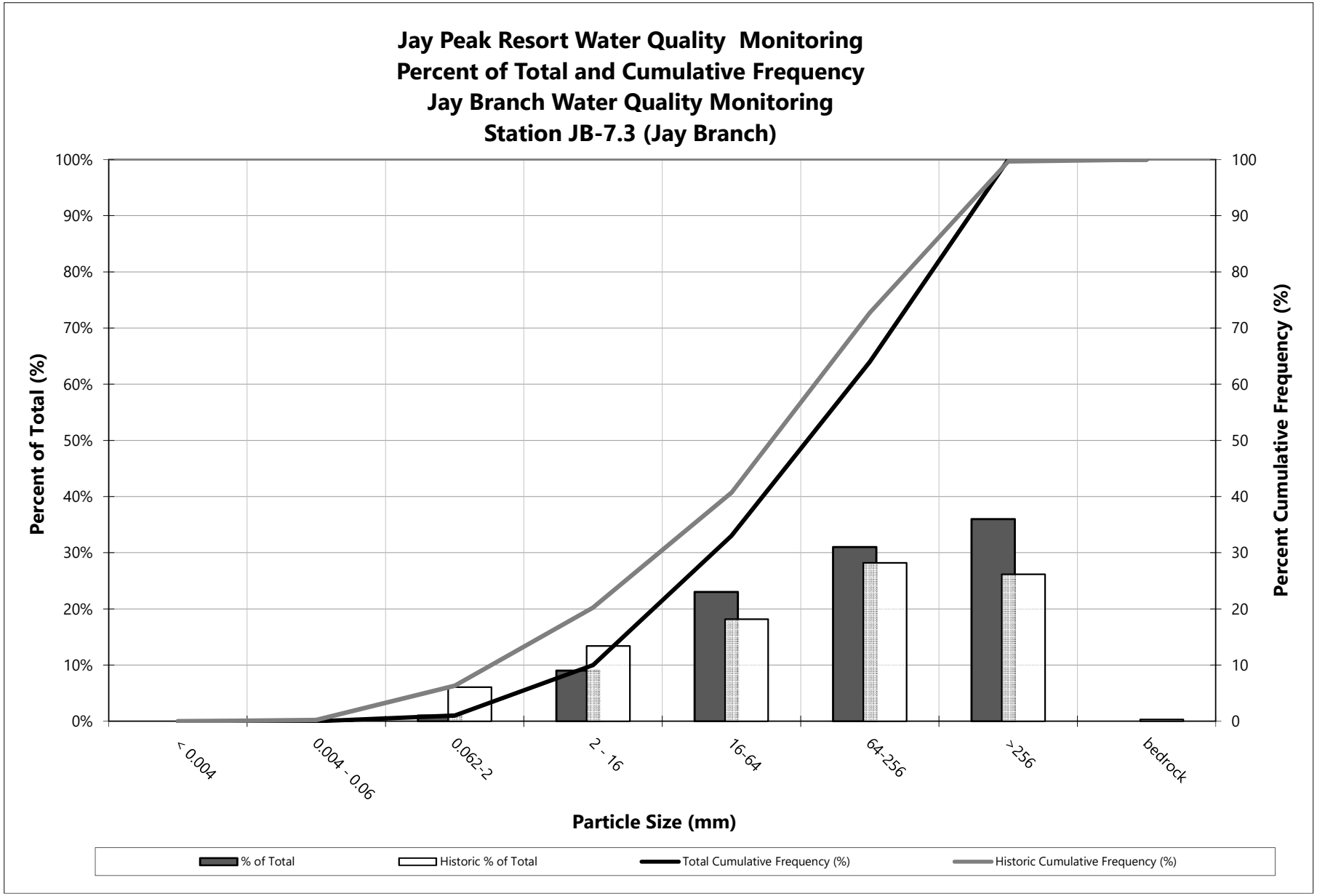
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	1	1%	1	1
Gravel	2 - 16	9	9%	10	10
Coarse gravel	16-64	23	23%	33	33
Cobble	64-256	31	31%	64	64
Boulder	>256	36	36%	100	100
Bedrock	bedrock	0	0%	100	100
	Sample Size (n)	100	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Cobble
Dominant Size Class	Cobble
% Fines	1%
% Particles < 2 mm	1%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	77	7	-	-

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	1	46		-	-	-	-



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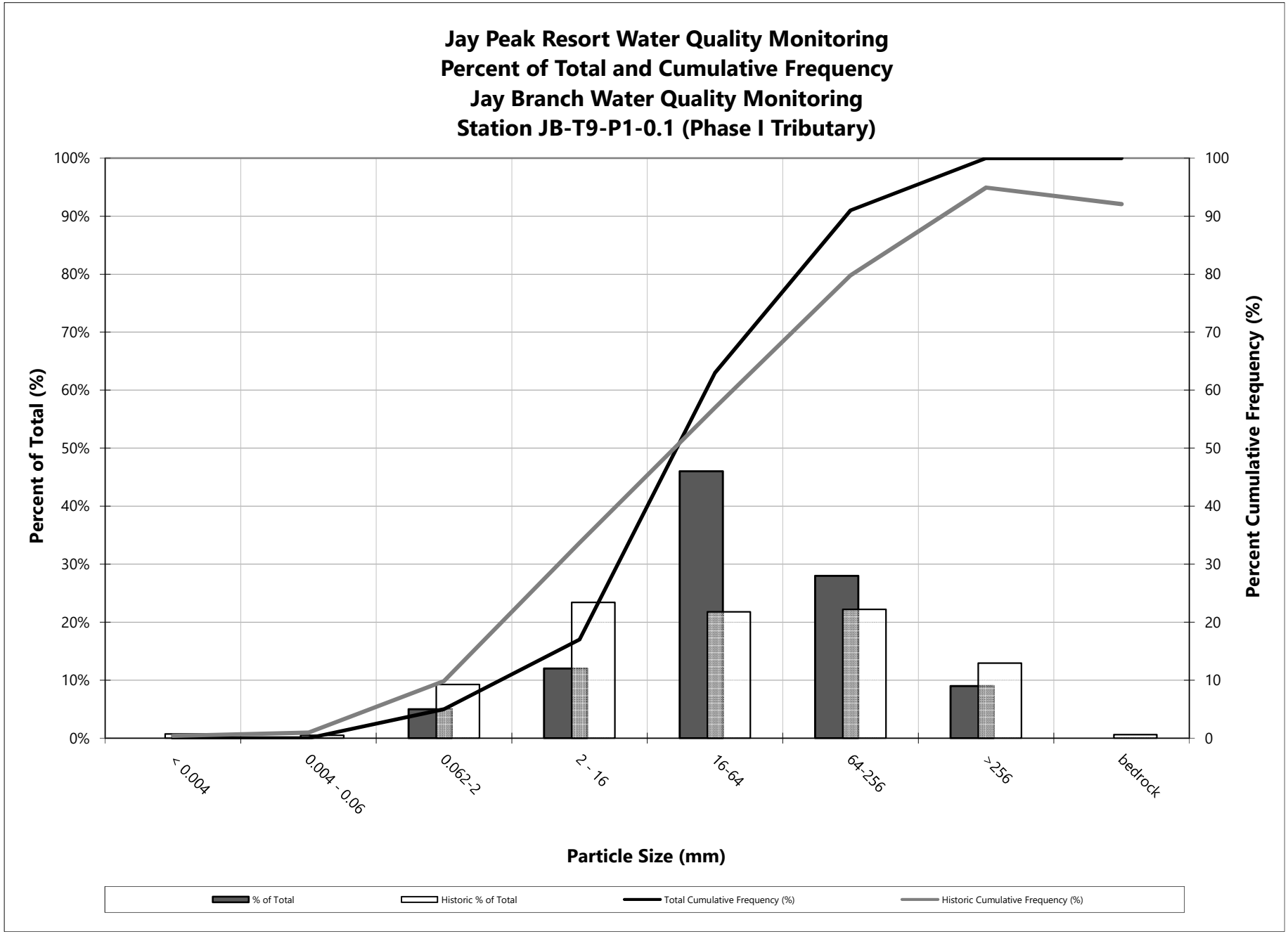
Jay Peak Water Quality Monitoring Plan 2019
Substrate Sampling Summary
Sample Location: JB-T9-P1-0.1
Sampling Date: September 18, 2019
Samplers: TGB, ZJD
Prepared by VHB on: March 02, 2019

Station Habitat Observations	Sub-1
Canopy cover:	80%
Embeddedness:	5-25%
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	5	5%	5	5
Gravel	2 - 16	12	12%	17	17
Coarse gravel	16-64	46	46%	63	63
Cobble	64-256	28	28%	91	91
Boulder	>256	9	9%	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	5%
% Particles < 2 mm	5%

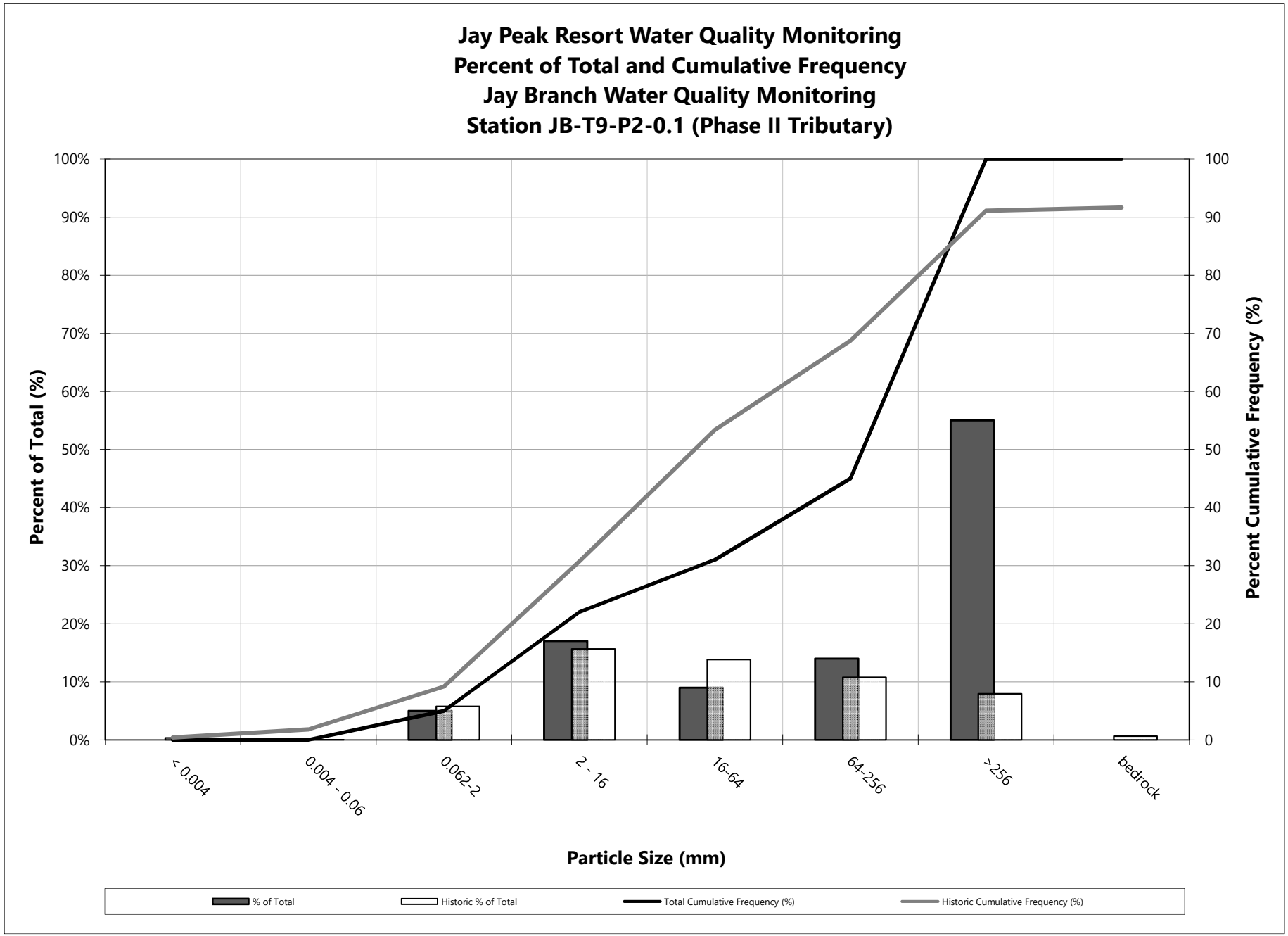

Jay Peak Resort Water Quality Monitoring
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station JB-T9-P1-0.1 (Phase I Tributary)
Percent of Total (%)
Percent Cumulative Frequency (%)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
100
90
80
70
60
50
40
30
20
10
0
< 0.004
0.004 - 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 2019
Substrate Sampling Summary
Sample Location: JB-T9-P2-0.1
Sampling Date: September 18, 2019
Samplers: TGB, ZJD
Prepared by VHB on: March 02, 2019

Station Habitat Observations	Sub-1
Canopy cover:	10%
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	5	5%	5	5
Gravel	2 - 16	17	17%	22	22
Coarse gravel	16-64	9	9%	31	31
Cobble	64-256	14	14%	45	45
Boulder	>256	55	55%	100	100
Bedrock	bedrock	0	0%	100	100
	Sample Size (n)	100	100%		
	Longitudinal Distance (ft)	0'-100'			

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


Jay Peak Resort Water Quality Monitoring
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station JB-T9-P2-0.1 (Phase II Tributary)
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 2019
Substrate Sampling Summary
Sample Location: JB-T9-0.1
Sampling Date: September 25, 2019
Samplers: TGB, CCS
Prepared by VHB on: March 02, 2019

Station Habitat Observations	Sub-1
Canopy cover:	70%
Embeddedness:	5-25%
Bank stability:	Very Good

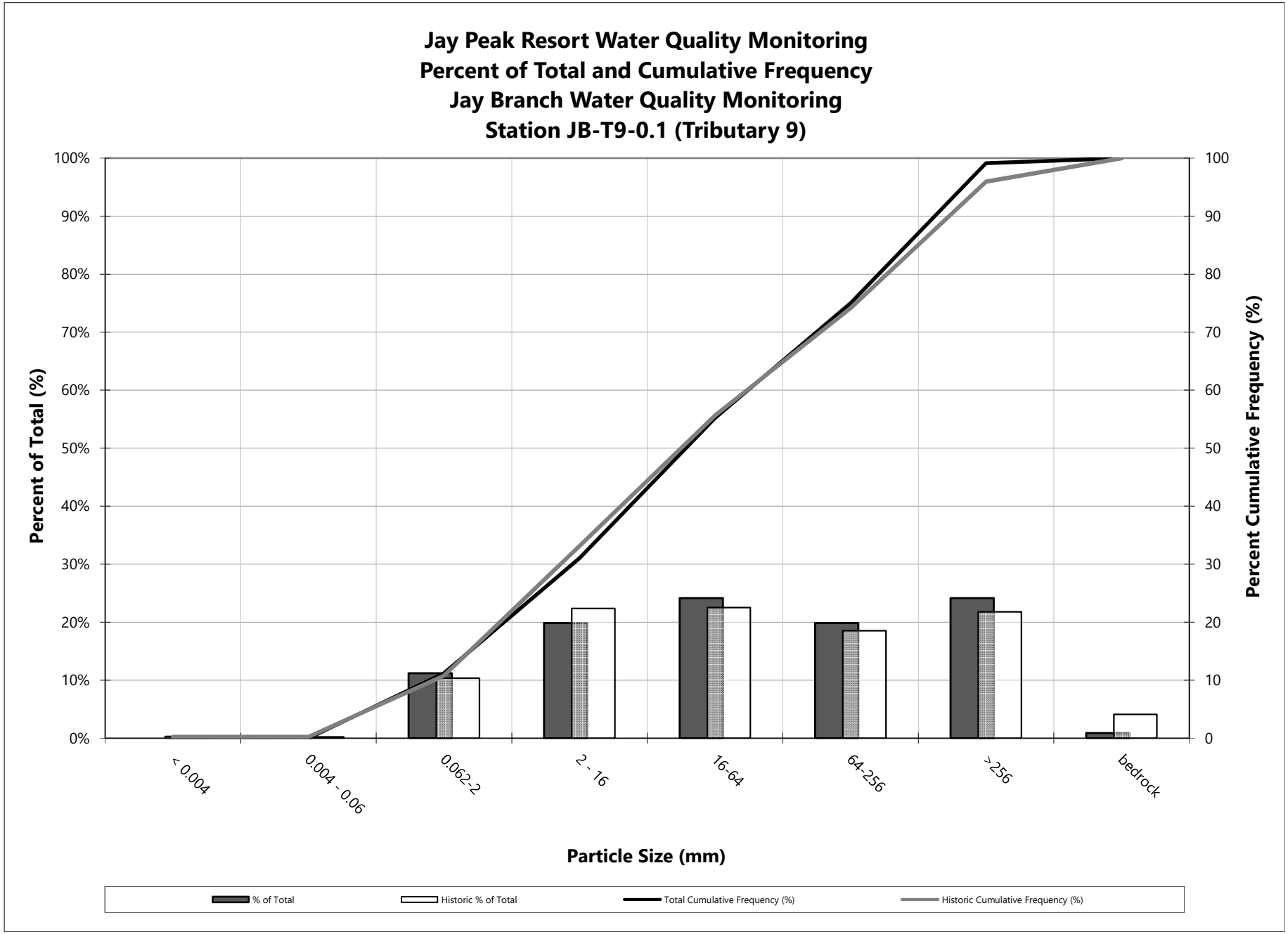
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	13	11%	13	11
Gravel	2 - 16	23	20%	36	31
Coarse gravel	16-64	28	24%	64	55
Cobble	64-256	23	20%	87	75
Boulder	>256	28	24%	115	99
Bedrock	bedrock	1	1%	116	100
	Sample Size (n)	116	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	55	10	8	4

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	27	35	3	-

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


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 2019
Substrate Sampling Summary
Sample Location: SMB-T3-0.8
Sampling Date: September 26, 2018
Samplers: CCS
Prepared by VHB on: March 02, 2019

Station Habitat Observations	Sub-1
Canopy cover:	90%
Embeddedness:	5-25%
Bank stability:	Very Good

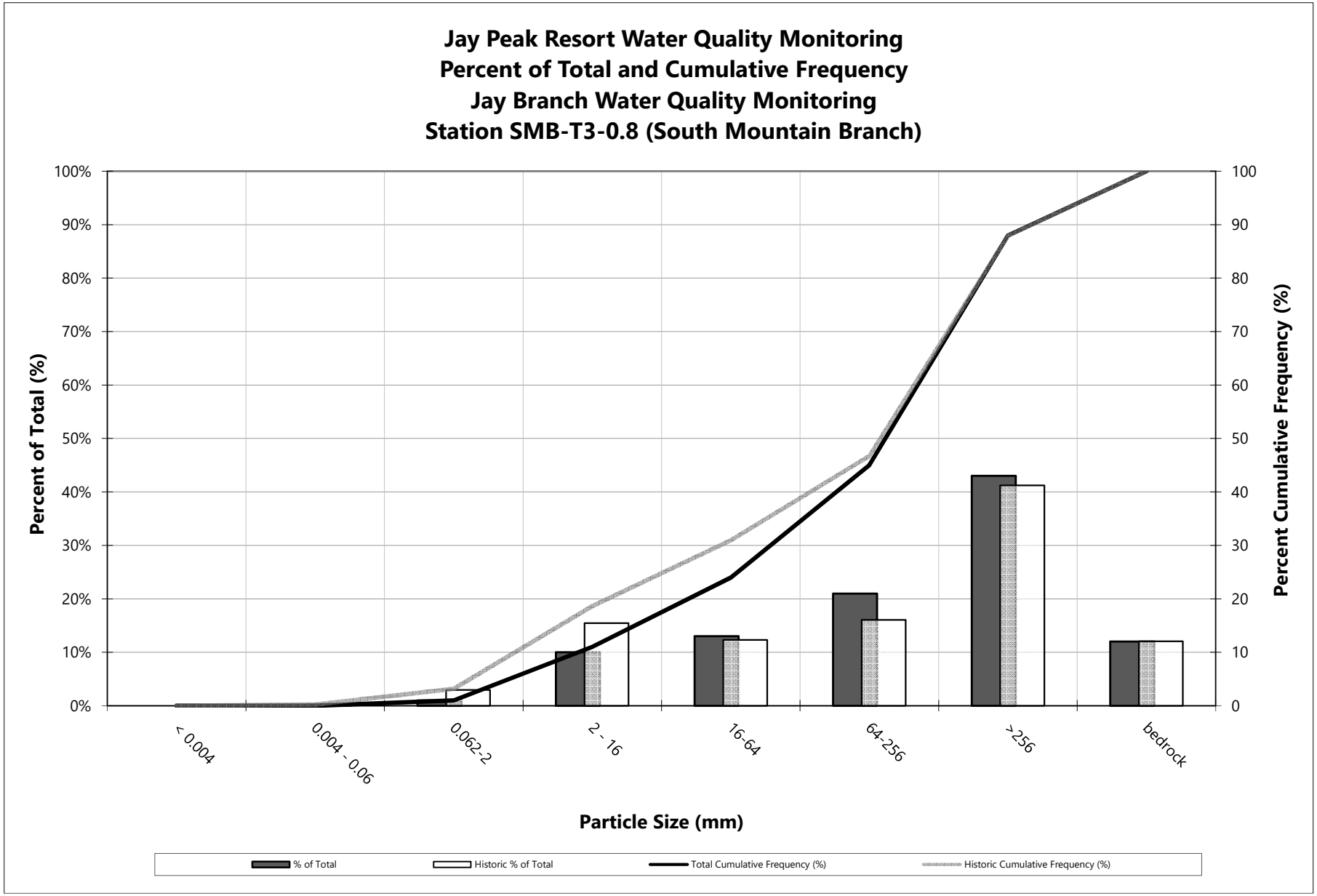
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	1	1%	1	1
Gravel	2 - 16	10	10%	11	11
Coarse gravel	16-64	13	13%	24	24
Cobble	64-256	21	21%	45	45
Boulder	>256	43	43%	88	88
Bedrock	bedrock	12	12%	100	100
	Sample Size (n)	100	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Cobble
Dominant Size Class	Boulder
% Fines	1%
% Particles < 2 mm	1%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	38	42	6	2

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	3	47	-	-	-	-	-



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Jay Peak Water Quality Monitoring Plan 2019
Substrate Sampling Summary
Sample Location: SMB-T3-0.5
Sampling Date: September 18, 2018
Samplers: TGB, ZJD
Prepared by VHB on: March 02, 2019

Station Habitat Observations	Sub-1
Canopy cover:	80%
Embeddedness:	5-25%
Bank stability:	Good

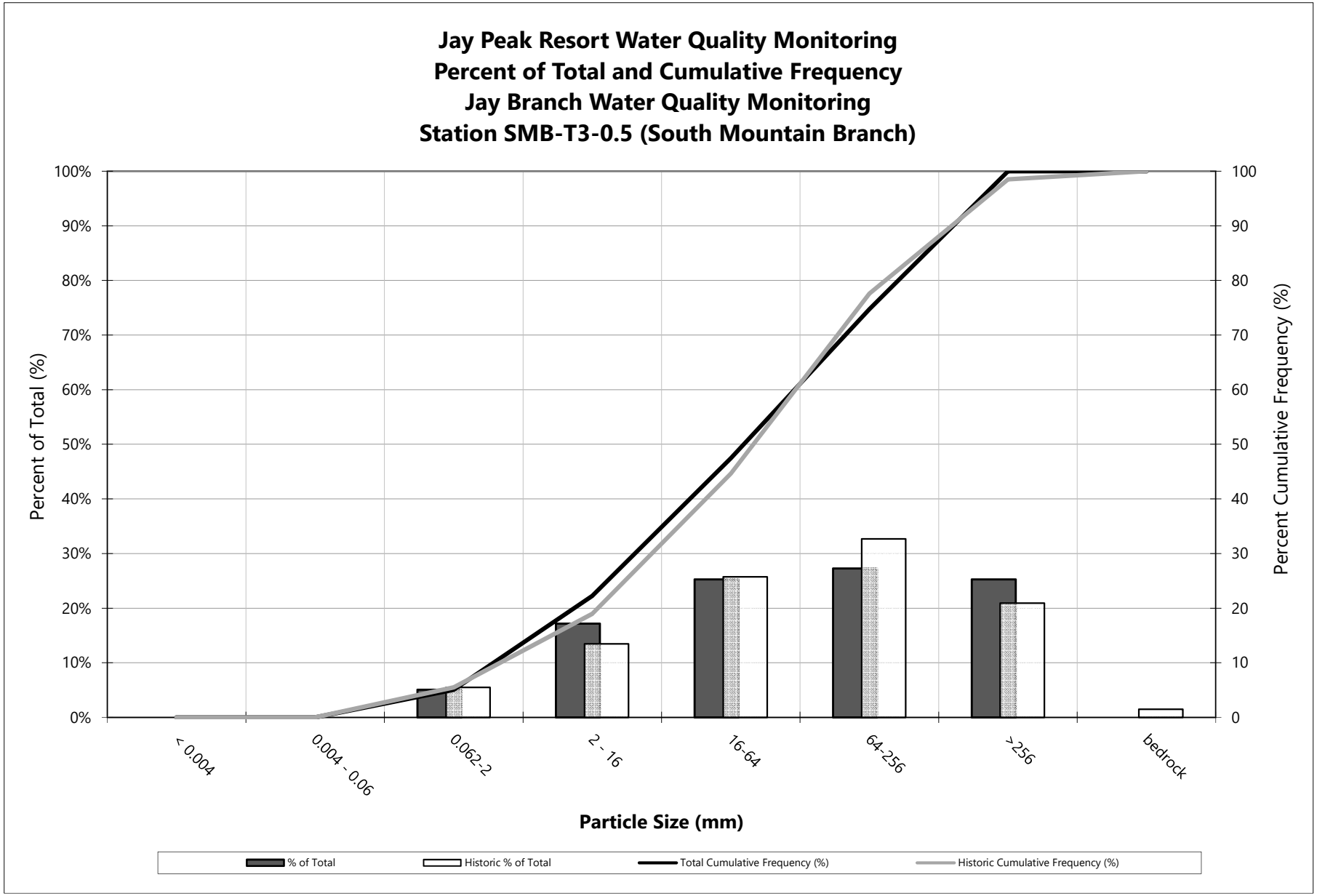
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	5	5%	5	5
Gravel	2 - 16	17	17%	22	22
Coarse gravel	16-64	25	25%	47	47
Cobble	64-256	27	27%	74	75
Boulder	>256	25	25%	99	100
Bedrock	bedrock	0	0%	99	100
	Sample Size (n)	99	100%		
	Longitudinal Distance (ft)	0'-100'			

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

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	-	-	-	-	-	-	-



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Jay Peak Water Quality Monitoring Plan 2019
Substrate Sampling Summary
Sample Location: SMB-T3-0.3
Sampling Date: September 25, 2019
Samplers: TGB, CCS
Prepared by VHB on: March 02, 2019

Station Habitat Observations	Sub-1
Canopy cover:	70%
Embeddedness:	25-50%
Bank stability:	Good

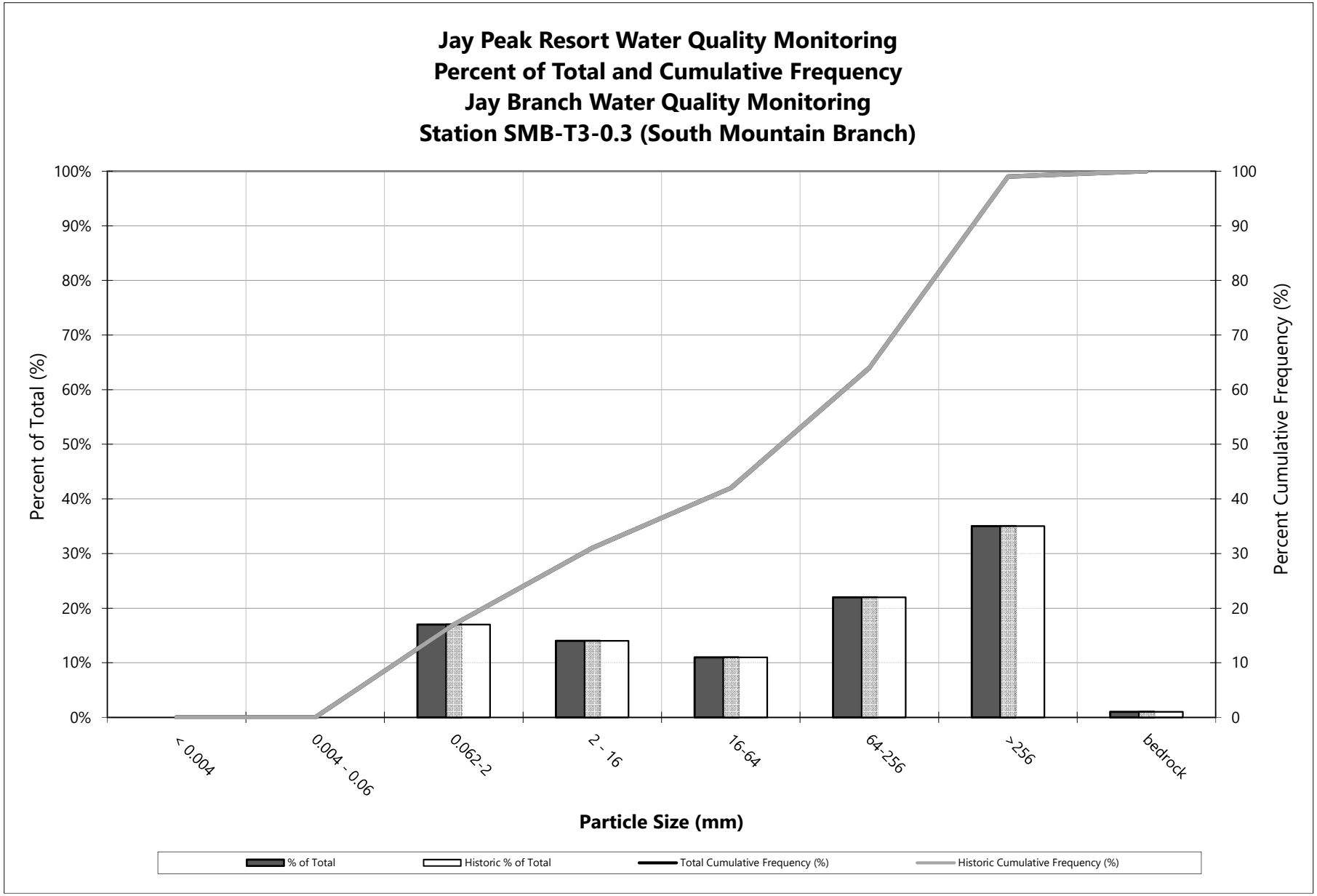
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	17	17%	17	17
Gravel	2 - 16	14	14%	31	31
Coarse gravel	16-64	11	11%	42	42
Cobble	64-256	22	22%	64	64
Boulder	>256	35	35%	99	99
Bedrock	bedrock	1	1%	100	100
	Sample Size (n)	100	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Coarse Gravel
Dominant Size Class	Boulder
% Fines	17%
% Particles < 2 mm	17%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	37	11	12	9

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	60	1	-	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	-	31	-	-	-	-	-



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Jay Peak Water Quality Monitoring Plan 2019
Substrate Sampling Summary
Sample Location: SMB-T3-0.1
Sampling Date: September 25, 2019
Samplers: TGB, CCS
Prepared by VHB on: March 02, 2019

Station Habitat Observations	Sub-1
Canopy cover:	80%
Embeddedness:	5-25%
Bank stability:	Very Good

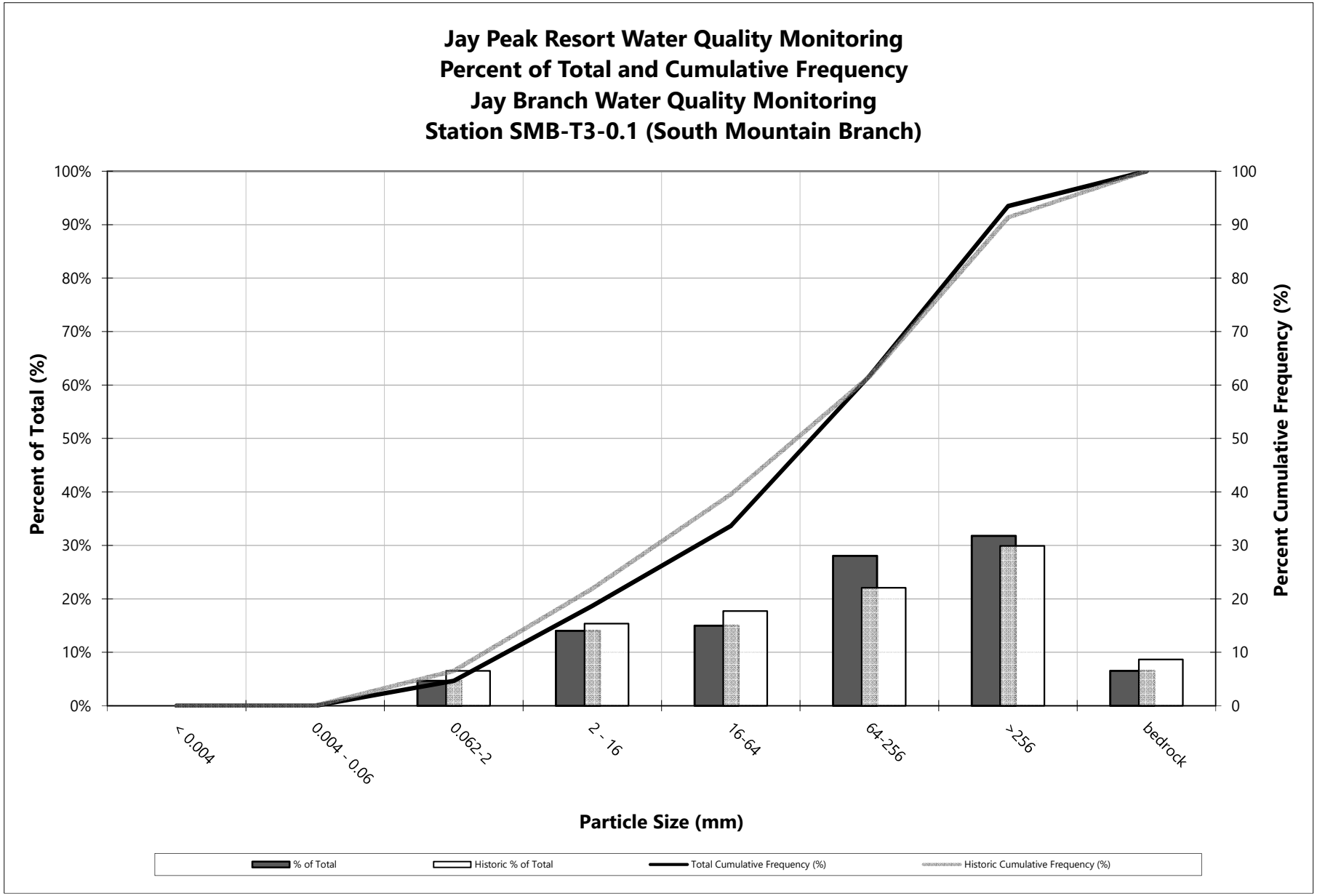
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	5	5%	5	5
Gravel	2 - 16	15	14%	20	19
Coarse gravel	16-64	16	15%	36	34
Cobble	64-256	30	28%	66	62
Boulder	>256	34	32%	100	93
Bedrock	bedrock	7	7%	107	100
	Sample Size (n)	107	100%		
	Longitudinal Distance (ft)	0'-100'			

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

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	54	13	8	11

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	72	7	5	-

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



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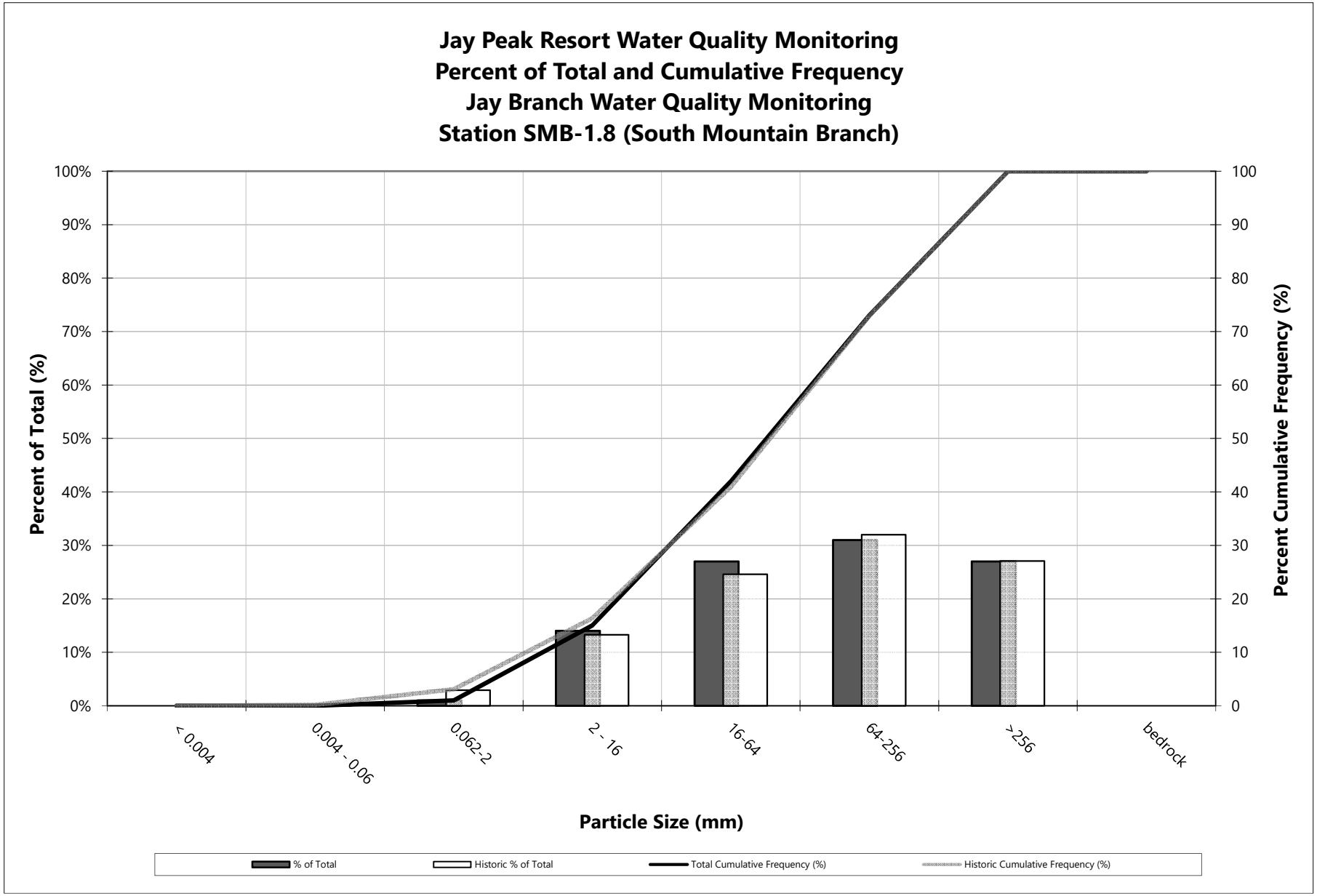
Jay Peak Water Quality Monitoring Plan 2019
Substrate Sampling Summary
Sample Location: SMB-1.8
Sampling Date: September 18, 2019
Samplers: TGB, ZJD
Prepared by VHB on: March 02, 2019

Station Habitat Observations	Sub-1
Canopy cover:	70%
Embeddedness:	5-25%
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	1	1%	1	1
Gravel	2 - 16	14	14%	15	15
Coarse gravel	16-64	27	27%	42	42
Cobble	64-256	31	31%	73	73
Boulder	>256	27	27%	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	1%
% Particles < 2 mm	1%



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Jay Peak Water Quality Monitoring Plan 2019
Substrate Sampling Summary
Sample Location: SMB-1.2
Sampling Date: September 25, 2019
Samplers: TGB, CCS
Prepared by VHB on: March 02, 2019

Station Habitat Observations	Sub-1
Canopy cover:	70%
Embeddedness:	25-50%
Bank stability:	Very Good

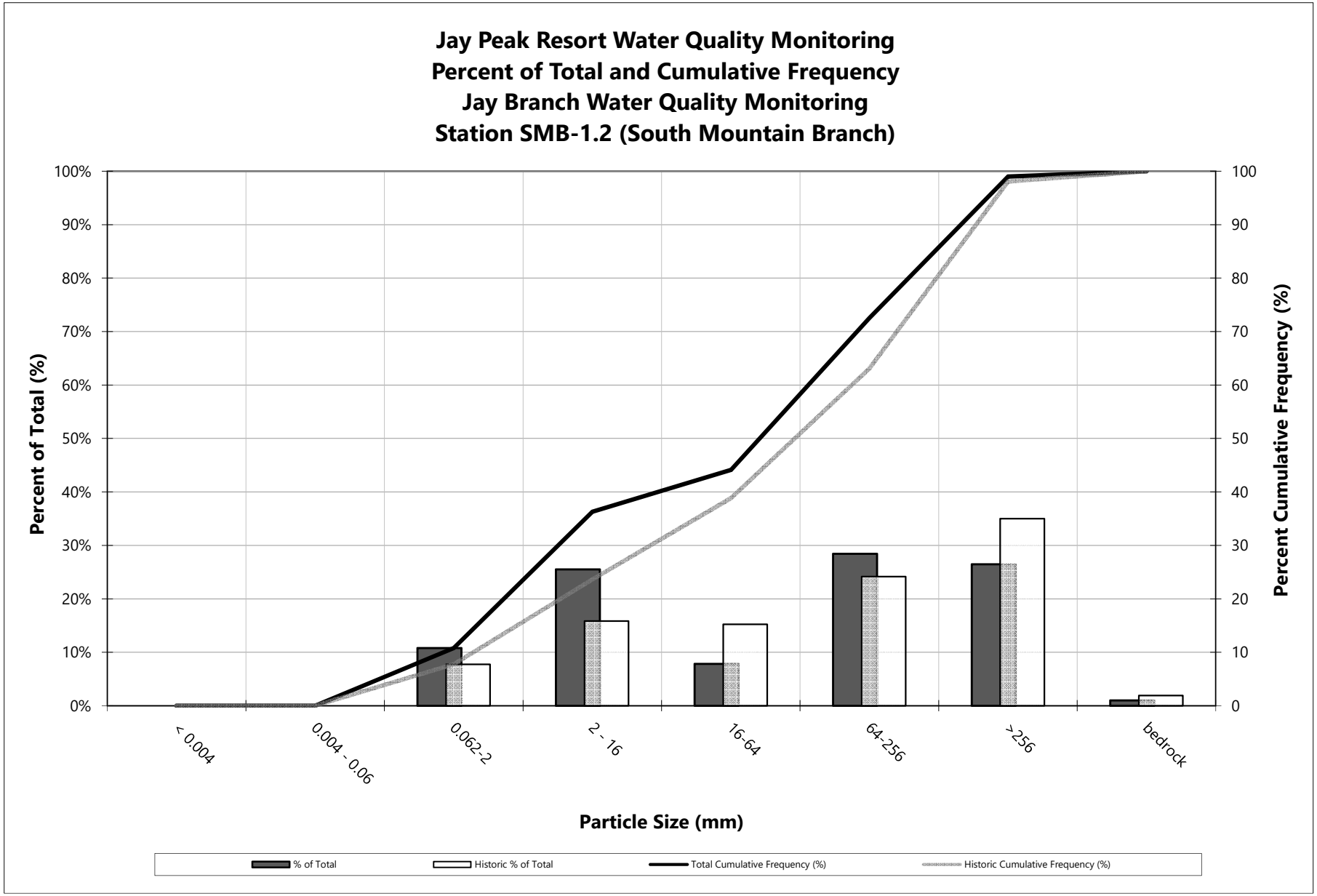
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	11	11%	11	11
Gravel	2 - 16	26	25%	37	36
Coarse gravel	16-64	8	8%	45	44
Cobble	64-256	29	28%	74	73
Boulder	>256	27	26%	101	99
Bedrock	bedrock	1	1%	102	100
	Sample Size (n)	102	100%		
	Longitudinal Distance (ft)	0'-100'			

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

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	29	11	17	9

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	66	-	-	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	-	45	-	-	-	-	-



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APPENDIX 6

Jay Peak Resort
2019 Kick Net Data Summary (Class B, Small High Gradient Streams)
Prepared by VHB
March 2, 2020

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	1,073	36	23	63	1.03	1.3	0.97	54	Meets Class B Criteria	Benchmark station, near Hole 13. Meets Class B Criteria.
JB-9.1 Jay Branch	698	28	20	64	0.77	2.8	0.98	51	Meets Class B Criteria	Upstream of Hole 10 bridge. Meets Class B Criteria.
JB-8.3 Jay Branch	643	34	24	74	1.24	6.2	0.97	56	Meets 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	356	34	26	72	1.48	8.3	0.99	64	Meets Class B Criteria	Upstream of Route 242 bridge. Meets Class B Criteria.
JB-T9-0.1 Trib. 9 to Jay Branch	433	31	18	65	1.08	2.5	0.95	43	Meets Class B Criteria	Upstream of confluence with Jay Branch. Meets Class B Criteria.
SMB-T3-0.8 Trib. 3 to SMB	635	32	18	56	0.97	2.5	0.95	34	Meets Class B Criteria *	Benchmark station, near Wedding Bridge. Meets Class B Criteria.
SMB-T3-0.3 Trib. 3 to SMB	225	24	15	65	1.22	11.7	0.95	48	Does Not Meet Class B Criteria	Intermediate station added in 2019 to evaluate T3 between Route 242 and compliance station at SMB-T3-0.1
SMB-T3-0.1 Trib. 3 to SMB	219	30	21	65	1.35	8.0	0.97	46	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)	325	33	23	80	1.21	6.6	0.96	62	Meets Class B Criteria	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 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.

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
2019 VHB	1,073	36	23	63	1.03	1.3	0.97	54	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 2019 version

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

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

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.945723	-72.518770
or VT Site ID:	427813000002	
Date collected:	9/25/2019	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 2020	Jan. 2020
#sq picked:	8	6
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan. 2020	Jan. 2020

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]	NOTES	FFG	Chiro
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CS	A	14	42	CCS	A	22	88	Larvae	SCR	N
01.03.00.00.006.00.02	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	nitidulus	CS	A	2	6	CCS	A	1	4		SCR	N
01.03.00.00.007.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	PROMORESIA	N/A	sp	CS	A	3	9	CCS	A	1	4		SCR	N
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A	DIA/PALPON	BEZZIA	N/A	sp	CS	A	2	6	CCS					PRD	N
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CS	A	1	3	CCS	A	1	4		CG	Y
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CS	A	1	3	CCS	A	1	4		CG	Y
02.05.05.00.096.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	RHEOCRICOTOPUS	N/A	sp					CCS	A	2	8		CG	Y
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca	CS	A	1	3	CCS	A	2	8		CG	Y
02.05.09.04.000.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	MANNIMYIA	N/A	N/A	group	CS	A	1	3	CCS	A	6	24		PRD	Y
02.06.00.00.001.00.00	DIPTERA	DIXIDAE	N/A	N/A	DIXA	N/A	sp	CS	A	1	3	CCS					CG	N
02.08.00.00.000.00.00	DIPTERA	EMPIDIDAE	N/A	N/A	N/A	N/A	uid					CCS	A	1	4		PRD	N
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CS	A	1	3	CCS					PRD	N
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CS	A	7	21	CCS	A	7	28		PRD	N
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CS	A	1	3	CCS	A	1	4		SRD	N
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CS	A	2	6	CCS	A	2	8		CG	N
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CS	A	5	15	CCS	A	2	8		CG	N
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EURYLOPHELLA	N/A	funeralis	CS	A	1	3	CCS	A	1	4		SRD	N
03.04.00.00.008.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	TELOGANOPSIS	N/A	deficiens	CS	A	3	9	CCS	A	1	4		CG	N
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CS	A	3	9	CCS	A	1	4		SCR	N
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CS	A	2	6	CCS					CG	N
03.06.00.00.009.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	LEUCROCUTA	N/A	sp	CS	A	1	3	CCS	A	1	4		SCR	N
03.07.00.01.006.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	EBIA/PARA	NEOLEPTOPHLEBIA	N/A	sp	CS	A	10	30	CCS	A	4	16		CG	N
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp	CS	A	2	6	CCS	A	4	16		SHR	N
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CS	A	21	63	CCS	A	4	16		CF	N
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CS	A	7	21	CCS	A	5	20		SRD	N
04.11.00.00.001.00.00	TRICHOPTERA	ODONTOCERIDAE	N/A	N/A	PSILOTRETA	N/A	sp					CCS	A	1	4		SCR	N
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CS	A	11	33	CCS	A	13	52		CF	N
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CS	A	1	3	CCS	A	2	8		PRD	N
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CS	A	2	6	CCS	A	5	20		PRD	N
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CS	A	2	6	CCS	A	3	12		PRD	N
04.16.00.00.001.03.09	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	minor/manistee	minor	CS	A	8	24	CCS	A	5	20		PRD	N
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CS	A	19	57	CCS	A	19	76		SCR	N
05.01.00.00.000.00.01	PLECOPTERA	CAPNIIDAE	N/A	N/A	N/A	N/A	imm					CCS	A	1	4		SRD	N
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CS	A	53	159	CCS	A	57	228		PRD	N
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CS	A	70	210	CCS	A	85	340		SRD	N
05.05.00.00.002.00.00	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	TALLAPERLA	N/A	sp	CS	A	13	39	CCS	A	16	64		SRD	N
05.07.00.00.006.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	ISOPERLA	N/A	sp					CCS	A	2	8		PRD	N
05.07.00.00.007.00.02	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	iroquois	CS	A	15	45	CCS	A	18	72		PRD	N
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CS	A	10	30	CCS	A	3	12		SRD	N
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A	N/A	LANTHUS	N/A	sp	CS	A	3	9	CCS	A	5	20		PRD	N
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CS	A	4	12	CCS	A	4	16		CG	N
TOTALS by Rep:										303	**909**			309	**1236**			

GRAND TOTAL: 2145 organisms

Taxonomic Data	Biotic Index						Richness Metrics			
	Biotic Index Scores		Old BI (1-5)		New BI (1-10)		Richness	EPT	Richness	EPT
Expanded Key	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	2	3	84	176	126	264	1	0	1	0
01.03.00.00.006.00.02	2	3	12	8	18	12	-	0	-	0
01.03.00.00.007.00.00	2	2	18	8	18	8	1	0	1	0
02.03.00.01.003.00.00	3	6	18	0	36	0	1	0	-	0
02.05.01.00.085.00.05	3	4	9	12	12	16	1	0	1	0
02.05.05.00.075.00.00	3	5	9	12	15	20	1	0	1	0
02.05.05.00.096.00.00	2	6	0	16	0	48	-	0	1	0
02.05.05.00.114.01.04	2	4	6	16	12	32	1	0	1	0
02.05.09.04.000.00.00	3	6	9	72	18	144	1	0	1	0
02.06.00.00.001.00.00	2	1	6	0	3	0	1	0	-	0
02.08.00.00.000.00.00	3	6	0	12	0	24	-	0	1	0
02.19.00.00.003.00.00	2	3	6	0	9	0	1	0	-	0
02.19.00.00.006.00.00	2	2	42	56	42	56	1	0	1	0
02.19.00.00.016.00.00	3	6	9	12	18	24	1	0	1	0
03.01.00.00.001.00.09	3	6	18	24	36	48	1	1	1	1
03.04.00.00.004.00.01	0	0	0	0	0	0	1	1	1	1
03.04.00.00.005.00.02	1	0	3	4	0	0	1	1	1	1
03.04.00.00.008.00.01	1	2	9	4	18	8	1	1	1	1
03.06.00.00.004.00.00	1	4	9	4	36	16	1	1	1	1
03.06.00.00.005.00.00	0	0	0	0	0	0	1	1	-	0
03.06.00.00.009.00.00	1	1	3	4	3	4	1	1	1	1
03.07.00.01.006.00.00	2	1	60	32	30	16	1	1	1	1
04.01.00.00.003.00.00	1	2	6	16	12	32	1	1	1	1
04.05.01.00.006.00.01	0	0	0	0	0	0	1	1	1	1
04.07.00.00.001.00.00	1	1	21	20	21	20	1	1	1	1
04.11.00.00.001.00.00	0	0	0	0	0	0	-	0	1	1
04.12.00.00.002.00.00	0	0	0	0	0	0	1	1	1	1
04.14.00.00.005.00.00	3	6	9	24	18	48	1	1	1	1
04.16.00.00.001.00.01	1	2	6	20	12	40	1	1	1	1
04.16.00.00.001.02.00	0	1	0	0	6	12	1	1	1	1
04.16.00.00.001.03.09	0	0	0	0	0	0	1	1	1	1
04.20.00.00.001.00.00	1	3	57	76	171	228	1	1	1	1
05.01.00.00.000.00.01	1	3	0	4	0	12	-	0	1	1
05.02.00.00.006.00.00	0	0	0	0	0	0	1	1	1	1
05.03.00.00.000.00.01	0	0	0	0	0	0	1	1	1	1
05.05.00.00.002.00.00	1	0	39	64	0	0	1	1	1	1
05.07.00.00.006.00.00	1	2	0	8	0	16	-	0	1	1
05.07.00.00.007.00.02	1	2	45	72	90	144	1	1	1	1
05.08.00.00.001.00.02	1	0	30	12	0	0	1	1	1	1
06.06.00.00.007.00.00	2	5	18	40	45	100	1	0	1	0
18.04.00.00.000.00.00	-	-	-	-	-	-	1	0	1	0
Total BI Score			561	828	825	1392	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
Total # Organisms			909	1236	909	1236	35		36	
# of Organisms w/o BI			12	16	12	16		22		24
Total # Organisms with BI			897	1220	897	1220				
Biotic Index			0.63	0.68	0.92	1.14				

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

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
VT Site ID 427813000002
Sample Date 09/25/2019

2019 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	42	0	0	0	0	0	0	0	0	0	
01.03.00.00.006.00.02	6	0	0	0	0	0	0	0	0	0	
01.03.00.00.007.00.00	9	0	0	0	0	0	0	0	0	0	
02.03.00.01.003.00.00	0	6	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	3	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	3	0	0	0	0	0	0	0	0	
02.05.05.00.096.00.00	0	0	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	3	0	0	0	0	0	0	0	0	
02.06.00.00.001.00.00	0	3	0	0	0	0	0	0	0	0	
02.08.00.00.000.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	3	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	21	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	3	0	0	0	0	0	0	0	0	
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	15	0	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	3	0	0	0	0	0	0	0	
03.04.00.00.008.00.01	0	0	9	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	9	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	6	0	0	0	0	0	0	0	
03.06.00.00.009.00.00	0	0	3	0	0	0	0	0	0	0	
03.07.00.01.006.00.00	0	0	30	0	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	6	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	63	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	21	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	33	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	3	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	6	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	6	0	0	0	0	0	0	
04.16.00.00.001.03.09	0	0	0	24	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	57	0	0	0	0	0	0	
05.01.00.00.000.00.01	0	0	0	0	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	159	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	210	0	0	0	0	0	
05.05.00.00.002.00.00	0	0	0	0	39	0	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	0	0	0	0	0	0	
05.07.00.00.007.00.02	0	0	0	0	45	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	30	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	9	0	
18.04.00.00.000.00.00	0	0	0	0	0	12	0	0	0	0	
Total	**57**	**48**	**81**	**219**	**483**	**12**	**0**	**0**	**9**	**0**	**909**
Percent	**6%**	**5%**	**9%**	**24%**	**53%**	**1%**	**0%**	**0%**	**1%**	**0%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
VT Site ID 427813000002
Sample Date 09/25/2019

2019 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	88	0	0	0	0	0	0	0	0	0	
01.03.00.00.006.00.02	4	0	0	0	0	0	0	0	0	0	
01.03.00.00.007.00.00	4	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	4	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	4	0	0	0	0	0	0	0	0	
02.05.05.00.096.00.00	0	8	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	8	0	0	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	24	0	0	0	0	0	0	0	0	
02.06.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
02.08.00.00.000.00.00	0	4	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	28	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	4	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	8	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	8	0	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	4	0	0	0	0	0	0	0	
03.04.00.00.008.00.01	0	0	4	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	0	0	0	0	0	0	0	0	
03.06.00.00.009.00.00	0	0	4	0	0	0	0	0	0	0	
03.07.00.01.006.00.00	0	0	16	0	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	16	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	16	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	20	0	0	0	0	0	0	
04.11.00.00.001.00.00	0	0	0	4	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	52	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	8	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	20	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	12	0	0	0	0	0	0	
04.16.00.00.001.03.09	0	0	0	20	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	76	0	0	0	0	0	0	
05.01.00.00.000.00.01	0	0	0	0	4	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	228	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	340	0	0	0	0	0	
05.05.00.00.002.00.00	0	0	0	0	64	0	0	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	8	0	0	0	0	0	
05.07.00.00.007.00.02	0	0	0	0	72	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	12	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	20	0	
18.04.00.00.000.00.00	0	0	0	0	0	16	0	0	0	0	
Total	**96**	**84**	**48**	**244**	**728**	**16**	**0**	**0**	**20**	**0**	**1236**
Percent	**8%**	**7%**	**4%**	**20%**	**59%**	**1%**	**0%**	**0%**	**2%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
Location 427813000002
Sample Date 09/25/2019

2019 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	42	0		0	0	0	0	0	88	0	
01.03.00.00.006.00.02	0	0	0	0	0	6	0		0	0	0	0	0	4	0	
01.03.00.00.007.00.00	0	0	0	0	0	9	0		0	0	0	0	0	4	0	
02.03.00.01.003.00.00	0	0	6	0	0	0	0		0	0	0	0	0	0	0	
02.05.01.00.085.00.05	3	0	0	0	0	0	0		4	0	0	0	0	0	0	
02.05.05.00.075.00.00	3	0	0	0	0	0	0		4	0	0	0	0	0	0	
02.05.05.00.096.00.00	0	0	0	0	0	0	0		8	0	0	0	0	0	0	
02.05.05.00.114.01.04	3	0	0	0	0	0	0		8	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	0	3	0	0	0	0		0	0	24	0	0	0	0	
02.06.00.00.001.00.00	3	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.08.00.00.000.00.00	0	0	0	0	0	0	0		0	0	4	0	0	0	0	
02.19.00.00.003.00.00	0	0	3	0	0	0	0		0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	0	21	0	0	0	0		0	0	28	0	0	0	0	
02.19.00.00.016.00.00	0	0	0	3	0	0	0		0	0	0	4	0	0	0	
03.01.00.00.001.00.09	6	0	0	0	0	0	0		8	0	0	0	0	0	0	
03.04.00.00.004.00.01	15	0	0	0	0	0	0		8	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	0	3	0	0	0		0	0	0	4	0	0	0	
03.04.00.00.008.00.01	9	0	0	0	0	0	0		4	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	9	0		0	0	0	0	0	4	0	
03.06.00.00.005.00.00	6	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.06.00.00.009.00.00	0	0	0	0	0	3	0		0	0	0	0	0	4	0	
03.07.00.01.006.00.00	30	0	0	0	0	0	0		16	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	0	6	0	0		0	0	0	0	16	0	0	
04.05.01.00.006.00.01	0	63	0	0	0	0	0		0	16	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	21	0	0	0		0	0	0	20	0	0	0	
04.11.00.00.001.00.00	0	0	0	0	0	0	0		0	0	0	0	0	4	0	
04.12.00.00.002.00.00	0	33	0	0	0	0	0		0	52	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	3	0	0	0	0		0	0	8	0	0	0	0	
04.16.00.00.001.00.01	0	0	6	0	0	0	0		0	0	20	0	0	0	0	
04.16.00.00.001.02.00	0	0	6	0	0	0	0		0	0	12	0	0	0	0	
04.16.00.00.001.03.09	0	0	24	0	0	0	0		0	0	20	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	57	0		0	0	0	0	0	76	0	
05.01.00.00.000.00.01	0	0	0	0	0	0	0		0	0	0	4	0	0	0	
05.02.00.00.006.00.00	0	0	159	0	0	0	0		0	0	228	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	210	0	0	0		0	0	0	340	0	0	0	
05.05.00.00.002.00.00	0	0	0	39	0	0	0		0	0	0	64	0	0	0	
05.07.00.00.006.00.00	0	0	0	0	0	0	0		0	0	8	0	0	0	0	
05.07.00.00.007.00.02	0	0	45	0	0	0	0		0	0	72	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	30	0	0	0		0	0	0	12	0	0	0	
06.06.00.00.007.00.00	0	0	9	0	0	0	0		0	0	20	0	0	0	0	
18.04.00.00.000.00.00	12	0	0	0	0	0	0		16	0	0	0	0	0	0	
Total	**90**	**96**	**285**	**306**	**6**	**126**	**0**	**909**	**76**	**68**	**444**	**448**	**16**	**184**	**0**	**1236**
Percent	**10%**	**11%**	**31%**	**34%**	**1%**	**14%**	**0%**	**100%**	**6%**	**6%**	**36%**	**36%**	**1%**	**15%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
Location 427813000002
Sample Date 09/25/2019

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%	9.9%	31.9%	6.1%	19.8%
Col. Filt.	18%	30%	36%	10.6%	58.7%	5.5%	30.6%
Predator	19%	13%	7%	31.4%	60.6%	35.9%	52.9%
Shred-Det.	15%	4%	2%	33.7%	44.6%	36.2%	41.4%
Shred- Herb.	1%	1%	5%	0.66%	66.0%	1.29%	77.3%
Scraper	12%	13%	22%	13.86%	86.57%	14.89%	80.6%
				PPCS-FG =	**58.1%**	**PPCS-FG =**	**50.4%**

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

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
VT Site ID 427813000002
Sample Date 09/25/2019
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%	6.27%	1.73	7.77%	0.23
Diptera	19%	18%	13%	5.3%	13.72	6.8%	12.204
Ephemeroptera	23%	34%	32%	8.9%	14.1	3.88%	19.1
Plecoptera	21%	8%	8%	53.1%	32.1	58.9%	37.9
Trichoptera	28%	33%	33%	24.1%	3.9	19.7%	8.3
Oligochaeta	0.5%	0.5%	1.0%	1.32%	0.82	1.29%	0.79
Other	0.5%	0.5%	1.0%	0.99%	0.490	1.62%	1.118
				Sum diff	66.9		79.6
				Sum diff * 0.5	33.4		39.8
				100-(sum diff * 0.5)	66.6		60.2
				% model affinity	**66.6%**		**60.2%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
Location 427813000002
Sample Date 09/25/2019
Class Small, High Gradient, B2
Sampler CCS

	KN-1	KN-2
#EPT organisms	783	1020
#C organisms	12	48
EPT/EPT+C	0.98	0.96

Biometric Summary

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
Location 427813000002
Sample Date 09/25/2019
Class Small, High Gradient, B2
Sampler CCS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	909	1236	1073
Species Richness	35.0	36.0	35.5
EPT Richness	22.0	24.0	23.0
Old Bio Index (0 to 5)	0.63	0.68	0.65
New Bio Index (0 to 10)	0.92	1.14	1.03
% dominant taxa	23.1%	27.5%	25.3%
EPT/EPT+C	0.985	0.955	0.970
EPT/Richness	0.629	0.667	0.648
% Model Affinity (orders)	66.6%	60.2%	63.4%
PPCS - functional groups	58.1%	50.4%	54.2%
Major Groups:			
Coleoptera (%)	6.27%	7.77%	7.02%
Diptera (%)	5.3%	6.8%	6.0%
Ephemeroptera (%)	8.9%	3.88%	6.40%
Trichoptera (%)	24.1%	19.7%	21.9%
Plecoptera (%)	53.1%	58.9%	56.0%
Oligochaeta (%)	1.32%	1.29%	1.31%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.99%	1.62%	1.30%
Other (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	9.9%	6.1%	8.0%
Collector Filterer (%)	10.6%	5.50%	8.0%
Predator (%)	31.4%	35.9%	33.6%
Shredder - Detritus (%)	33.7%	36.2%	35.0%
Shredder - Herbivore (%)	0.66%	1.29%	0.98%
Scraper (%)	13.86%	14.89%	14.37%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Project	Jay Peak Resort		
Station	JB-T13-0.2	**Latitude**	44.945723
Stream	Jay Branch	**Longitude**	-72.518770
Location	427813000002	**Class**	Small, High Gradient, B2
Sample Date	09/25/2019	**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	1072.5	≥300	Pass	≥400	Pass	≥500	Pass
Richness	35.5	≥27	Pass	≥31	Pass	≥35	Pass
EPT	23.0	≥16	Pass	≥19	Pass	≥21	Pass
% PMA-O	63.4%	≥45%	Pass	≥55%	Pass	≥65%	I
BI (New 1-10)	1.03	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	1.31%	≤12%	Pass	≤5	Pass	≤2	Pass
EPT/EPT+C	0.970	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	54.2%	≥ 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
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 BRANCH TRIB 13 River Mile 0.2 USFS____ PROB____
Site ID JB-T13-0.2
Date 09/25/19 Time 10:55 Crew TGB/CS
Site Description_____

Town: JAY Stream Order:_____ Drainage Area: _____Km² Elevation:_____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS – set to NAD83:) _____
Weather: 50°F Flow/Weather Previous (2 weeks/2days): Moderate events: 2wk, light showers today
Surrounding Land Use: 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 10 % Filamentous Green _____% and length _____in
Blue Green __% Moss 5 % 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 5%
Silt Rating: 1 (0=none, 5= chocolate) CPOM Rating (leaf packs): 3 (0= none,5=high)
Lg Woody Debris (>4"dia) #: 3 /100m (reach)

Habitat Comments

GENERAL WATER TYPE Riffle, Winder, or Other _____ Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 8 ft (m) Wetted Width: 6 (m) Riffle Depth: 2 (in) Pool Depth: 2 ft (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 7/100 m, R 7/100 m
Overstory: Softwood 40 % Hardwood 60 % Understory: Shrub (brush) 60 Grass __% 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 50 °C °F Temp Water 10.5 °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.) 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:

404 TROUT

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

River (Site) JB-TB-0.2 Personnel TGB/CS Date 09/25/19

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"				
very fine gravel	2-4	01.08-0.15"				
small gravel	4-8	0.15-0.3"				
medium gravel	8-16	0.3- 0.6"		卌 卌 卌	15	
coarse gravel	16-32	0.6-1.25"				
very coarse gravel	32-64	1.25-2.5"		卌 卌 卌 卌 卌 |	26	
small and medium cobble	64-128	2.5-5"		卌 卌 卌 卌 卌 卌 |	31	
large cobble	128-256	5-10"				
small boulder	265-512	10-20"				
medium boulder	512-1024	20-40"				
large boulder	1024-2048	40-80"				
very large boulder	>2048	>80"		卌 卌 卌 卌 |	21	
bedrock				卌 |||	8	
				TOTALS	101	

	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	NONE NOTED			

	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 |	|||				

	Other *Macro or Micro* _____ Cover Index					
Category	0	1_____	2_____	3_____	4_____	5_____
Tally	NONE NOTED					

Substrate Comments:

[\\vhb\depts\Vermont\EV\Resources\Biomonitoring\lotic_benthos_fieldsheet-2016.docx]

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
2019 VHB	698	28	20	64	0.77	3	0.98	51	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 2019 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:	9/26/2019	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 2020	Jan. 2020
#sq picked:	12	11
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan. 2020	Jan. 2020

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	2	CCS			
01.03.00.00.006.00.02	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	nitidulus	CCS	A	1	2	CCS			
01.03.00.00.007.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	PROMORESIA	N/A	sp	CCS	A	1	2	CCS			
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A	N/A	ATHERIX	N/A	sp	CCS	A	1	2	CCS			
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	3	6	CCS	A	2	4.363636364
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	5	10	CCS	A	2	4.363636364
02.05.05.00.096.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	RHEOCRICOTOPUS	N/A	sp	CCS	A	1	2	CCS			
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca	CCS	A	3	6	CCS			
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	2	4	CCS	A	4	8.727272727
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	4	8	CCS	A	6	13.09090909
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	9	18	CCS	A	13	28.36363636
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	8	16	CCS	A	5	10.90909091
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS				CCS	A	2	4.363636364
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EURYLOPHELLA	N/A	funeralis	CCS	A	1	2	CCS			
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	1	2	CCS	A	2	4.363636364
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	3	6	CCS	A	1	2.181818182
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS				CCS	A	11	24
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp	CCS	A	2	4	CCS			
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS	A	1	2	CCS	A	1	2.181818182
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	alhedra	CCS	A	18	36	CCS	A	11	24
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	sparna	CCS	A	1	2	CCS	A	2	4.363636364
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	34	68	CCS	A	14	30.54545455
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	146	292	CCS	A	135	294.5454545
04.16.00.00.001.00.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	sp	CCS	A	1	2	CCS			
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	5	10	CCS	A	2	4.363636364
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS	A	1	2	CCS	A	3	6.545454545
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A	N/A	NEOPHYLAX	N/A	sp	CCS				CCS	A	1	2.181818182
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	2	4	CCS	A	2	4.363636364
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	49	98	CCS	A	42	91.63636364
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	19	38	CCS	A	15	32.72727273
05.05.00.00.002.00.00	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	TALLAPERLA	N/A	sp	CCS	A	10	20	CCS	A	16	34.90909091
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata	CCS				CCS	A	1	2.181818182
05.07.00.00.007.00.02	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	iroquois	CCS	A	7	14	CCS	A	12	26.18181818
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	5	10	CCS			
08.00.00.00.000.00.00	LEPIDOPTERA	N/A	N/A	N/A	N/A	N/A		CCS				CCS	A	1	2.181818182
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	14	28	CCS	A	4	8.727272727
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A	N/A	N/A	N/A	uid	CCS				CCS	A	1	2.181818182
TOTALS by Rep:										359	**718**			311	**678.545455**

GRAND TOTAL: 1396.545455 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 2019 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:	9/26/2019	
# 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	Larvae	SCR	N	2	3	4	0	6	0	1	0	-	0
01.03.00.00.006.00.02	COLEOPTERA	ELMIDAE	N/A		SCR	N	2	3	4	0	6	0	-	0	-	0
01.03.00.00.007.00.00	COLEOPTERA	ELMIDAE	N/A		SCR	N	2	2	4	0	4	0	1	0	-	0
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A		PRD	N	3	2	6	0	4	0	1	0	-	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI		CG	Y	3	4	18	13.091	24	17.455	1	0	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	3	5	30	13.091	50	21.818	1	0	1	0
02.05.05.00.096.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	6	4	0	12	0	1	0	-	0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	4	12	0	24	0	1	0	-	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	3	8	17.455	12	26.182	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	2	16	26.182	16	26.182	1	0	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A		CG	N	3	6	54	85.091	108	170.18	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	8.7273	0	17.455	-	0	1	1
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A		SRD	N	1	0	2	0	0	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	6	2.1818	24	8.7273	1	1	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	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	4	0	8	0	1	1	-	0
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A		SCR	N	1	0	2	2.1818	0	0	1	1	1	1
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	3	72	48	108	72	1	1	1	1
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	4	4	8.7273	8	17.455	1	1	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A		SRD	N	1	1	68	30.545	68	30.545	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
04.16.00.00.001.00.00	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	0	1	0	0	2	0	-	0	-	0
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	1	2	10	4.3636	20	8.7273	1	1	1	1
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	0	1	0	0	2	6.5455	1	1	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
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A		SCR	N	1	3	4	4.3636	12	13.091	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
05.05.00.00.002.00.00	PLECOPTERA	PELTOPERLIDAE	N/A		SRD	N	1	0	20	34.909	0	0	1	1	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
05.07.00.00.007.00.02	PLECOPTERA	PERLODIDAE	N/A		PRD	N	1	2	14	26.182	28	52.364	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A		SRD	N	1	0	10	0	0	0	1	1	-	0
08.00.00.00.000.00.00	LEPIDOPTERA	N/A	N/A			N	-	-	-	-	-	-	-	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	-	-	-	-	-	-	-	0	1	0
TOTALS by Rep:								**Total BI Score**	376	329.45	546	499.64	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
GRAND TOTAL:	1396.545455 organisms							**Total # Organisms**	718	678.55	718	678.55				
								# of Organisms w/o BI	28	13.091	28	13.091	29		27	
								Total # Organisms with BI	690	665.45	690	665.45		19		20
								Biotic Index	0.54	0.50	0.79	0.75				

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

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
VT Site ID 427800000091
Sample Date 09/26/2019

2019 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	2	0	0	0	0	0	0	0	0	0	
01.03.00.00.007.00.00	2	0	0	0	0	0	0	0	0	0	
02.01.00.00.001.00.00	0	2	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	6	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	10	0	0	0	0	0	0	0	0	
02.05.05.00.096.00.00	0	2	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	6	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	8	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	18	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	16	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	2	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	2	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	6	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	0	0	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	4	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	2	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	0	0	36	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	68	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	292	0	0	0	0	0	0	
04.16.00.00.001.00.00	0	0	0	2	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	10	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	2	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	4	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	98	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	38	0	0	0	0	0	
05.05.00.00.002.00.00	0	0	0	0	20	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	0	0	0	0	0	0	
05.07.00.00.007.00.02	0	0	0	0	14	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	10	0	0	0	0	0	
08.00.00.00.000.00.00	0	0	0	0	0	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	28	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	0	0	0	0	0	
Total	**6**	**38**	**44**	**422**	**180**	**28**	**0**	**0**	**0**	**0**	**718**
Percent	**1%**	**5%**	**6%**	**59%**	**25%**	**4%**	**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 09/26/2019

2019 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	
01.03.00.00.006.00.02	0	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	
02.01.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	4.363636364	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	4.363636364	0	0	0	0	0	0	0	0	
02.05.05.00.096.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	8.727272727	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	13.09090909	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	28.36363636	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	4.363636364	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	4.363636364	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	2.181818182	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	24	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	2.181818182	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	0	0	24	0	0	0	0	0	0	
04.05.00.00.004.03.04	0	0	0	4.363636364	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	30.54545455	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	294.5454545	0	0	0	0	0	0	
04.16.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	4.363636364	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	6.545454545	0	0	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	2.181818182	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	4.363636364	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	91.63636364	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	32.72727273	0	0	0	0	0	
05.05.00.00.002.00.00	0	0	0	0	34.90909091	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	2.181818182	0	0	0	0	0	
05.07.00.00.007.00.02	0	0	0	0	26.18181818	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	0	0	0	0	0	0	
08.00.00.00.000.00.00	0	0	0	0	0	0	0	0	0	2.181818	
18.04.00.00.000.00.00	0	0	0	0	0	8.727272727	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	2.181818182	0	0	0	0	
Total	**0**	**30.54545455**	**74.18181818**	**373.0909091**	**187.6363636**	**10.90909091**	**0**	**0**	**0**	**2.18182**	**678.55**
Percent	**0%**	**5%**	**11%**	**55%**	**28%**	**2%**	**0%**	**0%**	**0%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091
Sample Date 09/26/2019

2019 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	
01.03.00.00.006.00.02	0	0	0	0	0	2	0		0	0	0	0	0	0	0	
01.03.00.00.007.00.00	0	0	0	0	0	2	0		0	0	0	0	0	0	0	
02.01.00.00.001.00.00	0	0	2	0	0	0	0		0	0	0	0	0	0	0	
02.05.01.00.085.00.05	6	0	0	0	0	0	0		4.363636	0	0	0	0	0	0	
02.05.05.00.075.00.00	10	0	0	0	0	0	0		4.363636	0	0	0	0	0	0	
02.05.05.00.096.00.00	2	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.114.01.04	6	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	4	0	0	0	0		0	0	8.727273	0	0	0	0	
02.19.00.00.006.00.00	0	0	8	0	0	0	0		0	0	13.09091	0	0	0	0	
03.01.00.00.001.00.09	18	0	0	0	0	0	0		28.36364	0	0	0	0	0	0	
03.04.00.00.004.00.01	16	0	0	0	0	0	0		10.90909	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	0	0	0	0	0		4.363636	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	0	2	0	0	0		0	0	0	0	0	0	0	
03.06.00.00.003.00.00	2	0	0	0	0	0	0		4.363636	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	6	0		0	0	0	0	0	2.181818	0	
03.06.00.00.005.00.00	0	0	0	0	0	0	0		24	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	0	4	0	0		0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	0	0	2	0		0	0	0	0	0	2.181818	0	
04.05.00.00.004.03.02	0	36	0	0	0	0	0		0	24	0	0	0	0	0	
04.05.00.00.004.03.04	0	2	0	0	0	0	0		0	4.363636	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	68	0	0	0		0	0	0	30.54545	0	0	0	
04.12.00.00.002.00.00	0	292	0	0	0	0	0		0	294.5455	0	0	0	0	0	
04.16.00.00.001.00.00	0	0	2	0	0	0	0		0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	10	0	0	0	0		0	0	4.363636	0	0	0	0	
04.16.00.00.001.02.00	0	0	2	0	0	0	0		0	0	6.545455	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	
04.20.00.00.001.00.00	0	0	0	0	0	4	0		0	0	0	0	0	4.363636	0	
05.02.00.00.006.00.00	0	0	98	0	0	0	0		0	0	91.63636	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	38	0	0	0		0	0	0	32.72727	0	0	0	
05.05.00.00.002.00.00	0	0	0	20	0	0	0		0	0	0	34.90909	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	
05.07.00.00.007.00.02	0	0	14	0	0	0	0		0	0	26.18182	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	10	0	0	0		0	0	0	0	0	0	0	
08.00.00.00.000.00.00	0	0	0	0	0	0	0		0	0	0	0	0	0	0	
18.04.00.00.000.00.00	28	0	0	0	0	0	0		8.727273	0	0	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	0	0		2.181818	0	0	0	0	0	0	
Total	**88**	**330**	**140**	**138**	**4**	**18**	**0**	**718**	**91.6364**	**322.909**	**152.727**	**98.1818**	**0**	**10.9091**	**0**	**676.364**
Percent	**12%**	**46%**	**19%**	**19%**	**1%**	**3%**	**0%**	**100%**	**14%**	**48%**	**23%**	**14%**	**0%**	**2%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091
Sample Date 09/26/2019

FFG Summary:							
	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS	KN-2	PPCS
Col. Gath.	31%	32%	22%	12.3%	39.5%	13.5%	43.6%
Col. Filt.	18%	30%	36%	46.0%	39.2%	47.6%	37.8%
Predator	19%	13%	7%	19.5%	97.4%	22.5%	84.4%
Shred-Det.	15%	4%	2%	19.2%	78.0%	14.5%	96.5%
Shred- Herb.	1%	1%	5%	0.56%	55.7%	0.00%	0.0%
Scraper	12%	13%	22%	2.51%	20.89%	1.61%	13.4%
				PPCS-FG =	**55.1%**	**PPCS-FG =**	**45.9%**

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-9.1
Stream Jay Branch
VT Site ID 427800000091
Sample Date 09/26/2019
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%	0.84%	7.16	0.00%	8.00
Diptera	19%	18%	13%	5.3%	13.71	4.5%	14.498
Ephemeroptera	23%	34%	32%	6.1%	16.9	10.93%	12.1
Plecoptera	21%	8%	8%	25.1%	4.1	27.7%	6.7
Trichoptera	28%	33%	33%	58.8%	30.8	55.0%	27.0
Oligochaeta	0.5%	0.5%	1.0%	3.90%	3.40	1.61%	1.11
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.32%	0.178
				Sum diff	76.5		69.5
				Sum diff * 0.5	38.2		34.7
				100-(sum diff * 0.5)	61.8		65.3
				% model affinity	**61.8%**		**65.3%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091
Sample Date 09/26/2019
Class Small, High Gradient, B2
Sampler CCS

	KN-1	KN-2
#EPT organisms	646	634.9091
#C organisms	24	8.727273
EPT/EPT+C	0.96	0.99

Biometric Summary

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091
Sample Date 09/26/2019
Class Small, High Gradient, B2
Sampler CCS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	718	679	698
Species Richness	29.0	27.0	28.0
EPT Richness	19.0	20.0	19.5
Old Bio Index (0 to 5)	0.54	0.50	0.52
New Bio Index (0 to 10)	0.79	0.75	0.77
% dominant taxa	40.7%	43.4%	42.0%
EPT/EPT+C	0.964	0.986	0.975
EPT/Richness	0.655	0.741	0.696
% Model Affinity (orders)	61.8%	65.3%	63.5%
PPCS - functional groups	55.1%	45.9%	50.5%
Major Groups:			
Coleoptera (%)	0.84%	0.00%	0.42%
Diptera (%)	5.3%	4.5%	4.9%
Ephemeroptera (%)	6.1%	10.93%	8.53%
Trichoptera (%)	58.8%	55.0%	56.9%
Plecoptera (%)	25.1%	27.7%	26.4%
Oligochaeta (%)	3.90%	1.61%	2.75%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.00%	0.00%	0.00%
Other (%)	0.00%	0.32%	0.16%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	12.3%	13.5%	12.9%
Collector Filterer (%)	46.0%	47.59%	46.8%
Predator (%)	19.5%	22.5%	21.0%
Shredder - Detritus (%)	19.2%	14.5%	16.8%
Shredder - Herbivore (%)	0.56%	0.00%	0.28%
Scraper (%)	2.51%	1.61%	2.06%
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 09/26/2019 **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	698.3	≥300	Pass	≥400	Pass	≥500	Pass
Richness	28.0	≥27	Pass	≥31	Fail	≥35	Fail
EPT	19.5	≥16	Pass	≥19	Pass	≥21	Fail
% PMA-O	63.5%	≥45%	Pass	≥55%	Pass	≥65%	I
BI (New 1-10)	0.771	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	2.75%	≤12%	Pass	≤5	Pass	≤2	I
EPT/EPT+C	0.975	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	50.5%	≥ 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
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 BRANCH River Mile 9.1 USFS___ PROB___
Site ID JB-9.1
Date 09/25/19 Time 11:51 Crew TGB/CS
Site Description_____

Town: JAY Stream Order:_____ Drainage Area: _____Km² Elevation:_____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS – set to NAD83:) _____
Weather: Light rain Flow/Weather Previous (2 weeks/2days): Moderate events: 2 wks, Light showers today
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 80 % Filamentous Green 2 % and length _____in
Blue Green __% Moss 10 % 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 10%
Silt Rating: 2 (0=none, 5= chocolate) CPOM Rating (leaf packs): 2 (0= none,5=high)
Lg Woody Debris (>4"dia) #: 0 /100m (reach)

Habitat Comments

GENERAL WATER TYPE Riffle, Winder, or Other _____ Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 20 FT ~~(m)~~ Wetted Width: 15 FT ~~(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
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 15 m, R 30 m
Overstory: Softwood 10 % Hardwood 90 % Understory: Shrub (brush) 20 Grass 10 % Herbaceous 30 %
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 50 °C/°F Temp Water 10.5 °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 (STAIN) | Scum | None black rocks
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-9.1 Personnel TGB Date 09/25/19

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"		II	2	
very fine gravel	2-4	01.08-0.15"				
small gravel	4-8	0.15-0.3"				
medium gravel	8-16	0.3- 0.6"		卌	5	
coarse gravel	16-32	0.6-1.25"				
very coarse gravel	32-64	1.25-2.5"		卌 IIII	9	
small and medium cobble	64-128	2.5-5"		卌 卌 卌 卌 卌 卌 卌 卌 卌 II	47	
large cobble	128-256	5-10"				
small boulder	265-512	10-20"				
medium boulder	512-1024	20-40"		卌 卌 卌 卌 卌 卌 卌 II	37	
large boulder	1024-2048	40-80"				
very large boulder	>2048	>80"				
bedrock						
				TOTALS	100	

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

	Macro-Algae 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 III	卌 卌 III	II	

	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 I					

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

Substrate Comments:

[\\vhb\depts\Vermont\EV\Resources\Biomonitoring\lotic_benthos_fieldsheet-2016.docx]

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
2019 VHB	643	34	24	74	1.24	6	0.97	56	Meets 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 2019 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 grids (squares) should be used to process a sample

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.938950	-72.489451
or VT Site ID:	427800000083	
Date collected:	9/26/2019	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Nov. 2019	Jan. 2020
#sq picked:	14	12
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Nov. 2019	Jan. 2020

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	6	10.2857143	CCS	A	3	6
01.03.00.00.006.00.02	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	nitidulus	CCS				CCS	A	1	2
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A	N/A	ATHERIX	N/A	sp	CCS	A	1	1.71428571	CCS	A	1	2
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	2	3.42857143	CCS			
02.05.05.00.005.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	BRILLIA	N/A	sp	CCS	A	1	1.71428571	CCS	A	1	2
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS				CCS	A	2	4
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	1	1.71428571	CCS			
02.05.05.00.114.00.01	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	N/A	vitracies	CCS	A	1	1.71428571	CCS			
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca	CCS	A	4	6.85714286	CCS	A	3	6
02.05.05.00.160.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PLATYSMITTIA	N/A	fimbriata	CCS	A	1	1.71428571	CCS			
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	6	10.2857143	CCS	A	6	12
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	5	8.57142857	CCS	A	5	10
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CCS	A	1	1.71428571	CCS	A	3	6
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	7	12	CCS	A	9	18
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	11	18.8571429	CCS	A	7	14
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS	A	3	5.14285714	CCS	A	5	10
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	1	1.71428571	CCS	A	9	18
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	9	15.4285714	CCS	A	21	42
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	11	18.8571429	CCS	A	13	26
03.06.00.00.007.00.91	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	MACCAFFERTIUM	N/A	sp a	CCS	A	1	1.71428571	CCS	A	2	4
03.06.00.00.009.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	LEUCROCUTA	N/A	sp	CCS				CCS	A	1	2
03.07.00.01.006.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	EBIA/PARA	NEOLEPTOPHLEBIA	N/A	sp	CCS	A	2	3.42857143	CCS	A	1	2
04.05.00.00.003.00.01	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	DIPLECTRONA	N/A	modesta	CCS	A	2	3.42857143	CCS			
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	alhedra	CCS	A	32	54.8571429	CCS	A	38	76
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	sparna	CCS	A	2	3.42857143	CCS	A	2	4
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	7	12	CCS	A	18	36
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	68	116.571429	CCS	A	58	116
04.12.00.00.003.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	WORMALDIA	N/A	sp	CCS	A	2	3.42857143	CCS			
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	1	1.71428571	CCS	A	2	4
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	2	3.42857143	CCS	A	4	8
04.16.00.00.001.00.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	sp	CCS	A	2	3.42857143	CCS	A	1	2
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	2	3.42857143	CCS	A	6	12
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	90	154.285714	CCS	A	54	108
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp	CCS	A	3	5.14285714	CCS	A	2	4
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	7	12	CCS	A	4	8
05.05.00.00.002.00.00	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	TALLAPERLA	N/A	sp	CCS	A	15	25.7142857	CCS	A	2	4
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata	CCS	A	4	6.85714286	CCS	A	4	8
05.07.00.00.007.00.02	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	iroquois	CCS	A	15	25.7142857	CCS	A	6	12
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	17	29.1428571	CCS	A	14	28
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	24	41.1428571	CCS	A	19	38
TOTALS by Rep:										369	**632.571429**			327	**654**

GRAND TOTAL: 1286.571429 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 2019 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:	9/26/2019	
# 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	Larvae	SCR	N	2	3	20.571	12	30.857	18	1	0	1	0
01.03.00.00.006.00.02	COLEOPTERA	ELMIDAE	N/A		SCR	N	2	3	0	4	0	6	-	0	-	0
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A		PRD	N	3	2	5.1429	6	3.4286	4	1	0	1	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI		CG	Y	3	4	10.286	0	13.714	0	1	0	-	0
02.05.05.00.005.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		SRD	Y	3	5	5.1429	6	8.5714	10	1	0	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	2	0	8	0	8	-	0	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	3	5	5.1429	0	8.5714	0	1	0	-	0
02.05.05.00.114.00.01	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	3	6	5.1429	0	10.286	0	1	0	-	0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	4	13.714	12	27.429	24	1	0	1	0
02.05.05.00.160.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	0	2	0	0	3.4286	0	1	0	-	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	3	20.571	24	30.857	36	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	2	17.143	20	17.143	20	1	0	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A		SRD	N	3	6	5.1429	18	10.286	36	1	0	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A		CG	N	3	6	36	54	72	108	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	10.286	20	20.571	40	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	15.429	42	61.714	168	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
03.06.00.00.007.00.91	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		SCR	N	2	3	3.4286	8	5.1429	12	1	1	1	1
03.06.00.00.009.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		SCR	N	1	1	0	2	0	2	-	0	1	1
03.07.00.01.006.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A		CG	N	2	1	6.8571	4	3.4286	2	1	1	1	1
04.05.00.00.003.00.01	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	0	0	0	0	0	0	1	1	-	0
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	3	109.71	152	164.57	228	1	1	1	1
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	4	6.8571	8	13.714	16	1	1	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A		SRD	N	1	1	12	36	12	36	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	1	1	-	0
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A		PRD	N	3	6	5.1429	12	10.286	24	1	1	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	1	2	3.4286	8	6.8571	16	1	1	1	1
04.16.00.00.001.00.00	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	0	1	0	0	3.4286	2	-	0	-	0
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A		SCR	N	1	3	3.4286	12	10.286	36	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
05.05.00.00.002.00.00	PLECOPTERA	PELTOPERLIDAE	N/A		SRD	N	1	0	25.714	4	0	0	1	1	1	1
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A		PRD	N	0	2	0	0	13.714	16	1	1	1	1
05.07.00.00.007.00.02	PLECOPTERA	PERLODIDAE	N/A		PRD	N	1	2	25.714	12	51.429	24	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A		SRD	N	1	0	29.143	28	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**	401.14	512	613.71	892	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
GRAND TOTAL:	1286.571429 organisms							**Total # Organisms**	632.57	654	632.57	654				
								# of Organisms w/o BI	41.143	38	41.143	38	36		32	
								Total # Organisms with BI	591.43	616	591.43	616		24		23
								Biotic Index	0.68	0.83	1.04	1.45				

*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 o

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

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
VT Site ID 427800000083
Sample Date 09/26/2019

2019 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	10.28571429	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	1.714285714	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	3.428571429	0	0	0	0	0	0	0	0	
02.05.05.00.005.00.00	0	1.714285714	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	1.714285714	0	0	0	0	0	0	0	0	
02.05.05.00.114.00.01	0	1.714285714	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	6.857142857	0	0	0	0	0	0	0	0	
02.05.05.00.160.00.00	0	1.714285714	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	10.28571429	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	8.571428571	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	1.714285714	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	12	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	18.85714286	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	5.142857143	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	1.714285714	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	15.42857143	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	18.85714286	0	0	0	0	0	0	0	
03.06.00.00.007.00.91	0	0	1.714285714	0	0	0	0	0	0	0	
03.06.00.00.009.00.00	0	0	0	0	0	0	0	0	0	0	
03.07.00.01.006.00.00	0	0	3.428571429	0	0	0	0	0	0	0	
04.05.00.00.003.00.01	0	0	0	3.428571429	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	0	0	54.85714286	0	0	0	0	0	0	
04.05.00.00.004.03.04	0	0	0	3.428571429	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	12	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	116.5714286	0	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	3.428571429	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	1.714285714	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	3.428571429	0	0	0	0	0	0	
04.16.00.00.001.00.00	0	0	0	3.428571429	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	3.428571429	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	154.2857143	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	5.142857143	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	12	0	0	0	0	0	
05.05.00.00.002.00.00	0	0	0	0	25.71428571	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	6.857142857	0	0	0	0	0	
05.07.00.00.007.00.02	0	0	0	0	25.71428571	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	29.14285714	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	41.14285714	0	0	0	0	
Total	**10.28571429**	**39.42857143**	**77.14285714**	**205.7142857**	**258.8571429**	**41.14285714**	**0**	**0**	**0**	**0**	**632.571**
Percent	**2%**	**6%**	**12%**	**33%**	**41%**	**7%**	**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 09/26/2019

2019 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	6	0	0	0	0	0	0	0	0	0	
01.03.00.00.006.00.02	2	0	0	0	0	0	0	0	0	0	
02.01.00.00.001.00.00	0	2	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.005.00.00	0	2	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	4	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.114.00.01	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	6	0	0	0	0	0	0	0	0	
02.05.05.00.160.00.00	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	12	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	10	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	6	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	18	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	14	0	0	0	0	0	0	0	
03.04.00.00.004.01.00	0	0	10	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	18	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	42	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	26	0	0	0	0	0	0	0	
03.06.00.00.007.00.91	0	0	4	0	0	0	0	0	0	0	
03.06.00.00.009.00.00	0	0	2	0	0	0	0	0	0	0	
03.07.00.01.006.00.00	0	0	2	0	0	0	0	0	0	0	
04.05.00.00.003.00.01	0	0	0	0	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	0	0	76	0	0	0	0	0	0	
04.05.00.00.004.03.04	0	0	0	4	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	36	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	116	0	0	0	0	0	0	
04.12.00.00.003.00.00	0	0	0	0	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	4	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	8	0	0	0	0	0	0	
04.16.00.00.001.00.00	0	0	0	2	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	12	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	108	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	8	0	0	0	0	0	
05.05.00.00.002.00.00	0	0	0	0	4	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	8	0	0	0	0	0	
05.07.00.00.007.00.02	0	0	0	0	12	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	28	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	38	0	0	0	0	
Total	**8**	**42**	**136**	**258**	**172**	**38**	**0**	**0**	**0**	**0**	**654**
Percent	**1%**	**6%**	**21%**	**39%**	**26%**	**6%**	**0%**	**0%**	**0%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083
Sample Date 09/26/2019

2019 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	10.28571	0		0	0	0	0	0	6	0	
01.03.00.00.006.00.02	0	0	0	0	0	0	0		0	0	0	0	0	2	0	
02.01.00.00.001.00.00	0	0	1.714285714	0	0	0	0		0	0	2	0	0	0	0	
02.05.01.00.085.00.05	3.428571429	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.005.00.00	0	0	0	1.714286	0	0	0		0	0	0	2	0	0	0	
02.05.05.00.029.00.11	0	0	0	0	0	0	0		4	0	0	0	0	0	0	
02.05.05.00.075.00.00	1.714285714	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.114.00.01	1.714285714	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.114.01.04	6.857142857	0	0	0	0	0	0		6	0	0	0	0	0	0	
02.05.05.00.160.00.00	1.714285714	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	10.28571429	0	0	0	0		0	0	12	0	0	0	0	
02.19.00.00.006.00.00	0	0	8.571428571	0	0	0	0		0	0	10	0	0	0	0	
02.19.00.00.016.00.00	0	0	0	1.714286	0	0	0		0	0	0	6	0	0	0	
03.01.00.00.001.00.09	12	0	0	0	0	0	0		18	0	0	0	0	0	0	
03.04.00.00.004.00.01	18.85714286	0	0	0	0	0	0		14	0	0	0	0	0	0	
03.04.00.00.004.01.00	5.142857143	0	0	0	0	0	0		10	0	0	0	0	0	0	
03.06.00.00.003.00.00	1.714285714	0	0	0	0	0	0		18	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	15.42857	0		0	0	0	0	0	42	0	
03.06.00.00.005.00.00	18.85714286	0	0	0	0	0	0		26	0	0	0	0	0	0	
03.06.00.00.007.00.91	0	0	0	0	0	1.714286	0		0	0	0	0	0	4	0	
03.06.00.00.009.00.00	0	0	0	0	0	0	0		0	0	0	0	0	2	0	
03.07.00.01.006.00.00	3.428571429	0	0	0	0	0	0		2	0	0	0	0	0	0	
04.05.00.00.003.00.01	0	3.428571	0	0	0	0	0		0	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	54.85714	0	0	0	0	0		0	76	0	0	0	0	0	
04.05.00.00.004.03.04	0	3.428571	0	0	0	0	0		0	4	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	12	0	0	0		0	0	0	36	0	0	0	
04.12.00.00.002.00.00	0	116.5714	0	0	0	0	0		0	116	0	0	0	0	0	
04.12.00.00.003.00.00	0	3.428571	0	0	0	0	0		0	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	1.714285714	0	0	0	0		0	0	4	0	0	0	0	
04.16.00.00.001.00.01	0	0	3.428571429	0	0	0	0		0	0	8	0	0	0	0	
04.16.00.00.001.00.00	0	0	3.428571429	0	0	0	0		0	0	2	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	3.428571	0		0	0	0	0	0	12	0	
05.02.00.00.006.00.00	0	0	154.2857143	0	0	0	0		0	0	108	0	0	0	0	
05.02.00.00.091.00.00	0	0	5.142857143	0	0	0	0		0	0	4	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	12	0	0	0		0	0	0	8	0	0	0	
05.05.00.00.002.00.00	0	0	0	25.71429	0	0	0		0	0	0	4	0	0	0	
05.06.00.00.007.00.01	0	0	6.857142857	0	0	0	0		0	0	8	0	0	0	0	
05.07.00.00.007.00.02	0	0	25.71428571	0	0	0	0		0	0	12	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	29.14286	0	0	0		0	0	0	28	0	0	0	
18.04.00.00.000.00.00	41.14285714	0	0	0	0	0	0		38	0	0	0	0	0	0	
Total	**116.5714286**	**181.714**	**221.1428571**	**82.2857**	**0**	**30.8571**	**0**	**632.571**	**136**	**196**	**170**	**84**	**0**	**68**	**0**	**654**
Percent	**18%**	**29%**	**35%**	**13%**	**0%**	**5%**	**0%**	**100%**	**21%**	**30%**	**26%**	**13%**	**0%**	**10%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083
Sample Date 09/26/2019

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%	18.4%	59.4%	20.8%	67.1%
Col. Filt.	18%	30%	36%	28.7%	62.7%	30.0%	60.1%
Predator	19%	13%	7%	35.0%	54.3%	26.0%	73.1%
Shred-Det.	15%	4%	2%	13.0%	86.7%	12.8%	85.6%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.00%	0.0%
Scraper	12%	13%	22%	4.88%	40.65%	10.40%	86.6%
				PPCS-FG =	**50.6%**	**PPCS-FG =**	**62.1%**

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

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
VT Site ID 427800000083
Sample Date 09/26/2019
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%	1.63%	6.37	1.22%	6.78
Diptera	19%	18%	13%	6.2%	12.77	6.4%	12.578
Ephemeroptera	23%	34%	32%	12.2%	10.8	20.80%	2.2
Plecoptera	21%	8%	8%	40.9%	19.9	26.3%	5.3
Trichoptera	28%	33%	33%	32.5%	4.5	39.4%	11.4
Oligochaeta	0.5%	0.5%	1.0%	6.50%	6.00	5.81%	5.31
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.00%	0.500
				Sum diff	60.9		44.1
				Sum diff * 0.5	30.4		22.1
				100-(sum diff * 0.5)	69.6		77.9
				% model affinity	**69.6%**		**77.9%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083
Sample Date 09/26/2019
Class Small, High Gradient, B2
Sampler CCS

	KN-1	KN-2
#EPT organisms	541.7142857	566
#C organisms	17.14285714	12
EPT/EPT+C	0.97	0.98

Biometric Summary

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083
Sample Date 09/26/2019
Class Small, High Gradient, B2
Sampler CCS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	633	654	643
Species Richness	36.0	32.0	34.0
EPT Richness	24.0	23.0	23.5
Old Bio Index (0 to 5)	0.68	0.83	0.75
New Bio Index (0 to 10)	1.04	1.45	1.24
% dominant taxa	24.4%	17.7%	21.1%
EPT/EPT+C	0.969	0.979	0.974
EPT/Richness	0.667	0.719	0.691
% Model Affinity (orders)	69.6%	77.9%	73.7%
PPCS - functional groups	50.6%	62.1%	56.4%
Major Groups:			
Coleoptera (%)	1.63%	1.22%	1.42%
Diptera (%)	6.2%	6.4%	6.3%
Ephemeroptera (%)	12.2%	20.80%	16.50%
Trichoptera (%)	32.5%	39.4%	36.0%
Plecoptera (%)	40.9%	26.3%	33.6%
Oligochaeta (%)	6.50%	5.81%	6.16%
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 (%)	18.4%	20.8%	19.6%
Collector Filterer (%)	28.7%	29.97%	29.3%
Predator (%)	35.0%	26.0%	30.5%
Shredder - Detritus (%)	13.0%	12.8%	12.9%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	4.88%	10.40%	7.64%
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 09/26/2019 **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	643.3	≥300	Pass	≥400	Pass	≥500	Pass
Richness	34.0	≥27	Pass	≥31	Pass	≥35	Fail
EPT	23.5	≥16	Pass	≥19	Pass	≥21	Pass
% PMA-O	73.7%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	1.24	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	6.16%	≤12%	Pass	≤5	I	≤2	Fail
EPT/EPT+C	0.974	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	56.4%	≥ 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
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 Branch River Mile 8.3 USFS____ PROB____
Site ID JB8.3
Date 9.26.19 Time 1000 Crew CCS
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): Moderate events-2wks, showers yesterday
Surrounding Land Use: Resort, golf course, 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 _____% and length _____in
Blue Green __% Moss 1 % Green _____% Other _____%
mainly terrs.
General Trophic Rating: 1-2 (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 10
Silt Rating: 2-3 (0=none, 5= chocolate) CPOM Rating (leaf packs): 2-3 (0= none,5=high)
Lg Woody Debris (>4"dia) #: 1 /100m (reach)

Habitat Comments

GENERAL WATER TYPE Riffle, Winder, or Other _____ Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 35 (m) Wetted Width: 25' (m) Riffle Depth: 4-6" (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 >100m, R >100 m
Overstory: Softwood 30% Hardwood 70 % Understory: Shrub (brush) 40 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 58 °C,°F Temp Water 13 °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 few black rock
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) JB8.3 Personnel CCS Date 9·26·19

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"		I	1	
very fine gravel	2-4	01.08-0.15"		~~IIII~~ ~~IIII~~ ~~IIII~~ II	17	
small gravel	4-8	0.15-0.3"				
medium gravel	8-16	0.3- 0.6"				
coarse gravel	16-32	0.6-1.25"		~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ III	28	
very coarse gravel	32-64	1.25-2.5"				
small and medium cobble	64-128	2.5-5"		~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ III	29	
large cobble	128-256	5-10"				
small boulder	265-512	10-20"				
medium boulder	512-1024	20-40"		~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ I	26	
large boulder	1024-2048	40-80"				
very large boulder	>2048	>80"				
bedrock						
				TOTALS	101	

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

	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	III	~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~					

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

Substrate Comments:

[\\vhb\depts\Vermont\EV\Resources\Biomonitoring\lotic_benthos_fieldsheet-2016.docx]

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	0.7	0.98	50	Meets Class B Criteria
2019 VHB	356	34	26	72	1.48	8.3	0.99	64	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 2019 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:	9/26/2019	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 2020	Jan. 2020
#sq picked:	20	22
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan. 2020	Jan. 2020

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	2.4	CCS	A	2	2.181818182
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A	N/A	ATHERIX	N/A	sp	CCS				CCS	A	1	1.090909091
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	1	1.2	CCS	A	3	3.272727273
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	PSEC/TANY	MICROPSECTRA	N/A	sp	CCS				CCS	A	1	1.090909091
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	2	2.4	CCS			
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca	CCS				CCS	A	1	1.090909091
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	2	2.4	CCS			
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	12	14.4	CCS	A	1	1.090909091
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CCS				CCS	A	2	2.181818182
03.01.00.00.001.00.03	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	flavistriga	CCS	A	1	1.2	CCS	A	2	2.181818182
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	25	30	CCS	A	13	14.18181818
03.01.00.00.010.00.01	EPHEMEROPTERA	BAETIDAE	N/A	N/A	DIPHETOR	N/A	hageni	CCS	A	1	1.2	CCS			
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	RELLA/PLAU	PLAUDITUS	N/A	sp	CCS				CCS	A	1	1.090909091
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	14	16.8	CCS	A	23	25.09090909
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EURYLOPHELLA	N/A	funeralis	CCS				CCS	A	1	1.090909091
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	2	2.4	CCS	A	5	5.454545455
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	16	19.2	CCS	A	18	19.63636364
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	12	14.4	CCS	A	14	15.27272727
03.07.00.01.006.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	LEBIA/PARA	NEOLEPTOPHLEBIA	N/A	sp	CCS	A	5	6	CCS	A	2	2.181818182
03.14.00.00.001.00.00	EPHEMEROPTERA	AMELETIDAE	N/A	N/A	AMELETUS	N/A	sp	CCS				CCS	A	1	1.090909091
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp	CCS				CCS	A	1	1.090909091
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS	A	2	2.4	CCS	A	4	4.363636364
04.05.00.00.003.00.01	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	DIPLECTRONA	N/A	modesta	CCS	A	2	2.4	CCS	A	5	5.454545455
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	alhedra	CCS	A	19	22.8	CCS	A	32	34.90909091
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	sparna	CCS	A	1	1.2	CCS	A	2	2.181818182
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	11	13.2	CCS	A	20	21.81818182
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	88	105.6	CCS	A	56	61.09090909
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	9	10.8	CCS	A	3	3.272727273
04.16.00.00.001.00.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	sp	CCS	A	1	1.2	CCS			
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS				CCS	A	1	1.090909091
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS	A	1	1.2	CCS			
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	1	1.2	CCS	A	8	8.727272727
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	11	13.2	CCS	A	48	52.36363636
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp	CCS	A	2	2.4	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	6	7.2	CCS	A	5	5.454545455
05.05.00.00.002.00.00	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	TALLAPERLA	N/A	sp	CCS				CCS	A	8	8.727272727
05.06.00.00.001.00.00	PLECOPTERA	PERLIDAE	N/A	N/A	ACRONEURIA	N/A	sp	CCS	A	1	1.2	CCS	A	2	2.181818182
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata	CCS	A	11	13.2	CCS	A	8	8.727272727
05.07.00.00.007.00.02	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	iroquois	CCS	A	1	1.2	CCS	A	1	1.090909091
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	1	1.2	CCS	A	11	12
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A	N/A	LANTHUS	N/A	sp	CCS				CCS	A	1	1.090909091
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	42	50.4	CCS	A	9	9.818181818
TOTALS by Rep:										305	**366**			317	**345.818182**

GRAND TOTAL: 711.8181818 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 2019 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:	9/26/2019	
# 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	Larvae	SCR	N	2	3	4.8	4.3636	7.2	6.5455	1	0	1	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	3.6	9.8182	4.8	13.091	1	0	1	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI		CG	Y	3	6	0	3.2727	0	6.5455	-	0	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	3	5	7.2	0	12	0	1	0	-	0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	4	0	2.1818	0	4.3636	-	0	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	3	4.8	0	7.2	0	1	0	-	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	2	28.8	2.1818	28.8	2.1818	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
03.01.00.00.001.00.03	EPHEMEROPTERA	BAETIDAE	N/A		CG	N	3	5	3.6	6.5455	6	10.909	1	1	1	1
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A		CG	N	3	6	90	42.545	180	85.091	1	1	1	1
03.01.00.00.010.00.01	EPHEMEROPTERA	BAETIDAE	N/A		CG	N	1	2	1.2	0	2.4	0	1	1	-	0
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A		SCR	N	2	5	0	2.1818	0	5.4545	-	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
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A		SRD	N	1	0	0	1.0909	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	19.2	19.636	76.8	78.545	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
03.07.00.01.006.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A		CG	N	2	1	12	4.3636	6	2.1818	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	0	1.0909	0	2.1818	-	0	1	1
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A		SCR	N	1	0	2.4	4.3636	0	0	1	1	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	45.6	69.818	68.4	104.73	1	1	1	1
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	4	2.4	4.3636	4.8	8.7273	1	1	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A		SRD	N	1	1	13.2	21.818	13.2	21.818	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	32.4	9.8182	64.8	19.636	1	1	1	1
04.16.00.00.001.00.00	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	0	1	0	0	1.2	0	-	0	-	0
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	1	2	0	1.0909	0	2.1818	-	0	1	1
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	0	1	0	0	1.2	0	1	1	-	0
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A		SCR	N	1	3	1.2	8.7273	3.6	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
05.05.00.00.002.00.00	PLECOPTERA	PELTOPERLIDAE	N/A		SRD	N	1	0	0	8.7273	0	0	-	0	1	1
05.06.00.00.001.00.00	PLECOPTERA	PERLIDAE	N/A		PRD	N	0	0	0	0	0	0	1	1	1	1
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A		PRD	N	0	2	0	0	26.4	17.455	1	1	1	1
05.07.00.00.007.00.02	PLECOPTERA	PERLODIDAE	N/A		PRD	N	1	2	1.2	1.0909	2.4	2.1818	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A		SRD	N	1	0	1.2	12	0	0	1	1	1	1
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A		PRD	N	2	5	0	2.1818	0	5.4545	-	0	1	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep:																
GRAND TOTAL:	711.8181818 organisms															

Total BI Score	274.8	253.09	517.2	440.73
Total # Organisms	366	345.82	366	345.82
# of Organisms w/o BI	50.4	9.8182	50.4	9.8182
Total # Organisms with BI	315.6	336	315.6	336
Biotic Index	0.87	0.75	1.64	1.31

Total Richness	**Total EPT-R**	**Total Richness**	**Total EPT-R**
30		37	
	24		28

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

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
VT Site ID 427800000073
Sample Date 09/26/2019

2019 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	2.4	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	1.2	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	
02.05.05.00.075.00.00	0	2.4	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	0	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	2.4	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	14.4	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	
03.01.00.00.001.00.03	0	0	1.2	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	30	0	0	0	0	0	0	0	
03.01.00.00.010.00.01	0	0	1.2	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	0	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	16.8	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	2.4	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	19.2	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	14.4	0	0	0	0	0	0	0	
03.07.00.01.006.00.00	0	0	6	0	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	2.4	0	0	0	0	0	0	
04.05.00.00.003.00.01	0	0	0	2.4	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	0	0	22.8	0	0	0	0	0	0	
04.05.00.00.004.03.04	0	0	0	1.2	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	13.2	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	105.6	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	10.8	0	0	0	0	0	0	
04.16.00.00.001.00.00	0	0	0	1.2	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	0	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	1.2	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	1.2	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	13.2	0	0	0	0	0	
05.02.00.00.091.00.00	0	0	0	0	2.4	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	7.2	0	0	0	0	0	
05.05.00.00.002.00.00	0	0	0	0	0	0	0	0	0	0	
05.06.00.00.001.00.00	0	0	0	0	1.2	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	13.2	0	0	0	0	0	
05.07.00.00.007.00.02	0	0	0	0	1.2	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	1.2	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	50.4	0	0	0	0	
Total	**2.4**	**20.4**	**91.2**	**162**	**39.6**	**50.4**	**0**	**0**	**0**	**0**	**366**
Percent	**1%**	**6%**	**25%**	**44%**	**11%**	**14%**	**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 09/26/2019

2019 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	2.181818182	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	3.272727273	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	
02.05.05.00.075.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	1.090909091	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	1.090909091	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	
03.01.00.00.001.00.03	0	0	2.181818182	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	14.18181818	0	0	0	0	0	0	0	
03.01.00.00.010.00.01	0	0	0	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	1.090909091	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	25.09090909	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	
03.06.00.00.003.00.00	0	0	5.454545455	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	19.63636364	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	15.27272727	0	0	0	0	0	0	0	
03.07.00.01.006.00.00	0	0	2.181818182	0	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	1.090909091	0	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	1.090909091	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	4.363636364	0	0	0	0	0	0	
04.05.00.00.003.00.01	0	0	0	5.454545455	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	0	0	34.90909091	0	0	0	0	0	0	
04.05.00.00.004.03.04	0	0	0	2.181818182	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	21.81818182	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	61.09090909	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	3.272727273	0	0	0	0	0	0	
04.16.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	1.090909091	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	0	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	8.727272727	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	52.36363636	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	5.454545455	0	0	0	0	0	
05.05.00.00.002.00.00	0	0	0	0	8.727272727	0	0	0	0	0	
05.06.00.00.001.00.00	0	0	0	0	2.181818182	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	8.727272727	0	0	0	0	0	
05.07.00.00.007.00.02	0	0	0	0	1.090909091	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	12	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	1.0909091	0	
18.04.00.00.000.00.00	0	0	0	0	0	9.818181818	0	0	0	0	
Total	**2.181818182**	**9.818181818**	**87.27272727**	**144**	**91.63636364**	**9.818181818**	**0**	**0**	**1.0909091**	**0**	**345.82**
Percent	**1%**	**3%**	**25%**	**42%**	**26%**	**3%**	**0%**	**0%**	**0%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073
Sample Date 09/26/2019

2019 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	2.4	0		0	0	0	0	0	2.181818	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	1.2	0	0	0	0	0	0		3.272727	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	0	0	0	0	0	0		1.090909	0	0	0	0	0	0	
02.05.05.00.075.00.00	2.4	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	0	0	0	0	0	0		1.090909	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	2.4	0	0	0	0		0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	0	14.4	0	0	0	0		0	0	1.090909	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	
03.01.00.00.001.00.03	1.2	0	0	0	0	0	0		2.181818	0	0	0	0	0	0	
03.01.00.00.001.00.09	30	0	0	0	0	0	0		14.18182	0	0	0	0	0	0	
03.01.00.00.010.00.01	1.2	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	0	0		0	0	0	0	0	1.090909	0	
03.04.00.00.004.00.01	16.8	0	0	0	0	0	0		25.09091	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	0	0	0	0	0		0	0	0	1.090909	0	0	0	
03.06.00.00.003.00.00	2.4	0	0	0	0	0	0		5.454545	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	19.2	0		0	0	0	0	0	19.63636	0	
03.06.00.00.005.00.00	14.4	0	0	0	0	0	0		15.27273	0	0	0	0	0	0	
03.07.00.01.006.00.00	6	0	0	0	0	0	0		2.181818	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	0	0	0	0	0		1.090909	0	0	0	0	0	0	
04.01.00.00.003.00.00	0	0	0	0	0	0	0		0	0	0	0	1.090909	0	0	
04.03.00.00.002.00.00	0	0	0	0	0	2.4	0		0	0	0	0	0	4.363636	0	
04.05.00.00.003.00.01	0	2.4	0	0	0	0	0		0	5.454545	0	0	0	0	0	
04.05.00.00.004.03.02	0	22.8	0	0	0	0	0		0	34.90909	0	0	0	0	0	
04.05.00.00.004.03.04	0	1.2	0	0	0	0	0		0	2.181818	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	13.2	0	0	0		0	0	0	21.81818	0	0	0	
04.12.00.00.002.00.00	0	105.6	0	0	0	0	0		0	61.09091	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	10.8	0	0	0	0		0	0	3.272727	0	0	0	0	
04.16.00.00.001.00.00	0	0	1.2	0	0	0	0		0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	0	0	0	0		0	0	1.090909	0	0	0	0	
04.16.00.00.001.02.00	0	0	1.2	0	0	0	0		0	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	1.2	0		0	0	0	0	0	8.727273	0	
05.02.00.00.006.00.00	0	0	13.2	0	0	0	0		0	0	52.36364	0	0	0	0	
05.02.00.00.091.00.00	0	0	2.4	0	0	0	0		0	0	1.090909	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	7.2	0	0	0		0	0	0	5.454545	0	0	0	
05.05.00.00.002.00.00	0	0	0	0	0	0	0		0	0	0	8.727273	0	0	0	
05.06.00.00.001.00.00	0	0	1.2	0	0	0	0		0	0	2.181818	0	0	0	0	
05.06.00.00.007.00.01	0	0	13.2	0	0	0	0		0	0	8.727273	0	0	0	0	
05.07.00.00.007.00.02	0	0	1.2	0	0	0	0		0	0	1.090909	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	1.2	0	0	0		0	0	0	12	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0		0	0	1.090909	0	0	0	0	
18.04.00.00.000.00.00	50.4	0	0	0	0	0	0		9.818182	0	0	0	0	0	0	
Total	**126**	**132**	**61.2**	**21.6**	**0**	**25.2**	**0**	**366**	**80.7273**	**103.636**	**73.0909**	**51.2727**	**1.09091**	**36**	**0**	**345.818**
Percent	**34%**	**36%**	**17%**	**6%**	**0%**	**7%**	**0%**	**100%**	**23%**	**30%**	**21%**	**15%**	**0%**	**10%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073
Sample Date 09/26/2019

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%	34.4%	90.0%	23.3%	75.3%
Col. Filt.	18%	30%	36%	36.1%	49.9%	30.0%	60.1%
Predator	19%	13%	7%	16.7%	88.0%	21.1%	89.9%
Shred-Det.	15%	4%	2%	5.9%	39.3%	14.8%	98.8%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.32%	31.5%
Scraper	12%	13%	22%	6.89%	57.38%	10.41%	86.8%
				PPCS-FG =	**54.1%**	**PPCS-FG =**	**73.7%**

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

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
VT Site ID 427800000073
Sample Date 09/26/2019
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	0.63%	7.37
Diptera	19%	18%	13%	5.6%	13.43	2.8%	16.161
Ephemeroptera	23%	34%	32%	24.9%	1.9	25.24%	2.2
Plecoptera	21%	8%	8%	10.8%	10.2	26.5%	5.5
Trichoptera	28%	33%	33%	44.3%	16.3	41.6%	13.6
Oligochaeta	0.5%	0.5%	1.0%	13.77%	13.27	2.84%	2.34
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.32%	0.185
				Sum diff	62.9		47.4
				Sum diff * 0.5	31.5		23.7
				100-(sum diff * 0.5)	68.5		76.3
				% model affinity	**68.5%**		**76.3%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073
Sample Date 09/26/2019
Class Small, High Gradient, B2
Sampler CCS

	KN-1	KN-2
#EPT organisms	292.8	322.9091
#C organisms	3.6	5.454545
EPT/EPT+C	0.99	0.98

Biometric Summary

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073
Sample Date 09/26/2019
Class Small, High Gradient, B2
Sampler CCS

Replicate #	1	2	Average
Sampling Method	**KN**	**KN**	**KN**
Biometrics:			
Density/Unit	366	346	356
Species Richness	30.0	37.0	33.5
EPT Richness	24.0	28.0	26.0
Old Bio Index (0 to 5)	0.87	0.75	0.81
New Bio Index (0 to 10)	1.64	1.31	1.48
% dominant taxa	28.9%	17.7%	23.3%
EPT/EPT+C	0.988	0.983	0.986
EPT/Richness	0.800	0.757	0.776
% Model Affinity (orders)	68.5%	76.3%	72.4%
PPCS - functional groups	54.1%	73.7%	63.9%
Major Groups:			
Coleoptera (%)	0.66%	0.63%	0.64%
Diptera (%)	5.6%	2.8%	4.2%
Ephemeroptera (%)	24.9%	25.24%	25.08%
Trichoptera (%)	44.3%	41.6%	43.0%
Plecoptera (%)	10.8%	26.5%	18.7%
Oligochaeta (%)	13.77%	2.84%	8.30%
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 (%)	34.4%	23.3%	28.9%
Collector Filterer (%)	36.1%	29.97%	33.0%
Predator (%)	16.7%	21.1%	18.9%
Shredder - Detritus (%)	5.9%	14.8%	10.4%
Shredder - Herbivore (%)	0.00%	0.32%	0.16%
Scraper (%)	6.89%	10.41%	8.65%
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	09/26/2019	**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	355.9	≥300	Pass	≥400	I	≥500	Fail
Richness	33.5	≥27	Pass	≥31	Pass	≥35	Fail
EPT	26.0	≥16	Pass	≥19	Pass	≥21	Pass
% PMA-O	72.4%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	1.48	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	8.30%	≤12%	Pass	≤5	Fail	≤2	Fail
EPT/EPT+C	0.986	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	63.9%	≥ 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
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 Branch River Mile 7.3 USFS____ PROB____
Site ID JB7.3
Date 9·26·19 Time 1200 Crew CS
Site Description_____

Town: _____ Stream Order:_____ Drainage Area: _____Km² Elevation:_____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS – set to NAD83:) _____
Weather: light rain Flow/Weather Previous (2 weeks/2days): Moderate events · 2wks, Light showers yesterday
Surrounding Land Use: Road, Residential, forest, resort

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 _____% and length _____in
Blue Green __% Moss Tr % Green _____% Other _____%
Any moss present is terrs.
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: 3-4 (0=none, 5= chocolate) CPOM Rating (leaf packs): 1-2 (0= none,5=high)
Lg Woody Debris (>4"dia) #: 1 /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" (in) Pool Depth: 1.5' (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 20% Hardwood 80% Understory: Shrub (brush) 30 Grass 10% Herbaceous 30%
Canopy %: 100 (90) 80 70 60 50 40 30 20 10 0 Overhead: Open, Partly Open, or (Closed)
Leaves mainly on ~80%

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 58 °C,°F Temp Water 13 °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:

Light rain changed to downpour making it hard to replicate because I couldn't see the stream bed bottom

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

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River (Site) JB7.3 Personnel CCS Date 9.26.19

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"		|	1	
very fine gravel	2-4	01.08-0.15"		卌 ||||	9	
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 |||	23	
very coarse gravel	32-64	1.25-2.5"				
small and medium cobble	64-128	2.5-5"		卌 卌 卌 卌 卌 卌 |	31	
large cobble	128-256	5-10"				
small boulder	265-512	10-20"				
medium boulder	512-1024	20-40"		卌 卌 卌 卌 卌 卌 卌 |	36	
large boulder	1024-2048	40-80"				
very large boulder	>2048	>80"				
bedrock						
				TOTALS	100	

	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 ||		

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

	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 |					

	Other *Macro or Micro*____________ Cover Index					
Category	0	1______	2______	3______	4______	5______
Tally						

Substrate Comments:

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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
2019 VHB	433	31	18	65	1.08	2	0.95	43	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 2019 version

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

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

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.938650	-72.491635
or VT Site ID:	427809000001	
Date collected:	9/25/2019	
# Reps Collected:	1	
# Rep Picked:	1	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**
Picked By:	CCS
Date Picked:	Jan. 2020
#sq picked:	18
#sq total:	24
Checked By:	CCS
Sorted By:	CCS
Sorted Date:	Jan. 2020

Taxonomic Data

Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	Rep1			
								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	4	5.333333333
01.03.00.00.006.00.02	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	nitidulus	CCS	A	7	9.333333333
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A	ZZIA/PALPOMY	BEZZIA	N/A	sp	CCS	A	1	1.333333333
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	RTHOCLADIIN	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	2	2.666666667
02.05.05.00.068.00.00	DIPTERA	CHIRONOMIDAE	RTHOCLADIIN	N/A	RACHAETOCLAD	N/A	sp	CCS	A	2	2.666666667
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	RTHOCLADIIN	N/A	TVETENIA	bavarica grp	paucunca	CCS	A	6	8
02.05.09.04.000.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURIN	EMANNIMYIA (	N/A	N/A	group	CCS	A	3	4
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	9	12
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	9	12
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CCS	A	10	13.33333333
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	1	1.333333333
03.04.00.00.008.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	TELOGANOPSIS	N/A	deficiens	CCS	A	1	1.333333333
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	1	1.333333333
03.07.00.01.006.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	HLEBIA/PARALE	EOLEPTOPHLEB	N/A	sp	CCS	A	2	2.666666667
04.05.00.00.003.00.01	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	DIPLECTRONA	N/A	modesta	CCS	A	31	41.33333333
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	alhedra	CCS	A	17	22.66666667
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	sparna	CCS	A	14	18.66666667
04.11.00.00.001.00.00	TRICHOPTERA	ODONTOCERIDAE	N/A	N/A	PSILOTRETA	N/A	sp	CCS	A	1	1.333333333
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	130	173.3333333
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPU	N/A	sp	CCS	A	1	1.333333333
04.16.00.00.001.00.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	sp	CCS	A	1	1.333333333
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS	A	1	1.333333333
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	1	1.333333333
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	32	42.66666667
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	9	12
05.05.00.00.002.00.00	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	TALLAPERLA	N/A	sp	CCS	A	5	6.666666667
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata	CCS	A	2	2.666666667
05.07.00.00.007.00.02	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	iroquois	CCS	A	2	2.666666667
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	10	13.33333333
12.08.00.00.002.00.00	GASTROPODA	PHYSIDAE	N/A	N/A	PHYSA	N/A	sp	CCS	A	1	1.333333333
16.01.00.00.001.00.00	NEMATOMORPHA	GORDIIDAE	N/A	N/A	GORDIUS	N/A	SP	CCS	A	1	1.333333333
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	5	6.666666667
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A	N/A	N/A	N/A	uid	CCS	A	3	4
TOTALS by Rep:										325	433.3333333
GRAND TOTAL:	433.3333333 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 - VTDEC October 2019 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:	9/25/2019	
# Reps Collected:	1	
# Rep Picked:	1	
Collection Method:	Kicknet	
Collector:	C. Szal	

							Biotic Index				Richness Metrics	
Expanded Key	Order	Family	SubFamily Or Tribe	NOTES	FFG	Chiro	Biotic Index Scores		Old Biotic Index (1-5)	New Biotic Index (1-10)	Richness	EPT
							Old BI	New BI	KN-1	KN-1	KN-1	KN-1
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A		SCR	N	2	3	10.66666667	16	--	0
01.03.00.00.006.00.02	COLEOPTERA	ELMIDAE	N/A		SCR	N	2	3	18.66666667	28	1	0
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A		PRD	N	3	6	4	8	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	RTHOCLADIIN		CG	Y	2	2	5.333333333	5.333333333	1	0
02.05.05.00.068.00.00	DIPTERA	CHIRONOMIDAE	RTHOCLADIIN		CG	Y	2	2	5.333333333	5.333333333	1	0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	RTHOCLADIIN		CG	Y	2	4	16	32	1	0
02.05.09.04.000.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURIN		PRD	Y	3	6	12	24	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	3	24	36	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	2	24	24	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A		SRD	N	3	6	40	80	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A		CG	N	3	6	4	8	1	1
03.04.00.00.008.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A		CG	N	1	2	1.333333333	2.666666667	1	1
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		SCR	N	1	4	1.333333333	5.333333333	1	1
03.07.00.01.006.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A		CG	N	2	1	5.333333333	2.666666667	1	1
04.05.00.00.003.00.01	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	0	0	0	0	1	1
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	3	45.33333333	68	1	1
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	4	37.33333333	74.66666667	1	1
04.11.00.00.001.00.00	TRICHOPTERA	ODONTOCERIDAE	N/A		SCR	N	0	0	0	0	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A		CF	N	0	0	0	0	1	1
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A		PRD	N	3	6	4	8	1	1
04.16.00.00.001.00.00	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	0	1	0	1.333333333	--	0
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	0	1	0	1.333333333	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A		SCR	N	1	3	1.333333333	4	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A		PRD	N	0	0	0	0	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A		SRD	N	0	0	0	0	1	1
05.05.00.00.002.00.00	PLECOPTERA	PELTOPERLIDAE	N/A		SRD	N	1	0	6.666666667	0	1	1
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A		PRD	N	0	2	0	5.333333333	1	1
05.07.00.00.007.00.02	PLECOPTERA	PERLODIDAE	N/A		PRD	N	1	2	2.666666667	5.333333333	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A		SRD	N	1	0	13.33333333	0	1	1
12.08.00.00.002.00.00	GASTROPODA	PHYSIDAE	N/A		CG	N	4	8	5.333333333	10.66666667	1	0
16.01.00.00.001.00.00	NEMATOMORPHA	GORDIIDAE	N/A			N	-	-	-	-	1	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A		CG	N	-	-	-	-	1	0
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A		CG	N	-	-	-	-	1	0
TOTALS by Rep:								**Total BI Score**	288	456	**Total Richness**	**Total EPT-R**
GRAND TOTAL:	433.3333333 organisms							**Total # Organisms**	433.3333333	433.3333333		
								# of Organisms w/o BI	12	12	31	
								Total # Organisms with BI	421.3333333	421.3333333		18
								Biotic Index	0.68	1.08		

*Notes:
[1] ID is initial
[2] QA is confi
[3] Count: only
[4] Total Samp

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-T9-0.1
Stream Jay Branch - Trib 9
Location 427809000001
Sample Date 09/25/19

2019 Expanded Key	KN-1: Numbers of Organisms										
ID#	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	5.333333333	0	0	0	0	0	0	0	0	0	
01.03.00.00.006.00.02	9.333333333	0	0	0	0	0	0	0	0	0	
02.03.00.01.003.00.00	0	1.333333333	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	2.666666667	0	0	0	0	0	0	0	0	
02.05.05.00.068.00.00	0	2.666666667	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	8	0	0	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	4	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	12	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	12	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	13.33333333	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	1.333333333	0	0	0	0	0	0	0	
03.04.00.00.008.00.01	0	0	1.333333333	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	1.333333333	0	0	0	0	0	0	0	
03.07.00.01.006.00.00	0	0	2.666666667	0	0	0	0	0	0	0	
04.05.00.00.003.00.01	0	0	0	41.33333333	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	0	0	22.66666667	0	0	0	0	0	0	
04.05.00.00.004.03.04	0	0	0	18.66666667	0	0	0	0	0	0	
04.11.00.00.001.00.00	0	0	0	1.333333333	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	173.3333333	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	1.333333333	0	0	0	0	0	0	
04.16.00.00.001.00.00	0	0	0	1.333333333	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	1.333333333	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	1.333333333	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	42.66666667	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	12	0	0	0	0	0	
05.05.00.00.002.00.00	0	0	0	0	6.666666667	0	0	0	0	0	
05.06.00.00.007.00.01	0	0	0	0	2.666666667	0	0	0	0	0	
05.07.00.00.007.00.02	0	0	0	0	2.666666667	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	13.33333333	0	0	0	0	0	
12.08.00.00.002.00.00	0	0	0	0	0	0	0	0	0	1.3333333	
16.01.00.00.001.00.00	0	0	0	0	0	0	0	0	0	1.3333333	
18.04.00.00.000.00.00	0	0	0	0	0	6.666666667	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	4	0	0	0	0	
Total	**14.67**	**56**	**6.67**	**262.7**	**80**	**10.7**	**0**	**0**	**0**	**2.67**	**433.3**
Percent	**3.38%**	**12.9%**	**1.54%**	**60.6%**	**18.5%**	**2.46%**	**0.00%**	**0.00%**	**0.00%**	**0.615%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-T9-0.1
Stream Jay Branch - Trib 9
Location 427809000001
Sample Date 09/25/19

2016 Expanded Key ID#	KN-1: Numbers of Organisms											
	Collector Filterer	Collector Gatherer	Parasite	Planktivore	Predator	Piercing Carnivore	Piercing Herbivore	Scraper	Shredder-Herbivore	Shredder-Detritus	Other/ Unidentified	Total
01.03.00.00.006.00.00	0	0	0	0	0	0	0	5.33333	0	0	0	**5.3333**
01.03.00.00.006.00.02	0	0	0	0	0	0	0	9.33333	0	0	0	**9.3333**
02.03.00.01.003.00.00	0	0	0	0	1.333333	0	0	0	0	0	0	**1.3333**
02.05.05.00.029.00.11	0	2.666666667	0	0	0	0	0	0	0	0	0	**2.6667**
02.05.05.00.068.00.00	0	2.666666667	0	0	0	0	0	0	0	0	0	**2.6667**
02.05.05.00.114.01.04	0	8	0	0	0	0	0	0	0	0	0	**8**
02.05.09.04.000.00.00	0	0	0	0	4	0	0	0	0	0	0	**4**
02.19.00.00.003.00.00	0	0	0	0	12	0	0	0	0	0	0	**12**
02.19.00.00.006.00.00	0	0	0	0	12	0	0	0	0	0	0	**12**
02.19.00.00.016.00.00	0	0	0	0	0	0	0	0	0	13.333333	0	**13.333**
03.01.00.00.001.00.09	0	1.333333333	0	0	0	0	0	0	0	0	0	**1.3333**
03.04.00.00.008.00.01	0	1.333333333	0	0	0	0	0	0	0	0	0	**1.3333**
03.06.00.00.004.00.00	0	0	0	0	0	0	0	1.33333	0	0	0	**1.3333**
03.07.00.01.006.00.00	0	2.666666667	0	0	0	0	0	0	0	0	0	**2.6667**
04.05.00.00.003.00.01	41.33333333	0	0	0	0	0	0	0	0	0	0	**41.333**
04.05.00.00.004.03.02	22.66666667	0	0	0	0	0	0	0	0	0	0	**22.667**
04.05.00.00.004.03.04	18.66666667	0	0	0	0	0	0	0	0	0	0	**18.667**
04.11.00.00.001.00.00	0	0	0	0	0	0	0	1.33333	0	0	0	**1.3333**
04.12.00.00.002.00.00	173.3333333	0	0	0	0	0	0	0	0	0	0	**173.33**
04.14.00.00.005.00.00	0	0	0	0	1.333333	0	0	0	0	0	0	**1.3333**
04.16.00.00.001.00.00	0	0	0	0	1.333333	0	0	0	0	0	0	**1.3333**
04.16.00.00.001.02.00	0	0	0	0	1.333333	0	0	0	0	0	0	**1.3333**
04.20.00.00.001.00.00	0	0	0	0	0	0	0	1.33333	0	0	0	**1.3333**
05.02.00.00.006.00.00	0	0	0	0	42.66667	0	0	0	0	0	0	**42.667**
05.03.00.00.000.00.01	0	0	0	0	0	0	0	0	0	12	0	**12**
05.05.00.00.002.00.00	0	0	0	0	0	0	0	0	0	6.6666667	0	**6.6667**
05.06.00.00.007.00.01	0	0	0	0	2.666667	0	0	0	0	0	0	**2.6667**
05.07.00.00.007.00.02	0	0	0	0	2.666667	0	0	0	0	0	0	**2.6667**
05.08.00.00.001.00.02	0	0	0	0	0	0	0	0	0	13.333333	0	**13.333**
12.08.00.00.002.00.00	0	1.333333333	0	0	0	0	0	0	0	0	0	**1.3333**
16.01.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	1.333333333	**1.3333**
18.04.00.00.000.00.00	0	6.666666667	0	0	0	0	0	0	0	0	0	**6.6667**
18.06.00.00.000.00.00	0	4	0	0	0	0	0	0	0	0	0	**4**
Group Total	**256**	**30.66666667**	**0**	**0**	**81.33333**	**0**	**0**	**18.6667**	**0**	**45.333333**	**1.333333333**	**433.33**
Percent of Sample Total	**59.1%**	**7.1%**	**0.0%**	**0.0%**	**18.8%**	**0.0%**	**0.0%**	**4.3%**	**0.0%**	**10.5%**	**0.3%**	**100.0%**

	Model			Kicknet 1 vs. SHG	
	SHG	MHG	WWMG	**KN-1**	**PPCS**
Col. Gath.	31%	32%	22%	7.1%	22.8%
Col. Filt.	18%	30%	36%	59.08%	30.5%
Predator	19%	13%	7%	18.8%	98.8%
Shred-Det.	15%	4%	2%	10.5%	69.7%
Shred- Herb.	1%	1%	5%	0.00%	0.0%
Scraper	12%	13%	22%	4.31%	35.9%
				PPCS-FG =	**43.0%**

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 09/25/19 **Sampler** C. Szal

Order	Model			Kicknet 1 vs. Model (SHG)	
	SHG	MHG	WWMG	**%**	**difference**
Coleoptera	8%	6%	13%	3.38%	4.62
Diptera	19%	18%	13%	12.9%	6.08
Ephemeroptera	23%	34%	32%	1.5%	21.46
Plecoptera	21%	8%	8%	18.5%	2.5
Trichoptera	28%	33%	33%	60.6%	32.6
Oligochaeta	0.5%	0.5%	1.0%	2.46%	1.96
Other	0.5%	0.5%	1.0%	0.62%	0.115

Sum diff	69.4
Sum diff * 0.5	34.7
100-(sum diff * 0.5)	65.3
% model affinity	**65.3%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-T9-0.1
Stream Jay Branch - Trib 9
Location 427809000001
Sample Date 09/25/19
Class SHG
Sampler C. Szal

	KN-1
#EPT organisms	349.3333333
#C organisms	17
EPT/EPT+C	0.953

Biometrics Summary

Project Jay Peak Resort
Station JB-T9-0.1
Stream Jay Branch - Trib 9
Location 427809000001
Sample Date 09/25/19
Class SHG
Sampler C. Szal

Replicate # Sampling Method	1 KN	Average KN
Biometrics:		
Density/Unit	433	433
Species Richness	31.0	31.0
EPT Richness	18.0	18.0
Old Bio Index (0 to 5)	0.68	0.68
New Bio Index (0 to 10)	1.08	1.08
% dominant taxa	40.0%	40.0%
# dominant taxa	173.3333333	
dominant taxa ID	TRICHOPTERA	PHILOPOTAMIDAE
EPT/EPT+C	0.953	0.953
EPT/Richness	0.581	0.581
% Model Affinity (orders)	65.3%	65.3%
PPCS - functional groups	43.0%	43.0%
Major Groups:		
Coleoptera (%)	3.38%	3.38%
Diptera (%)	12.9%	12.9%
Ephemeroptera (%)	1.5%	1.5%
Trichoptera (%)	60.6%	60.6%
Plecoptera (%)	18.5%	18.5%
Oligochaeta (%)	2.46%	2.46%
Bivalvia (%)	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%
Odonata (%)	0.00%	0.00%
Other (%)	0.62%	0.62%
Total (%)	100%	100%
Feeding Groups:		
Collector Gatherer (%)	7.1%	7.1%
Collector Filterer (%)	59.08%	59.08%
Predator (%)	18.8%	18.8%
Shredder - Detritus (%)	10.5%	10.5%
Shredder - Herbivore (%)	0.00%	0.00%
Scraper (%)	4.31%	4.31%
Other (%)	0.31%	0.31%
Total (%)	100%	100%

Project Jay Peak Resort
Station JB-T9-0.1
Stream Jay Branch - Trib 9
Location 427809000001
Sample Date 09/25/19

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	433	≥300	Pass	≥400	Pass	≥500	Fail
Richness	31.0	≥27	Pass	≥31	Pass	≥35	Fail
EPT	18.0	≥16	Pass	≥19	I	≥21	Fail
PMA-O	65.3%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	1.08	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	2.46%	≤12%	Pass	≤5	Pass	≤2	I
EPT/EPT+C	0.953	≥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
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
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 BRANCH TRIB 9 River Mile 0.1 USFS____ PROB____
Site ID JB-T9-0.1
Date 09/25/19 Time 09:43 Crew TGB/CS
Site Description_____

Town: JAY Stream Order:_____ Drainage Area: _____Km² Elevation:_____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS – set to NAD83:) _____
Weather: 50°F Flow/Weather Previous (2 weeks/2days): <0.5" PAST TWO DAYS; MINOR STORM EVENTS PAST 2 WKS
Surrounding Land Use: Golf course, forest

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: __ min Mesh: ____ um
Area: _____ m² Quantitative: Y / N
#Reps: 1 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 __% Moss TR % Green _____% Other _____%

General Trophic Rating: 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 15%
Silt Rating: 4 (0=none, 5= chocolate) CPOM Rating (leaf packs): 1 (0= none,5=high) RIFFLES
Lg Woody Debris (>4"dia) #: 2 /100m (reach) LEAVES ON TREES, 20% FALLEN

Habitat Comments

GENERAL WATER TYPE Riffle, Winder, or Other _____ Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 10 ft ~~(m)~~ Wetted Width: 8 ft ~~(m)~~ Riffle Depth: 1-2 (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 >100m, R >100m
Overstory: Softwood 10 % Hardwood 90 % Understory: Shrub (brush) 40 Grass TR % Herbaceous 40 %
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 50 °C °F Temp Water 12 °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 black rocks
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:
SALAMANDERS

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

River (Site) JB-T9-0.1 Personnel TGB Date 09/25/19

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 卌 |||	13	
very fine gravel	2-4	01.08-0.15"				
small gravel	4-8	0.15-0.3"		卌 卌 卌 卌 |||	23	
medium gravel	8-16	0.3- 0.6"				
coarse gravel	16-32	0.6-1.25"				
very coarse gravel	32-64	1.25-2.5"		卌 卌 卌 卌 卌 |||	~~23~~ 28	
small and medium cobble	64-128	2.5-5"				
large cobble	128-256	5-10"		卌 卌 卌 卌 |||	23	
small boulder	265-512	10-20"				
medium boulder	512-1024	20-40"				
large boulder	1024-2048	40-80"		卌 卌 卌 卌 卌 |||	28	
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 |||	||||

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

	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 |					

	Other *Macro 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
2019 VHB	635	32	18	56	0.97	2.5	0.95	34	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 2019 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:	9/26/2019	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 2020	Jan. 2020
#sq picked:	12	11
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan. 2020	Jan. 2020

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]
02.06.00.00.001.00.00	DIPTERA	DIXIDAE	N/A	N/A	DIXA	N/A	sp	CCS	A	1	2	CCS			
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	1	2	CCS			
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	PSEC/TANY	MICROPSECTRA	N/A	sp	CCS	A	1	2	CCS	A	2	4.36363636
02.05.05.00.007.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	CHAETOCLADIUS	N/A	sp	CCS				CCS	A	1	2.18181818
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	2	4	CCS			
02.05.05.00.065.00.02	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	ORTHOCLADIUS	N/A	lignicola	CCS	A	1	2	CCS	A	1	2.18181818
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	5	10	CCS	A	1	2.18181818
02.05.05.00.096.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	RHEOCRICOTOPUS	N/A	sp	CCS	A	1	2	CCS	A	1	2.18181818
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca	CCS	A	5	10	CCS	A	2	4.36363636
02.05.09.04.000.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	MANNIMYIA	N/A	N/A	group	CCS	A	2	4	CCS	A	2	4.36363636
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	6	12	CCS	A	8	17.4545455
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	4	8	CCS	A	3	6.54545455
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CCS	A	1	2	CCS	A	1	2.18181818
03.01.00.00.001.00.03	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	flavistriga	CCS	A	3	6	CCS			
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	23	46	CCS	A	6	13.0909091
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	RELLA/PLAU	PLAUDITUS	N/A	sp	CCS	A	1	2	CCS			
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	4	8	CCS	A	1	2.18181818
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EURYLOPHELLA	N/A	funeralis	CCS	A	1	2	CCS			
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	2	4	CCS			
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	2	4	CCS			
03.07.00.01.006.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	EBIA/PARA	NEOLEPTOPHLEBIA	N/A	sp	CCS	A	1	2	CCS			
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	8	16	CCS	A	4	8.72727273
04.06.00.00.000.00.01	TRICHOPTERA	HYDROPTILIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	1	2	CCS			
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	28	56	CCS	A	9	19.6363636
04.11.00.00.001.00.00	TRICHOPTERA	ODONTOCERIDAE	N/A	N/A	PSILOTRETA	N/A	sp	CCS	A	2	4	CCS			
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	19	38	CCS	A	11	24
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	1	2	CCS	A	1	2.18181818
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	2	4	CCS	A	5	10.9090909
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS	A	2	4	CCS	A	5	10.9090909
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A	N/A	NEOPHYLAX	N/A	sp	CCS				CCS	A	4	8.72727273
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	10	20	CCS	A	1	2.18181818
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	58	116	CCS	A	57	124.363636
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	93	186	CCS	A	147	320.727273
05.05.00.00.002.00.00	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	TALLAPERLA	N/A	sp	CCS				CCS	A	2	4.36363636
05.07.00.00.007.00.02	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	iroquois	CCS	A	8	16	CCS	A	12	26.1818182
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS				CCS	A	4	8.72727273
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A	N/A	LANTHUS	N/A	sp	CCS	A	1	2	CCS	A	1	2.18181818
08.00.00.00.000.00.00	LEPIDOPTERA	N/A	N/A	N/A	N/A	N/A		CCS	A	1	2	CCS			
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	6	12	CCS	A	6	13.0909091
18.05.00.00.000.00.00	OLIGOCHAETA	ENCHYTRAEIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	1	2	CCS			
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A	N/A	N/A	N/A	uid	CCS				CCS	A	2	4.36363636
TOTALS by Rep:										308	**616**			300	**654.545455**

GRAND TOTAL: 1270.545455 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 2019 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:	9/26/2019	
# 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
02.06.00.00.001.00.00	DIPTERA	DIXIDAE	N/A		CG	N	2	1	4	0	2	0	1	0	-	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI		CG	Y	3	4	6	0	8	0	1	0	-	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI		CG	Y	3	6	6	13.091	12	26.182	1	0	1	0
02.05.05.00.007.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	6	0	4.3636	0	13.091	-	0	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	2	8	0	8	0	1	0	-	0
02.05.05.00.065.00.02	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	3	5	6	6.5455	10	10.909	1	0	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	3	5	30	6.5455	50	10.909	1	0	1	0
02.05.05.00.096.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	6	4	4.3636	12	13.091	1	0	1	0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	4	20	8.7273	40	17.455	1	0	1	0
02.05.09.04.000.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI		PRD	Y	3	6	12	13.091	24	26.182	1	0	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	3	24	34.909	36	52.364	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	2	16	13.091	16	13.091	1	0	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A		SRD	N	3	6	6	6.5455	12	13.091	1	0	1	0
03.01.00.00.001.00.03	EPHEMEROPTERA	BAETIDAE	N/A		CG	N	3	5	18	0	30	0	1	1	-	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A		CG	N	3	6	138	39.273	276	78.545	1	1	1	1
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A		SCR	N	2	5	4	0	10	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	2	0	0	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	-	0
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		SCR	N	1	4	4	0	16	0	1	1	-	0
03.07.00.01.006.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A		CG	N	2	1	4	0	2	0	1	1	-	0
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE		CF	N	0	0	0	0	0	0	1	1	1	1
04.06.00.00.000.00.01	TRICHOPTERA	HYDROPTILIDAE	N/A		-	N	-	-	-	-	-	-	1	1	-	0
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A		SRD	N	1	1	56	19.636	56	19.636	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	6	6.5455	12	13.091	1	1	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	1	2	4	10.909	8	21.818	1	1	1	1
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	A separa	PRD	N	0	1	0	0	4	10.909	1	1	1	1
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A		SCR	N	2	3	0	17.455	0	26.182	-	0	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A		SCR	N	1	3	20	2.1818	60	6.5455	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
05.05.00.00.002.00.00	PLECOPTERA	PELTOPERLIDAE	N/A		SRD	N	1	0	0	4.3636	0	0	-	0	1	1
05.07.00.00.007.00.02	PLECOPTERA	PERLODIDAE	N/A		PRD	N	1	2	16	26.182	32	52.364	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A		SRD	N	1	0	0	8.7273	0	0	-	0	1	1
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A		PRD	N	2	5	4	4.3636	10	10.909	1	0	1	0
08.00.00.00.000.00.00	LEPIDOPTERA	N/A	N/A		-	N	-	-	-	-	-	-	1	0	-	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A		CG	N	-	-	-	-	-	-	1	0	1	0
18.05.00.00.000.00.00	OLIGOCHAETA	ENCHYTRAEIDAE	N/A		CG	N	-	-	-	-	-	-	1	0	-	0
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A		CG	N	-	-	-	-	-	-	-	0	1	0
TOTALS by Rep:								**Total BI Score**	418	250.91	746	436.36	**Total**	**Total**	**Total**	**Total**
GRAND TOTAL:	1270.545455	organisms						**Total # Organisms**	616	654.55	616	654.55	**Richness**	**EPT-R**	**Richness**	**EPT-R**
								# of Organisms w/o BI	18	17.455	18	17.455	36		28	
								Total # Organisms with BI	598	637.09	598	637.09		20		15
								Biotic Index	0.70	0.39	1.25	0.68				

*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 o

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

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB T3 0.8
Stream South Mountain Branch
VT Site ID 427807030008
Sample Date 09/26/2019

2019 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
02.06.00.00.001.00.00	0	2	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	2	0	0	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	2	0	0	0	0	0	0	0	0	
02.05.05.00.007.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	4	0	0	0	0	0	0	0	0	
02.05.05.00.065.00.02	0	2	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	10	0	0	0	0	0	0	0	0	
02.05.05.00.096.00.00	0	2	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	10	0	0	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	4	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	12	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	8	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	2	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.03	0	0	6	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	46	0	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	2	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	8	0	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	2	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	4	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	4	0	0	0	0	0	0	0	
03.07.00.01.006.00.00	0	0	2	0	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	16	0	0	0	0	0	0	
04.06.00.00.000.00.01	0	0	0	2	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	56	0	0	0	0	0	0	
04.11.00.00.001.00.00	0	0	0	4	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	38	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	2	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	4	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	4	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	20	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	116	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	186	0	0	0	0	0	
05.05.00.00.002.00.00	0	0	0	0	0	0	0	0	0	0	
05.07.00.00.007.00.02	0	0	0	0	16	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	2	0	
08.00.00.00.000.00.00	0	0	0	0	0	0	0	0	0	2	
18.04.00.00.000.00.00	0	0	0	0	0	12	0	0	0	0	
18.05.00.00.000.00.00	0	0	0	0	0	2	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	0	0	0	0	0	
Total	**0**	**60**	**74**	**146**	**318**	**14**	**0**	**0**	**2**	**2**	**616**
Percent	**0%**	**10%**	**12%**	**24%**	**52%**	**2%**	**0%**	**0%**	**0%**	**0%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB T3 0.8
Stream South Mountain Branch
VT Site ID 4.278E+11
Sample Date 09/26/2019

2019 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
02.06.00.00.001.00.00	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	4.3636364	0	0	0	0	0	0	0	0	
02.05.05.00.007.00.00	0	2.1818182	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.065.00.02	0	2.1818182	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	2.1818182	0	0	0	0	0	0	0	0	
02.05.05.00.096.00.00	0	2.1818182	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	4.3636364	0	0	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	4.3636364	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	17.454545	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	6.5454545	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	2.1818182	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.03	0	0	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	13.09090909	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	2.181818182	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	0	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	0	0	0	0	0	
03.07.00.01.006.00.00	0	0	0	0	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	8.727272727	0	0	0	0	0	0	
04.06.00.00.000.00.01	0	0	0	0	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	19.63636364	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	24	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	2.181818182	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	10.90909091	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	10.90909091	0	0	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	8.727272727	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	2.181818182	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	124.3636364	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	320.7272727	0	0	0	0	0	
05.05.00.00.002.00.00	0	0	0	0	4.363636364	0	0	0	0	0	
05.07.00.00.007.00.02	0	0	0	0	26.18181818	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	8.727272727	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	2.1818182	0	
08.00.00.00.000.00.00	0	0	0	0	0	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	13.09090909	0	0	0	0	
18.05.00.00.000.00.00	0	0	0	0	0	0	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	4.363636364	0	0	0	0	
Total	**0**	**48**	**15.27272727**	**87.27272727**	**484.3636364**	**17.45454545**	**0**	**0**	**2.1818182**	**0**	**654.55**
Percent	**0%**	**7%**	**2%**	**13%**	**74%**	**3%**	**0%**	**0%**	**0%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB T3 0.8
Stream South Mountain Branch
Location 427807030008
Sample Date 09/26/2019

2019 Expanded Key ID#	KN-1: Numbers of Organisms								KN-2: Numbers of Organisms							
	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total
02.06.00.00.001.00.00	2	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.01.00.085.00.05	2	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.03.02.121.00.00	2	0	0	0	0	0	0		4.363636	0	0	0	0	0	0	
02.05.05.00.007.00.00	0	0	0	0	0	0	0		2.181818	0	0	0	0	0	0	
02.05.05.00.029.00.11	4	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.065.00.02	2	0	0	0	0	0	0		2.181818	0	0	0	0	0	0	
02.05.05.00.075.00.00	10	0	0	0	0	0	0		2.181818	0	0	0	0	0	0	
02.05.05.00.096.00.00	2	0	0	0	0	0	0		2.181818	0	0	0	0	0	0	
02.05.05.00.114.01.04	10	0	0	0	0	0	0		4.363636	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	0	4	0	0	0	0		0	0	4.363636	0	0	0	0	
02.19.00.00.003.00.00	0	0	12	0	0	0	0		0	0	17.45455	0	0	0	0	
02.19.00.00.006.00.00	0	0	8	0	0	0	0		0	0	6.545455	0	0	0	0	
02.19.00.00.016.00.00	0	0	0	2	0	0	0		0	0	0	2.181818	0	0	0	
03.01.00.00.001.00.03	6	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.01.00.00.001.00.09	46	0	0	0	0	0	0		13.09091	0	0	0	0	0	0	
03.01.00.02.007.00.00	0	0	0	0	0	2	0		0	0	0	0	0	0	0	
03.04.00.00.004.00.01	8	0	0	0	0	0	0		2.181818	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	0	2	0	0	0		0	0	0	0	0	0	0	
03.06.00.00.003.00.00	4	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	4	0		0	0	0	0	0	0	0	
03.07.00.01.006.00.00	2	0	0	0	0	0	0		0	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	16	0	0	0	0	0		0	8.727273	0	0	0	0	0	
04.06.00.00.000.00.01	0	0	0	0	0	0	2		0	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	56	0	0	0		0	0	0	19.63636	0	0	0	
04.11.00.00.001.00.00	0	0	0	0	0	4	0		0	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	38	0	0	0	0	0		0	24	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	2	0	0	0	0		0	0	2.181818	0	0	0	0	
04.16.00.00.001.00.01	0	0	4	0	0	0	0		0	0	10.90909	0	0	0	0	
04.16.00.00.001.02.00	0	0	4	0	0	0	0		0	0	10.90909	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	0	0	0	0		0	0	0	0	0	8.727273	0	
04.20.00.00.001.00.00	0	0	0	0	0	20	0		0	0	0	0	0	2.181818	0	
05.02.00.00.006.00.00	0	0	116	0	0	0	0		0	0	124.3636	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	186	0	0	0		0	0	0	320.7273	0	0	0	
05.05.00.00.002.00.00	0	0	0	0	0	0	0		0	0	0	4.363636	0	0	0	
05.07.00.00.007.00.02	0	0	16	0	0	0	0		0	0	26.18182	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	0	0	0		0	0	0	8.727273	0	0	0	
06.06.00.00.007.00.00	0	0	2	0	0	0	0		0	0	2.181818	0	0	0	0	
08.00.00.00.000.00.00	0	0	0	0	0	0	2		0	0	0	0	0	0	0	
18.04.00.00.000.00.00	12	0	0	0	0	0	0		13.09091	0	0	0	0	0	0	
18.05.00.00.000.00.00	2	0	0	0	0	0	0		0	0	0	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	0	0		4.363636	0	0	0	0	0	0	
Total	**114**	**54**	**168**	**246**	**0**	**30**	**4**	**616**	**50.1818**	**32.7273**	**205.091**	**355.636**	**0**	**10.9091**	**0**	**654.545**
Percent	**19%**	**9%**	**27%**	**40%**	**0%**	**5%**	**1%**	**100%**	**8%**	**5%**	**31%**	**54%**	**0%**	**2%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB T3 0.8
Stream South Mountain Branch
Location 427807030008
Sample Date 09/26/2019

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%	18.5%	59.7%	7.7%	24.7%
Col. Filt.	18%	30%	36%	8.8%	48.7%	5.0%	27.8%
Predator	19%	13%	7%	27.3%	69.7%	31.3%	60.6%
Shred-Det.	15%	4%	2%	39.9%	37.6%	54.3%	27.6%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.00%	0.0%
Scraper	12%	13%	22%	4.87%	40.58%	1.67%	13.9%
				PPCS-FG =	**42.7%**	**PPCS-FG =**	**25.8%**

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

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station SMB T3 0.8
Stream South Mountain Branch
VT Site ID 427807030008
Sample Date 09/26/2019
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	0.00%	8.00
Diptera	19%	18%	13%	9.7%	9.26	7.3%	11.667
Ephemeroptera	23%	34%	32%	12.0%	11.0	2.33%	20.7
Plecoptera	21%	8%	8%	51.6%	30.6	74.0%	53.0
Trichoptera	28%	33%	33%	23.7%	4.3	13.3%	14.7
Oligochaeta	0.5%	0.5%	1.0%	2.27%	1.77	2.67%	2.17
Other	0.5%	0.5%	1.0%	0.65%	0.149	0.33%	0.167
				Sum diff	65.1		110.3
				Sum diff * 0.5	32.5		55.2
				100-(sum diff * 0.5)	67.5		44.8
				% model affinity	**67.5%**		**44.8%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station SMB T3 0.8
Stream South Mountain Branch
Location 427807030008
Sample Date 09/26/2019
Class Small, High Gradient, B2
Sampler CCS

	KN-1	KN-2
#EPT organisms	538	586.9091
#C organisms	36	21.81818
EPT/EPT+C	0.94	0.96

Biometric Summary

Project Jay Peak Resort
Station SMB T3 0.8
Stream South Mountain Branch
Location 427807030008
Sample Date 09/26/2019
Class Small, High Gradient, B2
Sampler CCS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	616	655	635
Species Richness	36.0	28.0	32.0
EPT Richness	20.0	15.0	17.5
Old Bio Index (0 to 5)	0.70	0.39	0.55
New Bio Index (0 to 10)	1.25	0.68	0.97
% dominant taxa	30.2%	49.0%	39.6%
EPT/EPT+C	0.937	0.964	0.951
EPT/Richness	0.556	0.536	0.547
% Model Affinity (orders)	67.5%	44.8%	56.1%
PPCS - functional groups	42.7%	25.8%	34.2%
Major Groups:			
Coleoptera (%)	0.00%	0.00%	0.00%
Diptera (%)	9.7%	7.3%	8.5%
Ephemeroptera (%)	12.0%	2.33%	7.17%
Trichoptera (%)	23.7%	13.3%	18.5%
Plecoptera (%)	51.6%	74.0%	62.8%
Oligochaeta (%)	2.27%	2.67%	2.47%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.32%	0.33%	0.33%
Other (%)	0.32%	0.00%	0.16%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	18.5%	7.7%	13.1%
Collector Filterer (%)	8.8%	5.00%	6.9%
Predator (%)	27.3%	31.3%	29.3%
Shredder - Detritus (%)	39.9%	54.3%	47.1%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	4.87%	1.67%	3.27%
No FG Designation (%)	0.65%	0.00%	0.32%
Total (%)	100%	100%	100%

Project	Jay Peak Resort		
Station	SMB T3 0.8	**Latitude**	44.928484
Stream	South Mountain Branch	**Longitude**	-72.507207
Location	4.27807E+11	**Class**	Small, High Gradient, B2
Sample Date	09/26/2019	**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	635.3	≥300	Pass	≥400	Pass	≥500	Pass
Richness	32.0	≥27	Pass	≥31	Pass	≥35	Fail
EPT	17.5	≥16	Pass	≥19	Fail	≥21	Fail
% PMA-O	56.1%	≥45%	Pass	≥55%	Pass	≥65%	Fail
BI (New 1-10)	0.97	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	2.47%	≤12%	Pass	≤5	Pass	≤2	I
EPT/EPT+C	0.951	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	34.2%	≥ 40%	Fail	≥ 45%	Fail	≥ 50%	Fail
Outcome:		**Biocriteria are not met**					
The following metrics do not meet Class B2 thresholds:		% PPCS-FG (Fail)					

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
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 - South Mt. Br T3 River Mile 0.8 USFS____ PROB____
Site ID SMB-T3-0.8
Date 9·26·19 Time 0735 Crew CCS
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): Many small events - 2 wk, showers yesterday
Surrounding Land Use: Forest, Ski Area

SAMPLING INFORMATION
Sampler: CCS 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 _____% and length _____in
Blue Green __% Moss 2 % Green _____% Other _____%
most moss 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 5
Silt Rating: 3 (0=none, 5= chocolate) CPOM Rating (leaf packs): 2 (0= none,5=high)
Lg Woody Debris (>4"dia) #: 1 /100m (reach)
Fresh leave packs

Habitat Comments

GENERAL WATER TYPE Riffle, Winder, or Other Fall & Pool ✓ Channelized Y / N Upstream Dam: Y / N ____mi
B.F.Width: 16' (m) Wetted Width: 8' (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
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 30 m, R 30 m
Overstory: Softwood 10 % Hardwood 90 % Understory: Shrub (brush) 20 Grass - % 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 54 °C / F Temp Water 11 °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:

Leaves mainly on trees.

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

River (Site) SMB-T30B Personnel CCS Date 9.26.19

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"		I	1	
very fine gravel	2-4	01.08-0.15"		~~IIII~~ ~~IIII~~	10	
small gravel	4-8	0.15-0.3"				
medium gravel	8-16	0.3- 0.6"				
coarse gravel	16-32	0.6-1.25"		~~IIII~~ ~~IIII~~ III	13	
very coarse gravel	32-64	1.25-2.5"				
small and medium cobble	64-128	2.5-5"		~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ I	21	
large cobble	128-256	5-10"				
small boulder	265-512	10-20"				
medium boulder	512-1024	20-40"		~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ III	43	
large boulder	1024-2048	40-80"				
very large boulder	>2048	>80"				
bedrock				~~IIII~~ ~~IIII~~ II	12	
				TOTALS	100	

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

	Micro ~~Macro~~ Algae Cover Index			
Category	0	1(<5%)	2(5-25%)	3(>25%)
Tally	III	~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ II		

	~~Micro~~ Algae Cover Index						
Category	0	1 (slimy)	2 (draw line)	3(.5-1mm)	4(1-5mm)	5(5-20mm)	6(>20mm)
Tally	No macro algae						

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

Substrate Comments:

Jay Peak Resort
Kick Net Data - South Mountain Branch - SMB-T3-0.3
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**	
2019 VHB	225	24	15	65	1.22	11.7	0.95	48	Does Not Meet 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 2019 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**South Mountain Branch**
Station:	**SMB T3 0.3**

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:		
or VT Site ID:		
Date collected:	9/25/2019	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 2020	Jan. 2020
#sq picked:	24	24
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan. 2020	Jan. 2020

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				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			
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A	ZIA/PALPON	BEZZIA	N/A	sp	CCS				CCS	A	1	1
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS				CCS	A	3	3
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	PSEC/TANY	MICROPSECTRA	N/A	sp	CCS				CCS	A	1	1
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	1	1	CCS	A	3	3
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS				CCS	A	4	4
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca	CCS	A	3	3	CCS	A	3	3
02.05.09.04.000.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	MANNIMYIA	N/A	N/A	group	CCS	A	1	1	CCS			
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	3	3	CCS	A	5	5
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	5	5	CCS	A	8	8
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	13	13	CCS	A	22	22
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	1	1	CCS			
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EURYLOPHELLA	N/A	funeralis	CCS	A	1	1	CCS			
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	1	1	CCS	A	5	5
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	2	2	CCS			
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	alhedra	CCS	A	4	4	CCS	A	6	6
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	sparna	CCS	A	4	4	CCS			
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	2	2	CCS			
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	10	10	CCS	A	9	9
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	33	33	CCS	A	25	25
04.16.00.00.001.00.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	sp	CCS				CCS	A	2	2
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS				CCS	A	3	3
04.16.00.00.001.00.04	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	torva	CCS	A	1	1	CCS			
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS				CCS	A	4	4
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A	N/A	NEOPHYLAX	N/A	sp	CCS	A	1	1	CCS			
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS				CCS	A	3	3
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	38	38	CCS	A	24	24
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	28	28	CCS	A	66	66
05.04.00.00.000.00.01	PLECOPTERA	NEMOURIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	1	1	CCS			
05.05.00.00.002.00.00	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	TALLAPERLA	N/A	sp	CCS	A	4	4	CCS			
05.07.00.00.007.00.02	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	iroquois	CCS	A	10	10	CCS	A	9	9
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	9	9	CCS	A	9	9
08.00.00.00.000.00.00	LEPIDOPTERA	N/A	N/A	N/A	N/A	N/A		CCS	A	1	1	CCS			
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	15	15	CCS	A	40	40
TOTALS by Rep:										193	**193**			256	**256**
GRAND TOTAL:	449 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 2019 version

Project Name:	Jay Peak Resort
VT DEC Lab ID:	
Stream Name:	**South Mountain Branch**
Station:	**SMB T3 0.3**

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:		
or VT Site ID:		
Date collected:	9/25/2019	
# 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	0	2	0	1	0	-	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	9	0	12	-	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	2	6	2	6	1	0	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	3	5	0	12	0	20	-	0	1	0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	4	6	6	12	12	1	0	1	0
02.05.09.04.000.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI		PRD	Y	3	6	3	0	6	0	1	0	-	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	3	6	10	9	15	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	2	10	16	10	16	1	0	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A		CG	N	3	6	39	66	78	132	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	-	0
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A		SRD	N	1	0	1	0	0	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	2	0	8	0	1	1	-	0
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	3	8	12	12	18	1	1	1	1
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	4	8	0	16	0	1	1	-	0
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	10	9	10	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
04.16.00.00.001.00.00	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	0	1	0	0	0	2	-	0	-	0
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	1	2	0	3	0	6	-	0	1	1
04.16.00.00.001.00.04	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	0	0	0	0	0	0	1	1	-	0
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	0	1	0	0	0	4	-	0	1	1
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A		SCR	N	2	3	2	0	3	0	1	1	-	0
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A		SCR	N	1	3	0	3	0	9	-	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
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	A separa	SRD	N	0	0	0	0	0	0	1	1	1	1
05.04.00.00.000.00.01	PLECOPTERA	NEMOURIDAE	N/A		SRD	N	1	2	1	0	2	0	1	1	-	0
05.05.00.00.002.00.00	PLECOPTERA	PELTOPERLIDAE	N/A		SRD	N	1	0	4	0	0	0	1	1	-	0
05.07.00.00.007.00.02	PLECOPTERA	PERLODIDAE	N/A		PRD	N	1	2	10	9	20	18	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A		SRD	N	1	0	9	9	0	0	1	1	1	1
08.00.00.00.000.00.00	LEPIDOPTERA	N/A	N/A		-	N	-	-	-	-	-	-	1	0	-	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep:								**Total BI Score**	124	178	190	294	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
GRAND TOTAL:	449 organisms							**Total # Organisms**	193	256	193	256				
								# of Organisms w/o BI	16	40	16	40	26		22	
								Total # Organisms with BI	177	216	177	216		18		12
								Biotic Index	0.70	0.82	1.07	1.36				

*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 or

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

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB T3 0.3
Stream South Mountain Branch
VT Site ID 0
Sample Date 09/25/2019

2019 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	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	1	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	
02.05.05.00.114.01.04	0	3	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	3	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	5	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	13	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	1	0	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	1	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	1	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	2	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	4	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	2	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	10	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	33	0	0	0	0	0	0	
04.16.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	0	0	0	0	0	0	0	
04.16.00.00.001.00.04	0	0	0	1	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	1	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	38	0	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	0	28	0	0	0	0	0	
05.04.00.00.000.00.01	0	0	0	0	1	0	0	0	0	0	
05.05.00.00.002.00.00	0	0	0	0	4	0	0	0	0	0	
05.07.00.00.007.00.02	0	0	0	0	10	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	9	0	0	0	0	0	
08.00.00.00.000.00.00	0	0	0	0	0	0	0	0	0	1	
18.04.00.00.000.00.00	0	0	0	0	0	15	0	0	0	0	
Total	**0**	**14**	**18**	**55**	**90**	**15**	**0**	**0**	**0**	**1**	**193**
Percent	**0%**	**7%**	**9%**	**28%**	**47%**	**8%**	**0%**	**0%**	**0%**	**1%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB T3 0.3
Stream South Mountain Branch
VT Site ID 0
Sample Date 09/25/2019

2019 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	0	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	3	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	3	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	4	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	5	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	8	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	22	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	0	0	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	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	0	0	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	0	0	6	0	0	0	0	0	0	
04.05.00.00.004.03.04	0	0	0	0	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	9	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	25	0	0	0	0	0	0	
04.16.00.00.001.00.00	0	0	0	2	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	3	0	0	0	0	0	0	
04.16.00.00.001.00.04	0	0	0	0	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	4	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	3	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	66	0	0	0	0	0	
05.04.00.00.000.00.01	0	0	0	0	0	0	0	0	0	0	
05.05.00.00.002.00.00	0	0	0	0	0	0	0	0	0	0	
05.07.00.00.007.00.02	0	0	0	0	9	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	9	0	0	0	0	0	
08.00.00.00.000.00.00	0	0	0	0	0	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	40	0	0	0	0	
Total	**1**	**28**	**27**	**52**	**108**	**40**	**0**	**0**	**0**	**0**	**256**
Percent	**0%**	**11%**	**11%**	**20%**	**42%**	**16%**	**0%**	**0%**	**0%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB T3 0.3
Stream South Mountain Branch
Location 0
Sample Date 09/25/2019

2019 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	0	0	0	0		0	0	0	0	0	0	0	
02.03.00.01.003.00.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
02.05.01.00.085.00.05	0	0	0	0	0	0	0		3	0	0	0	0	0	0	
02.05.03.02.121.00.00	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
02.05.05.00.029.00.11	1	0	0	0	0	0	0		3	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	0	0	0	0	0	0		4	0	0	0	0	0	0	
02.05.05.00.114.01.04	3	0	0	0	0	0	0		3	0	0	0	0	0	0	
02.05.09.04.000.00.00	0	0	1	0	0	0	0		0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	3	0	0	0	0		0	0	5	0	0	0	0	
02.19.00.00.006.00.00	0	0	5	0	0	0	0		0	0	8	0	0	0	0	
03.01.00.00.001.00.09	13	0	0	0	0	0	0		22	0	0	0	0	0	0	
03.04.00.00.004.00.01	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.04.00.00.005.00.02	0	0	0	1	0	0	0		0	0	0	0	0	0	0	
03.06.00.00.003.00.00	1	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	2	0		0	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	4	0	0	0	0	0		0	6	0	0	0	0	0	
04.05.00.00.004.03.04	0	4	0	0	0	0	0		0	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	2	0	0	0	0	0		0	0	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	10	0	0	0		0	0	0	9	0	0	0	
04.12.00.00.002.00.00	0	33	0	0	0	0	0		0	25	0	0	0	0	0	
04.16.00.00.001.00.00	0	0	0	0	0	0	0		0	0	2	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	0	0	0	0		0	0	3	0	0	0	0	
04.16.00.00.001.00.04	0	0	1	0	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	4	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	0	0	1	0		0	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	0	0		0	0	0	0	0	3	0	
05.02.00.00.006.00.00	0	0	38	0	0	0	0		0	0	24	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	28	0	0	0		0	0	0	66	0	0	0	
05.04.00.00.000.00.01	0	0	0	1	0	0	0		0	0	0	0	0	0	0	
05.05.00.00.002.00.00	0	0	0	4	0	0	0		0	0	0	0	0	0	0	
05.07.00.00.007.00.02	0	0	10	0	0	0	0		0	0	9	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	9	0	0	0		0	0	0	9	0	0	0	
08.00.00.00.000.00.00	0	0	0	0	0	0	1		0	0	0	0	0	0	0	
18.04.00.00.000.00.00	15	0	0	0	0	0	0		40	0	0	0	0	0	0	
Total	**34**	**43**	**59**	**53**	**0**	**3**	**1**	**193**	**81**	**31**	**56**	**84**	**0**	**4**	**0**	**256**
Percent	**18%**	**22%**	**31%**	**27%**	**0%**	**2%**	**1%**	**100%**	**32%**	**12%**	**22%**	**33%**	**0%**	**2%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB T3 0.3
Stream South Mountain Branch
Location 0
Sample Date 09/25/2019

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%	17.6%	56.8%	31.6%	98.0%
Col. Filt.	18%	30%	36%	22.3%	80.8%	12.1%	67.3%
Predator	19%	13%	7%	30.6%	62.2%	21.9%	86.9%
Shred-Det.	15%	4%	2%	27.5%	54.6%	32.8%	45.7%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.00%	0.0%
Scraper	12%	13%	22%	1.55%	12.95%	1.56%	13.0%
				PPCS-FG =	**44.6%**	**PPCS-FG =**	**51.8%**

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

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station SMB T3 0.3
Stream South Mountain Branch
VT Site ID 0
Sample Date 09/25/2019
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	0.39%	7.61
Diptera	19%	18%	13%	7.3%	11.75	10.9%	8.063
Ephemeroptera	23%	34%	32%	9.3%	13.7	10.55%	12.5
Plecoptera	21%	8%	8%	46.6%	25.6	42.2%	21.2
Trichoptera	28%	33%	33%	28.5%	0.5	20.3%	7.7
Oligochaeta	0.5%	0.5%	1.0%	7.77%	7.27	15.63%	15.13
Other	0.5%	0.5%	1.0%	0.52%	0.018	0.00%	0.500
				Sum diff	66.8		72.6
				Sum diff * 0.5	33.4		36.3
				100-(sum diff * 0.5)	66.6		63.7
				% model affinity	**66.6%**		**63.7%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station SMB T3 0.3
Stream South Mountain Branch
Location 0
Sample Date 09/25/2019
Class Small, High Gradient, B2
Sampler CCS

	KN-1	KN-2
#EPT organisms	163	187
#C organisms	5	14
EPT/EPT+C	0.97	0.93

Biometric Summary

Project Jay Peak Resort
Station SMB T3 0.3
Stream South Mountain Branch
Location 0
Sample Date 09/25/2019
Class Small, High Gradient, B2
Sampler CCS

Replicate #	1	2	Average
Sampling Method	**KN**	**KN**	**KN**
Biometrics:			
Density/Unit	193	256	225
Species Richness	26.0	22.0	24.0
EPT Richness	18.0	12.0	15.0
Old Bio Index (0 to 5)	0.70	0.82	0.76
New Bio Index (0 to 10)	1.07	1.36	1.22
% dominant taxa	19.7%	25.8%	22.7%
EPT/EPT+C	0.970	0.930	0.950
EPT/Richness	0.692	0.545	0.625
% Model Affinity (orders)	66.6%	63.7%	65.1%
PPCS - functional groups	44.6%	51.8%	48.2%
Major Groups:			
Coleoptera (%)	0.00%	0.39%	0.20%
Diptera (%)	7.3%	10.9%	9.1%
Ephemeroptera (%)	9.3%	10.55%	9.94%
Trichoptera (%)	28.5%	20.3%	24.4%
Plecoptera (%)	46.6%	42.2%	44.4%
Oligochaeta (%)	7.77%	15.63%	11.70%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.00%	0.00%	0.00%
Other (%)	0.52%	0.00%	0.26%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	17.6%	31.6%	24.6%
Collector Filterer (%)	22.3%	12.11%	17.2%
Predator (%)	30.6%	21.9%	26.2%
Shredder - Detritus (%)	27.5%	32.8%	30.1%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	1.55%	1.56%	1.56%
No FG Designation (%)	0.52%	0.00%	0.26%
Total (%)	100%	100%	100%

Project	Jay Peak Resort		
Station	SMB T3 0.3	**Latitude**	0
Stream	South Mountain Branch	**Longitude**	0
Location	0	**Class**	Small, High Gradient, B2
Sample Date	09/25/2019	**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	224.5	≥300	Fail	≥400	Fail	≥500	Fail
Richness	24.0	≥27	Fail	≥31	Fail	≥35	Fail
EPT	15.0	≥16	I	≥19	Fail	≥21	Fail
% PMA-O	65.1%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	1.22	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	11.70%	≤12%	Pass	≤5	Fail	≤2	Fail
EPT/EPT+C	0.950	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	48.2%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	I
Outcome:		**Biocriteria are not met**					
The following metrics do not meet Class B2 thresholds:		Density (Fail), Richness (Fail), EPT (I)					

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
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 SOUTH MTN. TRIBUTARY 3 River Mile 0.3 USFS____ PROB____
Site ID SMB-T3-0.3
Date 09/25/19 Time 14:08 Crew TGB/CS
Site Description_____

Town: JAY Stream Order:_____ Drainage Area: _____Km² Elevation:_____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS – set to NAD83:) _____
Weather: 53°F Cloudy Flow/Weather Previous (2 weeks/2days): Moderate events - 2 wks Light showers - 48 hr
Surrounding Land Use: Resort, 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 TR % and length _____in
Blue Green __% Moss 2 % Green _____% Other _____%

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

HABITAT OBSERVATIONS
Embeddedness (5) 0-S% Excel (4) 5-25% V Good (3) 25-S0% Good (2) S0-7S% Fair (1) > 7S%Poor Estimate 25
Silt Rating: 4 (0=none, S= chocolate) CPOM Rating (leaf packs): 1 (0= none,5=high)
Lg Woody Debris (>4"dia) #: 3 /100m (reach)

Habitat Comments

GENERAL WATER TYPE Riffle, Winder, or Other Fast + Pool Channelized: Y / N Upstream Dam: Y / N ____mi
B.F.Width: 35 ft (m) Wetted Width: 15 ft (m) Riffle Depth: 2-4 (in) Pool Depth: 3 ft. (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) 40 Grass __% Herbaceous 10 %
Canopy %: 100 90 80 70 60 S0 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 55 °C °F Temp Water 12 °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:

SAND EMBEDDEDNESS MADE IT DIFFICULT TO KICK

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

River (Site) SMB-T3-0.3 Personnel JGB Date 09/25/19

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 卌 卌 ||	17	
very fine gravel	2-4	01.08-0.15"				
small gravel	4-8	0.15-0.3"				
medium gravel	8-16	0.3- 0.6"		卌 卌 ||||	14	
coarse gravel	16-32	0.6-1.25"				
very coarse gravel	32-64	1.25-2.5"		卌 卌 |	11	
small and medium cobble	64-128	2.5-5"		卌 卌 卌 卌 ||	22	
large cobble	128-256	5-10"				
small boulder	265-512	10-20"				
medium boulder	512-1024	20-40"				
large boulder	1024-2048	40-80"				
very large boulder	>2048	>80"		卌 卌 卌 卌 卌 卌 卌	35	
bedrock				|	1	
				TOTALS	100	

	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 ||||

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

	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 |					

	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-T3-0.1
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
2019 VHB	219	30	21	65	1.35	8	0.97	46	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 2019 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:	9/25/2019	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 2020	Jan. 2020
#sq picked:	24	24
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan. 2020	Jan. 2020

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			0	CCS	A	2	2
01.03.00.00.007.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	PROMORESIA	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	A	1	1	CCS			0
02.05.05.00.007.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	CHAETOCLADIUS	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	3	3	CCS			0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	1	1	CCS			0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca	CCS	A	2	2	CCS	A	3	3
02.05.09.04.000.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	MANNIMYIA	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	4	4	CCS	A	5	5
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	1	1	CCS	A	5	5
02.19.00.00.019.00.00	DIPTERA	TIPULIDAE	N/A	N/A	MOLOPHILUS	N/A	sp	CCS			0	CCS	A	1	1
03.01.00.00.001.00.03	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	flavistriga	CCS	A	2	2	CCS	A	1	1
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	14	14	CCS	A	20	20
03.01.00.00.010.00.01	EPHEMEROPTERA	BAETIDAE	N/A	N/A	DIPHETOR	N/A	hageni	CCS	A	1	1	CCS	A	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	3	3	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	CCS	A	3	3
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	2	2	CCS			0
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS			0	CCS	A	1	1
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	alhedra	CCS	A	7	7	CCS	A	6	6
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	sparna	CCS	A	1	1	CCS	A	2	2
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	1	1	CCS	A	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	19	19	CCS	A	27	27
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	6	6	CCS	A	31	31
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS			0	CCS	A	1	1
04.16.00.00.001.00.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	sp	CCS	A	2	2	CCS	A	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	3	3	CCS	A	5	5
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS			0	CCS	A	1	1
04.16.00.00.001.03.09	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	minor/manistee	minor	CCS			0	CCS	A	2	2
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	4	4
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	35	35	CCS	A	28	28
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
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	44	44	CCS	A	27	27
05.05.00.00.002.00.00	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	TALLAPERLA	N/A	sp	CCS	A	1	1	CCS	A	4	4
05.07.00.00.007.00.02	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	iroquois	CCS	A	17	17	CCS	A	11	11
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	17	17	CCS	A	8	8
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A	N/A	LANTHUS	N/A	sp	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	19	19	CCS	A	16	16
TOTALS by Rep:										211	**211**			227	**227**

GRAND TOTAL: 438 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 2019 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:	9/25/2019	
# 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	Larvae	SCR	N	2	3	0	4	0	6	-	0	1	0
01.03.00.00.007.00.00	COLEOPTERA	ELMIDAE	N/A		SCR	N	2	2	0	2	0	2	-	0	1	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI		CG	Y	3	4	3	0	4	0	1	0	-	0
02.05.05.00.007.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	6	2	0	6	0	1	0	-	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	2	6	0	6	0	1	0	-	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	3	5	3	0	5	0	1	0	-	0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	4	4	6	8	12	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	8	10	12	15	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	2	2	10	2	10	1	0	1	0
02.19.00.00.019.00.00	DIPTERA	TIPULIDAE	N/A		CG	N	3	4	0	3	0	4	-	0	1	0
03.01.00.00.001.00.03	EPHEMEROPTERA	BAETIDAE	N/A		CG	N	3	5	6	3	10	5	1	1	1	1
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A		CG	N	3	6	42	60	84	120	1	1	1	1
03.01.00.00.010.00.01	EPHEMEROPTERA	BAETIDAE	N/A		CG	N	1	2	1	1	2	2	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	1	3	4	12	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	-	0
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A		SCR	N	1	0	0	1	0	0	-	0	1	1
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	3	14	12	21	18	1	1	1	1
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	4	2	4	4	8	1	1	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	19	27	19	27	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	3	0	6	-	0	1	1
04.16.00.00.001.00.00	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	0	1	0	0	2	1	-	0	-	0
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	1	2	3	5	6	10	1	1	1	1
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	0	1	0	0	0	1	-	0	1	1
04.16.00.00.001.03.09	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	0	0	0	0	0	0	-	0	1	1
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A	A separa	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	4	3	12	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
05.05.00.00.002.00.00	PLECOPTERA	PELTOPERLIDAE	N/A		SRD	N	1	0	1	4	0	0	1	1	1	1
05.07.00.00.007.00.02	PLECOPTERA	PERLODIDAE	N/A		PRD	N	1	2	17	11	34	22	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A		SRD	N	1	0	17	8	0	0	1	1	1	1
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A		PRD	N	2	5	0	2	0	5	-	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**		155	188	238	307	**Total**	**Total**	**Total**	**Total**
GRAND TOTAL:		438 organisms					**Total # Organisms**		211	227	211	227	**Richness**	**EPT-R**	**Richness**	**EPT-R**
							# of Organisms w/o BI		19	16	19	16	28		32	
							Total # Organisms with BI		192	211	192	211		19		23
							Biotic Index		0.81	0.89	1.24	1.45				

*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 o

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

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch
VT Site ID 427807030001
Sample Date 09/25/2019

2019 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	
01.03.00.00.007.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	1	0	0	0	0	0	0	0	0	
02.05.05.00.007.00.00	0	1	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	3	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	1	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	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	4	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	1	0	0	0	0	0	0	0	0	
02.19.00.00.019.00.00	0	0	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.03	0	0	2	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	14	0	0	0	0	0	0	0	
03.01.00.00.010.00.01	0	0	1	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	3	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	1	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	2	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	7	0	0	0	0	0	0	
04.05.00.00.004.03.04	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	19	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	6	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	0	0	0	0	0	0	0	
04.16.00.00.001.00.00	0	0	0	2	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	3	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	0	0	0	0	0	0	0	
04.16.00.00.001.03.09	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	
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	35	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	44	0	0	0	0	0	
05.05.00.00.002.00.00	0	0	0	0	1	0	0	0	0	0	
05.07.00.00.007.00.02	0	0	0	0	17	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	17	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	19	0	0	0	0	
Total	**0**	**14**	**23**	**40**	**115**	**19**	**0**	**0**	**0**	**0**	**211**
Percent	**0%**	**7%**	**11%**	**19%**	**55%**	**9%**	**0%**	**0%**	**0%**	**0%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch
VT Site ID 427807030001
Sample Date 09/25/2019

2019 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	2	0	0	0	0	0	0	0	0	0	
01.03.00.00.007.00.00	1	0	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.007.00.00	0	0	0	0	0	0	0	0	0	0	
02.05.05.00.029.00.11	0	0	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	
02.05.05.00.114.01.04	0	3	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	5	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	1	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.03	0	0	1	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	20	0	0	0	0	0	0	0	
03.01.00.00.010.00.01	0	0	1	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	3	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	0	0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	1	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	0	0	6	0	0	0	0	0	0	
04.05.00.00.004.03.04	0	0	0	2	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	27	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	31	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	1	0	0	0	0	0	0	
04.16.00.00.001.00.00	0	0	0	1	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	5	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	1	0	0	0	0	0	0	
04.16.00.00.001.03.09	0	0	0	2	0	0	0	0	0	0	
04.18.00.00.001.00.00	0	0	0	1	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	4	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	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	27	0	0	0	0	0	
05.05.00.00.002.00.00	0	0	0	0	4	0	0	0	0	0	
05.07.00.00.007.00.02	0	0	0	0	11	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	8	0	0	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0	0	1	0	
18.04.00.00.000.00.00	0	0	0	0	0	16	0	0	0	0	
Total	**3**	**15**	**30**	**83**	**79**	**16**	**0**	**0**	**1**	**0**	**227**
Percent	**1%**	**7%**	**13%**	**37%**	**35%**	**7%**	**0%**	**0%**	**0%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch
Location 427807030001
Sample Date 09/25/2019

2019 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	2	0	
01.03.00.00.007.00.00	0	0	0	0	0	0	0		0	0	0	0	0	1	0	
02.05.01.00.085.00.05	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.007.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.029.00.11	3	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.075.00.00	1	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.114.01.04	2	0	0	0	0	0	0		3	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	4	0	0	0	0		0	0	5	0	0	0	0	
02.19.00.00.006.00.00	0	0	1	0	0	0	0		0	0	5	0	0	0	0	
02.19.00.00.019.00.00	0	0	0	0	0	0	0		1	0	0	0	0	0	0	
03.01.00.00.001.00.03	2	0	0	0	0	0	0		1	0	0	0	0	0	0	
03.01.00.00.001.00.09	14	0	0	0	0	0	0		20	0	0	0	0	0	0	
03.01.00.00.010.00.01	1	0	0	0	0	0	0		1	0	0	0	0	0	0	
03.06.00.00.003.00.00	3	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	0		0	0	0	0	0	3	0	
03.06.00.00.005.00.00	2	0	0	0	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	0	0	1	0	
04.05.00.00.004.03.02	0	7	0	0	0	0	0		0	6	0	0	0	0	0	
04.05.00.00.004.03.04	0	1	0	0	0	0	0		0	2	0	0	0	0	0	
04.05.01.00.006.00.01	0	1	0	0	0	0	0		0	1	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	19	0	0	0		0	0	0	27	0	0	0	
04.12.00.00.002.00.00	0	6	0	0	0	0	0		0	31	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
04.16.00.00.001.00.00	0	0	2	0	0	0	0		0	0	1	0	0	0	0	
04.16.00.00.001.00.01	0	0	3	0	0	0	0		0	0	5	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
04.16.00.00.001.03.09	0	0	0	0	0	0	0		0	0	2	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	4	0	
05.02.00.00.006.00.00	0	0	35	0	0	0	0		0	0	28	0	0	0	0	
05.02.00.00.091.00.00	0	0	1	0	0	0	0		0	0	1	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	44	0	0	0		0	0	0	27	0	0	0	
05.05.00.00.002.00.00	0	0	0	1	0	0	0		0	0	0	4	0	0	0	
05.07.00.00.007.00.02	0	0	17	0	0	0	0		0	0	11	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	17	0	0	0		0	0	0	8	0	0	0	
06.06.00.00.007.00.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
18.04.00.00.000.00.00	19	0	0	0	0	0	0		16	0	0	0	0	0	0	
Total	**49**	**15**	**64**	**81**	**0**	**2**	**0**	**211**	**47**	**40**	**62**	**66**	**0**	**12**	**0**	**227**
Percent	**23%**	**7%**	**30%**	**38%**	**0%**	**1%**	**0%**	**100%**	**21%**	**18%**	**27%**	**29%**	**0%**	**5%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch
Location 427807030001
Sample Date 09/25/2019

FFG Summary:							
	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS	KN-2	PPCS
Col. Gath.	31%	32%	22%	23.2%	74.9%	20.7%	66.8%
Col. Filt.	18%	30%	36%	7.1%	39.5%	17.6%	97.9%
Predator	19%	13%	7%	30.3%	62.6%	27.3%	69.6%
Shred-Det.	15%	4%	2%	38.4%	39.1%	29.1%	51.6%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.00%	0.0%
Scraper	12%	13%	22%	0.95%	7.90%	5.29%	44.1%
				PPCS-FG =	**37.3%**	**PPCS-FG =**	**55.0%**

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

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch
VT Site ID 427807030001
Sample Date 09/25/2019
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	1.32%	6.68
Diptera	19%	18%	13%	6.6%	12.36	6.6%	12.392
Ephemeroptera	23%	34%	32%	10.9%	12.1	13.22%	9.8
Plecoptera	21%	8%	8%	54.5%	33.5	34.8%	13.8
Trichoptera	28%	33%	33%	19.0%	9.0	36.6%	8.6
Oligochaeta	0.5%	0.5%	1.0%	9.00%	8.50	7.05%	6.55
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.44%	0.059
				Sum diff	84.0		57.8
				Sum diff * 0.5	42.0		28.9
				100-(sum diff * 0.5)	58.0		71.1
				% model affinity	**58.0%**		**71.1%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch
Location 427807030001
Sample Date 09/25/2019
Class Small, High Gradient, B2
Sampler CCS

	KN-1	KN-2
#EPT organisms	178	192
#C organisms	9	4
EPT/EPT+C	0.95	0.98

Biometric Summary

Project Jay Peak Resort
Station SMB-T3-0.1
Stream South Mountain Branch
Location 427807030001
Sample Date 09/25/2019
Class Small, High Gradient, B2
Sampler CCS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	211	227	219
Species Richness	28.0	32.0	30.0
EPT Richness	19.0	23.0	21.0
Old Bio Index (0 to 5)	0.81	0.89	0.85
New Bio Index (0 to 10)	1.24	1.45	1.35
% dominant taxa	20.9%	13.7%	17.3%
EPT/EPT+C	0.952	0.980	0.966
EPT/Richness	0.679	0.719	0.700
% Model Affinity (orders)	58.0%	71.1%	64.5%
PPCS - functional groups	37.3%	55.0%	46.2%
Major Groups:			
Coleoptera (%)	0.00%	1.32%	0.66%
Diptera (%)	6.6%	6.6%	6.6%
Ephemeroptera (%)	10.9%	13.22%	12.06%
Trichoptera (%)	19.0%	36.6%	27.8%
Plecoptera (%)	54.5%	34.8%	44.7%
Oligochaeta (%)	9.00%	7.05%	8.03%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.00%	0.44%	0.22%
Other (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	23.2%	20.7%	22.0%
Collector Filterer (%)	7.1%	17.62%	12.4%
Predator (%)	30.3%	27.3%	28.8%
Shredder - Detritus (%)	38.4%	29.1%	33.7%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	0.95%	5.29%	3.12%
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	09/25/2019	**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	219.0	≥300	Fail	≥400	Fail	≥500	Fail
Richness	30.0	≥27	Pass	≥31	Fail	≥35	Fail
EPT	21.0	≥16	Pass	≥19	Pass	≥21	Pass
% PMA-O	64.5%	≥45%	Pass	≥55%	Pass	≥65%	I
BI (New 1-10)	1.35	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	8.03%	≤12%	Pass	≤5	Fail	≤2	Fail
EPT/EPT+C	0.966	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	46.2%	≥ 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
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
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 SOUTH MTN. BRANCH TRIB 3 River Mile 0.1 USFS____ PROB____
Site ID SMB-T3-0.1
Date 09/25/19 Time 13:06 Crew TGB/CS
Site Description_____

Town: JAY Stream Order:_____ Drainage Area: _____Km² Elevation:_____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS – set to NAD83:) _____
Weather: 53°F cloudy Flow/Weather Previous (2 weeks/2days): Moderate events: 2 wks Light showers in morning today
Surrounding Land Use: Resort, 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 90% Filamentous Green TR % and length _____in
Blue Green __% Moss TR % Green _____% Other _____%

General Trophic Rating: 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 20%
Silt Rating: 4 (0=none, 5= chocolate) CPOM Rating (leaf packs): 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: 25 FT. (m) Wetted Width: 12 FT (m) Riffle Depth: 2-4 (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 >100 m, R >100 m
Overstory: Softwood 10 % Hardwood 90 % Understory: Shrub (brush) 20 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 53 °C °F Temp Water 12 °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.) _____

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

SAND FILLED POOLS
VISUALLY IMPROVED FROM LAST YEAR

Aquatic Biota Observed:

YOY TROUT + SALAMANDER

Sand filled in around substrate making it difficult to kick net, although better than last year.

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

[\\vhb\depts\Vermont\EV\Resources\Biomonitoring\lotic_benthos_fieldsheet-2016.docx]

River (Site) SMB-T3-0.1 Personnel TGB Date 09/25/19

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	5	
very fine gravel	2-4	01.08-0.15"				
small gravel	4-8	0.15-0.3"				
medium gravel	8-16	0.3- 0.6"		卌 卌 卌	15	
coarse gravel	16-32	0.6-1.25"				
very coarse gravel	32-64	1.25-2.5"		卌 卌 卌 |	16	
small and medium cobble	64-128	2.5-5"		卌 卌 卌 卌 卌 卌	30	
large cobble	128-256	5-10"				
small boulder	265-512	10-20"				
medium boulder	512-1024	20-40"		卌 卌 卌 卌 卌 卌 |||	34	
large boulder	1024-2048	40-80"				
very large boulder	>2048	>80"				
bedrock				卌 ||	7	
				TOTALS	107	

	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 |

	Macro-Algae 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 ||	卌	

	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 |					

	Other *Macro 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*
2019 VHB	325	33	23	80	1.21	6.6	0.96	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%	

* 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 2019 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:	4.27807E+11	
Date collected:	9/25/2019	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan. 2020	Jan. 2020
#sq picked:	22	24
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan. 2020	Jan. 2020

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	1.09090909	CCS			
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A	N/A	ATHERIX	N/A	sp	CCS	A	2	2.18181818	CCS	A	1	1
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A	ZIA/PALPON	BEZZIA	N/A	sp	CCS				CCS	A	3	3
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	2	2.18181818	CCS	A	2	2
02.05.05.00.068.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARACHAETOCLADIUS	N/A	sp	CCS	A	1	1.09090909	CCS			
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	3	3.27272727	CCS	A	4	4
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca	CCS	A	2	2.18181818	CCS	A	8	8
02.14.00.00.004.00.00	DIPTERA	SIMULIDAE	N/A	N/A	PROSIMULIUM	N/A	sp	CCS	A	1	1.09090909	CCS	A	2	2
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	2	2.18181818	CCS	A	6	6
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	4	4.36363636	CCS	A	5	5
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CCS	A	1	1.09090909	CCS			
03.01.00.00.001.00.03	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	flavistriga	CCS	A	1	1.09090909	CCS			
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	22	24	CCS	A	20	20
03.01.00.00.010.00.01	EPHEMEROPTERA	BAETIDAE	N/A	N/A	DIPHETOR	N/A	hageni	CCS	A	1	1.09090909	CCS			
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	1	1.09090909	CCS	A	2	2
03.04.00.00.008.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	TELOGANOPSIS	N/A	deficiens	CCS	A	1	1.09090909	CCS	A	2	2
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	3	3.27272727	CCS			
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	16	17.4545455	CCS	A	3	3
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	48	52.3636364	CCS	A	43	43
03.06.00.00.009.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	LEUCROCUTA	N/A	sp	CCS				CCS	A	1	1
03.07.00.01.006.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	EBIA/PARA	NEOLEPTOPHLEBIA	N/A	sp	CCS	A	1	1.09090909	CCS			
03.14.00.00.001.00.00	EPHEMEROPTERA	AMELETIDAE	N/A	N/A	AMELETUS	N/A	sp	CCS	A	2	2.18181818	CCS			
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS	A	1	1.09090909	CCS	A	5	5
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	1	1.09090909	CCS	A	1	1
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	alhedra	CCS	A	7	7.63636364	CCS	A	2	2
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	HYDROPSYCHE	alh/slo/spa	sparna	CCS				CCS	A	4	4
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	4	4.36363636	CCS	A	7	7
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	55	60	CCS	A	60	60
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	1	1.09090909	CCS			0
04.16.00.00.001.00.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	sp	CCS				CCS	A	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	5	5.45454545	CCS	A	6	6
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS				CCS	A	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	11	12	CCS	A	2	2
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	50	54.5454545	CCS	A	52	52
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp	CCS	A	1	1.09090909	CCS	A	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	8	8.72727273	CCS	A	12	12
05.05.00.00.002.00.00	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	TALLAPERLA	N/A	sp	CCS	A	4	4.36363636	CCS	A	1	1
05.07.00.00.007.00.02	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	iroquois	CCS	A	17	18.5454545	CCS	A	15	15
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	8	8.72727273	CCS	A	22	22
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	18	19.6363636	CCS	A	22	22
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A	N/A	N/A	N/A	uid	CCS	A	1	1.09090909	CCS			
TOTALS by Rep:										307	**334.909091**			316	**316**

GRAND TOTAL: 650.9090909 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 2019 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:	4.27807E+11	
Date collected:	9/25/2019	
# 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	2.1818	0	3.2727	0	1	0	-	0
02.01.00.00.001.00.00	DIPTERA	ATHERICIDAE	N/A		PRD	N	3	2	6.5455	3	4.3636	2	1	0	1	0
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A		PRD	N	3	6	0	9	0	18	-	0	1	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI		CG	Y	3	4	6.5455	6	8.7273	8	1	0	1	0
02.05.05.00.068.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	2	2.1818	0	2.1818	0	1	0	-	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	3	5	9.8182	12	16.364	20	1	0	1	0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE		CG	Y	2	4	4.3636	16	8.7273	32	1	0	1	0
02.14.00.00.004.00.00	DIPTERA	SIMULIDAE	N/A		CF	N	1	2	1.0909	2	2.1818	4	1	0	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	3	4.3636	12	6.5455	18	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A		PRD	N	2	2	8.7273	10	8.7273	10	1	0	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A		SRD	N	3	6	3.2727	0	6.5455	0	1	0	-	0
03.01.00.00.001.00.03	EPHEMEROPTERA	BAETIDAE	N/A		CG	N	3	5	3.2727	0	5.4545	0	1	1	-	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A		CG	N	3	6	72	60	144	120	1	1	1	1
03.01.00.00.010.00.01	EPHEMEROPTERA	BAETIDAE	N/A		CG	N	1	2	1.0909	0	2.1818	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
03.04.00.00.008.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A		CG	N	1	2	1.0909	2	2.1818	4	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	-	0
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		SCR	N	1	4	17.455	3	69.818	12	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
03.06.00.00.009.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A		SCR	N	1	1	0	1	0	1	-	0	1	1
03.07.00.01.006.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A		CG	N	2	1	2.1818	0	1.0909	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	-	0
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A		SCR	N	1	0	1.0909	5	0	0	1	1	1	1
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE		CF	N	0	0	0	0	0	0	1	1	1	1
04.05.00.00.004.03.02	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	3	15.273	4	22.909	6	1	1	1	1
04.05.00.00.004.03.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A		CF	N	2	4	0	8	0	16	-	0	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A		SRD	N	1	1	4.3636	7	4.3636	7	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	3.2727	0	6.5455	0	1	1	-	0
04.16.00.00.001.00.00	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	0	1	0	0	0	1	-	0	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	1	2	5.4545	6	10.909	12	1	1	1	1
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A		PRD	N	0	1	0	0	0	1	-	0	-	0
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A		SCR	N	1	3	12	2	36	6	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
05.05.00.00.002.00.00	PLECOPTERA	PELTOPERLIDAE	N/A		SRD	N	1	0	4.3636	1	0	0	1	1	1	1
05.07.00.00.007.00.02	PLECOPTERA	PERLODIDAE	N/A		PRD	N	1	2	18.545	15	37.091	30	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A		SRD	N	1	0	8.7273	22	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**	219.27	206	410.18	328	**Total**	**Total**	**Total**	**Total**
GRAND TOTAL:	650.9090909 organisms							**Total # Organisms**	334.91	316	334.91	316	**Richness**	**EPT-R**	**Richness**	**EPT-R**
								# of Organisms w/o BI	20.727	22	20.727	22	36		30	
								Total # Organisms with BI	314.18	294	314.18	294		24		21
								Biotic Index	0.70	0.70	1.31	1.12				

*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 o

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

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
VT Site ID 427807000012
Sample Date 09/25/2019

2019 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	1.090909091	0	0	0	0	0	0	0	0	0	
02.01.00.00.001.00.00	0	2.181818182	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	2.181818182	0	0	0	0	0	0	0	0	
02.05.05.00.068.00.00	0	1.090909091	0	0	0	0	0	0	0	0	
02.05.05.00.075.00.00	0	3.272727273	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	2.181818182	0	0	0	0	0	0	0	0	
02.14.00.00.004.00.00	0	1.090909091	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	2.181818182	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	4.363636364	0	0	0	0	0	0	0	0	
02.19.00.00.016.00.00	0	1.090909091	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.03	0	0	1.090909091	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	24	0	0	0	0	0	0	0	
03.01.00.00.010.00.01	0	0	1.090909091	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	
03.04.00.00.008.00.01	0	0	1.090909091	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	
03.06.00.00.004.00.00	0	0	17.45454545	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	52.36363636	0	0	0	0	0	0	0	
03.06.00.00.009.00.00	0	0	0	0	0	0	0	0	0	0	
03.07.00.01.006.00.00	0	0	1.090909091	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	
04.03.00.00.002.00.00	0	0	0	1.090909091	0	0	0	0	0	0	
04.05.01.00.006.00.01	0	0	0	1.090909091	0	0	0	0	0	0	
04.05.00.00.004.03.02	0	0	0	7.636363636	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	4.363636364	0	0	0	0	0	0	
04.12.00.00.002.00.00	0	0	0	60	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	1.090909091	0	0	0	0	0	0	
04.16.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	5.454545455	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	0	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	12	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	54.54545455	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	8.727272727	0	0	0	0	0	
05.05.00.00.002.00.00	0	0	0	0	4.363636364	0	0	0	0	0	
05.07.00.00.007.00.02	0	0	0	0	18.54545455	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	8.727272727	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	19.63636364	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	1.090909091	0	0	0	0	
Total	**1.090909091**	**19.63636364**	**104.7272727**	**92.72727273**	**96**	**20.72727273**	**0**	**0**	**0**	**0**	**334.909**
Percent	**0%**	**6%**	**31%**	**28%**	**29%**	**6%**	**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 09/25/2019

2019 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	0	0	0	0	0	0	0	0	
02.03.00.01.003.00.00	0	3	0	0	0	0	0	0	0	0	
02.05.01.00.085.00.05	0	2	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	4	0	0	0	0	0	0	0	0	
02.05.05.00.114.01.04	0	8	0	0	0	0	0	0	0	0	
02.14.00.00.004.00.00	0	2	0	0	0	0	0	0	0	0	
02.19.00.00.003.00.00	0	6	0	0	0	0	0	0	0	0	
02.19.00.00.006.00.00	0	5	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	
03.01.00.00.001.00.03	0	0	0	0	0	0	0	0	0	0	
03.01.00.00.001.00.09	0	0	20	0	0	0	0	0	0	0	
03.01.00.00.010.00.01	0	0	0	0	0	0	0	0	0	0	
03.04.00.00.004.00.01	0	0	2	0	0	0	0	0	0	0	
03.04.00.00.008.00.01	0	0	2	0	0	0	0	0	0	0	
03.06.00.00.003.00.00	0	0	0	0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	3	0	0	0	0	0	0	0	
03.06.00.00.005.00.00	0	0	43	0	0	0	0	0	0	0	
03.06.00.00.009.00.00	0	0	1	0	0	0	0	0	0	0	
03.07.00.01.006.00.00	0	0	0	0	0	0	0	0	0	0	
03.14.00.00.001.00.00	0	0	0	0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	5	0	0	0	0	0	0	
04.05.01.00.006.00.01	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	4	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	60	0	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	0	0	0	0	0	0	0	0	
04.16.00.00.001.00.00	0	0	0	1	0	0	0	0	0	0	
04.16.00.00.001.00.01	0	0	0	6	0	0	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	1	0	0	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	2	0	0	0	0	0	0	
05.02.00.00.006.00.00	0	0	0	0	52	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	12	0	0	0	0	0	
05.05.00.00.002.00.00	0	0	0	0	1	0	0	0	0	0	
05.07.00.00.007.00.02	0	0	0	0	15	0	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	0	22	0	0	0	0	0	
18.04.00.00.000.00.00	0	0	0	0	0	22	0	0	0	0	
18.06.00.00.000.00.00	0	0	0	0	0	0	0	0	0	0	
Total	**0**	**31**	**71**	**89**	**103**	**22**	**0**	**0**	**0**	**0**	**316**
Percent	**0%**	**10%**	**22%**	**28%**	**33%**	**7%**	**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 09/25/2019

2019 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	1.090909	0		0	0	0	0	0	0	0	
02.01.00.00.001.00.00	0	0	2.181818182	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	3	0	0	0	0	
02.05.01.00.085.00.05	2.181818182	0	0	0	0	0	0		2	0	0	0	0	0	0	
02.05.05.00.068.00.00	1.090909091	0	0	0	0	0	0		0	0	0	0	0	0	0	
02.05.05.00.075.00.00	3.272727273	0	0	0	0	0	0		4	0	0	0	0	0	0	
02.05.05.00.114.01.04	2.181818182	0	0	0	0	0	0		8	0	0	0	0	0	0	
02.14.00.00.004.00.00	0	1.090909	0	0	0	0	0		0	2	0	0	0	0	0	
02.19.00.00.003.00.00	0	0	2.181818182	0	0	0	0		0	0	6	0	0	0	0	
02.19.00.00.006.00.00	0	0	4.363636364	0	0	0	0		0	0	5	0	0	0	0	
02.19.00.00.016.00.00	0	0	0	1.090909	0	0	0		0	0	0	0	0	0	0	
03.01.00.00.001.00.03	1.090909091	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.01.00.00.001.00.09	24	0	0	0	0	0	0		20	0	0	0	0	0	0	
03.01.00.00.010.00.01	1.090909091	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.04.00.00.004.00.01	1.090909091	0	0	0	0	0	0		2	0	0	0	0	0	0	
03.04.00.00.008.00.01	1.090909091	0	0	0	0	0	0		2	0	0	0	0	0	0	
03.06.00.00.003.00.00	3.272727273	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.06.00.00.004.00.00	0	0	0	0	0	17.45455	0		0	0	0	0	0	3	0	
03.06.00.00.005.00.00	52.36363636	0	0	0	0	0	0		43	0	0	0	0	0	0	
03.06.00.00.009.00.00	0	0	0	0	0	0	0		0	0	0	0	0	1	0	
03.07.00.01.006.00.00	1.090909091	0	0	0	0	0	0		0	0	0	0	0	0	0	
03.14.00.00.001.00.00	2.181818182	0	0	0	0	0	0		0	0	0	0	0	0	0	
04.03.00.00.002.00.00	0	0	0	0	0	1.090909	0		0	0	0	0	0	5	0	
04.05.01.00.006.00.01	0	1.090909	0	0	0	0	0		0	1	0	0	0	0	0	
04.05.00.00.004.03.02	0	7.636364	0	0	0	0	0		0	2	0	0	0	0	0	
04.05.00.00.004.03.04	0	0	0	0	0	0	0		0	4	0	0	0	0	0	
04.07.00.00.001.00.00	0	0	0	4.363636	0	0	0		0	0	0	7	0	0	0	
04.12.00.00.002.00.00	0	60	0	0	0	0	0		0	60	0	0	0	0	0	
04.14.00.00.005.00.00	0	0	1.090909091	0	0	0	0		0	0	0	0	0	0	0	
04.16.00.00.001.00.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
04.16.00.00.001.00.01	0	0	5.454545455	0	0	0	0		0	0	6	0	0	0	0	
04.16.00.00.001.02.00	0	0	0	0	0	0	0		0	0	1	0	0	0	0	
04.20.00.00.001.00.00	0	0	0	0	0	12	0		0	0	0	0	0	2	0	
05.02.00.00.006.00.00	0	0	54.54545455	0	0	0	0		0	0	52	0	0	0	0	
05.02.00.00.091.00.00	0	0	1.090909091	0	0	0	0		0	0	1	0	0	0	0	
05.03.00.00.000.00.01	0	0	0	8.727273	0	0	0		0	0	0	12	0	0	0	
05.05.00.00.002.00.00	0	0	0	4.363636	0	0	0		0	0	0	1	0	0	0	
05.07.00.00.007.00.02	0	0	18.54545455	0	0	0	0		0	0	15	0	0	0	0	
05.08.00.00.001.00.02	0	0	0	8.727273	0	0	0		0	0	0	22	0	0	0	
18.04.00.00.000.00.00	19.63636364	0	0	0	0	0	0		22	0	0	0	0	0	0	
18.06.00.00.000.00.00	1.090909091	0	0	0	0	0	0		0	0	0	0	0	0	0	
Total	**116.7272727**	**69.8182**	**89.45454545**	**27.2727**	**0**	**31.6364**	**0**	**334.909**	**103**	**69**	**91**	**42**	**0**	**11**	**0**	**316**
Percent	**35%**	**21%**	**27%**	**8%**	**0%**	**9%**	**0%**	**100%**	**33%**	**22%**	**29%**	**13%**	**0%**	**3%**	**0%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
Location 427807000012
Sample Date 09/25/2019

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%	34.9%	88.9%	32.6%	95.1%
Col. Filt.	18%	30%	36%	20.8%	86.3%	21.8%	82.4%
Predator	19%	13%	7%	26.7%	71.1%	28.8%	66.0%
Shred-Det.	15%	4%	2%	8.1%	54.3%	13.3%	88.6%
Shred- Herb.	1%	1%	5%	0.00%	0.0%	0.00%	0.0%
Scraper	12%	13%	22%	9.45%	78.72%	3.48%	29.0%
				PPCS-FG =	**63.2%**	**PPCS-FG =**	**60.2%**

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 09/25/2019
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%	0.33%	7.67	0.00%	8.00
Diptera	19%	18%	13%	5.9%	13.14	9.8%	9.190
Ephemeroptera	23%	34%	32%	31.3%	8.3	22.47%	0.5
Plecoptera	21%	8%	8%	28.7%	7.7	32.6%	11.6
Trichoptera	28%	33%	33%	27.7%	0.3	28.2%	0.2
Oligochaeta	0.5%	0.5%	1.0%	6.19%	5.69	6.96%	6.46
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.00%	0.500
				Sum diff	43.2		36.4
				Sum diff * 0.5	21.6		18.2
				100-(sum diff * 0.5)	78.4		81.8
				% model affinity	**78.4%**		**81.8%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
Location 427807000012
Sample Date 09/25/2019
Class Small, High Gradient, B2
Sampler CCS

	KN-1	KN-2
#EPT organisms	293.4545455	263
#C organisms	8.727272727	14
EPT/EPT+C	0.97	0.95

Biometric Summary

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
Location 427807000012
Sample Date 09/25/2019
Class Small, High Gradient, B2
Sampler CCS

Replicate #	1	2	Average
Sampling Method	**KN**	**KN**	**KN**
Biometrics:			
Density/Unit	335	316	325
Species Richness	36.0	30.0	33.0
EPT Richness	24.0	21.0	22.5
Old Bio Index (0 to 5)	0.70	0.70	0.70
New Bio Index (0 to 10)	1.31	1.12	1.21
% dominant taxa	17.9%	19.0%	18.5%
EPT/EPT+C	0.971	0.949	0.960
EPT/Richness	0.667	0.700	0.682
% Model Affinity (orders)	78.4%	81.8%	80.1%
PPCS - functional groups	63.2%	60.2%	61.7%
Major Groups:			
Coleoptera (%)	0.33%	0.00%	0.16%
Diptera (%)	5.9%	9.8%	7.8%
Ephemeroptera (%)	31.3%	22.47%	26.87%
Trichoptera (%)	27.7%	28.2%	27.9%
Plecoptera (%)	28.7%	32.6%	30.6%
Oligochaeta (%)	6.19%	6.96%	6.58%
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 (%)	34.9%	32.6%	33.7%
Collector Filterer (%)	20.8%	21.84%	21.3%
Predator (%)	26.7%	28.8%	27.8%
Shredder - Detritus (%)	8.1%	13.3%	10.7%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	9.45%	3.48%	6.46%
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	4.2781E+11	**Class**	Small, High Gradient, B2
Sample Date	09/25/2019	**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	325.5	≥300	Pass	≥400	Fail	≥500	Fail
Richness	33.0	≥27	Pass	≥31	Pass	≥35	Fail
EPT	22.5	≥16	Pass	≥19	Pass	≥21	Pass
% PMA-O	80.1%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	1.21	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	6.58%	≤12%	Pass	≤5	Fail	≤2	Fail
EPT/EPT+C	0.960	≥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
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 SOUTH MTN. BRANCH River Mile 1.2 USFS____ PROB____
Site ID SMB-1.2
Date 09/25/19 Time 15:09 Crew TGB/CS
Site Description_____

Town: JAY Stream Order:_____ Drainage Area: _____Km² Elevation:_____ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS – set to NAD83:) _____
Weather: 55°F cloudy Flow/Weather Previous (2 weeks/2days): Moderate events-2 wks Quiet 2 days
Surrounding Land Use: Resort, road, forest, residential

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 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 30%
Silt Rating: 3 (0=none, 5= chocolate) CPOM Rating (leaf packs): 1 (0= none,5=high)
Lg Woody Debris (>4"dia) #: 0 /100m (reach)

Habitat Comments

GENERAL WATER TYPE Riffle, Winder, or Other _____ Channelized Y / N Upstream Dam: Y / N ____mi
B.F.Width: 25 ft (m) Wetted Width: 10 ft (m) Riffle Depth: 4-6 (in) Pool Depth: 1 ft (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 10 m, R 10 m
Overstory: Softwood 10% Hardwood 90 % Understory: Shrub (brush) 20 Grass __% Herbaceous 30%
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 55 °C, °F Temp Water 12 °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 Iron seeps BL
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) SMB-1.2 Personnel TGB Date 09/25/19

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 卌 |	11	
very fine gravel	2-4	01.08-0.15"				
small gravel	4-8	0.15-0.3"				
medium gravel	8-16	0.3- 0.6"		卌 卌 卌 卌 卌 |	26	
coarse gravel	16-32	0.6-1.25"				
very coarse gravel	32-64	1.25-2.5"		卌 |||	8	
small and medium cobble	64-128	2.5-5"				
large cobble	128-256	5-10"		卌 卌 卌 卌 卌 ||||	29	
small boulder	265-512	10-20"				
medium boulder	512-1024	20-40"		卌 卌 卌 卌 卌 ||	27	
large boulder	1024-2048	40-80"				
very large boulder	>2048	>80"				
bedrock				|	|	
				TOTALS	102	

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

	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					

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

Substrate Comments: