Volunteer Lake Assessment Program Individual Lake Reports
Lake Sunapee, Blodgett Brook Sub-Watershed and Red River Creek
2020 Data Summary

Recommended Actions: Great job sampling in 2020! Chloride levels were slightly greater than the state median at all stations, however were much less than the state chronic chloride standard and efforts to reduce impacts of winter de-icing materials should be focused in other sub-watersheds. Apparent color data suggest a tributary system with moderate dissolved organic matter that contributes to tea colored water and can also cause increases in phosphorus and turbidity levels. Drought conditions in 2020 resulted in low stream flows and which resulted in overall higher turbidity and phosphorus levels, and darker water color. Do not sample tributaries if there is not sufficient flow to collect samples free of sediment and/or organic matter. Keep up the great work!

Observations and Recommendations (*Refer to Table 1)*

- **Conductivity/Chloride:** Conductivity and chloride levels from Stn. 1115 (upstream) to Stn. 790.4 and 790.2 (downstream) did not change significantly and were approximately equal to or slightly greater than the state medians, yet less than a level of concern. Conductivity and chloride levels were higher at Stns. 790 and 788 and were greater than the state medians, however chloride levels were much less than the state chronic chloride standard. Conductivity levels decreased from that measured in 2019 at Stns. 790 and 1115, increased at Stn. 788, and remained stable at Stns. 790.2 and 790.4.
- **Color:** Color measured at Stn. 788 indicated the water was moderately tea colored, or brown, in August. Color measured at Stn. 1115 indicated the water was within a clear range in May and gradually darkened to a moderately tea colored range in August. Color measured at Stns. 790, 790.2, and 790.4 indicated the water fluctuated within a highly tea colored, or dark brown, range.
- **Total Phosphorus:** Phosphorus levels at Stn. 1115 (upstream) fluctuated within a low range for that station. Phosphorus levels at Stn. 788 were moderate in late August and early August phosphorus data was invalidated due to field duplicate data not meeting quality assurance metrics. Phosphorus levels at Stn. 790 were slightly elevated in August during low flow conditions and lab data noted colored water with low levels of sediment and/or organic matter. Phosphorus levels at Stn. 790.2 fluctuated within a moderate and average range for that station. Phosphorus levels at Stn.790.4 were slightly elevated in August and field data noted stagnant flow conditions. Average phosphorus levels decreased slightly at Stn. 788, and increased slightly at Stns. 790, 790.2, 790.4, and 1115 from that measured in 2019.
- **Turbidity:** Turbidity levels at Stn. 1115 and Stn. 790 fluctuated within a low range. Turbidity levels at Stns. 788 were elevated in August and lab data noted sediment and organic matter in the sample. Turbidity levels at Stn. 790.2 were slightly elevated in June following a significant storm event. Turbidity levels at Stn. 790.4 fluctuated within a low to moderate range. Average turbidity levels increased at Stns. 788, 790, 790.4, and 1115, and decreased at Stn. 790.2 from that measured in 2019.
- **pH:** pH levels at Stns. 788 and 790.4 were slightly less than the desirable range 6.5-8.0 units. pH levels at Stns. 790, 790.2, and 1115 were within the desirable range. Average pH levels decreased at Stns. 788, and increased at Stns. 790, 790.2, 790.4, and 1115 from that measured in 2019.

Table 1. 2020 Average Water Quality Data for Blodgett Brook Sub-Watershed

Sub-Watershed Name	Station Name	Chloride (mg/L)	Color (pcu)	Cond. (us/cm)	Total P (ug/L)	Turb. (ntu)	pH
Blodgett Brook (S. Branch)	788	19	57	121.4	14	4.25	6.23
Blodgett Brook (N. Branch)	790	10	123	66.9	15	1.15	6.91
Blodgett Brook	790.2	7	168	48.3	19	1.10	6.74
Blodgett Brook (S. County Rd.)	790.4	6	196	39.5	19	1.42	6.43
Chalk Pond Outlet	1115	11	38	48.3	9	1.08	6.65

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.5 mg/L
Chlorophyll-a: 4.39 ug/L
Conductivity: 42.0 uS/cm
Chloride: 5 mg/L
Total Phosphorus: 11 ug/L
Transparency: 3.3 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

Volunteer Lake Assessment Program Individual Lake Reports
Lake Sunapee, Chandler Brook and Johnson Brook Sub-Watersheds
2020 Data Summary

Recommended Actions: Great job sampling in 2020! Chloride levels at Stn. 670.5 were elevated in August when flow was stagnant and field data noted oily conditions indicating potential groundwater influence during drought conditions. Phosphorus and turbidity levels were elevated following significant storm events at Stns. 670 and 675 indicating potential pollution sources, however this is not uncommon during drought conditions. Keep an eye on these stations during storm events and note any areas of stormwater runoff. Phosphorus and turbidity levels were generally higher in 2020 likely due to drought conditions and low stream flows. Take care not to sample if flow conditions are stagnant and/or if there's not sufficient flow to collect a sample free of sediment and/or organic matter. Keep up the great work!

Observations and Recommendations (*Refer to Table 1)*

- **Conductivity/Chloride:** Conductivity levels were slightly elevated and greater than the state medians at Stns. 670 and 680. Chloride levels were also slightly elevated and greater than the state median, yet much less than the chronic chloride standard. Conductivity and chloride levels at Stn. 670.5 were elevated and much greater than the state medians. Chloride levels approached the chronic chloride standard in August when water flow was stagnant. Conductivity and chloride levels at Stn. 675 were slightly greater than the state medians yet much less than a level of concern. Average conductivity levels decreased at Stns. 670, 675 and 680 from those measured in 2019, but increased at Stn. 670.5 due to stagnant flow conditions in August.
- **Color:** Water color measured at Stn. 670 indicated highly tea colored, or dark brown, conditions particularly after storm events. Color measured at Stn. 670.5 indicated moderately tea colored conditions in May and highly tea colored conditions in August during stagnant flow conditions. Color measured at Stn. 680 indicated lightly to moderately tea colored conditions. Color measured at Stn. 675 indicated moderately tea colored conditions that darkened to highly tea colored conditions in September following a storm event.
- **Total Phosphorus:** Phosphorus levels fluctuated within a low range at Stn. 680 on each sampling event. Phosphorus levels at Stn. 670 were greatly elevated in September following a significant storm event and the turbidity level was also greatly elevated. Lab data noted colored water and organic matter in the sample. Phosphorus levels at Stn. 670.5 were elevated in August during stagnant flow conditions. Phosphorus levels at Stn. 675 were greatly elevated in September following a storm event and lab data noted high levels of organic matter in the sample. The average phosphorus levels increased slightly from those measured in 2019 at all Stns.
- **Turbidity:** Turbidity levels at Stn. 670 were elevated in July and September following storm events. Turbidity levels at Stn. 670.5 were elevated in August during stagnant flow conditions. Turbidity levels at Stn. 680 were slightly elevated in August. Turbidity levels at Stn. 675 were elevated in September following a storm event and high levels of organic matter were noted in the sample. Average turbidity levels increased at all Stns. from those measured in 2019.
- **pH:** pH levels at all Stns. were within the desirable range 6.5-8.0 units. Average pH levels increased slightly at all Stns. from those measured in 2019.

Table 1. 2020 Average Water Quality Data for Chandler & Johnson Brooks

Sub-Watershed Name	Station Name	Chloride (mg/L)	Color (pcu)	Cond. (us/cm)	Total P (ug/L)	Turb. (ntu)	pH
Chandler Brook	670	36	160	160.7	31	13.86	6.70
Chandler Brook	670.5	174	107	649.3	24	4.24	6.62
Chandler Brook (Beck. Bk.)	680	51	36	239.6	8	1.31	7.22
Johnson Brook	675	9	82	51.5	23	4.37	6.68

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.5 mg/L
Chlorophyll-a: 4.39 ug/L
Conductivity: 42.0 uS/cm
Chloride: 5 mg/L
Total Phosphorus: 11 ug/L
Transparency: 3.3 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
LAKE SUNAPEE, HERRICK COVE SUB-WATERSHED
2020 DATA SUMMARY

RECOMMENDED ACTIONS: Great job sampling in 2020! Chloride data indicates negative impacts from winter de-icing materials at each station, and chloride levels exceeded the state chronic chloride standard at Stns. 830.15 and 835. Encourage winter maintenance companies to obtain Voluntary NH Salt Applicator licenses through UNH Technology Transfer Center's Green SnowPro Certification program. Encourage local/state road agents to remove accumulated sand/salt from roadside ditches, culverts and catch-basins in the spring to help reduce impacts to water quality. Conductivity and chloride data suggest groundwater influence during dry years with lower flows. Phosphorus and turbidity levels at Stns. 830 and 830.15 were elevated due to low flow/stagnant conditions. Do not collect samples if there is no flow (stagnant conditions), or the flow is too low to collect a sample free of sediment and/or organic matter. Beaver activity in this tributary system likely restricts water flow. If necessary, install a flow through device in the beaver dam to allow water to continually flow through the system; and/or remove the beaver dam. Keep up the great work!

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1)*

- **CONDUCTIVITY/CHLORIDE:** Conductivity levels at all Stns. were elevated and much greater than the state median, and generally increased as the summer progressed. Chloride levels at all Stns. were elevated and much greater than the state median, and chloride levels exceeded the state chronic chloride standard at Stns. 830.15 and 835 in mid-late summer. Average conductivity levels decreased from that measured in 2019 at Stns. 830 and 835, and increased at Stn. 830.15.
- **COLOR:** Color measured at Stns. 830 and 830.15 indicated the water fluctuated within a highly tea colored or dark brown range. Color measured at Stn. 835 fluctuated within a light to moderate tea colored range.
- **TOTAL PHOSPHORUS:** Phosphorus levels at Stns. 830 were elevated from May through September regardless of flow conditions but were highest during conditions noted as low and/or stagnant. Turbidity levels were also elevated and beaver activity was noted. Phosphorus levels at Stn. 830.15 were elevated on each sampling event during low flow/stagnant conditions, turbidity levels were also elevated and beaver activity was noted. Phosphorus levels at Stn. 835 fluctuated within a low range and were highest in July during stagnant flow conditions. Average phosphorus levels increased from that measured in 2019 at Stns. 830 and 830.15, and decreased slightly at Stn. 835.
- **TURBIDITY:** Turbidity levels at Stns. 830 and 830.15 were elevated on each sampling event. Field data noted beaver activity and general low flows and stagnant conditions, and lab data noted highly colored water with organic matter in all samples. Turbidity levels at Stn. 835 fluctuated within a low to moderate range. Average turbidity levels increased greatly from that measured in 2019 at Stns. 830 and 830.15, and increased slightly at Stn. 835.
- **PH:** pH levels at Stns. 830 and 830.15 were slightly less than the desirable range 6.5-8.0 units. pH levels at Stn. 835 were within the desirable range. Average pH levels increased (improved) slightly at Stns. 830.15 and 835, and remained stable at Stn. 830 from that measured in 2019.

Table 1. 2020 Average Water Quality Data for Herrick Cove Sub-Watershed

Sub-Watershed Name	Station Name	Chloride (mg/L)	Color (pcu)	Cond. (us/cm)	Total P (ug/L)	Turb. (ntu)	pH
Herrick Cove South	830	151	444	537.8	54	18.92	6.31
Herrick Cove South	830.15	231	460	734.0	52	13.70	6.36
Herrick Cove North	835	257	50	838.9	8	0.90	7.12

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.5 mg/L
Chlorophyll-a: 4.39 ug/L
Conductivity: 42.0 uS/cm
Chloride: 5 mg/L
Total Phosphorus: 11 ug/L
Transparency: 3.3 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

Volunteer Lake Assessment Program Individual Lake Reports
Lake Sunapee, Little Sunapee Lake Sub-Watershed
2020 Data Summary

Recommended Actions: Great job sampling in 2020! Chloride and conductivity levels at Stns. 1415 and 1418 are being monitored and addressed when possible. Keep an eye on chloride levels at Stn. 1418 as they exceeded the state chronic chloride standard in July. Water quality at Stn. 1415 improved and monitors noted the Dept. of Transportation made improvements to the culvert and stabilized the steep slopes that were eroding into the stream. Beaver activity was not noted in 2020 and we hope the improvements made will deter future beaver activity and result in continued improvements to water quality. Keep up the great work!

Observations and Recommendations (*Refer to Table 1)*

- **Conductivity/Chloride:** Conductivity and chloride levels at Stn. 1410.5 fluctuated within a low range, were less than the state medians, and chloride levels were representative of undisturbed surface waters. Conductivity and chloride levels at Stn. 1420 were within an average range and were slightly greater than the state medians yet less than a level of concern. Conductivity and chloride levels at Stns. 1415 and 1418 were elevated and increased as the summer progressed. Chloride levels at Stn. 1418 exceeded the state chronic chloride standard in July. Average conductivity levels at all Stns. increased from that measured in 2019. Average chloride levels increased from 2019 at Stns. 1415 and 1418, and remained stable at Stns. 1410.5 and 1420.
- **Color:** Water color measured at Stn. 1410.5 indicated moderate to highly tea, or brown, colored water and was darkest in July and lightest in September. Color measured at Stns. 1415 and 1418 indicated very highly tea colored conditions, however color was much lighter in 2020 compared with 2019 likely due improvements made to the culvert and little to no beaver activity. Color measured at Stn. 1420 indicated lightly tea colored conditions, or light brown water that remained stable as the summer progressed.
- **Total Phosphorus:** Phosphorus levels at Stn. 1410.5 fluctuated within a low to moderate range from May through September even during low flow conditions. Phosphorus levels at Stn. 1415 were moderate in May, increased to elevated levels in June and July when turbidity and color levels were highest, and then decreased to moderate levels in August and September. Phosphorus levels at Stn. 1418 were moderate and increased as the summer progressed, but remained below average for this station. Phosphorus levels at Stn. 1420 were stable and low. The 2020 average phosphorus levels increased slightly from that measured in 2019 at Stns. 1410.5 and 1420 and decreased at Stns. 1415 and 1418.
- **Turbidity:** Turbidity levels at Stn. 1410.5 were slightly elevated in August following a rainfall during drought conditions and lab data noted colored water with sediment. Turbidity levels at Stn. 1415 were elevated between June and August when water color was darkest. Turbidity levels at Stn. 1418 were low in May and increased slightly through July. Turbidity levels at Stn. 1420 were slightly elevated in June following a significant storm event and organic matter was noted in the sample. The 2020 average turbidity levels decreased from that measured in 2019 at Stns. 1415 and 1418 and increased slightly at Stns. 1410.5 and 1420.
- **pH:** pH levels at Stns. 1410.5, 1415 and 1420 were within the desirable range 6.5-8.0 units on each sampling event. pH levels at Stn. 1418 were slightly less than desirable. The 2020 average pH level increased (improved) slightly at Stns. 1410.5 and 1415, and decreased slightly at Stns. 1418 and 1420 from that measured in 2019.

Sub-Watershed Name	Station Name	Table 1. 2020 Average Water Quality Data for Little Lake Sunapee Sub-Watershed					
		Chloride (mg/L)	Color (pcu)	Cond. (us/cm)	Total P (ug/L)	Turb. (ntu)	pH
Kidder Brook Upstream	1410.5	3	73	20.7	12	1.34	6.78
Bucklin Beach Brook	1415	125	172	514.8	26	5.58	6.82
Murray Pond Outlet	1418	173	273	581.7	22	1.03	6.41
Little Lake Sunapee Outlet	1420	21	30	87.2	8	1.38	6.72

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.5 mg/L
Chlorophyll-a: 4.39 ug/L
Conductivity: 42.0 uS/cm
Chloride: 5 mg/L
Total Phosphorus: 11 ug/L
Transparency: 3.3 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

Volunteer Lake Assessment Program Individual Lake Reports
Lake Sunapee, Newbury Inlet, Cunningham & Bartlett Brook Sub-Watersheds
2020 Data Summary

Recommended Actions: Great job sampling in 2020! Chloride levels at all stations were within a low to moderate range for NH's surface waters and were much less than the state chronic chloride standard. Stn. 715 experienced dry or no flow conditions following the May sampling event due to drought conditions. Phosphorus, turbidity and color levels spiked at Stn. 750 following a significant storm event in June. Drought conditions prior to sampling combined with an upstream sampling location and roadwork likely contributed to the elevated levels. Keep an eye for any changes to this location that may negatively impact water quality in the future. Water quality is generally good at all stations and the lower pH levels at stns. 715 and 720.1 may be a result of nearby woody wetland systems upstream. Keep up the great work!

Observations and Recommendations (*Refer to Table 1)*

- **Conductivity/Chloride:** Conductivity and chloride levels were very low and less than the state medians at Stns. 715 and 760. Conductivity and chloride levels were slightly greater than the state medians at Stns. 720.1 and 750 but were much less than a level of concern and chloride levels did not approach the state chronic chloride standard. The 2020 average conductivity levels increased from that measured in 2019 at Stns. 720.1, 750 and 760, and remained stable at Stn. 715.
- **Color:** Color measured at Stns. 715 indicated clear conditions with little to no tea, or brown color. Color measured at Stn. 750 indicated clear conditions with the exception of highly colored (dark brown) conditions measured in June following a significant storm event. Samples were noted as being collected upstream from the normal station as well as cloudy water conditions and roadwork. Color measured at Stn. 720.1 indicated highly tea colored conditions from June through August. Color measured at Stn. 760 indicated light to moderate tea colored conditions with the exception of highly tea colored conditions in July following a storm event.
- **Total Phosphorus:** Phosphorus levels were low at Stn. 715. Phosphorus levels at Stn. 720.1 were slightly elevated from June through August during low flow conditions and the turbidity of the samples was also slightly elevated. Phosphorus levels at Stn. 750 were elevated in June following the significant storm event and the turbidity levels were also elevated. Phosphorus levels at Stn. 760 were elevated in July following a storm event and lab data noted lightly colored water with organic matter. The 2020 average phosphorus levels increased from that measured in 2019 at Stns. 720.1, 750 and 760, and remained stable at Stn. 715.
- **Turbidity:** Turbidity levels fluctuated within a low to moderate range at Stns. 715 and 760. Turbidity levels at Stn. 720.1 were elevated from June through August during low flow conditions. Turbidity levels at Stn. 750 were extremely elevated in June following a significant storm event and sampling upstream. Lab data noted cloudy water and field data noted roadwork being conducted near the sampling site. The 2020 average turbidity levels increased from that measured in 2019 at Stns. 720.1 and 760, and decreased slightly at Stn. 715, and remained relatively stable at Stn. 760.
- **pH:** pH levels at Stns. 715 and 720.1 were slightly acidic and less than the desirable range 6.5-8.0 units. pH levels at Stns. 750 and 760 fluctuated within the desirable range. The 2020 average pH levels increased slightly from that measured in 2019 at Stns. 720.1, 750 and 760, and decreased slightly at Stn. 715.

Table 1. 2020 Average Water Quality Data for Newbury Inlet, Cunningham and Bartlett Brook Sub-Watersheds

Sub-Watershed Name	Station Name	Chloride (mg/L)	Color (pcu)	Cond. (us/cm)	Total P (ug/L)	Turb. (ntu)	pH
Unnamed Brook	715	3	20	12.1	3	0.08	5.52
Newbury Inlet	720.1	36	124	134.4	19	2.78	6.03
Cunningham Brook	750	14	90	77.2	19	10.95	6.59
Bartlett Brook	760	3	80	27.1	16	1.12	6.72

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.5 mg/L
Chlorophyll-a: 4.39 ug/L
Conductivity: 42.0 uS/cm
Chloride: 5 mg/L
Total Phosphorus: 11 ug/L
Transparency: 3.3 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

Volunteer Lake Assessment Program Individual Lake Reports
Lake Sunapee, Otter Pond, Ledge Pond & Eagle Rock Brooks, Jobs Creek, Rodgers Brook, & Outlet Sub-Watersheds
2020 Data Summary

Recommended Actions: Great job sampling in 2020! Stn. 540, Jobs Creek, experiences chloride levels that exceed the state chronic chloride standard which can negatively impact aquatic life. Stn. 575 also experienced elevated chloride levels when compared with the state median. Focus efforts on these sub-watersheds to implement best practices when applying winter de-icing materials. Encourage local and state road agents to annually remove any sand/salt accumulation in roadside ditches, culverts and catch-basins in the spring. The lower pH, higher phosphorus levels and darker water color at Stn. 540 is likely due to the nearby emergent woody wetland system. A significant storm event in late June resulted in elevated turbidity levels at all Stns., however this is not uncommon during drought conditions with low water levels and stagnant flow conditions prior to the storm event. Keep up the great work!

Observations and Recommendations (*Refer to Table 1)*

- **Conductivity/Chloride:** Conductivity and chloride levels at Stns. 540 and 610 were slightly greater than the state medians yet much less than a level of concern. Conductivity and chloride levels at Stns. 505 and 510 were slightly elevated and greater than the state medians, particularly in June and July at Stn. 510 during low flow and drought conditions. Conductivity and chloride levels at Stn. 515.1 were greatly elevated on each sampling event and chloride levels exceeded the state chronic chloride standard in May, the end of July, and August during low flow conditions. Conductivity and chloride levels at Stn. 575 were elevated on each sampling event, however chloride levels did not exceed the standard. The 2020 average conductivity levels decreased from 2019 at Stns. 515.1 and 540, and increased at Stns. 505, 510, 575, and 610.
- **Color:** Color measured at Stns. 505 and 510 indicated water fluctuated between light to moderately tea colored (brown) conditions. Color measured at Stns. 515.1 and 610 indicated water fluctuated within a clear to lightly tea colored (light brown) range. Color measured at Stn. 540 fluctuated within a highly tea colored (dark brown) range and was darkest in July. Color measured at Stn. 575 indicated water was highly tea colored from May through July.
- **Total Phosphorus:** Phosphorus levels fluctuated within a low range at Stns. 505, 510, 515.1 and 610. Phosphorus levels at Stn. 540 were elevated in May and July due to organic matter and elevated in June following a significant storm event during drought conditions. Phosphorus levels at Stn. 575 were slightly elevated in June following the storm event. The 2020 average phosphorus levels remained relatively stable with that measured in 2019 at Stns. 505, 510, 515.1, and 610, decreased slightly at Stn. 540, and increased slightly at Stn. 575.
- **Turbidity:** Turbidity levels at all Stns. were elevated following the significant storm event in June during drought conditions and low flows. Turbidity levels were low on all other sampling events at Stns. 505, 510 and 610. Turbidity levels at Stn. 515.1 were also slightly elevated in August during low flows and low levels of organic matter were noted in the sample. Turbidity levels at Stn. 540 were elevated on each sampling event and organic matter was noted in all of the samples. Turbidity levels at Stn. 575 were also elevated in July during low flows. The 2020 average turbidity levels increased slightly from that measured in 2019 at Stns. 540, 575 and 610, decreased slightly at Stns. 510 and 515.1, and remained stable at Stn. 505.
- **pH:** pH levels were within the desirable range 6.5 – 8.0 units at Stns. 505, 510, 515.1, 575, and 610. pH levels at Stn. 540 remained acidic and consistently less than the desirable range likely due to the nearby emergent woody wetlands. Average 2020 pH levels increased (improved) slightly at Stns. 505, 540 and 575, decreased slightly at Stns. 510 and 515.1, and remained stable at Stn. 610 from that measured in 2019.

Sub-Watershed Name	Station Name	Table 1. 2020 Average Water Quality Data for Otter Pond, Ledge Pond, Eagle Rock Brook, Jobs Creek, Rodgers Brook, & Outlet					
		Chloride (mg/L)	Color (pcu)	Cond. (us/cm)	Total P (ug/L)	Turb. (ntu)	pH
Otter Pond Brook	505	34	36	152.9	7	1.00	7.00
Ledge Pond (Muzzey Brook)	510	66	35	262.6	9	1.22	6.66
Eagle Rock Brook	515.1	225	30	766.4	6	1.25	6.66
Jobs Creek	540	9	158	48.8	36	3.02	6.16
Rodgers Brook	575	118	100	442.0	17	1.70	6.86
Outlet	610	25	20	105.1	4	0.74	6.99

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.5 mg/L
Chlorophyll-a: 4.39 ug/L
Conductivity: 42.3 uS/cm
Chloride: 5 mg/L
Total Phosphorus: 11 ug/L
Transparency: 3.3 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

Volunteer Lake Assessment Program Individual Lake Reports
Lake Sunapee, Pike Brook Sub-Watershed
2020 Data Summary

Recommended Actions: Great job sampling in 2020! Chloride levels at all stations fluctuated within a relatively low range for NH surface waters and were much less than the state chronic chloride standard. Drought conditions resulted in low flow conditions and monitors were careful not to sample stagnant water. A significant storm event in June resulted in elevated phosphorus and turbidity levels at Stns. 800.5 and 800.8 apparent color data indicated moderate to highly tea colored waters and flushing of wetland or other systems high in dissolved organic matter, tannic, humic and fulvic acids which could affect water quality following storm events and during low flow conditions. Keep up the great work!

Observations and Recommendations (*Refer to Table 1)*

- **Conductivity/Chloride:** Conductivity and chloride levels were within a low range and approximately equal to the state medians at Stns. 800.5 and 800.8. Conductivity and chloride levels at Stns. 800 and 805 were greater than the state medians, yet less than a level of concern and chloride levels were much less than the state chronic chloride standard. The 2020 average conductivity levels increased slightly at Stns. 800, 800.5 and 800.8, and decreased at Stn. 805 from that measured in 2019.
- **Color:** Apparent color measured at all Stns. indicates the water fluctuated within a moderate to highly tea colored, or brown to dark brown, range. The 2020 average color levels indicated darker water at Stns. 800.5 and 800.8, and lighter water at Stns. 800 and 805 from that measured in 2019.
- **Total Phosphorus:** Phosphorus levels at Stn. 800 were moderate in May, increased to a slightly elevated range in June and remained stable through August during low flow conditions. Phosphorus levels at Stn. 800.5 were elevated in June following a significant storm event during drought conditions. Phosphorus levels at Stn. 800.8 were elevated in June following the storm event and in July when lab data noted colored water and organic matter. Phosphorus levels at Stn. 805 were within a moderate range in May and July. The 2020 average phosphorus levels increased at Stns. 800.5 and 800.8, decreased at Stn. 805, and remained stable at Stn. 800 from that measured in 2019.
- **Turbidity:** Turbidity levels at Stn. 800 were slightly elevated in July and August during low flows and drought conditions. Turbidity levels at Stns. 800.5 were elevated in June following a significant storm event. Turbidity levels at Stn. 800.8 were elevated in June following the storm event and in July when water color was darker and organic matter was noted in the sample. Turbidity levels at Stn. 805 were within a low range. The 2020 average turbidity levels decreased slightly from that measured in 2019 at Stn. 805, and increased slightly at Stns. 800, 800.5 and 800.8.
- **pH:** pH levels were within the desirable range 6.5-8.0 units at all stations. The 2020 average pH levels increased (improved) from that measured in 2019 at all stations.

Sub-Watershed Name	Station Name	Table 1. 2020 Average Water Quality Data for Pike Brook Sub-Watershed					
		Chloride (mg/L)	Color (pcu)	Cond. (us/cm)	Total P (ug/L)	Turb. (ntu)	pH
Pike Brook	800	12	104	76.1	18	2.03	6.90
Pike Brook	800.5	5	90	51.5	20	1.49	6.70
Pike Brook	800.8	7	142	48.4	23	1.57	6.71
King Hill Brook	805	17	77	90.1	13	0.83	6.97

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.5 mg/L
Chlorophyll-a: 4.39 ug/L
Conductivity: 42.0 uS/cm
Chloride: 5 mg/L
Total Phosphorus: 11 ug/L
Transparency: 3.3 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)