



Results of the Water Quality Monitoring
Program for Coldwater Fisheries
Sudbury to Hudson Reliability Project
November 2023 – January 2024

MARCH 2024

PREPARED FOR
Eversource Energy

PREPARED BY
SWCA Environmental Consultants

**RESULTS OF THE WATER QUALITY MONITORING
PROGRAM FOR COLDWATER FISHERIES
SADBURY TO HUDSON RELIABILITY PROJECT
NOVEMBER 2023 – JANUARY 2024**

Prepared for

Eversource Energy
247 Station Drive
Westwood, MA 02090

Prepared by

Alison Holmes, LSP, and Rebecca Weissman, PWS

SWCA Environmental Consultants
153 Cordaville Road, Suite 130
Southborough, Massachusetts 01772
(413) 256-0202
www.swca.com

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1 INTRODUCTION

The Sudbury to Hudson Reliability Project (Project) consists of a new, approximately 9-mile-long transmission line between Eversource’s existing Sudbury substation in Sudbury, Massachusetts, and the Hudson Light & Power Company’s (HL&P) substation in Hudson, Massachusetts. The new underground transmission line will be installed in the municipalities of Sudbury, Hudson, Stow, and Marlborough, Massachusetts. Approximately 7.5 miles of the new transmission line will be installed within an inactive Massachusetts Bay Transportation Authority (MBTA) railroad right-of-way (ROW) which is to be converted into the Massachusetts Central Rail Trail (MCRT).

Special Condition Part I(q) of the Sudbury Order of Conditions (OOC) for the Project required baseline and construction phase monitoring of flow and water quality for all Coldwater Fisheries Resources (CFR) crossed by the Project. SWCA has prepared this quarterly summary of the water quality monitoring for the two (2) crossings of CFR in Hop Brook and six (6) other streams or tributaries that contribute to CFR and are crossed by the Project (see Figures in Appendix A).

The following eight streams were included in this monitoring plan as requested by the Sudbury Conservation Commission:

- Hop Brook – Bridge 128 (400+30): ST 400 Perennial Stream and State-listed CFR;
- Unnamed Stream (527+30): ST 527 Intermittent Stream and local CFR;
- Dudley Brook (539+40): ST 540 Perennial and local CFR;
- Unnamed intermittent stream (560+82): ST 561 Intermittent and local CFR;
- Unnamed Intermittent stream (593+18): ST 593 Intermittent and local CFR;
- Intermittent Tributary to Hop Brook (700+50, 710+50): ST 700/710 Intermittent and local CFR;
- Hop Brook (Bridge 127) (725+00): ST 725 Perennial Stream and State-listed CFR; and
- Intermittent Tributary to Wash Brook (747+39): ST 747 Intermittent and local CFR.

2 WATER QUALITY MONITORING METHODS AND RESULTS

2.1 Surface Water Monitoring Methods

In accordance with the *Baseflow and Baseline Water Quality Monitoring Program for Cold Water Fisheries* proposed by SWCA dated August 25, 2021 and approved by the Sudbury Conservation Commission, the following parameters were monitored on a monthly basis:

- temperature, dissolved oxygen, as well as pH, specific conductivity, and oxygen reduction potential (ORP) measured with a YSI multi-meter;
- flow velocity with a Hach FH950 flow velocity meter;
- turbidity levels measured with a turbidity meter; and

- chlorine, hardness and alkalinity measured with field test strips.

Based on the Massachusetts Surface Water Quality Standards (SWQS) (314 CMR 4.00), CFRs have special designated criteria for dissolved oxygen and temperature. All other criteria are the same as those for warm water fisheries.

The following Table 1 includes ranges for temperature, dissolved oxygen and pH that are favorable to cold water fisheries. Table 2 indicates ranges for other surface water criteria that are favorable for freshwater fish.

Table 1. Surface Water Conditions for Cold Water Fisheries

Parameter ¹	Favorable Ranges for Cold Water Fisheries
Temperature	below 20°C (up to 26°C for 24 hours)
Dissolved Oxygen	min of 6 mg/L, up to 7 mg/L preferred
pH	6.5 - 8.3

Note: C = Celsius; mg/L = milligrams per liter

Source:

1: 314 CMR 4.00: Massachusetts Surface Water Quality Standards

Table 2. Surface Water Conditions for Freshwater Fish

Parameter	Favorable Ranges for Freshwater Stream or Fish
Specific Conductivity ¹	150 - 500 µs/cm
Turbidity ²	"free from turbidity that would impair fish habitat"
Chlorine ³	<4 mg/L
Alkalinity ^{4,5}	< 300 mg/L

Note: ORP = oxygen reduction potential; mg/L = milligrams per liter; µs/cm = microsiemens per centimeter; mV = millivolts

Sources:

1: EPA Volunteer Stream Monitoring: A Methods Manual

2: 314 CMR 4.00: Massachusetts Surface Water Quality Standards

3: EPA National Primary Drinking Water Regulations

4: UMass Dartmouth Northeast Regional Aquaculture Center NRAC Fact Sheet No. 170-1993.

5: EPA National Recommended Water Quality Criteria for Aquatic Life.

During this quarterly monitoring period (November 2023 to January 2024) SWCA monitored these eight locations on November 30, December 28, and January 23, 2024. Earth disturbance activities began near the monitoring points beginning in January 2023 and have continued through this quarterly monitoring period. All crossings were observed to be flowing to some extent during at least one of those monitoring events with the exception of the unnamed stream at station 593+18, which has never been observed to be flowing since the initial survey was conducted. Temperature and dissolved oxygen can change naturally when the sun rises and enables aquatic plants to release more oxygen. Sampling was conducted in the same order of monitoring points and as a result, the sampling was conducted during roughly the same time of day at each location each month to help ensure comparability over time. Table 3 attached to this report in Appendix B summarizes the data collected during each of these monitoring events. The individual summary field logs are also included in Appendix C.

2.2 Temperature

Temperature of the surface water correlated to the temperature of ambient air from the week leading up to each monitoring event at all stations. Generally, surface water temperatures decreased during the November monitoring event, increased in the December monitoring event and then decreased in the January monitoring event relative to the ambient air temperatures from the week up to each monitoring event. Surface water temperatures in November ranged from 1.1 to 5.8 degrees Celsius. Temperatures rose to ranges of 3.4 to 8.1 degrees Celsius in December due to unseasonably warm ambient air temperatures prior to this sampling event. In January, the stream temperatures ranged from 0.2 to 6.2 degrees Celsius. The upgradient and downgradient temperature readings across the Project are similar and comparable to each other, and therefore the construction activities have not impacted surface water temperatures.

2.3 Dissolved Oxygen

Dissolved oxygen levels were varied in all locations for all three months, with results being both above and below the favorable value of 6 mg/L. Stations 527 U, 561 U/D, and 700 U were < 6 mg/L in the month of November. Station 700 U was also <6 mg/L in December and January. The upgradient and downgradient dissolved oxygen readings across the Project are similar in comparison to each other, and therefore the construction activities have not impacted surface water dissolved oxygen levels.

2.4 pH

The monitoring locations reported most of the pH levels to be within normal ranges for cold water fisheries at 6.5-8.3 for November 2023 through January 2024. Only station 527 U/D was below the normal range pH levels. Additionally, in November, the only other station with pH reading below the normal range was ST 747 D. All other stations were within the normal ranges for cold water fisheries at pH 6.5-8.3. The upgradient and downgradient pH readings across the Project are similar to each other, and therefore the construction activities have not impacted surface water pH levels.

2.5 Specific Conductivity

At a majority of the stations for all three monitoring events, the specific conductivity (at 25 degrees Celsius) readings were within the acceptable range for freshwater fisheries at 150-500 $\mu\text{S}/\text{cm}$. Readings were outside the acceptable range at 400 U/D (November and January), 561 U (December), 561 D (December and January), 700 U (November through January), 710 D (November), and 747 U (November). Stations 700 U and 710 D were at significantly higher than the acceptable range, with readings above 1000 $\mu\text{S}/\text{cm}$ for November and December. However, these results correlate with previous monitoring results at this station. Further, no difference was observed between the upgradient and downgradient readings across the Project, and therefore the construction activities have not impacted surface water specific conductivity.

2.6 Turbidity

Turbidity levels are not specifically defined by a standard value in Massachusetts. Based on available information, for the purpose of this assessment, it can be assumed that a value of less than 5 Nephelometric Turbidity Units (NTU) is favorable for freshwater, however a lower NTU is considered more favorable as typical groundwater is less than 1 NTU. For each of the monitoring events between November 2023 through January 2024, turbidity levels at each station were observed to be less than 5 NTUs in all locations other than Stations 747 U (November and December), 747 D (December), 700 U

and 710 D (all three months) at the Hop Brook Tributary. Within this Hop Brook Tributary, poor water quality conditions and frequent turbid water has been observed including before construction began. The upgradient and downgradient readings across the Project coincide to each other, concluding the construction activities have not impacted surface waters turbidity.

2.7 Other Parameters

The stream flow velocities from the downgradient side to the upgradient side were similar and consistent from month to month. The ORP, alkalinity, chlorine, and hardness levels from the downgradient side to the upgradient side were the same within the sampling months. Alkalinity and chlorine levels were within the desirable levels for freshwater.

3 SUMMARY

No significant differences were observed between upgradient and downgradient stations across the Project corridor. Therefore, construction activities do not appear to be impacting the water quality of these coldwater fisheries.

4 REFERENCES

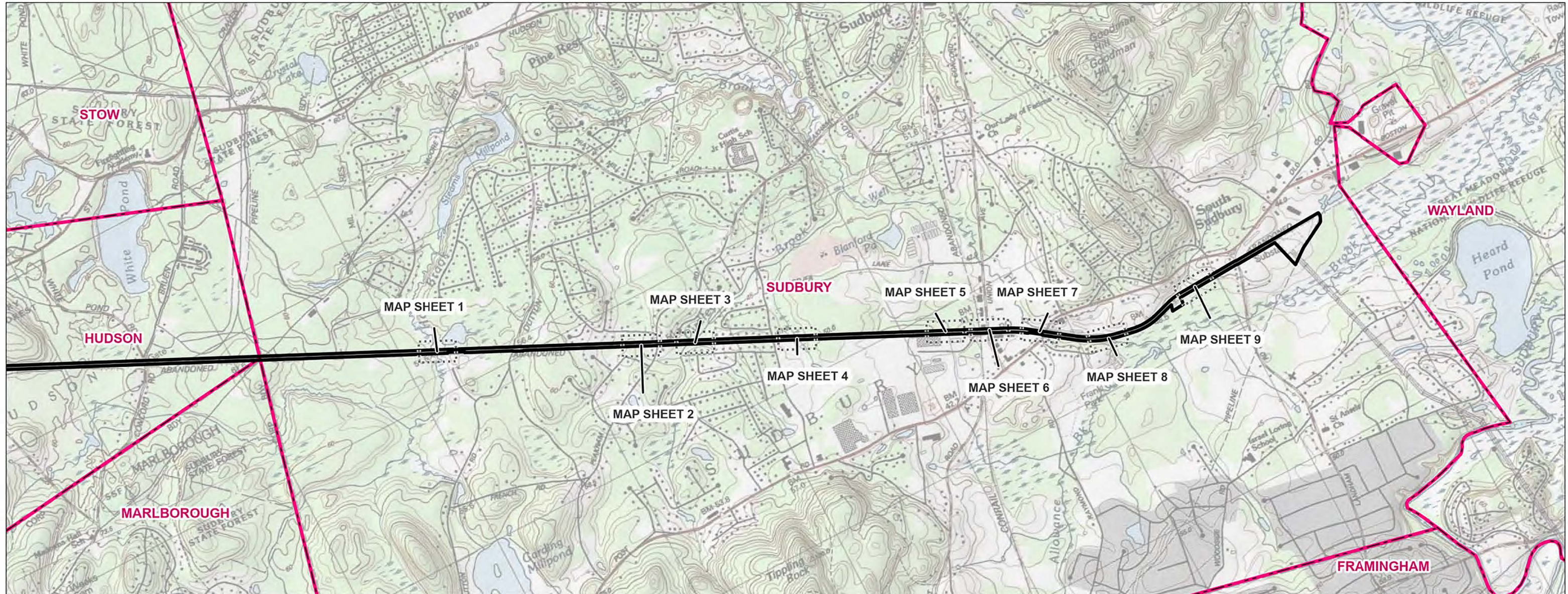
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APPENDIX A
Figures Map Book

2021 - Sudbury Hudson Reliability Project

HUDSON, STOW, & SUDBURY, MA Water Sampling Map

Date: August 11, 2021



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..... Map Sheet Matchline



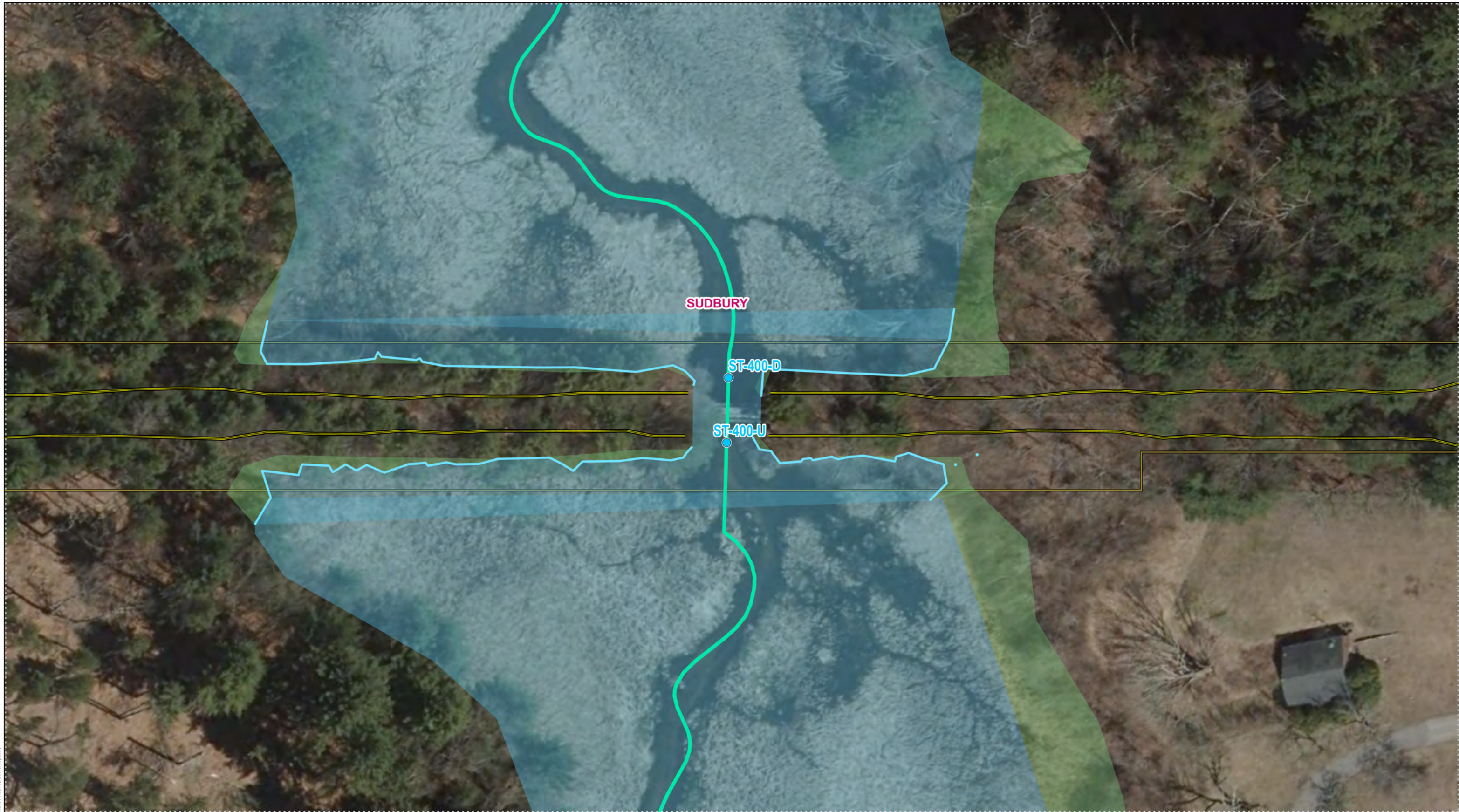
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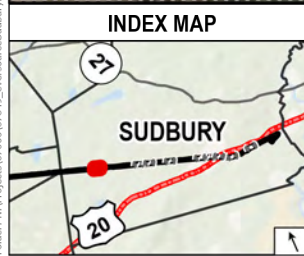
NO.	DATE	REVISIONS

PREPARED FOR:
EVERSOURCE
ENERGY
107 Selden Street
Berlin, CT 06037

PREPARED BY:
SWCA
ENVIRONMENTAL CONSULTANTS
15 Research Drive
Amherst, MA 01002

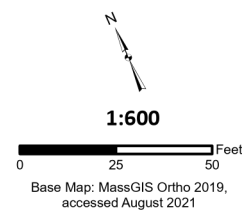


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- Water Sampling Point
- Watercourse
- Limit Of Work (LOW)
- Coldwater Fisheries Line
- Open Water
- Approximate Wetland (Not Delineated)
- Existing Right-of-Way (ROW)
- Municipal Boundary



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**Sudbury Hudson Reliability Project
Water Sampling Map**

SUDBURY, MA

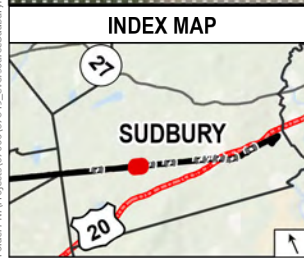
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Date: August, 2021

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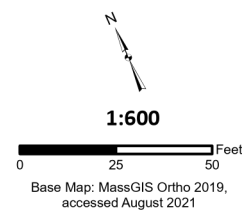


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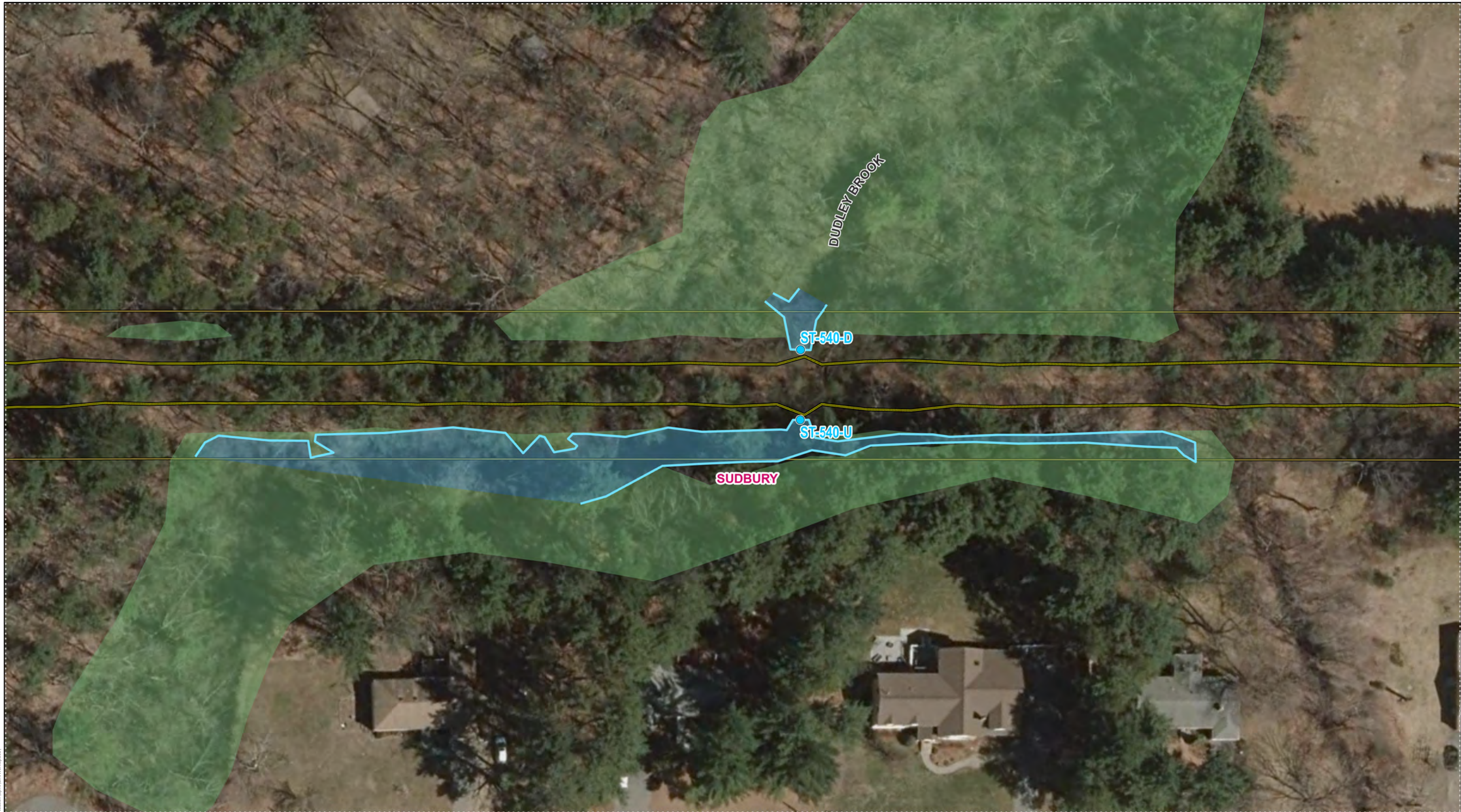


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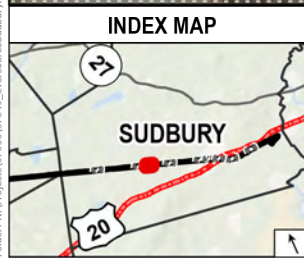
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SUDBURY, MA MAP SHEET 2 OF 9

Date: August, 2021

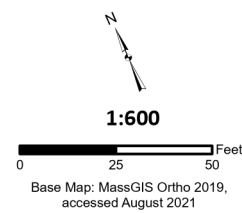


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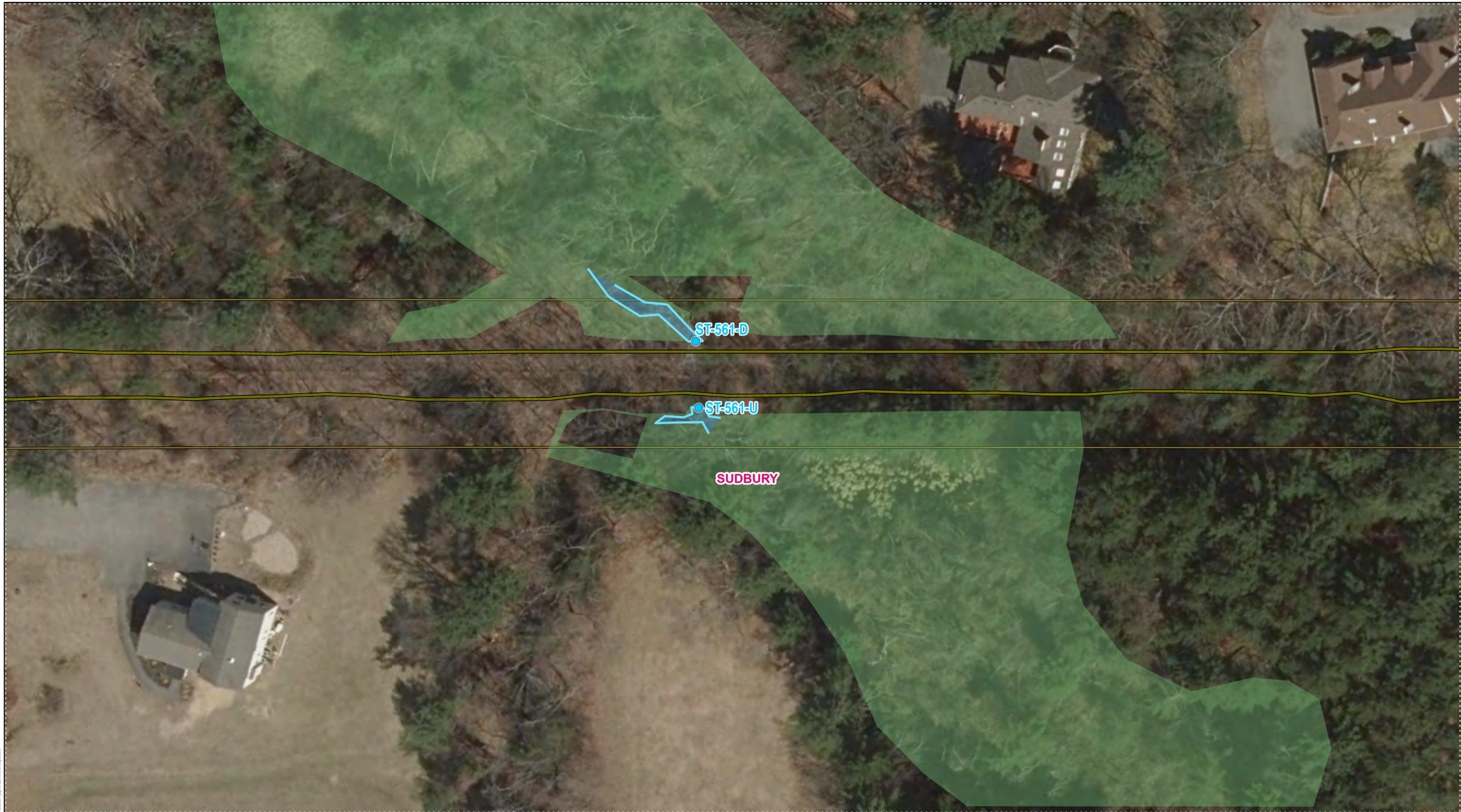
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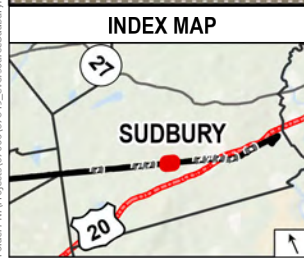
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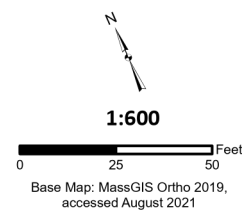


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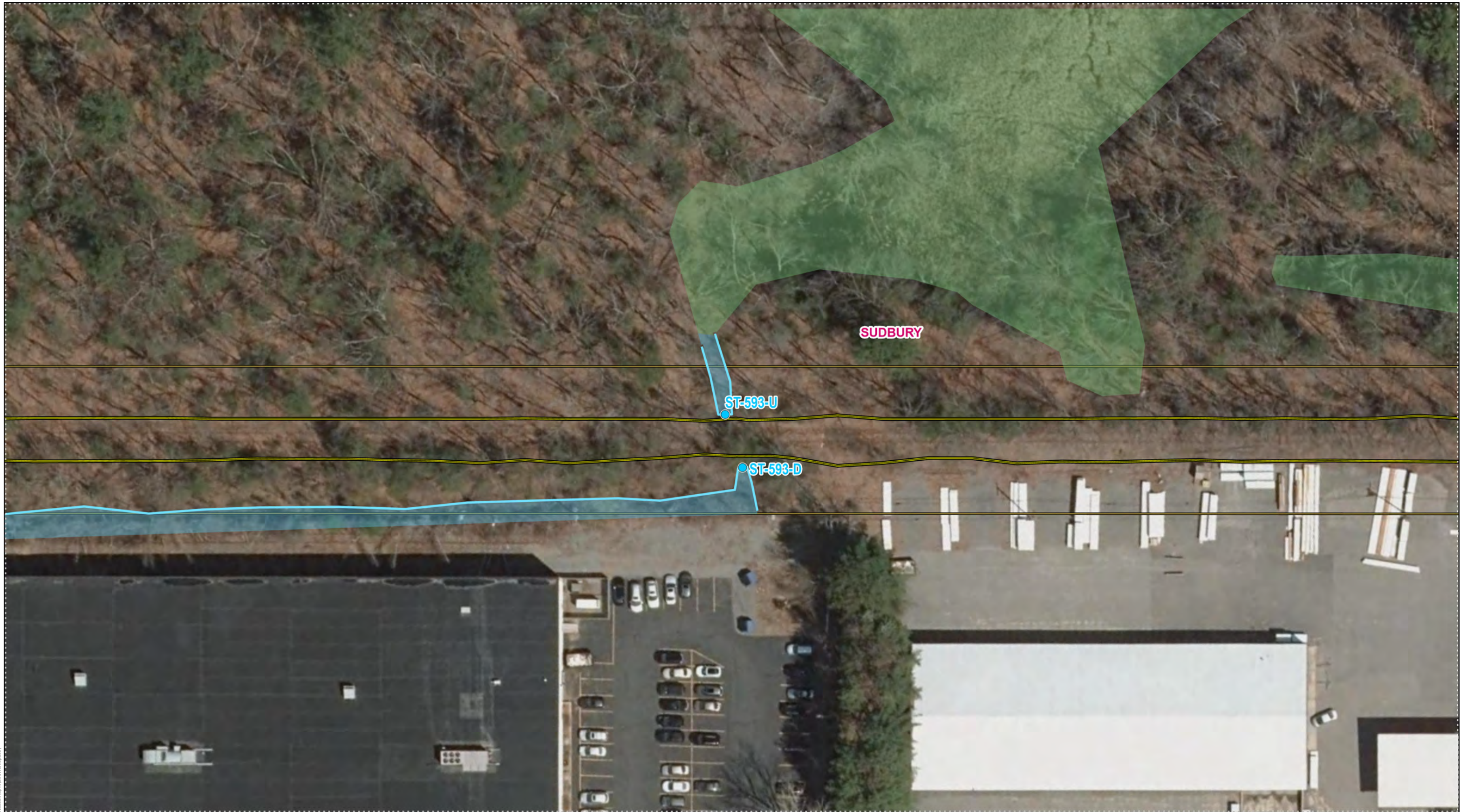
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Water Sampling Map**

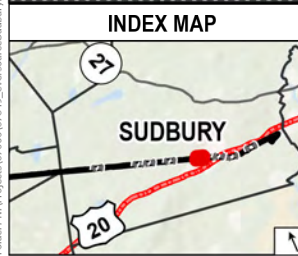
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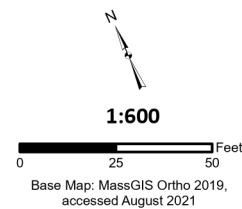


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**Sudbury Hudson Reliability Project
Water Sampling Map**

SUDBURY, MA MAP SHEET 5 OF 9

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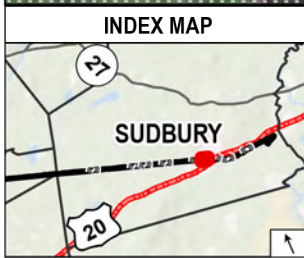


MAP SHEET 6

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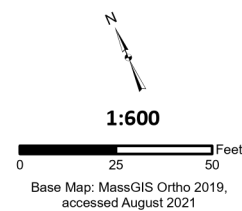
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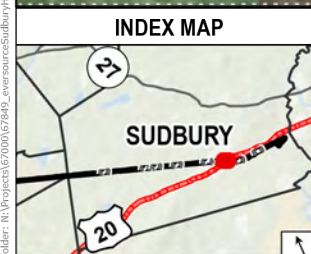
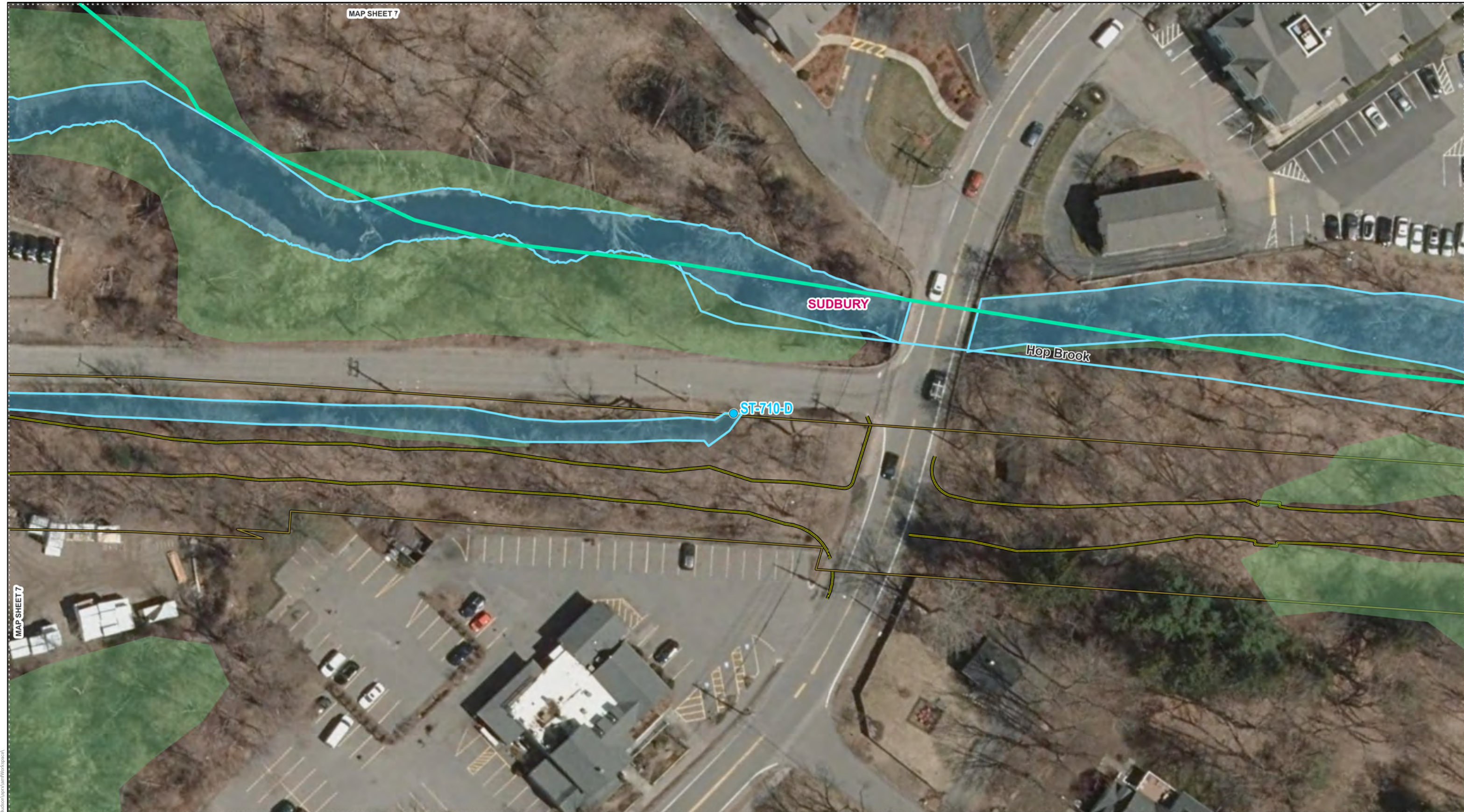
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**Sudbury Hudson Reliability Project
Water Sampling Map**

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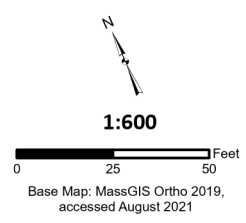
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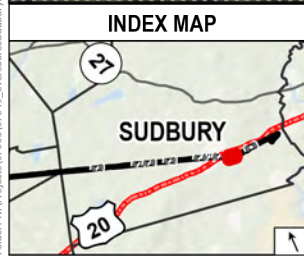
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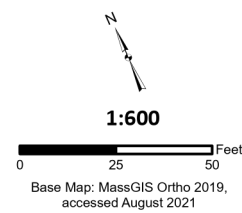


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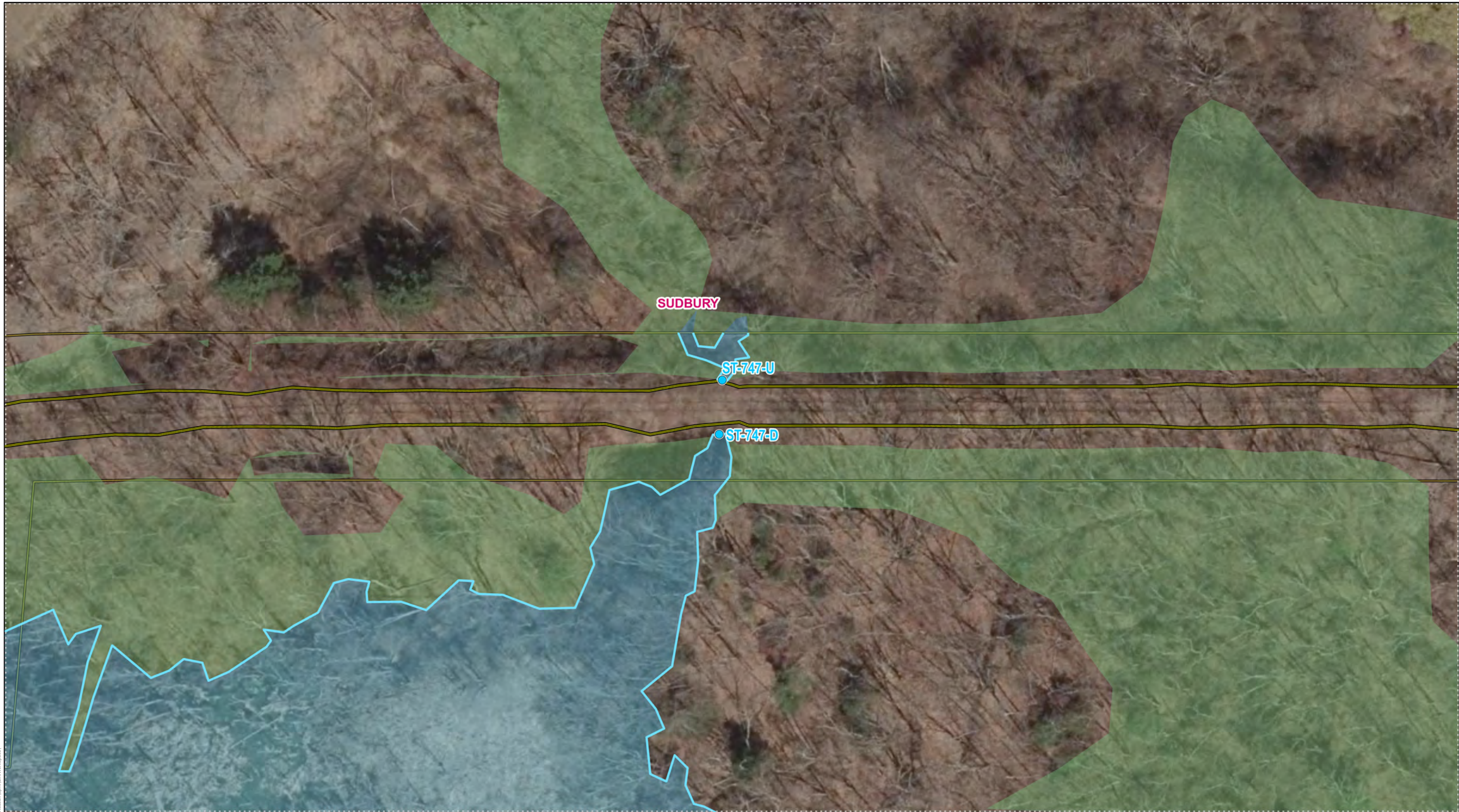


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Water Sampling Map**

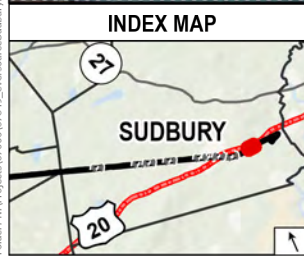
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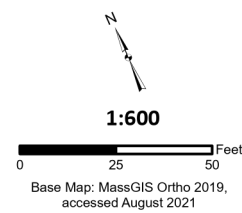


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APPENDIX B

Tables

Table 3: Cold Water Fisheries Monitoring Results
Sudbury to Hudson Reliability Project

Station # Brook/Stream/Tributary Plan # Direction of Flow Type Date	Favorable Conditions for Cold Water Fisheries	ST 400 UP		2021																	2022												2023												2024
		Hop Brook		perennial																	perennial												perennial												perennial
		PLAN 47		south																	south												south												south
		PLAN 47		30-Aug	30-Sep	29-Oct	30-Nov	23-Dec	19-Jan	23-Feb	18-Mar	22-Apr	23-May	24-Jun	27-Jul	25-Aug	23-Sep	28-Oct	21-Nov	21-Dec	30-Jan	24-Feb	24-Mar	20-Apr	17-May	21-Jun	28-Jul	23-Aug	28-Sep	5-Oct	30-Oct	30-Nov	28-Dec	23-Jan											
Temperature (°C)	< 20	22.25	16.20	9.23	2.77	2.16	2.48	6.48	11.88	15.15	24.82	21.27	26.25	22.64	16.06	11.38	2.3	2.37	4.35	0.96	10.49	12.04	Nm	18.54	24.9	Nm	Nm	18.15	12.35	3.3	3.4	2.1													
Specific Conductance (µS/cm @ 25°C)	150-500	414	422	421	408	410	573	768	730	727	889	771	787	852	666	598	764	572	523	403	503	450	188	634	664	516	Nm	468	386	524	335	506													
Specific Conductance (µS/cm)	150-500	393	351	294	235	231	327	496	547	599	880	716	806	813	552	442	432	325	316	235	364	367	470	556	662	476	Nm	405	293	309	220	285													
Dissolved Oxygen (%)	nsl	62	80	87	97	101	99	80.1	88.8	97.1	74.6	90.5	84.1	62.8	73.6	78.8	84.5	88	89.9	74.7	90.3	91.1	Nm	65.5	68.5	58.9	Nm	72.3	55.2	88.7	79.9	92.7													
Dissolved Oxygen (mg/L)	> 6	5.34	7.85	9.99	13.12	13.95	13.40	9.82	9.56	9.72	6.21	8.00	6.78	5.4	7.23	8.60	11.55	12.03	11.66	10.66	10.02	10.28	Nm	6.12	5.66	5.06	Nm	6.79	6.35	12.44	9.65	12.72													
pH	6.5-8.3	6.6	6.8	6.7	6.5	6.8	7.0	7.2	7.52	8.01	7.75	7.42	7	7.79	7.78	6.8	6.8	7.2	6.68	6.9	6.74	6.98	8.07	6.56	6.32	6.24	Nm	6.24	6.83	7.33	7.01	7.13													
ORP	nsl	91	94	93	78	104	69	156	144	137	107	73	60	73	85	109	135	34	Nm	Nm	Nm	Nm	610	1246.8	887.9	Nm	Nm	66.4	108.2	129.6	179.1	144.7													
Turbidity (NTU)	free from turbidity that would impair fish habitat	2.86	1.73	2.39	1.95	2.37	2.58	1.83	0.81	1.45	2.03	3.64	1.69	2.6	1.6	2.7	2.4	1.25	0.87	2.62	1.88	1.78	3.64	2.33	3.07	4.52	3.15	3.65	1.78	2.97	4.7	2.45													
Hardness	nsl	100	0	0	0	20	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100												
Chlorine, Free	< 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
Chlorine, Total	< 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
Alkalinity	<300	40	40	0	0	0	0	40	20	40	40	40	40	80	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40													
Velocity (ft/s)	nsl	0.35	0.38	0.4	0.28	Na	0.36	1.3	0.42	0.52	0.34	0.32	0.14	0.29	0.59	0.36	0.35	1.25	0.48	1.376	0.75	0.62	0.602	0.77	0.97	0.77	0.68	Nm	0.61	0.22	0.31	0.39													

Station # Brook/Stream/Tributary Plan # Direction of Flow Type Date	Favorable Conditions for Cold Water Fisheries	ST 400 DOWN		2021																	2022												2023												2024
		Hop Brook		perennial																	perennial												perennial												perennial
		PLAN 47		south																	south												south												south
		PLAN 47		30-Aug	30-Sep	29-Oct	30-Nov	23-Dec	19-Jan	23-Feb	18-Mar	22-Apr	23-May	24-Jun	27-Jul	25-Aug	23-Sep	28-Oct	21-Nov	21-Dec	30-Jan	24-Feb	24-Mar	20-Apr	17-May	21-Jun	28-Jul	23-Aug	28-Sep	5-Oct	30-Oct	30-Nov	28-Dec	23-Jan											
Temperature (°C)	< 20	22.25	16.17	9.22	2.74	2.12	2.47	6.45	11.85	15.16	24.78	21.14	26.18	22.59	16.04	11.39	2.29	2.37	4.34	0.95	10.48	11.4	Nm	18.52	24.86	20.94	Nm	18.15	12.08	3.2	7.1	2.1													
Specific Conductance (µS/cm @ 25°C)	150-500	415	422	420	408	408	573	775	717	715	868	777	788	877	681	604	761	572	525	422	506	417	190	635	667	516	Nm	463	384	517	335	505													
Specific Conductance (µS/cm)	150-500	394	351	293	235	230	327	500	537	580	865	718	805	834	564	447	431	325	318	227	365	310	474	556	666	476	Nm	402	289	335	221	484													
Dissolved Oxygen (%)	nsl	60	78	86	104	105	99	83.5	87.9	93.5	75.9	90	77.5	63.6	74.1	79.9	83.7	88	91	74.7	85.5	88.5	Nm	63.5	67.5	58.9	Nm	70.3	54.6	90.9	81.2	92.4													
Dissolved Oxygen (mg/L)	> 6	5.20	7.64	9.02	14.05	14.33	13.46	10.24	9.48	9.37	6.26	7.98	6.24	5.49	7.3	8.68	11.46	12.03	11.79	10.65	9.53	9.45	Nm	5.95	5.59	5.24	Nm	6.65	6.23	12.16	9.81	12.67													
pH	6.5-8.3	6.6	6.7	6.7	6.5	6.8	7.0	7.1	7.47	7.85	7.7	7.73	7	7.85	7.68	6.8	6.8	7.2	6.79	7.0	6.67	6.94	8.05	6.6	6.4	6.25	Nm	6.19	6.64	7.47	7	7.1													
ORP	nsl	91	94	93	79	117	119	159	146	142.4	103	60	50	75	86.2	140	140	34	Nm	Nm	Nm	Nm	620	1070.3	957.5	NA	Nm	66.2	120.9	131.2	168	143.8													
Turbidity (NTU)	free from turbidity that would impair fish habitat	2.86	1.73	2.30	2.02	2.43	2.56	1.88	1.04	1.91	1.97	3.25	1.5	2.63	1.3	2.74	2.45	1.25	0.86	2.64	1.35	1.96	3.55	2.43	2.61	4.68	3.12	3.28	1.47	2.7	0.42	2.24													
Hardness	nsl	100	0	0	0	0	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100													
Chlorine, Free	< 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
Chlorine, Total	< 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
Alkalinity	<300	40	40	0	0	20	0	40	20	40	40	40	40	80	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40													
Velocity (ft/s)	nsl	0.34	0.31	0.39	0.4	Na	0.35	1.25	0.32	0.49	0.28	0.3	0.17	0.34	0.56	0.4	0.37	1.25	0.475	1.247	0.67	0.59	0.565	0.76	0.93	0.75	0.69	Nm	0.53	0.145	0.34	0.45													

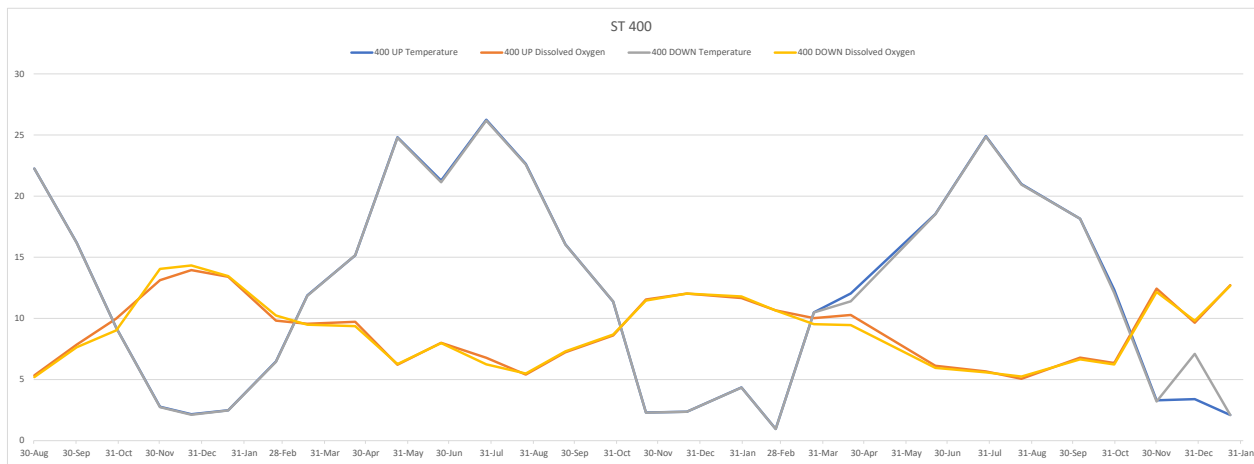


Table 3: Cold Water Fisheries Monitoring Results
Sudbury to Hudson Reliability Project

Station # Brook/Stream/Tributary Plan # Direction of Flow Type Date	Favorable Conditions for Cold Water Fisheries	ST 527 UP		2021												2022												2023												2024
		Unnamed Stream																																						
		PLAN 52																																						
		south																																						
intermittent		30-Aug	30-Sep	29-Oct	30-Nov	23-Dec	19-Jan	23-Feb	18-Mar	22-Apr	23-May	24-Jun	27-Jul	25-Aug	23-Sep	28-Oct	21-Nov	21-Dec	30-Jan	24-Feb	24-Mar	20-Apr	17-May	21-Jun	28-Jul	23-Aug	28-Sep	5-Oct	30-Oct	30-Nov	28-Dec	23-Jan								
Temperature (°C)	< 20	17.19	12.17	7.42	2.39	1.56	1.08	5.58	10.66	13.53	17.21	15.18	dry	dry	13.4	8.75	1.82	0.92	5.31	2.45	10.1	14.03	13.5	13.57	17.71	15.57	Nm	15.53	11.25	2.8	7.6	4.2								
Specific Conductance (µS/cm @ 25°C)	150-500	305	290	201	301	260	309	527	426	508	487	563	dry	dry	597	474	623	462	366	334	303	409	375	387	451	398	Nm	366	262	345	211	310								
Specific Conductance (µS/cm)	150-500	259	219	148	170	144	163	332	309	397	420	458	dry	dry	493	327	389	241	229	190	217	318	292	302	388	326	Nm	300	193	199	142	187								
Dissolved Oxygen (%)	nsf	51	61	54	67	70	72	62.4	78.8	91.3	50.5	63.6	dry	dry	71.2	44.3	65.3	76.5	85.5	85.3	76.3	81.1	81.6	61.1	62.2	61.9	Nm	70.9	66.9	42.1	64.4	65.3								
Dissolved Oxygen (mg/L)	> 6	4.94	6.56	6.02	9.17	9.71	10.2	7.82	8.74	9.47	4.87	6.38	dry	dry	7.03	5.13	8.91	9.49	10.82	11.63	8.57	8.34	8.48	6.35	5.92	6.15	Nm	7.06	6.78	5.66	7.62	8.48								
pH	6.5-8.3	5.4	6.1	6.3	6.3	6.0	6.0	6.2	6.37	6.42	6.62	6.8	dry	dry	7.2	6.8	6.8	7	6.14	5.7	7.3	7.17	5.89	5.9	5.67	5.52	Nm	5.82	5.94	6.36	6.03	6.23								
ORP	nsf	130	117	105	97	127	97	200	186	179	119	Ns	dry	dry	90	98	87	100	Nm	Nm	Nm	Nm	304	1081.8	662	NA	Nm	165.9	121.1	129.4	179.7	152.9								
Turbidity (NTU)	free from turbidity that would impair fish habitat	2.30	0.63	1.52	1.53	2.98	2.20	2.03	2.01	1.46	3.01	0.76	dry	dry	1.97	1.77	3.76	1.77	1.64	0.94	1.68	1.2	2.3	1.29	0.4	0.23	2.7	1.48	1.34	4.24	0.55	2.57								
Hardness	nsf	100	0	0	100	0	0	0	0	0	100	100	dry	dry	100	100	100	100	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100							
Chlorine, Free	< 4	0	0	0	0	0	0	0	0	0	0	0	dry	dry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
Chlorine, Total	< 4	0	0	0	0	0	0	0	0	0	0	0	dry	dry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
Alkalinity	<300	0	0	0	0	0	20	0	0	20	0	0	dry	dry	40	0	40	40	0	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40						
Velocity (ft/s)	nsf	0.2	0.18	0.1	0.21	Na	0.15	0.53	0.09	0.08	0.14	0.09	dry	dry	0.14	0.13	0.013	0.15	0.186	0.092	0.18	0.14	0.083	0	0.69	0.13	0.19	N/A	0.1	0.11	0.34	0.14								

Station # Brook/Stream/Tributary Plan # Direction of Flow Type Date	Favorable Conditions for Cold Water Fisheries	ST 527 DOWN		2021												2022												2023												2024
		Unnamed Stream																																						
		PLAN 52																																						
		south																																						
intermittent		30-Aug	30-Sep	29-Oct	30-Nov	23-Dec	19-Jan	23-Feb	18-Mar	22-Apr	23-May	24-Jun	27-Jul	25-Aug	23-Sep	28-Oct	21-Nov	21-Dec	30-Jan	24-Feb	24-Mar	20-Apr	17-May	21-Jun	28-Jul	23-Aug	28-Sep	5-Oct	30-Oct	30-Nov	28-Dec	23-Jan								
Temperature (°C)	< 20	17.07	12.13	7.36	2.48	1.63	1.07	5.49	10.11	13.11	17.17	14.88	dry	dry	13.56	8.84	1.68	0.89	4.74	2.82	10.08	13.96	13.03	12.31	17.41	15.39	Nm	15.36	11.23	2.9	7.7	4.3								
Specific Conductance (µS/cm @ 25°C)	150-500	301	287	204	304	262	294	538	435	513	604	579	dry	dry	560	482	624	481	374	341	305	405	371	378	462	409	Nm	364	272	362	221	326								
Specific Conductance (µS/cm)	150-500	255	217	154	174	145	159	337	311	396	513	467	dry	dry	479	323	402	274	229	196	218	320	287	286	395	333	Nm	297	200	209	148	198								
Dissolved Oxygen (%)	nsf	52	64	56	67	74	74	64.6	70.9	85.3	54.5	61.8	dry	dry	67.9	39.4	67.4	73.5	75.3	75.9	76.1	81.6	77.1	37.6	55.4	62.1	Nm	70.2	74.1	54.7	65.6	70.6								
Dissolved Oxygen (mg/L)	> 6	4.98	6.87	6.16	9.12	10.31	10.45	8.13	7.88	8.95	5.23	6.23	dry	dry	6.89	4.57	8.46	10.21	9.65	10.22	8.56	8.41	8.11	6.98	7.12	6.16	Nm	6.99	6.59	7.37	7.87	9.14								
pH	6.5-8.3	5.8	6.5	6.4	6.4	6.2	6.0	6.2	6.38	6.48	6.58	6.78	dry	dry	7.2	6.8	6.8	7	6.87	5.7	7.14	6.88	5.86	5.91	5.63	5.48	Nm	6.0	6.0	6.31	6.03	6.25								
ORP	nsf	127	106	105	96	122	81	175	178	173	123	116	dry	dry	80	90	76	60	Nm	Nm	Nm	Nm	1354	357.8	605.3	NA	Nm	161.1	106.9	137.5	169.9	144.9								
Turbidity (NTU)	free from turbidity that would impair fish habitat	1.18	0.84	1.56	1.40	2.00	1.50	1.81	1.26	1.4	2.18	0.64	dry	dry	1.89	1.24	3.78	1.48	1.94	0.33	1.47	0.99	2.22	2.13	0.78	1.04	2.9	2.19	0.84	2.85	0.58	0.42								
Hardness	nsf	100	100	0	100	0	0	0	0	0	100	100	dry	dry	100	100	100	100	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100							
Chlorine, Free	< 4	0	0	0	0	0	0	0	0	0	0	0	dry	dry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
Chlorine, Total	< 4	0	0	0	0	0	0	0	0	0	0	0	dry	dry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
Alkalinity	<300	0	0	0	0	0	0	0	20	0	0	0	dry	dry	40	0	40	40	0	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40						
Velocity (ft/s)	nsf	0.21	0.06	0.13	0.14	Na	0.1	0.48	0.23	0.17	0.09	0.06	dry	dry	0.12	0.09	0.01	0.1	0.155	0.193	0.16	0.13	0.063	0.01	0.33	0.14	0.18	NA	0.15	0.12	0.3	0.17								

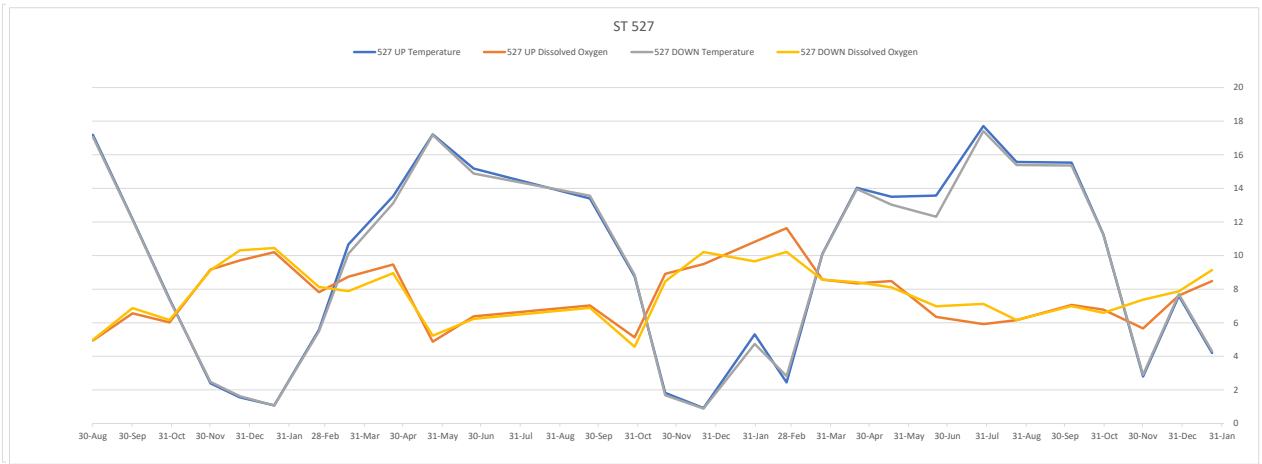


Table 3: Cold Water Fisheries Monitoring Results
Sudbury to Hudson Reliability Project

Station # Brook/Stream/Tributary Plan # Direction of Flow Type Date	Favorable Conditions for Cold Water Fisheries	ST 540 UP																																		2024										
		Dudley Brook																																		2024										
		PLAN 54																																		2024										
		south																																		2024										
perennial																																		2024												
		2021																				2022												2023												2024
		30-Aug	30-Sep	29-Oct	30-Nov	23-Dec	19-Jan	23-Feb	18-Mar	22-Apr	23-May	24-Jun	27-Jul	25-Aug	23-Sep	28-Oct	21-Nov	21-Dec	30-Jan	24-Feb	24-Mar	20-Apr	17-May	21-Jun	28-Jul	23-Aug	28-Sep	5-Oct	30-Oct	30-Nov	28-Dec	23-Jan														
Temperature (°C)	< 20	18.84	13.17	7.78	1.62	1.02	0.42	5.2	10.35	12.72	19.67	17.54	21.73	20.7	13.9	9.67	1.47	0.86	3.55	1.15	8.99	11.72	13.81	13.66	21.25	17.06	Nm	16.4	11.16	1.7	7.2	1.4														
Specific Conductance (µS/cm @ 25°C)	150-500	340	305	271	312	288	377	573	487	553	663	630	609	890	701	654	599	461	405	436	488	433	406	504	504	415	Nm	380	329	284	242	304														
Specific Conductance (µS/cm)	150-500	300	236	182	172	157	198	360	350	423	599	540	561	805	625	378	330	248	238	237	256	323	319	394	468	361	Nm	318	242	158	161	166														
Dissolved Oxygen (%)	nsl	16	56	52	73	79	80	83	84.4	70.6	42.1	53	58.3	57.8	67	34.8	59.7	70	73.9	77.5	117.8	78.2	64	61.5	42.3	55.1	Nm	65	67.8	73.9	75.2	75.8														
Dissolved Oxygen (mg/L)	> 6	1.41	5.91	6.11	10.16	11.15	11.60	10.26	9.43	7.6	4.01	5.07	5.12	4.77	6.92	3.93	8.35	9.97	9.78	10.94	12.3	8.47	6.62	6.37	3.73	5.32	Nm	6.32	6.24	10.25	9.06	14.34														
pH	6.5-8.3	6.1	6.7	6.5	6.6	6.6	7.0	6.7	6.95	6.99	7.45	7.2	6.8	7	7.2	6.6	6.9	7.2	6.22	6.1	6.83	6.71	6.28	6.42	5.93	6.02	Nm	6.3	6.53	7.05	6.73	6.72														
ORP	nsl	123	101	101	87	106	55	162	176	168	107	94	100	80	135	68	100	173	Nm	Nm	Nm	Nm	497	1020.6	993.9	Nm	Nm	140.7	82.1	106.6	142.2	135.1														
Turbidity (NTU)	free from turbidity that would impair fish habitat	3.14	1.37	1.90	1.86	1.54	1.66	2.2	1.67	2	2.67	2.48	3.29	4.2	2.66	4.5	3.56	0.92	0.42	0.52	2.56	1.99	1.42	3.12	2.37	0.71	2.7	3.26	0.73	2.02	0.9	2.7														
Hardness	nsl	100	20	0	100	0	0	100	0	100	100	100	100	100	100	100	100	100	100	0	100	100	100	100	100	100	100	100	100	100	100	100	100													
Chlorine, Free	< 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
Chlorine, Total	< 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
Alkalinity	<300	40	40	0	0	0	0	0	20	20	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40														
Velocity (ft/s)	nsl	0.55	0.44	0.66	0.31	Na	0.8	0.78	0.52	1.1	0.4	0.25	1.09	0.19	0.26	0.26	0.035	0.52	1.445	1.442	0.87	0.81	1.089	0.57	2.9	0.54	0.81	NA	0.73	1.85	2.11	0.97														

Station # Brook/Stream/Tributary Plan # Direction of Flow Type Date	Favorable Conditions for Cold Water Fisheries	ST 540 DOWN																																		2024										
		Dudley Brook																																		2024										
		PLAN 54																																		2024										
		south																																		2024										
perennial																																		2024												
		2021																				2022												2023												2024
		30-Aug	30-Sep	29-Oct	30-Nov	23-Dec	19-Jan	23-Feb	18-Mar	22-Apr	23-May	24-Jun	27-Jul	25-Aug	23-Sep	28-Oct	21-Nov	21-Dec	30-Jan	24-Feb	24-Mar	20-Apr	17-May	21-Jun	28-Jul	23-Aug	28-Sep	5-Oct	30-Oct	30-Nov	28-Dec	23-Jan														
Temperature (°C)	< 20	18.83	13.18	7.89	1.72	0.80	0.27	5.47	10.32	13.11	19.94	17.43	21.97	20.6	13.56	9.73	1.56	1.00	3.33	1.21	8.89	11.62	13.55	14.34	21.27	16.98	Nm	16.33	11.22	1.9	7.3	1.9														
Specific Conductance (µS/cm @ 25°C)	150-500	344	311	274	311	296	376	628	480	555	674	654	591	895	560	558	585	484	406	446	445	439	393	432	510	407	Nm	377	330	404	234	308														
Specific Conductance (µS/cm)	150-500	303	241	184	173	159	199	394	345	429	609	559	556	820	479	395	323	262	238	244	208	327	307	344	474	344	Nm	315	243	225	156	171														
Dissolved Oxygen (%)	nsl	42	67	59	76	88	78	74.3	77.2	86.4	46.7	57	55.2	57.1	67.9	36.3	59.4	75.1	72.2	79	106.7	79	61.1	63.5	37	47.1	Nm	66.2	62.8	74.6	74.2	76														
Dissolved Oxygen (mg/L)	> 6	3.86	6.98	7.00	10.57	12.49	11.33	9.28	8.63	9.06	4.24	5.51	4.82	4.92	6.89	4.11	8.27	10.61	9.62	11.12	11.8	8.57	6.36	6.48	3.28	4.54	Nm	6.46	6.19	10.33	8.89	10.57														
pH	6.5-8.3	6.3	6.7	6.9	6.8	6.5	7.0	6.8	7.04	7.11	7.02	7.11	7.2	7	7.2	6.5	6.98	7.2	6.32	6.0	6.62	6.64	6.28	6.32	5.96	6.06	Nm	6.36	6.6	7.03	7.7	6.73														
ORP	nsl	115	97	101	85	103	52	137	151	128	125	88	100	78	80	87	120	43	Nm	Nm	Nm	Nm	462	1216.7	1033.6	Nm	Nm	138.2	60.1	96.5	136.2	127.2														
Turbidity (NTU)	free from turbidity that would impair fish habitat	2.09	1.34	1.84	1.77	1.46	1.94	2.08	1.8	1.4	2.2	2.56	3.4	3.61	1.89	2.25	2.97	0.42	0.96	0.36	2.56	1.8	2.65	3.04	3.26	4.21	2.6	3.22	1.36	2.73	0.76	0.98														
Hardness	nsl	100	100	0	0	0	0	0	100	100	100	100	100	100	100	100	100	100	0	0	100	100	100	100	100	100	100	100	100	100	100	100	100													
Chlorine, Free	< 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
Chlorine, Total	< 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
Alkalinity	<300	40	40	0	0	20	0	0	20	20	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40													
Velocity (ft/s)	nsl	0.4	0.34	0.8	0.31	Na	0.25	0.6	1.2	0.82	0.36	0.57	0.26	0.26	0.12	0.43	0.045	0.48	1.128	1.305	0.68	0.83	1.253	1.06	2.38	0.6	0.73	NA	0.44	1.3	0.76	0.57														

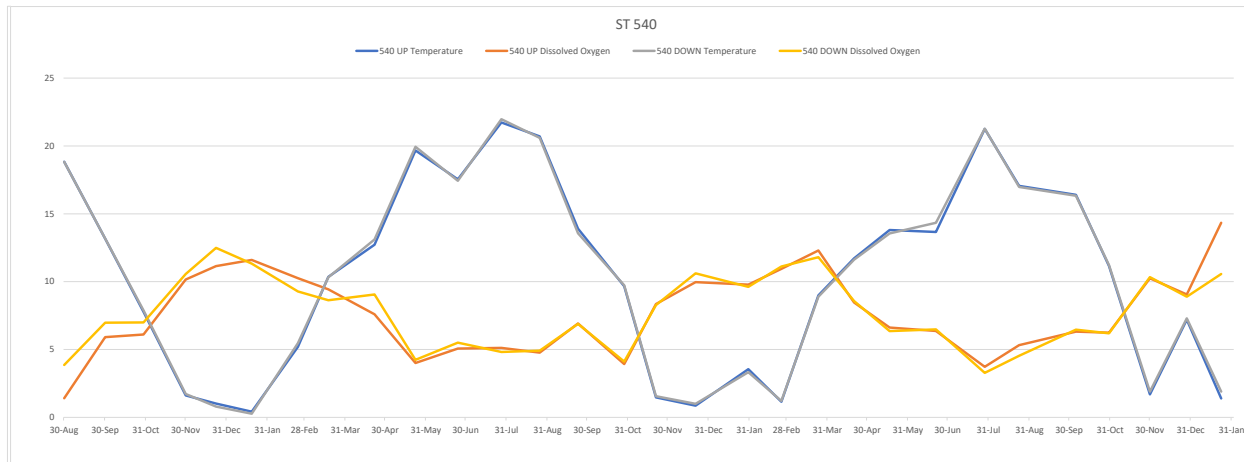


Table 3: Cold Water Fisheries Monitoring Results
Sudbury to Hudson Reliability Project

Station # Brook/Stream/Tributary Plan # Direction of Flow Type Date	Favorable Conditions for Cold Water Fisheries	ST 561 UP		2021																		2022												2023												2024	
		Unnamed Stream																																													
		PLAN 57																																													
		north																																													
Intermittent																																															
Date		30-Aug	30-Sep	29-Oct	30-Nov	23-Dec	19-Jan	23-Feb	18-Mar	22-Apr	23-May	24-Jun	27-Jul	25-Aug	23-Sep	28-Oct	21-Nov	21-Dec	30-Jan	24-Feb	24-Mar	20-Apr	17-May	21-Jun	28-Jul	23-Aug	28-Sep	5-Oct	30-Oct	30-Nov	28-Dec	23-Jan															
Temperature (°C)	< 20	20.59	14.12	7.57	0.84	0.02	0.22	6.7	12.92	15.79	21	dry	dry	dry	dry	dry	dry	dry	4.1	0.84	9.17	14.2	17.44	14.48	23.73	18.9	Nm	18.27	11.18	2.2	6.9	0.2															
Specific Conductance (µS/cm @ 25°C)	150-500	361	344	243	308	244	269	485	439	557	790	dry	dry	dry	dry	dry	dry	dry	408	426	469	479	460	399	426	465	Nm	338	273	318	149	263															
Specific Conductance (µS/cm)	150-500	331	272	162	166	127	141	315	337	459	678	dry	dry	dry	dry	dry	dry	dry	245	229	210	380	394	319	415	410	Nm	295	199	180	98	139															
Dissolved Oxygen (%)	nsi	22	42	38	64	71	40	62.4	80.8	91.3	62.5	dry	dry	dry	dry	dry	dry	dry	73.8	75.3	108.2	58.3	61.7	24.5	22.3	46.8	Nm	45.5	64.5	22.4	69.4	57															
Dissolved Oxygen (mg/L)	> 6	2.00	4.32	4.53	9.07	10.4	5.81	7.6	8.53	9.03	6.01	dry	dry	dry	dry	dry	dry	dry	9.63	10.73	11.7	5.98	5.9	2.49	1.86	4.34	Nm	4.17	6.02	3.08	8.56	8.29															
pH	6.5-8.3	6.1	6.7	6.4	6.9	6.6	6.7	6.8	7.08	7.35	7.45	dry	dry	dry	dry	dry	dry	dry	6.43	5.8	6.82	6.92	6.11	5.9	5.86	5.99	Nm	6.23	6.54	6.42	6.8	6.63															
ORP	nsi	47	78	73	72	99	68	147	98	94	89	dry	dry	dry	dry	dry	dry	dry	Nm	Nm	Nm	Nm	552	1045.7	870.3	NA	Nm	110.5	-12.6	64.4	116.5	100.8															
Turbidity (NTU)	free from turbidity that would impair fish habitat	5.74	1.40	2.16	1.72	1.44	1.70	1.58	3.28	1.94	3.2	dry	dry	dry	dry	dry	dry	dry	2.24	0.66	2.19	3.4	7.72	5.3	11.3	13.97	2.9	4.4	0.88	5.33	0.92	1.27															
Hardness	nsi	100	100	100	0	0	0	100	100	100	100	dry	dry	dry	dry	dry	dry	dry	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100														
Chlorine, Free	< 4	0	0	0	0	0	0	0	0	0	0	dry	dry	dry	dry	dry	dry	dry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
Chlorine, Total	< 4	0	0	0	0	0	0	0	0	0	0	dry	dry	dry	dry	dry	dry	dry	0	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0													
Alkalinity	<300	40	40	40	0	0	0	40	20	40	40	dry	dry	dry	dry	dry	dry	dry	20	40	40	40	40	40	40	40	40	40	40	40	40	40	40														
Velocity (ft/s)	nsi	0.08	0.06	0.19	0.16	NA	0.04	0.15	0.31	0.18	0.17	dry	dry	dry	dry	dry	dry	dry	0.478	0.107	0.26	0.04	0.176	0.06	1.38	0.17	0.37	NA	0.37	0.12	0.44	0.42															

Station # Brook/Stream/Tributary Plan # Direction of Flow Type Date	Favorable Conditions for Cold Water Fisheries	ST 561 DOWN		2021																		2022												2023												2024	
		Unnamed Stream																																													
		PLAN 57																																													
		north																																													
Intermittent																																															
Date		30-Aug	30-Sep	29-Oct	30-Nov	23-Dec	19-Jan	23-Feb	18-Mar	22-Apr	23-May	24-Jun	27-Jul	25-Aug	23-Sep	28-Oct	21-Nov	21-Dec	30-Jan	24-Feb	24-Mar	20-Apr	17-May	21-Jun	28-Jul	23-Aug	28-Sep	5-Oct	30-Oct	30-Nov	28-Dec	23-Jan															
Temperature (°C)	< 20	20.14	14.10	7.61	1.17	0.19	0.27	6.79	12.42	14.56	20.3	dry	dry	dry	dry	dry	dry	dry	3.61	0.84	9.12	14.21	15.57	Nm	22.3	18.23	Nm	17.74	11.16	1.4	6.9	0.4															
Specific Conductance (µS/cm @ 25°C)	150-500	350	338	252	311	245	281	497	431	567	835	dry	dry	dry	dry	dry	dry	dry	424	444	478	474	424	Nm	531	463	Nm	276	252	398	183	269															
Specific Conductance (µS/cm)	150-500	318	268	168	168	129	149	324	327	454	750	dry	dry	dry	dry	dry	dry	dry	251	239	213	386	348	Nm	503	403	Nm	238	185	219	120	142															
Dissolved Oxygen (%)	nsi	37	62	62	76	85	44	63.6	74.4	85	67.8	dry	dry	dry	dry	dry	dry	dry	69.5	77.7	110.3	58.1	56.7	Nm	27.4	49.7	Nm	54.2	68.7	37.6	72.7	60.7															
Dissolved Oxygen (mg/L)	> 6	3.36	5.34	7.28	10.78	12.28	6.29	7.74	7.93	8.61	6.4	dry	dry	dry	dry	dry	dry	dry	9.18	11.03	12.4	5.96	5.64	Nm	2.37	4.67	Nm	5.1	6.31	5.27	8.83	8.77															
pH	6.5-8.3	6.7	7.0	7.3	7.2	6.5	6.7	6.9	7.1	7.26	7.45	dry	dry	dry	dry	dry	dry	dry	6.15	5.9	6.92	6.84	5.96	Nm	5.8	5.97	Nm	6.53	6.37	7.68	8.8	6.67															
ORP	nsi	53	70	52	46	79	95	131	116	92.2	48	dry	dry	dry	dry	dry	dry	dry	Nm	Nm	Nm	Nm	1041	Nm	320.3	NA	Nm	104.3	46.1	78.7	103.7	85.4															
Turbidity (NTU)	free from turbidity that would impair fish habitat	1.87	1.90	3.27	1.90	1.73	1.67	1.89	1.85	2.3	4.2	dry	dry	dry	dry	dry	dry	dry	1.04	1.12	2.1	3.5	5.32	Nm	4.3	14.3	2.5	4.54	1.72	4.72	11.76	5.97															
Hardness	nsi	100	100	100	100	0	0	0	100	100	100	dry	dry	dry	dry	dry	dry	dry	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100														
Chlorine, Free	< 4	0	0	0	0	0	0	0	0	0	0	dry	dry	dry	dry	dry	dry	dry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
Chlorine, Total	< 4	0	0	0	0	0	0	0	0	0	0	dry	dry	dry	dry	dry	dry	dry	0	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0													
Alkalinity	<300	40	40	40	40	0	0	0	20	20	40	dry	dry	dry	dry	dry	dry	dry	20	40	40	40	80	40	40	40	40	40	40	40	40	40	40														
Velocity (ft/s)	nsi	0.1	0.13	0.45	0.37	NA	0.04	0.28	0.12	0.2	0.12	dry	dry	dry	dry	dry	dry	dry	0.574	0.081	0.31	0.08	0.102	0.07	0.72	0.13	0.26	NA	0.24	0.02	0.34	0.49															

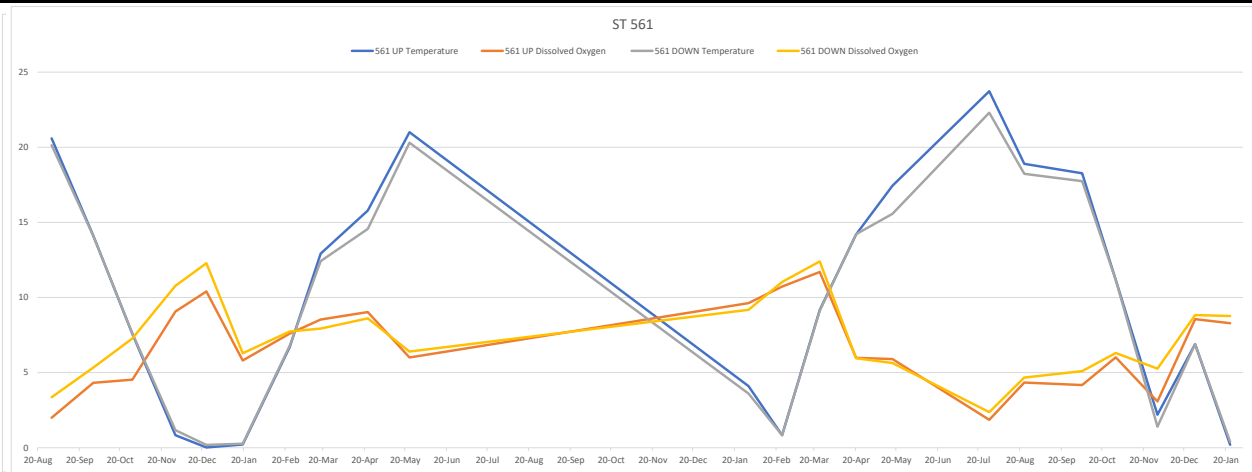


Table 3: Cold Water Fisheries Monitoring Results
Sudbury to Hudson Reliability Project

Station # Brook/Stream/Tributary Plan # Direction of Flow Type Date	Favorable Conditions for Cold Water Fisheries	ST 700 UP																															
		Hop Brook Tributary																															
		PLAN 61																															
		East																															
intermittent		2021		2022																2023								2024					
30-Aug	30-Sep	29-Oct	30-Nov	23-Dec	19-Jan	23-Feb	18-Mar	22-Apr	23-May	24-Jun	27-Jul	25-Aug	23-Sep	28-Oct	21-Nov	21-Dec	30-Jan	24-Feb	24-Mar	20-Apr	17-May	21-Jun	28-Jul	23-Aug	28-Sep	5-Oct	30-Oct	30-Nov	28-Dec	23-Jan			
Temperature (°C)	< 20	21.13	16.14	9.67	7.56	6.43	4.49	6.79	8.15	16.21	26	dry	dry	dry	13.88	11.4	dry	0.08	2.91	1.09	10.96	14.52	14.23	16.21	23.78	19.52	Nm	18.15	13.72	5.8	8.1	6.2	
Specific Conductance (µS/cm @ 25°C)	150-500	1362	1129	1104	1110	1079	1689	2225	3094	2398	10112	dry	dry	dry	946	900	dry	942	1756	3320	1786	1482	1736	1932	1372	1552	Nm	1595	468	1195	594	1858	
Specific Conductance (µS/cm)	150-500	1263	938	702	742	697	1027	1450	2098	1909	9978	dry	dry	dry	728	750	dry	501	1009	1750	1294	1204	1353	1628	1340	1389	Nm	1387	367	758	403	1192	
Dissolved Oxygen (%)	nsl	43	41	52	51	56	61	84.2	49.6	76.3	39.5	dry	dry	dry	48.9	46.8	dry	48.9	64.3	75.1	89.4	116.8	82.3	46.3	54.5	26.4	Nm	5.4	68.6	0.5	1.8	28	
Dissolved Oxygen (mg/L)	> 6	3.96	4.13	5.87	5.45	6.88	7.84	10.19	5.78	7.11	3.7	dry	dry	dry	4.6	4.57	dry	6.71	8.67	10.36	9.73	10.7	8.43	4.52	4.63	2.41	Nm	0.53	6.23	0.06	0.23	3.44	
pH	6.5-8.3	6.5	6.9	6.8	6.6	6.4	6.4	6.8	6.82	7.1	7.8	dry	dry	dry	7.6	6.7	dry	7.9	6.9	6.1	6.51	6.58	6.35	6.19	6.02	5.97	Nm	6.52	7.17	7.33	6.96	6.67	
ORP	nsl	62	10	20	29	15	70	56.3	55	65	20	dry	dry	dry	105	82	dry	139	Nm	Nm	Nm	Nm	82.1	1015	607.4	NA	Nm	-91.3	-138.9	-109	-64.7	50	
Turbidity (NTU)	free from turbidity that would impair fish habitat	20.90	12.09	8.17	14.70	7.59	3.76	6.34	12.8	15	7.2	dry	dry	dry	3.7	5.1	dry	7.56	7.98	6.43	5.62	6.71	12.5	16.7	15.3	19.5	12.7	28.7	24.7	19.6	22.3	21	
Hardness	nsl	100	100	100	250	0	100	250	250	100	250	dry	dry	dry	100	100	dry	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Chlorine, Free	< 4	0	0	0	0	0	0	0	0	0	0	dry	dry	dry	0	0	dry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chlorine, Total	< 4	0	0	0	0	0	0	0	0	0	0	dry	dry	dry	0	0	dry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alkalinity	<300	40	80	40	80	40	40	40	80	40	40	dry	dry	dry	40	40	dry	40	40	40	40	80	80	80	40	40	40	40	40	40	40	40	40
Velocity (ft/s)	nsl	0.23	0.02	0.05	0.01	Na	0.40	0.1	0.05	0.00	0.03	dry	dry	dry	0.02	0.03	dry	0.02	0.05	0.05	0.09	0.03	0	0	0	0.08	0.13	NA	0.11	0.049	0.24	0.09	

Station # Brook/Stream/Tributary Plan # Direction of Flow Type Date	Favorable Conditions for Cold Water Fisheries	ST 710 DOWN																															
		Hop Brook Tributary																															
		PLAN 63																															
		East																															
intermittent		2021		2022																2023								2024					
30-Aug	30-Sep	29-Oct	30-Nov	23-Dec	19-Jan	23-Feb	18-Mar	22-Apr	23-May	24-Jun	27-Jul	25-Aug	23-Sep	28-Oct	21-Nov	21-Dec	30-Jan	24-Feb	24-Mar	20-Apr	17-May	21-Jun	28-Jul	23-Aug	28-Sep	5-Oct	30-Oct	30-Nov	28-Dec	23-Jan			
Temperature (°C)	< 20	21.08	14.28	9.55	0.40	0.01	frozen	8.55	11.06	15.44	24	dry	dry	dry	dry	dry	13.94	11.35	dry	0.03	2.68	1.67	10.8	14.34	14.05	16.17	24.05	18.67	Nm	18.22	12.75	1.3	7.6
Specific Conductance (µS/cm @ 25°C)	150-500	1122	755	927	1054	1108	frozen	2215	3268	2228	10068	dry	dry	dry	878	1260	dry	955	1731	3000	1734	1466	1669	1870	1290	1469	Nm	1648	490	1434	329	frozen	
Specific Conductance (µS/cm)	150-500	1039	600	653	559	580	frozen	1520	2409	1822	9630	dry	dry	dry	677	867	dry	495	992	1680	1265	1169	1322	1553	1267	1291	Nm	1435	375	786	219	frozen	
Dissolved Oxygen (%)	nsl	37	49	61	59	73	frozen	54.8	57.4	82.5	46.8	dry	dry	dry	53.5	24.3	dry	52.3	65.5	75	95.1	122.9	81.9	45.2	57.3	31	Nm	46.8	65.5	46.6	75.4	frozen	
Dissolved Oxygen (mg/L)	> 6	3.30	4.97	6.87	8.52	10.51	frozen	6.35	6.25	8.18	4.2	dry	dry	dry	5.61	2.8	dry	7.66	8.83	10.35	10.46	12.55	8.38	4.42	4.8	2.88	Nm	4.36	6.02	6.52	8.98	frozen	
pH	6.5-8.3	6.8	6.9	6.8	6.5	6.5	frozen	6.8	6.94	7.3	7.6	dry	dry	dry	7.54	6.76	dry	7.8	6.9	6.0	6.52	6.7	6.41	6.18	6.08	6.15	Nm	6.7	6.75	6.98	6.83	frozen	
ORP	nsl	66	51	25	72	60	frozen	92.4	98	79	10	dry	dry	dry	110	72.7	dry	410	Nm	Nm	Nm	Nm	80.1	989	603.9	NA	Nm	-2.1	-24.3	71.8	53.5	frozen	
Turbidity (NTU)	free from turbidity that would impair fish habitat	11.50	9.48	6.62	6.00	3.82	frozen	3.98	7.25	23	5.7	dry	dry	dry	3.65	4.58	dry	6.42	7.47	5.69	5.1	5.06	7.2	14.2	13.6	15.6	10.3	16.1	18.53	13.27	12.55	frozen	
Hardness	nsl	100	120	100	100	0	frozen	100	250	100	100	dry	dry	dry	100	100	dry	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Chlorine, Free	< 4	0	0	0	0	0	frozen	0	0	0	0	dry	dry	dry	0	0	dry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chlorine, Total	< 4	0	0	0	0	0	frozen	0	0	0	0	dry	dry	dry	0	0	dry	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0
Alkalinity	<300	100	100	40	40	20	frozen	40	40	40	40	dry	dry	dry	40	40	dry	40	40	40	40	80	80	80	40	40	40	40	40	40	40	40	40
Velocity (ft/s)	nsl	0.08	0.02	0.07	0.02	Na	frozen	0.18	0.2	0.02	0.08	dry	dry	dry	0.06	0.04	dry	0.06	0.05	0.145	0.13	0.06	0.023	0	0.76	0.1	0.11	NA	0.13	0.052	0.42	frozen	

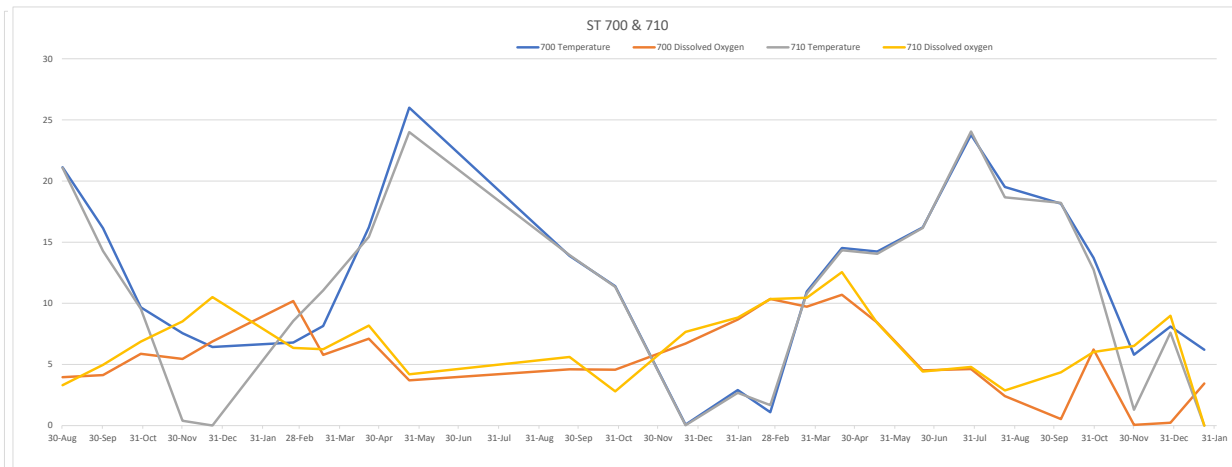


Table 3: Cold Water Fisheries Monitoring Results
Sudbury to Hudson Reliability Project

Station # Brook/Stream/Tributary Plan # Direction of Flow Type Date	Favorable Conditions for Cold Water Fisheries	ST 725 UP		2021												2022												2023												2024
		Hop Brook		south												south												south												south
		PLAN 65		perennial												perennial												perennial												perennial
		30-Aug	30-Sep	29-Oct	30-Nov	23-Dec	19-Jan	23-Feb	18-Mar	22-Apr	23-May	24-Jun	27-Jul	25-Aug	23-Sep	28-Oct	21-Nov	21-Dec	30-Jan	24-Feb	24-Mar	20-Apr	17-May	21-Jun	28-Jul	23-Aug	28-Sep	5-Oct	30-Oct	30-Nov	28-Dec	23-Jan								
Temperature (°C)	< 20	20.55	14.52	7.67	1.17	0.54	0.05	6.3	8.9	12.12	18.63	21.51	21.36	14.26	10.28	1.17	0.12	2.6	2.23	8.99	10.1	15.16	16.52	22.46	17.91	Nm	17.18	11.69	1.2	7	0.5									
Specific Conductance (µS/cm @ 25°C)	150-500	393	355	380	309	358	487	789	653	726	817	750	777	807	658	650	738	520	655	547	493	589	473	594	634	455	Nm	477	404	481	325	419								
Specific Conductance (µS/cm)	150-500	360	284	254	168	190	255	507	452	548	773	659	725	750	523	475	402	273	375	311	338	420	384	493	593	393	Nm	406	314	262	213	221								
Dissolved Oxygen (%)	nsf	75	87	94	95	97	105	82.8	83	94	85.9	68.9	67.6	67.3	69.9	74.6	84.3	83	84.8	87.1	84.8	82.7	74.7	64.2	53.8	58.7	Nm	85.6	79.3	87.1	75.2	85								
Dissolved Oxygen (mg/L)	> 6	6.74	8.87	11.23	13.48	13.89	15.20	10.29	9.56	10.07	7.47	6.43	5.93	5.95	7.15	8.32	11.9	12.07	11.48	11.93	9.82	9.32	7.5	6.27	4.69	5.55	Nm	8.26	7.87	12.34	9.1	12.21								
pH	6.5-8.3	6.8	7.0	6.9	7.1	7.2	7.4	7.2	7.49	7.75	7.89	6.8	7.63	7.2	6.8	6.8	6.8	7.2	6.72	6.5	6.91	6.62	6.65	6.71	6.63	6.11	Nm	6.9	6.91	7.33	6.99	7.07								
ORP	nsf	97	96	88	81	94	35	88.5	121	116	91	Ns	134	100	140	127	Nm	215	Nm	Nm	Nm	352.3	1023.4	954.6	NA	Nm	118.7	107.8	108.3	127.3	104.4									
Turbidity (NTU)	free from turbidity that would impair fish habitat	2.62	2.15	2.62	2.42	2.25	2.21	2.07	1.86	0.78	3.1	4.59	2.42	3.52	2.29	2.44	2.98	3.08	1.96	1.98	2.46	3.69	12.4	5.32	2.46	2.67	3.4	3.25	4.22	3.14	3.3	3.67								
Hardness	nsf	40	0	0	100	0	0	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100							
Chlorine, Free	< 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
Chlorine, Total	< 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
Alkalinity	<300	100	0	0	0	40	0	0	20	40	40	40	40	80	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40						
Velocity (ft/s)	nsf	0.23	0.15	0.51	0.23	Na	0.46	0.34	0.57	0.38	0.2	0.06	0.1	0.18	0.2	0.27	0.027	0.17	0.19	0.462	0.37	0.24	0.126	0.06	0.36	0.31	0.45	NA	0.29	0.056	0.49	0.23								

Station # Brook/Stream/Tributary Plan # Direction of Flow Type Date	Favorable Conditions for Cold Water Fisheries	ST 725 DOWN		2021												2022												2023												2024
		Hop Brook		south												south												south												south
		PLAN 65		perennial												perennial												perennial												perennial
		30-Aug	30-Sep	29-Oct	30-Nov	23-Dec	19-Jan	23-Feb	18-Mar	22-Apr	23-May	24-Jun	27-Jul	25-Aug	23-Sep	28-Oct	21-Nov	21-Dec	30-Jan	24-Feb	24-Mar	20-Apr	17-May	21-Jun	28-Jul	23-Aug	28-Sep	5-Oct	30-Oct	30-Nov	28-Dec	23-Jan								
Temperature (°C)	< 20	20.49	14.45	7.63	1.13	0.51	0.06	4.91	8.81	12.17	22.14	18.57	21.5	21.39	14.23	10.24	1.24	0.06	2.49	2.25	8.89	9.96	15.05	16.41	22.37	17.87	Nm	17.17	11.68	1.2	6.9	0.4								
Specific Conductance (µS/cm @ 25°C)	150-500	399	360	378	324	358	487	777	658	719	833	767	816	788	681	650	728	540	680	560	495	596	469	586	623	460	Nm	477	406	488	315	412								
Specific Conductance (µS/cm)	150-500	365	287	253	176	190	255	479	455	543	788	673	760	733	541	467	398	283	388	325	343	425	380	490	591	397	Nm	406	302	267	207	219								
Dissolved Oxygen (%)	nsf	80	79	100	102	101	106	74	81.5	93	87	62.4	65.1	65.2	70.6	75.6	83.6	88.1	89.1	87.3	86.1	82.2	74.8	64.4	53.8	61.7	Nm	87.2	83.5	85.2	81.7	85								
Dissolved Oxygen (mg/L)	> 6	7.20	8.00	11.88	14.37	14.52	15.39	9.44	9.45	9.95	7.57	5.83	5.83	5.77	7.22	8.47	11.78	12.79	12.17	11.96	9.96	9.27	7.53	6.29	4.66	5.85	Nm	8.39	8.14	11.95	9.92	12.28								
pH	6.5-8.3	7.2	7.0	7.1	7.2	7.2	7.3	7.1	7.6	7.78	7.98	6.8	7.61	7.25	6.8	6.8	6.8	7	7.07	6.5	6.94	6.68	6.56	6.64	6.53	6.14	Nm	7.05	6.98	7.2	7.04	7.12								
ORP	nsf	98	98	80	76	92	29	128	124	122.2	89	Ns	140.3	110	120	120	Nm	51	7.07	Nm	Nm	Nm	345	932	939.7	NA	Nm	119.7	119.3	109.9	127.4	97.5								
Turbidity (NTU)	free from turbidity that would impair fish habitat	2.63	2.19	3.05	2.25	2.21	2.40	2.76	1.19	0.94	3.22	1.52	2.3	3.89	1.92	2.3	3.45	3.62	1.92	2.41	1.94	3.25	3.17	4.41	2.41	2.71	3.2	5.73	3.64	2.35	2.76	3.53								
Hardness	nsf	40	0	0	100	0	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100							
Chlorine, Free	< 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
Chlorine, Total	< 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
Alkalinity	<300	100	0	0	0	0	0	0	20	40	40	40	40	80	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40						
Velocity (ft/s)	nsf	0.08	0.13	0.17	0.28	Na	0.3	0.28	0.25	0.35	0.27	0.1	0.16	0.11	0.22	0.23	0.038	0.32	0.558	0.42	0.4	0.28	0.132	0.11	0.64	0.29	0.33	NA	0.12	0.469	0.11	0.12								

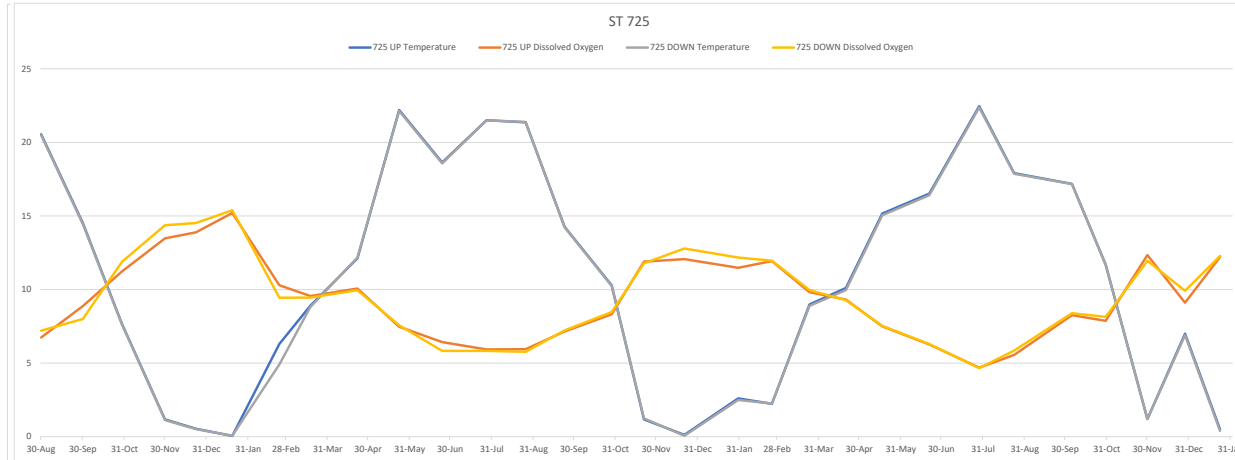


Table 3: Cold Water Fisheries Monitoring Results
Sudbury to Hudson Reliability Project

Station #	Favorable Conditions for Cold Water Fisheries	2021												2022												2023												2024		
		30-Aug	30-Sep	29-Oct	30-Nov	23-Dec	19-Jan	23-Feb	18-Mar	22-Apr	23-May	24-Jun	27-Jul	25-Aug	23-Sep	28-Oct	21-Nov	21-Dec	30-Jan	24-Feb	24-Mar	20-Apr	17-May	21-Jun	28-Jul	23-Aug	28-Sep	5-Oct	30-Oct	30-Nov	28-Dec	23-Jan								
ST 747 UP	Wash Brook Tributary																																							
Brook/Stream/Tributary	PLAN 67																																							
Plan #	south																																							
Direction of Flow	intermittent																																							
Type																																								
Date																																								
Temperature (°C)	< 20	19.39	13.34	7.72	1.94	0.32	0.83	5.04	8.81	12.86	19.02	16.01	dry	dry	dry	9.6	dry	0.6	3.62	2.18	9.11	11.03	12.71	14.57	20.52	15.56	Nm	15.94	11.78	1.1	7.1	2.1								
Specific Conductance (µS/cm @ 25°C)	150-500	524	418	379	451	377	530	774	626	798	826	832	dry	dry	dry	627	dry	509	595	620	508	661	501	578	597	637	Nm	555	401	577	336	459								
Specific Conductance (µS/cm)	150-500	468	325	254	252	200	286	473	432	612	730	689	dry	dry	dry	451	dry	272	352	351	354	485	383	463	544	66.4	Nm	459	300	313	220	258								
Dissolved Oxygen (%)	nsl	91	86	89	92	107	97	73.5	79.6	80.5	72.5	67	dry	dry	dry	54.2	dry	77.5	82.7	87.6	84.3	79.4	75.8	65.7	63.5	66.4	Nm	87.2	71.5	75.6	83.9	85.1								
Dissolved Oxygen (mg/L)	> 6	8.32	9.02	10.57	12.66	15.15	13.77	9.33	9.23	8.5	7.49	6.6	dry	dry	dry	5.87	dry	11.12	10.93	12.03	9.7	8.73	8.02	6.67	5.71	6.61	Nm	8.61	7.89	10.67	10.12	11.74								
pH	6.5-8.3	7.2	7.0	6.6	7.2	7.2	7.4	7.15	7.55	7.5	7.4	6.8	dry	dry	dry	6.8	dry	7.6	6.67	6.3	6.79	7.32	6.58	6.7	6.21	6.28	Nm	7.48	6.76	7.19	7.12	7.21								
ORP	nsl	58	60	80	59	76	-15	124	98	92	101	Ns	dry	dry	dry	102	dry	340	Nm	Nm	Nm	Nm	345	310.7	557.8	NA	Nm	90.7	144.1	110.7	119.4	93								
Turbidity (NTU)	free from turbidity that would impair fish habitat	0.72	1.15	1.88	1.69	1.58	2.17	3.32	1.28	1.29	2.6	2.42	dry	dry	dry	1.67	dry	0.29	1.48	0.96	2.35	2.45	2.62	6.92	1.72	0.29	2.8	3.68	5.66	7.73	10.1	2.43								
Hardness	nsl	80	40	40	100	0	0	100	100	100	100	100	dry	dry	dry	100	dry	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100							
Chlorine, Free	< 4	0	0	0	0	0	0	0	0	0	0	0	dry	dry	dry	0	dry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
Chlorine, Total	< 4	0	0	0	0	0	0	0	0	0	0	0	dry	dry	dry	0	dry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
Alkalinity	<300	100	100	100	40	20	40	40	40	40	40	40	dry	dry	dry	40	dry	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40						
Velocity (ft/s)	nsl	0.24	0.23	0.35	0.33	Na	0.1	0.36	0.43	0.55	0.19	0.03	dry	dry	dry	0.14	dry	0.38	0.245	0.539	0.44	0.24	0.64	0.63	1.34	0.15	0.18	NA	0.28	0.045	0.53	0.21								
ST 747 DOWN	Wash Brook Tributary																																							
Brook/Stream/Tributary	PLAN 67																																							
Plan #	south																																							
Direction of Flow	intermittent																																							
Type																																								
Date																																								
Temperature (°C)	< 20	19.45	13.26	7.76	1.75	0.33	0.76	6.31	8.59	13.12	19.03	15.42	dry	dry	dry	9.9	dry	0.5	3.81	2.16	8.87	10.94	12.55	14.43	20.42	15.33	Nm	15.88	11.71	1.4	7.1	2								
Specific Conductance (µS/cm @ 25°C)	150-500	495	451	382	453	403	532	803	643	795	875	836	dry	dry	dry	647	dry	532	575	617	561	668	474	583	634	662	Nm	560	410	446	344	459								
Specific Conductance (µS/cm)	150-500	443	350	256	252	213	285	516	441	614	775	683	dry	dry	dry	460	dry	283	342	348	388	488	362	466	578	540	Nm	462	305	243	226	258								
Dissolved Oxygen (%)	nsl	80	85	82	96	95	103	81.8	81.6	79.5	69.8	62.3	dry	dry	dry	53	dry	79.8	83.4	87.5	85.7	82.3	84.4	69	61.4	65	Nm	86.5	72.6	73.2	80.4	84								
Dissolved Oxygen (mg/L)	> 6	7.36	8.85	9.79	13.37	13.79	14.63	10.06	9.49	8.33	6.45	6.2	dry	dry	dry	5.96	dry	11.46	10.98	12.01	9.91	9.05	9.07	7.02	5.53	6.49	Nm	8.55	8.44	10.35	9.68	11.55								
pH	6.5-8.3	7.0	6.8	6.5	7.3	7.1	7.8	7.07	7.77	7.55	7.58	6.8	dry	dry	dry	6.7	dry	7.12	6.6	6.4	7.36	7.43	7.33	8.76	6.11	6.99	Nm	7.27	6.77	7.21	7.14	7.33								
ORP	nsl	73	75	84	57	82	21	25.5	106	94	91.1	Ns	dry	dry	dry	100	dry	368	Nm	Nm	Nm	351	436.6	1111.7	NA	Nm	99.6	209.2	185.7	126.5	79.7									
Turbidity (NTU)	free from turbidity that would impair fish habitat	0.79	1.87	1.81	1.82	1.77	2.27	2.21	1.56	1.11	2.9	1.92	dry	dry	dry	1.9	dry	0.18	0.46	1.02	1.83	2.37	2.27	8.76	1.78	3.13	2.7	5.27	2.07	2.39	9.7	1.4								
Hardness	nsl	80	40	40	100	0	0	0	100	100	100	100	dry	dry	dry	100	dry	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100							
Chlorine, Free	< 4	0	0	0	0	0	0	0	0	0	0	0	dry	dry	dry	0	dry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
Chlorine, Total	< 4	0	0	0	0	0	0	0	0	0	0	0	dry	dry	dry	0	dry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
Alkalinity	<300	100	100	100	40	40	40	40	40	40	40	40	dry	dry	dry	40	dry	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40						
Velocity (ft/s)	nsl	0.07	0.1	0.2	0.17	Na	0.06	0.39	0.31	0.46	0.22	0.06	dry	dry	dry	0.13	dry	0.36	0.305	0.213	0.18	0.2	0.15	0.32	0.55	0.06	0.12	NA	0.13	0.063	0.27	0.16								

