

**Maine Department of Environmental Protection  
Biological Monitoring Program  
Wetland Epiphytic Algae Aquatic Life Classification Attainment Report**

Station Information
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<b>Station Number: W-105</b>	Trip ID: 2016-105	River Basin: Penobscot
Waterbody: WHEELER STREAM - HERMON BOG		HUC8 Name: Lower Penobscot
Town: Hermon		Latitude: 44 47 54.68 N
Mitigation Monitoring Site: No		Longitude: 68 52 57.07 W

Sample Information
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<b>Sample ID: WA-105-2016E (1570)</b>	Type of Sample: PLANT RUBBINGS	Date Sampled: 6/14/2016
Bottle #: 1570	Sampling Organization: BIOMONITORING UNIT	Taxonomist: ECOANALYSTS IDAHO

Classification Attainment
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<b>Statutory Class: B</b>	<b>Final Determination: C</b>	Date: 9/4/2019
Model Result with P $\geq$ 0.6: C	<b>Reason for Determination: Model L&amp;w</b>	
Date Last Calculated: 1/22/2019	Comments:	

Model Probabilities
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<u>First Stage Model</u>	<u>C or Better Model</u>
Class A: 0.00      Class C: 0.84	Class A, B, or C      0.85
Class B: 0.01      NA: 0.15	Non-Attainment      0.15
<u>B or Better Model</u>	<u>A Model</u>
Class A or B      0.01	Class A      0.00
Class C or Non-Attainment      0.99	Class B or C or Non-Attainment      1.00

Model Variables
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		<u>Reference Range (10th or 90th percentile value)</u>
Relative Richness of Diatoms in the Eunotiaceae Family	0.152	>0.09
Relative Density of Eutrophic Diatoms	0.345	<0.15
Relative Richness of Oligosaprobic Diatoms	0.289	>0.37
Relative Richness of Intermediate Taxa	0.532	>0.61
Relative Richness of Sensitive Taxa	0.085	>0.13
Maine Tolerance Index Score for Wetland Epiphytic Algae	45.88	<38

Other Variables
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	Density (cells/cm <sup>2</sup> )	Relative Density	Richness	Relative Richness	Biovolume ( $\mu\text{m}^3/\text{cm}^2$ )	Relative Biovolume
Total for Sample	28,054	-	66	-	54,567,325	-
Diatom Only	17,626	-	58	-	15,952,326	-
MTI Sensitive	382	0.022	4	0.085	684,354	0.020
MTI Intermediate	12,045	0.701	25	0.532	30,734,728	0.890
MTI Eurytopic	4,759	0.277	18	0.383	3,130,359	0.091
Ratio of MTI:						
Sensitive to Eurytopic	0.080	0.080	0.222	0.222	0.219	0.219

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**Water Chemistry**

**Sample Date:** 6/14/2016 11:00:00 AM

Collection Method	Parameter	Value	Units	Qualifier
Grab Sample	Chloride	13	mg/l	
Grab Sample	Chlorophyll A	0.002	mg/l	
Grab Sample	Chlorophyll A - Phaeophytin	0.0019	mg/l	J
Grab Sample	Dissolved Organic Carbon	13	mg/l	
Grab Sample	Nitrate + Nitrite As Nitrogen	0.01	mg/l	
Grab Sample	Orthophosphate As Phosphorus	11	ug/l	
Grab Sample	Total Alkalinity	47	mg/l	
Grab Sample	Total Kjeldahl Nitrogen (organic And Nh3) As Nitrogen	0.6	mg/l	
Grab Sample	Total Phosphorus Mixed Forms (po4 And Organic) As Phosphorus	39	ug/l	
Grab Sample	True Color	110	unit	
In-situ	Dissolved Oxygen	4.64	mg/l	
In-situ	Dissolved Oxygen Saturation	45.4	%	
In-situ	pH	7.16		
In-situ	Specific Conductance	106.1	us/cm	
In-situ	Temperature	13.8	deg c	

**Landcover Summary - 2004 Data**

Total Area (ac)	6944	High Int. Dev. %	1.0	Water %	0.3	Non-vegetated %	0.0
		Med Int. Dev. %	1.2	Wetland %	23.7	Tilled Agriculture %	6.8
		Low Int. Dev. %	6.1	Upland Woody %	47.1	Grassland %	9.7
		Development %	8.4	Natural %	70.8	Human Altered %	28.9
						Impervious %	5.8
Total Land (ac)	6921	High Int. Dev. %	1.0	Water %	N/A	Non-vegetated %	N/A
		Med Int. Dev. %	1.2	Wetland %	23.8	Tilled Agriculture %	6.8
		Low Int. Dev. %	6.1	Upland Woody %	47.2	Grassland %	9.7
		Development %	8.4	Natural %	71.0	Human Altered %	29.0

**Summary of Habitat Characteristics**

Human Disturbance

Total Score:	22
Hydrologic Modifications to Wetland:	3
Vegetative Modifications to Wetland:	1
Evidence of Chemical Pollutants:	4
Watershed Characterization and Potential NPS Pollution Impacts:	14

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**Summary of Habitat Characteristics**

Dominant Plant Species:

Additional Plant Community Observations: SEDGES, RUSHES, DUCKWEED RELATIVELY ABUNDANT

Habitat Classification:  
AQUATIC MACROPHYTE BED  
EMERGENT NON-PERSISTENT VEGETATION

Substrate Classification:  
SILT/MUCK SUBSTRATE

Visible Flow: Yes      Rain In Previous 24 Hours: No

Sample Comments: SUBMERGED AQUATIC VEGETATION FAIRLY DENSE (UNKNOWN SPECIES)

**Common Plants Observed**

Scientific Name	Common Name	Maine Taxonomic Code	Plant CoC Score	Wetland Indicator Status	Growth Form
<i>Lemna minor</i>	Common duckweed	LW-34010201002001	3	OBL	FORB/HERB
<i>Nuphar lutea ssp. variegata</i>	Variegated yellow pond-lily	LW-34023103002002	4	OBL	FORB/HERB
<i>Pontederia cordata</i>	Pickerelweed	LW-34010906002002	4	OBL	FORB/HERB
<i>Potamogeton</i>		LW-34011101001			PLANT
<i>Sparganium</i>		LW-34011301001			PLANT
<i>Typha</i>		LW-34011301002			PLANT
<i>Utricularia</i>		LW-34022305002			PLANT

**Additional Summary Variables**

	Density (cells/cm <sup>2</sup> )	Relative Density	Richness	Relative Richness	Biovolume (um <sup>3</sup> /cm <sup>2</sup> )	Relative Biovolume
Diatom Growth Forms and Motility:						
Unattached	529	0.030	3	0.052	299,290	0.019
Variable	764	0.043	5	0.086	101,737	0.006
Erect	5,816	0.330	14	0.241	8,677,778	0.544
Stalked	3,672	0.208	9	0.155	2,838,225	0.178
Prostrate	6,845	0.388	27	0.466	4,035,295	0.253
Motile	3,584	0.203	19	0.328	2,467,716	0.155



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**Bottle # :** 1570

**Waterbody:** Wheeler Stream - Hermon Bog - W-105

**Town:** Hermon

**Sample ID:** WA-105-2016E (1570)

**Station Number:** W-105

Taxa Name	Group	Density (cells/ cm <sup>2</sup> )	Relative Density		Biovolume (um <sup>3</sup> / cm <sup>2</sup> )	Relative Biovolume	Form	Mot- ility	van Dam Index Values							Maine Epi Tolerance	
			All	Rank Diatoms					pH	NO2	S	T	M	Sal			
<i>Leptolyngbya</i>	Filamentous Cyanobacteria	470	1.675%	15	6,110	0.011%											
<i>Cyclotella meneghiniana</i>	Centric Diatom	323	1.152%	25	1.8%	232,041	0.425%	U	N	4	3	5	4	5	2	3	85.6-E
<i>Diatoma tenuis</i>	Pennate Diatom	59	0.209%	57	0.3%	16,715	0.031%	U	N	4	2	3	3	5	1	3	58.5-E
<i>Fragilaria</i>	Pennate Diatom	470	1.675%	16	2.7%	57,466	0.105%	V	N								
<i>Fragilaria mesolepta</i>	Pennate Diatom	29	0.105%	66	0.2%	9,980	0.018%	V	N	4						2	72-E
<i>Fragilaria vaucheriae</i>	Pennate Diatom	59	0.209%	57	0.3%	12,734	0.023%	V	N	4	2	3	3	5	3	2	51.3-I
<i>Fragilaria sepes</i>	Pennate Diatom	118	0.419%	43	0.7%	12,926	0.024%	V	N	3	1	1	1	2	2	1	38.7-I
<i>Meridion circulare var. constrictum</i>	Pennate Diatom	147	0.524%	35	0.8%	93,284	0.171%	E	N	4	2	2	2	7	2	2	43.8-I
<i>Pseudostaurosira brevistriata</i>	Pennate Diatom	118	0.419%	43	0.7%	17,107	0.031%	E	N	4	1	1	1	7	2	2	34.9-I
<i>Staurosira construens var. venter</i>	Pennate Diatom	88	0.314%	48	0.5%	8,631	0.016%	V	N	4	2	1	2	4	1	2	32.4-I
<i>Ulnaria acus</i>	Pennate Diatom	441	1.571%	17	2.5%	625,783	1.147%	E	N	4	2	2	3	5	2	2	57.4-E
<i>Ulnaria ulna</i>	Pennate Diatom	1,910	6.806%	4	10.8%	3,819,040	6.999%	E	N	4	2	3	4		2	2	44.5-I
<i>Tabellaria flocculosa</i>	Pennate Diatom	147	0.524%	35	0.8%	50,535	0.093%	U	N	2	1	1	2	3	3	1	24.7-S
<i>Achnanthydium minutissimum</i>	Pennate Diatom	499	1.780%	14	2.8%	27,218	0.050%	P	N	6	2	1	2	7	3	2	49.5-I
<i>Achnanthydium rivulare</i>	Pennate Diatom	59	0.209%	57	0.3%	5,405	0.010%	P	N								48-I
<i>Lemnicola hungarica</i>	Pennate Diatom	59	0.209%	57	0.3%	30,824	0.056%	P	V	4	2	4	3	6	1	2	96.6-E
<i>Planothidium lanceolatum</i>	Pennate Diatom	29	0.105%	66	0.2%	4,059	0.007%	P	V	4	2	3	3	5	3	2	64-E
<i>Rossethidium anastasiae</i>	Pennate Diatom	823	2.932%	11	4.7%	205,641	0.377%	P	V								
<i>Cocconeis placentula</i>	Pennate Diatom	1,351	4.817%	7	7.7%	1,022,271	1.873%	P	N	4	2	3	2	5	2	2	67.9-E
<i>Cocconeis placentula var. euglypta</i>	Pennate Diatom	411	1.466%	21	2.3%	241,517	0.443%	P	N	4	2	3	2	5	2	2	69.2-E
<i>Cocconeis placentula var. lineata</i>	Pennate Diatom	29	0.105%	66	0.2%	30,643	0.056%	P	N	4	2	3	2	5	2	2	53.6-E
<i>Eunotia</i>	Pennate Diatom	1,174	4.186%	8	6.7%	587,544	1.077%	E	V								
<i>Eunotia bilunaris</i>	Pennate Diatom	411	1.466%	21	2.3%	350,465	0.642%	E	V	6	2	2	2	7	3	2	36.1-I
<i>Eunotia circumborealis</i>	Pennate Diatom	118	0.419%	43	0.7%	364,278	0.668%	E	V							1	
<i>Eunotia formica</i>	Pennate Diatom	118	0.419%	43	0.7%	617,596	1.132%	E	V	2	1	1	1	3	2	2	26.5-S
<i>Eunotia incisa</i>	Pennate Diatom	588	2.094%	13	3.3%	280,200	0.513%	E	V	2	1	1	1	1	2	1	28-I
<i>Eunotia monodon</i>	Pennate Diatom	118	0.419%	43	0.7%	514,306	0.943%	E	V	2	1	1	1	1	2	1	
<i>Eunotia naegelii</i>	Pennate Diatom	176	0.628%	30	1.0%	179,991	0.330%	E	V	2	1	1	1	1	3	1	28.5-I
<i>Eunotia pectinalis var. undulata</i>	Pennate Diatom	353	1.257%	23	2.0%	1,171,566	2.147%	E	V	2	2	1	2	1	3	1	31-I
<i>Eunotia rhomboidea</i>	Pennate Diatom	29	0.105%	66	0.2%	9,613	0.018%	E	V	2	1	1	1	1	3	1	19.8-S
<i>Eunotia subarcuatoidea</i>	Pennate Diatom	118	0.419%	43	0.7%	47,004	0.086%	E	V	1	1	1	1	1	3	1	27.6-I
<i>Cymbella cistula</i>	Pennate Diatom	29	0.105%	66	0.2%	35,463	0.065%	S	V	4	1	2	2	5	1	2	48.8-I
<i>Encyonema silesiacum</i>	Pennate Diatom	29	0.105%	66	0.2%	14,833	0.027%	S	V	3	2	3	3	7	1	2	45.6-I
<i>Epithemia adnata</i>	Pennate Diatom	59	0.209%	57	0.3%	84,837	0.155%	P	M	5	1	2	2	4	2	2	
<i>Epithemia turgida</i>	Pennate Diatom	118	0.419%	43	0.7%	1,505,266	2.759%	P	M	5	1	2	2	4	3	2	
<i>Gomphonema</i>	Pennate Diatom	147	0.524%	35	0.8%	33,784	0.062%	S	N	0							
<i>Gomphonema acuminatum</i>	Pennate Diatom	88	0.314%	48	0.5%	118,700	0.218%	S	N	4	1	2	2	5	2	2	41.4-I
<i>Gomphonema coronatum</i>	Pennate Diatom	59	0.209%	57	0.3%	70,505	0.129%	S	N								
<i>Gomphonema gracile</i>	Pennate Diatom	2,526	9.005%	3	14.3%	2,057,989	3.771%	S	N	3	1	1	1	3	3	2	38.6-I
<i>Gomphonema parvulum</i>	Pennate Diatom	294	1.047%	26	1.7%	63,942	0.117%	S	N	3	3	4	4	5	3	2	55.7-E

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**Town:** Hermon

**Sample ID:** WA-105-2016E (1570)

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Taxa Name	Group	Density (cells/ cm <sup>2</sup> )	Relative Density			Biovolume (um <sup>3</sup> / cm <sup>2</sup> )	Relative Biovolume	Form	Mot- ility	van Dam Index Values							Maine Epi Tolerance
			All	Rank	Diatoms					pH	NO2	S	T	M	Sal		
<i>Gomphonema truncatum</i>	Pennate Diatom	411	1.466%	21	2.3%	337,251	0.618%	S	N	4	1	2	2	4	2	2	54.3-E
<i>Gomphonema brebissonii</i>	Pennate Diatom	88	0.314%	48	0.5%	105,758	0.194%	S	N								
<i>Chamaepinnularia mediocris</i>	Pennate Diatom	88	0.314%	48	0.5%	6,610	0.012%	P	M	2	1	1	1	1	4	1	19.3-S
<i>Navicula cryptocephala</i>	Pennate Diatom	176	0.628%	30	1.0%	59,919	0.110%	P	M	4	2	3	3	7	2	2	66.2-E
<i>Navicula cryptotenella</i>	Pennate Diatom	29	0.105%	66	0.2%	6,684	0.012%	P	M	4			2	7	2	2	52.4-I
<i>Navicula notha</i>	Pennate Diatom	323	1.152%	25	1.8%	80,687	0.148%	P	M								28.4-I
<i>Navicula rhynchocephala</i>	Pennate Diatom	29	0.105%	66	0.2%	21,021	0.039%	P	M	4	2	4	2	7	2	2	54.4-E
<i>Nupela lapidosa</i>	Pennate Diatom	59	0.209%	57	0.3%	5,288	0.010%	P	M	2	1	1	1	1	4	2	
<i>Sellaphora</i>	Pennate Diatom	118	0.419%	43	0.7%	14,101	0.026%	P	M								
<i>Sellaphora pupula</i>	Pennate Diatom	29	0.105%	66	0.2%	18,239	0.033%	P	M	3	2	3	3	4	2	2	51.3-I
<i>Eolimna minima</i>	Pennate Diatom	264	0.942%	28	1.5%	10,547	0.019%	P	M	4	3	4	4	5	3	2	53.2-E
<i>Nitzschia acidoclinata</i>	Pennate Diatom	911	3.246%	9	5.2%	86,516	0.159%	P	H	3	1	1	2	3	3	1	43.4-I
<i>Nitzschia dissipata</i>	Pennate Diatom	264	0.942%	28	1.5%	68,143	0.125%	P	H	4	2	2	2	4	3	2	57.9-E
<i>Nitzschia dissipata var. media</i>	Pennate Diatom	59	0.209%	57	0.3%	14,738	0.027%	P	H	4						2	34.4-I
<i>Nitzschia linearis</i>	Pennate Diatom	88	0.314%	48	0.5%	252,986	0.464%	P	H	4	2	2	2	4	3	2	66.6-E
<i>Nitzschia palea</i>	Pennate Diatom	147	0.524%	35	0.8%	41,318	0.076%	P	H	3	4	4	5	6	3	2	52.5-E
<i>Nitzschia palea var. debilis</i>	Pennate Diatom	353	1.257%	23	2.0%	61,400	0.113%	P	H	3			1	1	3	1	75.5-E
<i>Nitzschia perminuta</i>	Pennate Diatom	59	0.209%	57	0.3%	6,033	0.011%	P	H	4	1	1	1	2	3	2	37.8-I
<i>Nitzschia columbiana</i>	Pennate Diatom	411	1.466%	21	2.3%	123,384	0.226%	P	H								
<i>Dinobryon</i>	Chrysophyte	147	0.524%	35		2,938	0.005%										
<i>Lagynion</i>	Chrysophyte	1,586	5.655%	5		15,864	0.029%										
<i>Pediastrum duplex</i>	Colonial Green	2,703	9.634%	1		621,622	1.139%										
<i>Oedogonium 15-20 μm</i>	Filamentous Green	1,381	4.922%	6		13,807,298	25.303%										
<i>Mougeotia</i>	Filamentous Green	2,556	9.110%	2		15,853,286	29.053%										37.5-I
<i>Spirogyra</i>	Filamentous Green	764	2.723%	12		6,415,987	11.758%										39.6-I
<i>Zygnema</i>	Filamentous Green	823	2.932%	11		1,891,894	3.467%										