Friends of Merrymeeting Bay

Testimony in Support of LD 2187 with an Amendment to Reclassify the Lower Androscoggin River from Worumbo Dam to Gulf Island Pond Dam from Class C to Class B

2/25/26

Friends of Merrymeeting Bay

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LD 2187 Testimony 2/25/26

Vote Ought to Pass with Lower Androscoggin Classification Upgrade Amendment

Senator Tepler, Representative Doudera, and members of the Joint Standing Committee on Environment and Natural Resources,

My name is Ed Friedman and I'm testifying on behalf of Friends of Merrymeeting Bay (FOMB) in support of LD 2187 **with the caveat that a classification upgrade amendment be added covering the upper lower Androscoggin River between Worumbo dam in Lisbon Falls and Gulf Island Pond dam in Auburn.** Clean rivers are the life blood of Maine and water quality upgrades whenever possible to reflect and lock in actual improved conditions benefit all of us, providing a healthy environment and economy, overall, improving quality of life in Maine.

When the actual quality of the water exceeds that of its classification, this leaves room to pollute while still meeting the lower existing classification. This is the situation on the upper lower Androscoggin River from Worumbo dam in Lisbon Falls to Gulf Island Pond dam in Auburn. Compliance with state and federal water quality antidegradation laws are only is only ensured when classification keeps up with actual water quality conditions. Because intensive sampling last summer by Friends of Merrymeeting Bay at ten sites in this section of river showed easy Class B compliance 100% of the time, I'm asking you to please support amendment language locking in the improved water quality.

Here are some reasons why FOMB believes this amendment is important and why I'm requesting your support for it:

1. Introduction

LD 2187, **An Act To Update Certain Water Quality Standards and To Reclassify Certain Waters of the State** reflects the triennial review of and amendments to water quality classifications in state statute 38 MRSA.

Unfortunately this year neither the Department of Environmental Protection nor Board of Environmental Protection recommended any of the eight citizen water body proposals for an upgrade in classification including a segment of the Androscoggin where we performed actual data sampling and analysis demonstrating a basis for classification upgrade. **When the actual quality of the water exceeds that of its classification, this leaves room to pollute while still meeting the lower existing classification.** This is the situation on the upper lower Androscoggin River from Worumbo dam in Lisbon Falls to Gulf Island Pond dam (GIP) in Auburn. **Please support an amendment to include this section of river for a classification upgrade to Class B since the actual data easily surpass Class B minimums.**

2. The short version of "Why an Upgrade Amendment?"

Clean rivers improve and enhance local economies and strengthen surrounding communities. A clean, healthy river attracts people and new businesses to riverfront areas, increasing property values, environmental health, and local quality of life. An upgrade of the Androscoggin will lock in decades of water quality improvement along the river, ensuring that the current balance between industrial use and environmental protection is maintained into the future.

Why Upgrade?

1. It's the law! Actual Class B water quality conditions have been met in the Androscoggin below GIP for years, and Maine statute requires that they be upgraded and maintained.
2. Anti-degradation language in the Clean Water Act prohibits backsliding in water quality.
3. A cleaner river has well-documented economic, ecological and quality of life benefits.
4. Besides aquatic species, 70-80% percent of terrestrial wildlife species inhabit or utilize river corridors and benefit from high water quality.

Goal-Based Reclassification

"*Maine's Water Quality Classification System is goal-based. When proposing an upgrade in classification, recommend waters that either presently attain or with reasonable application of improved treatment or Best Management Practices (BMPs), could reasonably be expected to attain, the standards and criteria of a higher proposed class*." [DEP 2024 Triennial Review Submission Guidelines]

Classification Must Be Based on Actual Water Quality

*"When the **actual quality** of any classified water exceeds the minimum standards of the next highest classification, that higher water quality must be maintained and protected. The board shall recommend to the Legislature that water be reclassified in the next higher classification."* [38 M.R.S.A. § 464 (4) (F)(4)]. Our actual field data, taken during a record drought year, shows the Androscoggin segment below GIP in attainment of Class B Dissolved Oxygen and E. Coli standards triggering this statutory mandate. The last sampling for aquatic life standards (2021) also showed compliance with Class B.

3. The Long version: background, detail and comprehensive referenced version of "Why Upgrade?"

- **For years, the river has met dissolved oxygen and *E. coli* Class B standards under "business as usual" conditions.**

  http://cybrary.fomb.org/pages/20200331%20AUP%20Exhibit%2027%20DO_Geomeans_2003-2019.pdf (DO geometric mean graphs from lowest section of river-Worumbo to Merrymeeting Bay [now Class B!])

  http://cybrary.fomb.org/pages/20200331%20AUP%20Exhibit%2026%20E_coli_geo_means_2006-2019-page-001.pdf (E. coli geometric mean graphs from lowest section of river-Worumbo to Merrymeeting Bay [now Class B!])

  https://cybrary.fomb.org//pages/CMP%20DO%20Lewiston%20Falls%201990-1995%20DO%20study.pdf (1990-1995 continuous monitoring DO data collected by CMP below and above Lewiston Falls)

  https://cybrary.fomb.org//pages/1%20Page%20Summary%202026%20%20Androscoggin%20River%20Upgrade%201-13-26.pdf (Great summary of 2025 FOMB sampling effort for amendment area including charts}

- **A cleaner river has well-documented economic, ecological and quality of life benefits and comprehensive plans support these.**

  http://cybrary.fomb.org/pages/20200331%20AUP%20Exhibit%2008%20Economic_Benefit_Articles.pdf (studies on economic benefits of clean waters)

  http://cybrary.fomb.org/pages/20200331%20AUP%20Exhibit%2006%20Andro_Comp_Plan_Excerpts.pdf (Comprehensive Plan excerpts from Androscoggin communities on importance of clean water)

https://cybrary.fomb.org//pages/McNew%20et%20al%20eds.%202023%20Rangeland%20Wildlife%20Ecology%20and%20Conservation-Water%20is%20Life-Chapter%207_compressed.pdf (See Chapter 7-70-80% percent of terrestrial wildlife species inhabit or utilize river corridors and benefit from high water quality)

- **The Lower Androscoggin upgrade has widespread support.**

  http://cybrary.fomb.org/pages/20210502%20Exhibit%2007%20Androscoggin%20Reclassification%20Support%20letters.pdf (Supporters)

- **It's the law.**

  38 M.R.S.A. § 464 (F) (4) *"When the **actual quality** of any classified water exceeds the minimum standards of the next highest classification, that higher water quality must be maintained and protected."*
  https://www.mainelegislature.org/legis/statutes/38/title38sec464.html

- **The DEP Reclassification Submission Guidelines are goal-based and aspirational in nature:**

  When proposing an upgrade in classification, recommend waters that either presently attain or with reasonable application of improved treatment or Best Management Practices (BMPs), could reasonably be expected to attain, the standards and criteria of a higher proposed class.
  https://www.maine.gov/dep/water/monitoring/classification/2017_SubmissionGuidelines-WQ-ReClass.pdf

- **Reduced CSO's**

  Lewiston & Auburn have done a great job reducing combined sewage overflows since 2010. An upgrade recognizes and celebrates this. Treatment plants should not be held to an unreasonable standard nor penalized as long as what they discharge does not reduce ambient water quality. In times of increasing temperatures and drought, dams must be actively managed to allow sufficient flows for native river life, vertebrates and invertebrates.

  http://cybrary.fomb.org/pages/20200331%20AUP%20Exhibit%2024%20Auburn_Lewiston_CSO_Charts_200-2018.pdf

- **The Clean Water Act dictates a state shall revise its standards to reflect uses and water quality actually being attained**. 40

C.F.R. § 131.1O.(j) See also id. §464. 4.F; 38 M.R.S.A

- **Riverine Corridors are Crucial Wildlife, Fish and Plant Habitat**
  In addition to aquatic species, 70-80% of our terrestrial wildlife species inhabit river corridors and all benefit as do we. The lower Androscoggin is designated critical habitat for endangered Atlantic salmon and provides highest value wildlife habitat for multiple species.

  http://cybrary.fomb.org/pages/20200331%20AUP%20Exhibit%2009%20USFWS_Merrymeeting_Bay-Lower_Kennebec_Composite_HVH.pdf (USFWS composite high value habitat map for lowest Andro section, Merrymeeting Bay and lower Kennebec)

  https://media.fisheries.noaa.gov/dam-migration/atlanticsalmon-accessible.pdf (NMFS map Atlantic salmon Critical Habitat)

  https://cybrary.fomb.org//pages/McNew%20et%20al%20eds.%202023%20Rangeland%20Wildlife%20Ecology%20and%20Conservation-Water%20is%20Life-Chapter%207_compressed.pdf (Value of riparian habitat to wildlife-See Chapter 7)

- **Actual Water Quality-Not Hypothetical Discharge Monitoring**

  An upgrade must be based on existing water quality - not hypothetical modeling with point sources operating at maximum licensed discharge. Indeed, the Board, DEP and legislature are specifically prohibited from considering maximum licensed loads because both state and federal regulations prohibit consideration of waste discharge or transport as a designated use. 40 C.F.R. § 131.10(a); 38 M.R.S.A. § 464(4)(F)(l)(d). Discharge licenses have very large buffers built in, far above actual discharges. Holding upgrades hostage to these limits (all dischargers discharging at maximum licensed loads under critical flow conditions at highest temperatures) is not only unrealistic but conflates discharge statutes (based on modeling) with upgrade statutes based on actual water quality. The Clean Water Act is crafted in such a way that classification and discharge statutes should work together to ratchet water quality upwards.

  http://cybrary.fomb.org/pages/20210502%20Exhibit%2040%20Andro%20Dischargers%20Actual%20vs.%20Licensed%202012-2013.pdf (Chart showing example of Andro dischargers with actual vs. licensed discharges in specific loads, percent actual discharge is of licensed maximum and percent buffer the licensed amount provides)

- **Multiple expert legal opinions**
  (from Greenfire Law, Conservation Law Foundation and Sells Law):support an Androscoggin upgrade and include such points as:

- **Use of the water body to receive waste water discharges is not a permissible consideration in establishing appropriate classification.**

  DEP expressly may not take into account industrial discharge capacity needs in determining uses.33 DEP improperly invited consideration of the waste-assimilative capacity of the River as part of the reclassification review, stating that waste permitting limits "is an important requirement [to consider] when a reclassification is being evaluated. . . It is highly recommended that the Legislature fully understands any new licensing requirements that will be imposed on any discharge prior to a reclassification decision being made."34 In short, the DEP was directing the legislature to be careful not to eliminate the ability of the water legally to support the waste disposal needs of industry, which is not allowed.35 (Greenfire)

- **Naturally occurring conditions cannot be used as evidence of non-attainment of water quality standards**

  DEP's analysis of dissolved oxygen deficiency relied on naturally occurring conditions. [Yet] "Where natural conditions, including, but not limited to, marshes, bogs and abnormal concentrations of wildlife cause the dissolved oxygen or other water quality criteria to fall below the minimum standards specified in sections 465, 465-A and 465-B, those waters shall not be considered to be failing to attain their classification because of those natural conditions."36 (Greenfire)

- **Upstream conditions must be ameliorated rather than used as an excuse to avoid protecting downstream water quality.**

  DEP concluded that "river sampling showed a nutrient loading from sources upstream."37 The States designation of those upstream sources should not negatively impact downstream waters.38 Further, "[n]o waste load allocation can be developed or NPDES permit issued that would result in standards being violated. With respect to antidegradation, that means existing uses must be protected, water quality may not be lowered in [Outstanding Natural Resource Waters], and in the case of waters whose

quality exceeds that necessary for the section 101(a)(2) goals of the Act, an activity cannot result in a lowering of water quality unless the applicable public participation, intergovernmental review, and baseline control requirements of the antidegradation policy have been met."39 (Greenfire)

- **The rationale given by the Department to recommend against re-classification is inappropriate and, in some cases, unlawful. It must be ameliorated rather than used as an excuse to avoid protecting downstream water quality.**

  Simply put, the Department's "interpretation" of the statute is that certain other additional factors must be taken into account or considered. In summary these factors include:

  1. *Under modeled "critical" once-in-a-decade low flow, high temperature conditions, the lower Androscoggin might fail to meet Class B standard,*
  2. *Waste discharge permits might have to be altered and might not be allowed at all under Class B designation because of the requirement to consider modeled once-in-a-decade low flow, high temperature conditions, and*
  3. *Upstream and instream pollution (point and non-point source discharges) somehow can prevent lower reaches from being reclassified.*

  Importantly, none of these factors are appropriate when confronted with a segment of water that is actually meeting water quality standards and designated uses. Again, there is nothing – nothing - in the statute that allows for this and the overwhelming legal basis for both the Federal Clean Water Act and Maine's Anti-degradation statute explicitly say so. (Sells Law)

- **Using the Department's own method of statutory interpretation and the explicit language of federal and state statute, regulation and guidance – there is no reasonable legal interpretation that would justify denial.**

  There is no dispute over whether the Class B standards or the designated uses are being met here. However, the external considerations used by the Department in denying reclassification are not in accordance with the federal and state statute, regulation and guidance or the express purposes underlying those laws. Further, there is no assertion by the Department that the legislature intended to provide an exception for the rationale it has provided. The Department has made no showing that the actual data is

disputed or that the designated uses are inconsistent with Class B designation. Instead, it offers justification for denial that is inconsistent with the plain language and purpose of the very statutes and programs it itself administers. (Sells Law)

(The points above are covered by all three entities-all experts in water quality law. CLF and Greenfire comments are from earlier efforts and while some specifics may apply to just the lowest section of river {upgraded to B in the last triennial without the world ending}, all three legal analyses are generally applicable to the current upgrade effort)

http://cybrary.fomb.org/pages/20200331%20AUP%20Exhibit%2004%20Greenfire_Law_%20Memo_re_Reclassification_3-31-20.pdf

http://cybrary.fomb.org/pages/20200331%20AUP%20Exhibit%2005%202020 09-10-02_CLF_BEP_Comments_abridged.pdf

http://cybrary.fomb.org/pages/FOMB%20BEP%20Triennial%20Review%20Androscoggin%20Upgrade%20-Legal%20Analysis-Scott%20Sells%2010-22-2.pdf

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- **The Clean Water Act**

  2022 marked the 50th anniversary of the Clean Water Act championed by Maine Senator Ed Muskie in large part with the then foul Androscoggin as poster child for the Act's necessity. Now the Androscoggin is the only major Maine river mostly relegated to Class C status. Anniversary of the Act marks an appropriate time to finally recognize, honor and lock in improvements made over the last half century.

Please support an Androscoggin amendment reclassifying the section from Worumbo to Gulf Island Pond from C to B and then vote "Ought to Pass on LD 2187 as amended" ensuring the Lower Androscoggin Upgrade remains a part of the bill and locking in existing water quality.

4. History Class-

Links to FOMB newsletter articles on history and progress of this upgrade effort and the in-depth section in our web Cybrary for you "deep diving legislators."

FOMB Summer 2025 Newsletter (Page 1)

FOMB Fall 2025 Newsletter (Page 1)
FOMB Winter 2026 Newsletter (Page 6)
Chemical Page of Cybrary-Scroll down to Androscoggin Upgrade Proposal 2025 (6^{th} + sign down)

5. Classification statute showing strike-throughs of current language and proposed replacement language (as amended).

§467. Classification of major river basins

All surface waters lying within the boundaries of the State that are in river basins having a drainage area greater than 100 square miles that are not classified as lakes or ponds are classified in this section. [PL 1989, c. 764, §2 (AMD).]

1. Androscoggin River Basin.

A. Androscoggin River, main stem, including all impoundments.

(1) From the Maine-New Hampshire boundary to its confluence with the Ellis River - Class B.

(2) From its confluence with the Ellis River to ~~Worumbo Dam in Lisbon Falls~~ **Gulf Island Pond dam in Auburn**- Class C.

(3) From ~~Worumbo Dam in Lisbon Falls~~ **Gulf Island Pond dam in Auburn** to a line formed by the extension of the Bath-Brunswick boundary across Merrymeeting Bay in a northwesterly direction - Class B. [PL 2021, c. 551, §19 (AMD).]

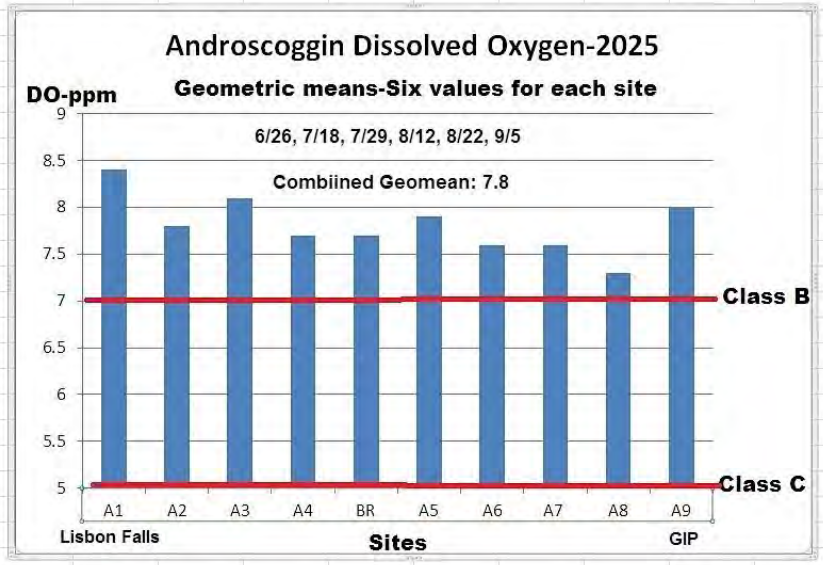
Exhibit 1: Data summary charts and maps
Exhibit 2: Explanation of FOMB sampling data
Exhibit 3: FOMB 2025 water quality data-also linked to Excel file in paragraph 2
Exhibit 4: CMP 1990-1995 continuous monitoring DO data table, Lewiston Falls area
Exhibit 5: DEP aquatic life data (benthic macroinvertebrates) modeling from FOMB 2021 sampling
Exhibit 6: Statutory classification adjustments for hydropower impoundments

Exhibit 1

2025 Androscoggin River Sampling Summary Charts

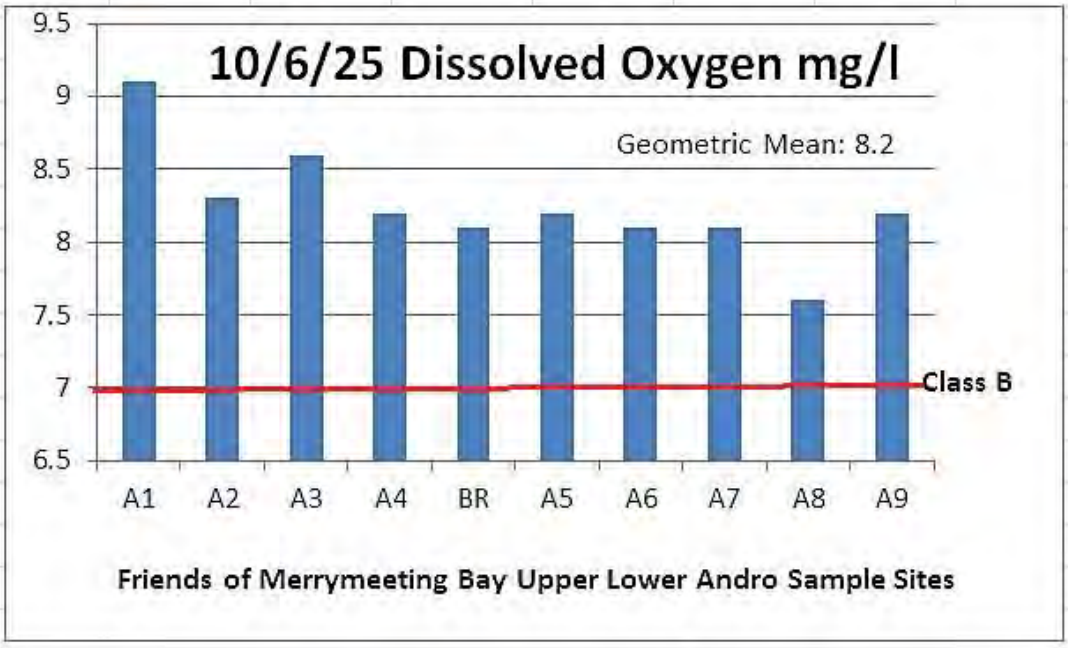
Friends of Merrymeeting Bay/MMBTU/Grow L+A

Site	Androscoggin Dissolved Oxygen-2025
A1	8.4
A2	7.8
A3	8.1
A4	7.7
BR	7.7
A5	7.9
A6	7.6
A7	7.6
A8	7.3
A9	8
Geomean	7.8

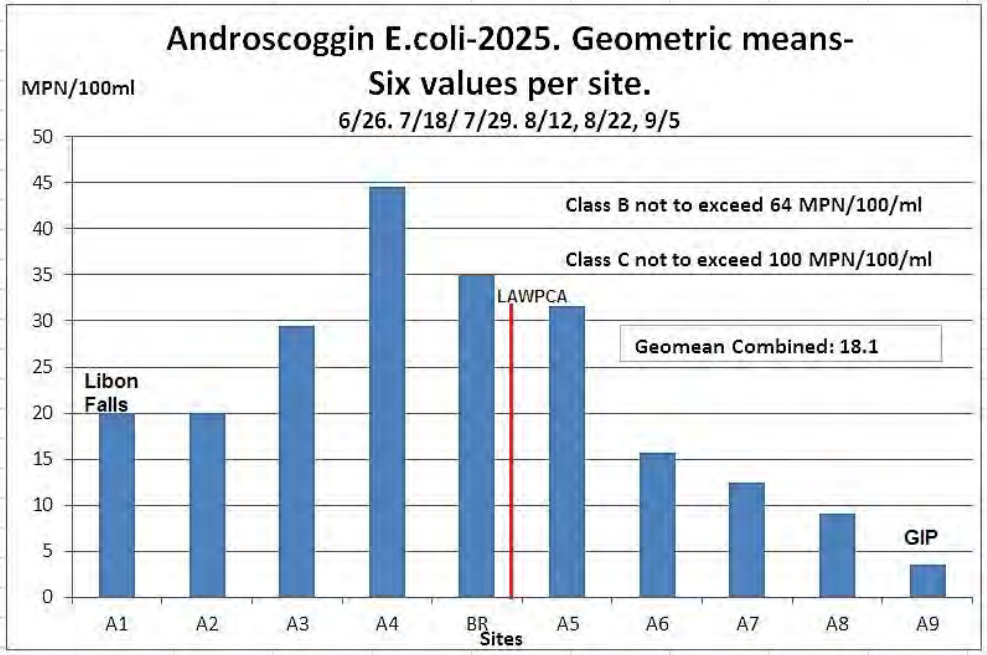


And after an additional month of drought:

10/6/25 DO
9.1
8.3
8.6
8.2
8.1
8.2
8.1
8.1
7.6
8.2

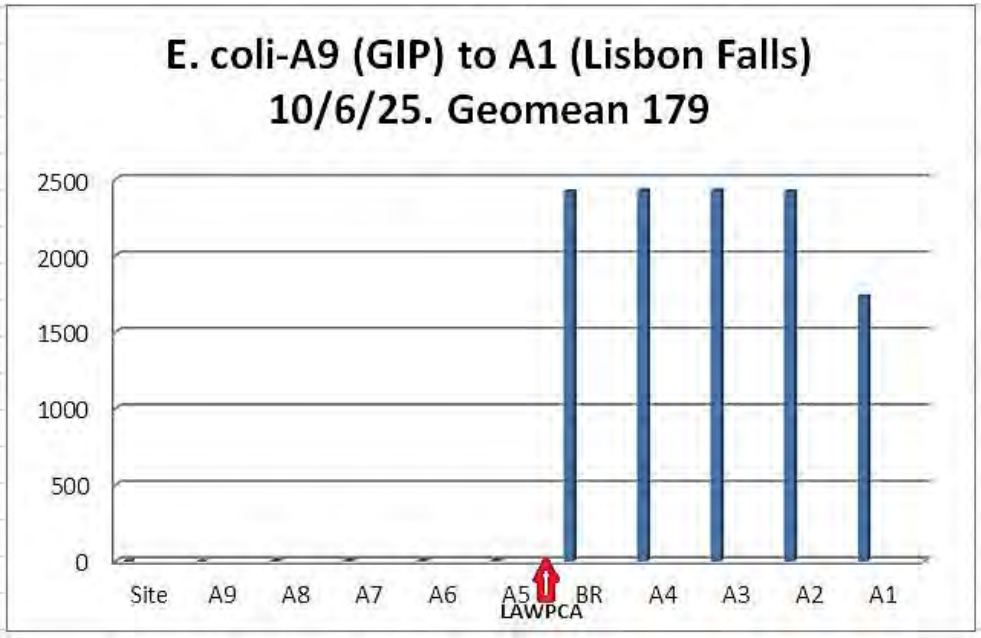


Site	Androscoggin E.coli-2025.Geometric means-Six values per site.
A1	19.9
A2	20
A3	29.5
A4	44.6
BR	35.1
A5	31.6
A6	15.7
A7	12.4
A8	9.1
A9	3.6
Geomean	**18.1**

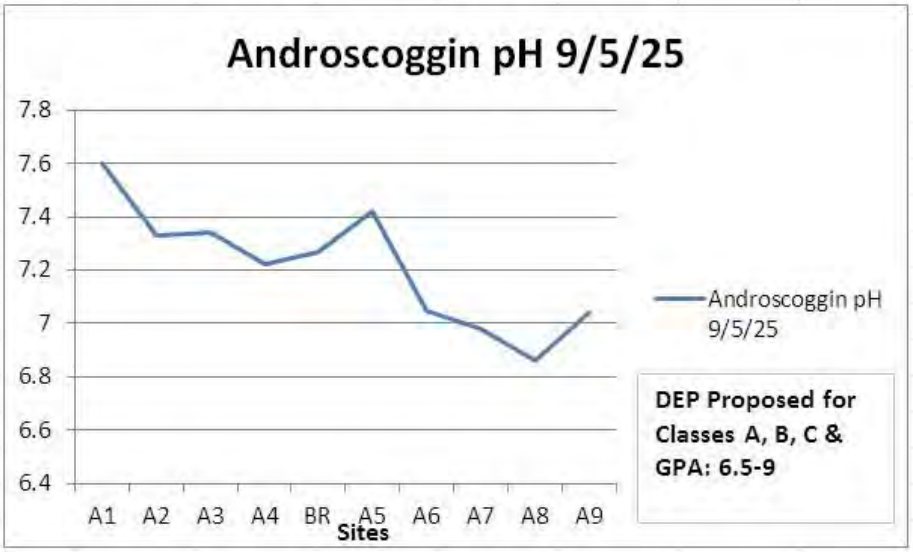


A month later and after LAWPCA has stopped chlorinating/dechlorinating for season [new permits will extend treatment until 10/31 from 9/30]. Classification standards only apply during treatment period:

Site	E. coli
A9	1
A8	5.2
A7	8.6
A6	7.5
A5	9.5
BR	2419.6
A4	2425
A3	2425
A2	2419.6
A1	1732.9

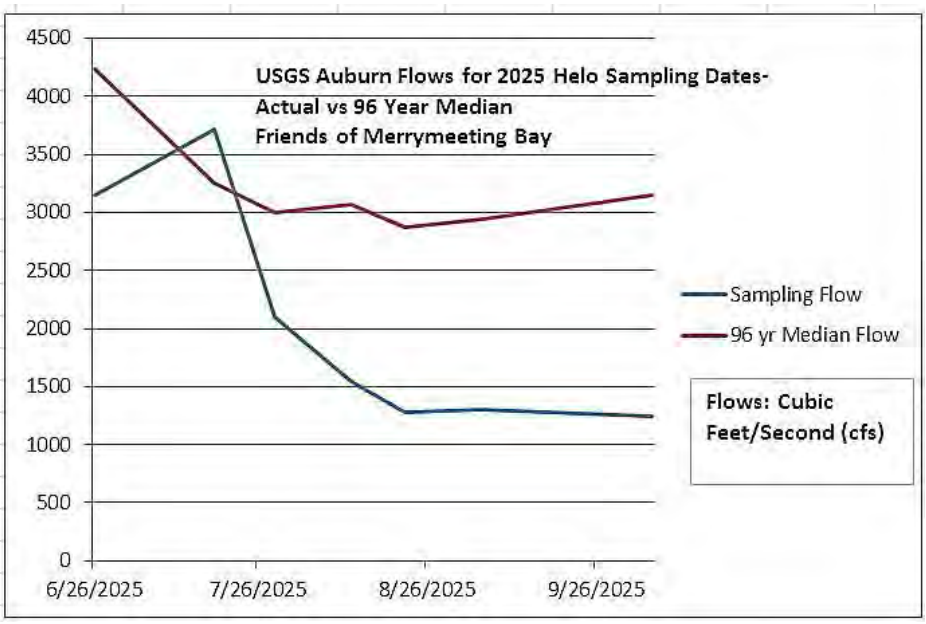


Site	Androscoggin pH 9/5/25
A1	7.6
A2	7.33
A3	7.34
A4	7.22
BR	7.27
A5	7.42
A6	7.05
A7	6.98
A8	6.86
A9	7.04
A6 Replicate	7.01



And actual flows at sampling vs 96 year median flows. Five of seven sampling events at flows well below median:

Date	Sampling F	96 yr Median Flow
6/26/2025	3150	4240
7/18/2025	3720	3255
7/29/2025	2100	2995
8/12/2025	1540	3070
8/22/2025	1280	2875
9/5/2025	1300	2940
10/6/2025	1240	3145



2025 Helicopter Sampling Sites

All FOMB sites (BMI-benthic macroinvertebrate)

Exhibit 2

This spreadsheet contains all sampling data from single test flight in August, 2024 and all seven sampling flights in 2025. We used a helicopter with amphibious floats (Point of View Helicopter Services) enabling us to sample an extensive longitudinal profile of 10 sites along the river reach from Worumbo dam in Lisbon Falls (site A1) into Gulf Island Pond (site A9). Despite the numbers: A1-A9, there were 10 sites but we called one BR because it was the only one with a recognized name which we thought was Benner Rips (just above I-95). As it turns out, the actual name may be Dresser Rips!

Six of our sampling flights were planned initially and funded by FOMB and the Merrymeeting Bay Chapter of Trout Unlimited. Because we wanted to focus on worst case conditions-meaning low flow and high temperatures, we planned one flight in June, two each in July and August and one in September. Because we had record drought conditions and they extended over a month beyond our early September "final" sampling, we conducted a seventh sampling flight in early October.

With over 200 samples conducted of dissolved oxygen (DO) in mg/l, DO in % saturation and E. coli, Class B criteria were met at all times during the period regulated by DEP which is May 15-September 30. During this period, wastewater treatment plants are required to chlorinate and then de-chlorinate their discharges. Historically, the thought was before and after these dates, colder water and air temperatures minimize growth of harmful E. coli bacteria. With increased warming however we see an extended range of warmer temperatures with more use of the rivers and so new DEP discharge permits will have an extended treatment period from April 15-October 31. Unfortunately DEP has had a 4-year backlog of expired permits and they are only just now beginning to catch up. Our October sampling which showed sky-high bacteria loading from the Lewiston-Auburn wastewater plant (LAWPCA) because we were sampling outside of the treatment range the plant continues to operate under until the new permit is actually issued.

Numerical excursions beyond Class B limits are shown in red. The only E.coli exceedances (above a geometric mean of 64mpn [most probable number]) were in October and don't compromise Class B attainment as currently regulated. Class B minimums for DO are 7mg/l or 75% saturation whichever is higher. We had one DO reading of 6.7mg/l in the Deer Rips impoundment as a result of anoxic water coming in from deep in Gulf Island Pond through the turbines but the same sample showed a DO saturation of over 75% so this still met the Class B attainment criteria. All DO readings from all ten stations at all seven samplings easily met Class B requirements.

Aquatic life standards, not in this spreadsheet but the third major DEP criteria after DO and E.coli bacteria, we measured back in 2021. Of the six sites we deployed rock baskets in (these get colonized by benthic macroinvertebrates, analyzed for species and abundance and then fed into a model to determine classification), four were between Worumbo and Lewiston Falls (two were below Worumbo). All three of the sites in free-flowing water met the Class B criteria while the fourth, in the upper Worumbo impoundment modeled at Class C but still meets the Class B qualification because of a statutory exemption for hydropower impoundments recognizing their unique nature. Numerical details on this sampling can be found in our 10/16./26 Triennial Comments to the BEP on this page and the sampling project and techniques in our Summer 2021 newsletter.

Exhibit 3

Upper Lower Androscoggin Helicopter Water Sampling Profiles 2024-2025-FOMB

Date	Site	Lat	Long	Time	DO mg/l	DO %	Spec Cond	H2O Temp	Depth Ft.	Air Temp	E. coli	Total Col.
6/26/2025	A1	44° 0.524N	70° 5.169W	6:37	8	92.9	75.2	23.1	4	19	42.2	1986
7/18/2025	A1	44° 0.524N	70° 5.169W	6:47	7.6	91.8	74.4	24.9	4	20	28.3	>2419.6
7/29/2025	A1	44° 0.524N	70° 5.169W	6:31	8.1	98.2	75.7	25.1	4	19.9	18.5	1732.9
8/12/2025	A1	44° 0.524N	70° 5.169W	6:24	8.6	107	90.3	26.1	6	19.5	13.5	1986.3
8/22/2025	A1	44° 0.524N	70° 5.169W	6:35	9.9	116	101.5	23.1	6	12	17.2	1732.9
9/5/2025	A1	44° 0.524N	70° 5.169W	6:45	8.6	101.2	104.5	23	6	18	12.1	>2419.6
				Geomean	**8.4**						**19.9**	
10/6/2025	A1	44° 0.524N	70° 5.169W	6:52	9.1	98.1	117	19	6	12	1732.9*	>2419.6
				Geomean 7	**8.5**						*See October notes	
6/26/2025	A2	43° 59.573N	70° 6.839W	6:52	7.9	91.5	74.7	22.7	2	19	22.8	2419.6
7/18/2025	A2	43° 59.573N	70° 6.839W	6:55	7.7	92.2	74.1	24.6	2	22	25.3	>2419.6
7/29/2025	A2	43° 59.573N	70° 6.839W	6:38	7.9	95.2	75.8	24.9	2	18.5	29.5	>2419.6
8/12/2025	A2	43° 59.573N	70° 6.839W	6:33	7.9	96.2	91.1	25.2	4	19	6.3	1553.1
8/22/2025	A2	43° 59.573N	70° 6.839W	6:43	7.8	90.1	101.8	22.2	2	15	13.4	>2419.6
9/5/2025	A2	43° 59.573N	70° 6.839W	6:54	7.9	90.3	104.9	22	2	18	44.1	>2419.6
				Geomean	**7.8**						**20**	
10/6/2025	A2	43° 59.573N	70° 6.839W	6:57	8.3	88	115.8	18.2	3	12	2419.6*	>2419.6
					7.9							
6/26/2025	A3	44° 0.116N	70° 9.076W	7:00	7.9	91.6	74.2	22.6	2	19	50.4	>2419.6
7/18/2025	A3	44° 0.116N	70° 9.076W	7:05	7.7	92.6	73.3	24.6	3	22	22.8	>2419.6
7/29/2025	A3	44° 0.116N	70° 9.076W	6:44	7.6	92.7	77.2	25	2	19	23.8	2419.5
8/12/2025	A3	44° 0.116N	70° 9.076W	6:40	8.4	102.7	91.8	25.4	1	19	15.6	1732.9
8/22/2025	A3	44° 0.116N	70° 9.076W	6:50	8.5	98.4	107	22.8	2	12	37.7	1986.3
9/5/2025	A3	44° 0.116N	70° 9.076W	7:00	8.3	95.5	105.9	22.4	2	18	40.8	>2419.6
				Geomean	**8.1**						**29.5**	
10/6/2025	A3	44° 0.116N	70° 9.076W	7:03	8.6	91.7	116.5	18.4	4	11	>2419.6*	>2419.6
					8.1							

Date	Site	Lat	Long	Time	DO mg/l	DO %	Spec Cond	H2O Temp	Depth Ft.	Air Temp	E. coli	Total Col.
6/26/2025	A4	44° 2.744N	70° 11.278W	7:12	8	93.9	74.1	22.7	2	19	58.1	816.4
7/18/2025	A4	44° 2.744N	70° 11.278W	7:15	7.9	94	74	24.4	2.5	20.2	31.3	>2419.6
7/29/2025	A4	44° 2.744N	70° 11.278W	6:53	7.4	88.5	76.9	24.3	2	19	34.5	>2419.6
8/12/2025	A4	44° 2.744N	70° 11.278W	6:47	7.3	88.6	94.1	25	1	19	21.6	1986.3
8/22/2025	A4	44° 2.744N	70° 11.278W	6:58	7.6	87.9	102.4	23	2	12	108.6	2419.6
9/5/2025	A4	44° 2.744N	70° 11.278W	7:09	8.2	94	107	22	2	18	53.8	1986.3
				Geomean	**7.7**						**44.6**	
10/6/2025	A4	44° 2.744N	70° 11.278W	7:14	8.2	86.5	117.7	18	2	14	>2419.6*	>2419.6
					7.8							
6/26/2025	BR	44° 3.917N	70° 12.457W	7:18	7.9	91.6	74.2	22.5	4	19	47.8	571.7
7/18/2025	BR	44° 3.917N	70° 12.457W	7:23	7.8	92.7	74.6	24.3	4	22	36.4	>2419.6
7/29/2025	BR	44° 3.917N	70° 12.457W	6:58	7.4	89.7	76	24.8	4	24.8	30.5	2419.5
8/12/2025	BR	44° 3.917N	70° 12.457W	6:53	7.4	88.9	92.2	24.9	6	19.5	12.2	1732.9
8/22/2025	BR	44° 3.917N	70° 12.457W	7:06	7.4	86.1	99.7	23.1	6	12	38.8	1986.3
9/5/2025	BR	44° 3.917N	70° 12.457W	7:20	8.3	94.4	108.5	22	6	18	74.9	2419.6
				Geomean	**7.7**						**35.1**	
10/6/2025	BR	44° 3.917N	70° 12.457W	7:20	8.1	85.2	113	18	6	15	>2419.6*	>2419.6
					7.7							
Date	**Site**	**Lat**	**Long**	**Time**	**DO mg/l**	**DO %**	**Spec Cond**	**H2O Temp**	**Depth Ft.**	**Air Temp**	**E. coli**	**Total Col.**
	LAWPCA WWTP upstream of BR & slightly downstream of A5											
6/26/2025	A5	44° 13.010N	70° 13.010W	7:25	7.9	92.1	68.5	22.6	4	19	59.8	640.5
7/18/2025	A5	44° 13.010N	70° 13.010W	7:30	7.9	94.3	69.4	24.5	4	22	32.3	2419.6
7/29/2025	A5	44° 13.010N	70° 13.010W	7:03	7.5	91.5	69.9	25	4	22	18.3	1986.3
8/12/2025	A5	44° 13.010N	70° 13.010W	7:00	7.9	95.8	85.6	25.2	6	20	16	1119.9
8/22/2025	A5	44° 13.010N	70° 13.010W	7:12	7.7	91.8	90.8	23.9	4	16	20.1	1986.3
9/5/2025	A5	44° 13.010N	70° 13.010W	7:29	8.8	101.6	101.6	22.3	6	18	88.2	2419.6
				Geomean	**7.9**						**31.6**	
10/6/2025	A5	44° 13.010N	70° 13.010W	7:23	8.2	87.7	107.9	18.3	3	15	9.5	1203.3
					8							

Date	Site	Lat	Long	Time	DO mg/l	DO %	Spec Cond	H2O Temp	Depth Ft.	Air Temp	E. coli	Total Col.
6/26/2025	A6	44° 6.364N	70° 13.406W	7:28	7.9	91.2	68.3	22.6	4	19	51.2	980.4
7/18/2025	A6	44° 6.364N	70° 13.406W	7:35	7.7	92.1	68.9	24.6	4	21	13.5	>2419.6
7/29/2025	A6	44° 6.364N	70° 13.406W	7:08	7.3	88.7	69.7	25	6	22	6.3	1732.9
8/12/2025	A6	44° 6.364N	70° 13.406W	7:06	7.7	92.8	85.2	25.1	6	20	6.3	1203.3
8/22/2025	A6	44° 6.364N	70° 13.406W	7:20	7.6	91	90.3	24.2	6	16	15.6	1986.3
9/5/2025	A6	44° 6.364N	70° 13.406W	7:33	7.5	86	101.7	22	6	18	35	980.4
				Geomean	**7.6**						**15.7**	
10/6/2025	A6	44° 6.364N	70° 13.406W	7:27	8.1	86.1	107.3	18.4	6	15	7.5	648.8
					7.7							
6/26/2025	A7	44° 7.791N	70° 12.358W	7:42	8	92.6	67.6	22.8	4	19	32.8	1986.3
7/18/2025	A7	44° 7.791N	44° 7.791N	7:40	7.6	91.5	68.3	24.7	6	20	4.1	1553.1
7/29/2025	A7	44° 7.791N	44° 7.791N	7:14	7.3	88.3	68.8	24.6	6	22	3.1	>2419.6
8/12/2025	A7	44° 7.791N	70° 12.358W	7:11	7.6	91.3	85.9	24.8	6	20	33.6	1986.3
8/22/2025	A7	44° 7.791N	44° 7.791N	7:25	7.5	89.3	90.1	24.1	6	14	24.1	2419.6
9/5/2025	A7	44° 7.791N	44° 7.791N	7:42	7.4	84.5	103	21.8	6	18	11	1986.3
				Geomean	**7.6**						**12.4**	
10/6/2025	A7	44° 7.791N	44° 7.791N	7:32	8.1	85.4	106.5	18.1	6	15	8.6	770.1
					7.6							
6/26/2025	A8	44° 8.421N	70° 12.125W	7:47	7.9	92.5	67.7	22.9	4	19	31.8	436.2
7/18/2025	A8	44° 8.421N	70° 12.125W	7:46	7.4	89.6	68.2	24.9	6	20	7.5	1986.3
7/29/2025	A8	44° 8.421N	70° 12.125W	7:18	7.3	87.3	68.5	24.6	6	21	4	>2419.6
8/12/2025	A8	44° 8.421N	70° 12.125W	7:15	7.3	87.6	84.8	24.8	6	20	7.4	980.4
8/22/2025	A8	44° 8.421N	70° 12.125W	7:30	7.1	85	89.6	24.2	6	15	8.4	1203.3
9/5/2025	A8	44° 8.421N	70° 12.125W	7:46	6.7	76.6	103.1	21.8	6	18	9.7	1119.9
				Geomean	**7.3**						**9.1**	
10/6/2025	A8	44° 8.421N	70° 12.125W	5:39	7.6	80.7	104.9	18	6	15	5.2	816.4
					7.3							

Date	Site	Lat	Long	Time	DO mg/l	DO %	Spec Cond	H2O Temp	Depth Ft.	Air Temp	E. coli	Total Col.
6/26/2025	A9	44° 9.586N	70° 12.415W	7:53	8.8	107.2	68.7	25.7	4	19	37.9	238.2
7/18/2025	A9	44° 9.586N	70° 12.415W	7:50	8	98.7	68.2	26	6	19	5.2	>2419.6
7/29/2025	A9	44° 9.586N	70° 12.415W	7:22	7.9	96.3	69.8	25.3	6	21	<1	>2419.6
8/12/2025	A9	44° 9.586N	70° 12.415W	7:20	8.3	101.9	86.4	25.7	6	20.5	2	920.8
8/22/2025	A9	44° 9.586N	70° 12.415W	7:38	7.5	89.8	91	24.5	6	16	5.2	1119.9
9/5/2025	A9	44° 9.586N	70° 12.415W	7:55	7.6	87.1	95	22	6	18	>1	1553.1
				Geomean	**8**						**3.6**	
				Geomean Combined-	**7.8**					**Geomean Combined-**		**18.1**
10/6/2025	A9	44° 9.586N	70° 12.415W	7:45	8.2	87.2	106.4	18.4	6	15	1	>2419.6
				Geomean	**8**							
		Geomean Combined All Geomeans			**7.8**							
Replicates												
6/26/2025	A1	Replicate	As Above	6:46	8	92.9	75.2	23.1	4	19	30.5	2419.6
7/18/2025	A2	Replicate	As Above	6:57	7.7	91.9	74.1	24.6	2	22	28.2	>2419.6
7/29/2025	A3	Replicate	As Above	6:46	7.6	91.9	77.3	25	2	25	26.9	1732.9
8/12/2025	BR	Replicate	As Above	6:55	7.4	89.5	92.2	25	6	20	18.3	1732.9
8/22/2025	A5	Replicate	As Above	7:14	7.7	91.5	90.8	24	4	16	26.2	1533.1
9/5/2025	A6	Replicate	As Above	7:35	7.5	85.8	101.7	22	6	18	32.3	1203.3
				Geomean	**7.7**						**26.7**	
10/6/2025	A7	44° 7.791N	44° 7.791N	7:35	8	84.9	106.2	18.1	6	15	5.2	1046.2
					7.7							

6/26/2025	Lab Blank	9:30	<1	<1
7/18/2025	Lab Blank	10:00	<1	<1
7/29/2025	Lab Blank `	9:05	<1	<1
8/12/2025	Lab Blank	8:45	<1	<1
8/22/2025	Lab Blank	9:25	<1	<1
9/5/2025	Lab Blank	10:25	<1	<1
10/6/2025	Lab Blank	9:35	<1	<1

Site Notes

A1-FOMB Site 4 from BMI study-below Sabbatus mouth
A2-FOMB Site 3 from BMI study-in westerly rapid below Durham
A3-FOMB Site 2 from BMI study-Shallows opposite FOMB DBN
A4-One mile downstream of FOMB Site 1 from BMI study. Eagle nest site XF
Br-Bottom of Benner[Dresser] Rips-below LAWPCA-East eddy
A5-Little Andy alt site below green bridge
A6-Upstream of island below Auburn boat launch
A7-Below Deer Rips-large eddy by upstream double points-east bank
A8-Start of narrows above Deer Rips dam. At 10'-same readings
A9-GIP 850' above first island opposite west point, below rocks

6/26/2025 Notes

DEP YSI ProSOLO meter #46- Calibrated (99.9%) used in FOMB VRMP program. Bacteria samples analyzed with IDEXX Colilert.
Air temperatures from helicopter thermometer-no idea of accuracy
Helicopter-Schweizer 300C with amphibious floats
USGS Auburn Flows-3,150 cfs, median-4,240 cfs. Checked 6:45 am & 8:00 am-same readings. 3,250 at 4:15am.
Ed Friedman & Kathy Claerr
Engine start 6:17am. Depart KLEW 6:30. End sampling 7:57. Back at KLEW 8:10

7/18/2025 Notes

DEP YSI ProSOLO meter #46- Calibrated (98.7%) used in FOMB VRMP program. Bacteria samples analyzed with IDEXX Colilert.
Air temperatures from helicopter thermometer-no idea of accuracy
Helicopter-Schweizer 300C with amphibious floats
USGS Auburn Flows-3,720 cfs, median-3,255 cfs. 7am, 8:00 am-3,960 cfs, median-3,255.
Ed Friedman & Ryan Baxter
Engine start 6:30am. Depart KLEW 6:40. End sampling 7:55. Back at KLEW 8:10

7/29/2025 Notes

DEP YSI ProSOLO meter #46- Calibrated (99.1%) used in FOMB VRMP program. Bacteria samples analyzed with IDEXX Colilert.
Air temperatures from helicopter thermometer-no idea of accuracy
Helicopter-Schweizer 300C with amphibious floats
USGS Auburn Flows-2,100 cfs, median-2,995 cfs. 7:30am; 6:30am 2220 cfs; 8:00am-2080 cfs.
Ed Friedman & Peter Rubins

Engine start 5:52am. Depart KLEW 6:20. End sampling 7:24. Back at KLEW 7:40

8/12/2025 Notes

DEP YSI ProSOLO meter #46- Calibrated (99.5%) used in FOMB VRMP program. Bacteria samples analyzed with IDEXX Colilert.
Air temperatures from helicopter thermometer-no idea of accuracy
Helicopter-Schweizer 300C with amphibious floats
USGS Auburn Flows-1,540 cfs, median-3.070 cfs. 6:15am; 1.540 cfs 7:15am.
Ed Friedman & Hannah Herrick (from IDEXX)
Engine start 5:50am. Depart KLEW 6:12. End sampling 7:22. Back at KLEW 7:35

8/22/2025 Notes

DEP YSI ProSOLO meter #46- Calibrated (99.2%) used in FOMB VRMP program. Bacteria samples analyzed with IDEXX Colilert.
Air temperatures from helicopter thermometer-no idea of accuracy
Helicopter-Schweizer 300C with amphibious floats
USGS Auburn Flows-1,280 cfs, median-2,875 cfs. 7:00am; 1.290 cfs 6:30am; 1,280 cfs 7:30am.
Ed Friedman & Stan Pauwels (MMBTU)
Engine start 6:10am. Depart KLEW 6:20. End sampling 7:40. Back at KLEW 7:50

9/5/2025 Notes

DEP YSI ProSOLO meter #46- Calibrated (99%) used in FOMB VRMP program. Bacteria samples analyzed with IDEXX Colilert.
Air temperatures from helicopter thermometer-no idea of accuracy
Helicopter-Schweizer 300C with amphibious floats
USGS Auburn Flows-1,300 cfs, median-2,940 cfs. 6:45, 7:15, 8:00
Ed Friedman & Peter Rubins
Engine start 6:20am. Depart KLEW 6:30. End sampling 7:58. Back at KLEW 8:30
Sampled two extra sites in GIP-All Class B- DO mg/l: 7.9. 8.2 and one in river 100yds above Nezinscott mouth: 8.7
Only individual reading below Class B of all 198 readings (DO mg, DO%, E.coli) was DO mg/l of 6.7 in Deer Rips impoundment on 9/5/25 and DO% met Class 8

10/6/2025 Notes-Supplemental Sampling

DEP YSI ProSOLO meter #46- Calibrated (100%) used in FOMB VRMP program. Bacteria samples analyzed with IDEXX Colilert.
Air temperatures from helicopter thermometer-no idea of accuracy
Helicopter-Schweizer 300C with amphibious floats
USGS Auburn Flows-1,240 cfs, median-3,145 cfs. 7:00

Ed Friedman & Michael Gaines
Engine start 6:12am. Depart KLEW 6:35. End sampling 7:46. Back at KLEW 7:55
All DO readings Class B and higher than Geomeans for six scheduled flights.
***E. coli levels explode below LAWPCA which discharges between BR and A5. Classification requirementsapply 5/30-9/30.**
LAWPCA chlorinates/dechlorinates discharges May 15-September 30. Expanded times: 4/15-10/31 effective with permit renewals. Overdue by several years.
E.coli levels appear to be dropping by A1 and continue dropping with distance downriver as monitored 10/5 by FOMB's regular monthly monitors.
By Pejepscot Boat Launch E. coil was 178.5, Fish Park up [above Pejepscot dam): 27.9, Fish Park Down: 39.3, Brunswick Interstate Ledge (above I-295): 52.1, & 29.5 (Replicate), Brunswick Canoe Portage: 28.5, Brunswick Water St.: 8.5, IVL : 55.4

MRS Title 38 Section 3 §465. Standards for classification of fresh surface waters
B. **Class B** waters must be of sufficient quality to support all aquatic species indigenous to those waters without detrimental changes in the resident biological community. The dissolved oxygen content of Class B waters may not be less than 7 parts per million or 75% of saturation, **whichever is higher**, except that for the period from October 1st to May 14th, in order to ensure spawning and egg incubation of indigenous fish species, the 7-day mean dissolved oxygen concentration may not be less than 9.5 parts per million in order to ensure spawning and the one-day minimum dissolved oxygen concentration may not be less than 8.0 parts per million in identified fish spawning areas. Between April 15th and October 31st, the number of Escherichia coli bacteria in these waters may not exceed a **geometric mean of 64 CFU or MPN per 100 milliliters over a 90-day interval or 236 CFU or MPN per 100 milliliters in more than 10% of the samples in any 90-day interval.**

Exhibit 4

Brookfield PAD — DO 1990 – 1995

5.2.2.4.1 Lewiston Falls Project Post Operational Water Quality Monitoring (1990-1994)

Central Maine Power (CMP), the original Licensee of the Project, collected water quality data from 1990 to 1994 in accordance with Article 402 of the Lewiston Falls Project License. CMP worked in conjunction with USGS to operate two DO gages downstream of the Project, USGS Gage 010159010 Androscoggin River Below Dresser's Rips Near Lewiston, Maine (approximately 2.7 miles downstream of the Project) and USGS Gage 01056600 Androscoggin River at North Bridge at Lewiston Maine (located approximately 500 feet downstream of the Project).

The USGS has published the data from USGS Gage 010159010, which has a period of record from 1988 to 1995. The data includes mean daily DO and temperature from June through September. Table 5-5 provides a summary of the data recorded at this gage from 1990 to 1995. The table shows that the monthly average never fell below 6.5 mg/L requirement, even during the unusually dry conditions experienced in 1991.

The USGS has not published the data from USGS Gage 01056600. The data from this gage is included in the annual water quality monitoring reports submitted by CMP from 1990 to 1994. The 1994 report indicates that the monthly average never fell below 6.5 mg/L at this monitoring location (CMP, 1994).

The results of the DO monitoring at the two USGS gages indicate no adverse impact by the Project on the DO of the Androscoggin River. A January 23, 1995 Order terminated the water quality monitoring program after the 1994 study season when it was determined that the Project does not adversely impact on DO concentrations in the Androscoggin River.

Table 5-5 Average DO Downstream of the Lewiston Falls Project (mg/L)

Year	June	July	August	September	Season Average
1990	8.46	6.67	7.16	7.19	7.36
1991	7.16	6.54	8.08	8.85	7.63
1992	7.42	7.62	7.45	8.02	7.63
1993	8.18	7.02	8.14	7.83	7.79
1994	7.82	7.23	7.62	8.53	7.80
1995	7.75	7.54	7.49	7.97	7.60

Source: USGS Gage 010159010

Exhibit 5

2021

Aquatic Life Determination

Macroinvertebrate Sampling Study

of the

Androscoggin River,

Lewiston to Brunswick

Submitted by:

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Introduction

This macroinvertebrate sampling study was conducted to determine what Maine Aquatic Life Water Quality Standards the lower Androscoggin River currently attains, between Lewiston and Brunswick. Rock bags/baskets were deployed at six sites during August and September, 2021 providing standardized substrates for macroinvertebrate colonization. Samples were retrieved, and the organisms were identified and enumerated. These data were submitted to the DEP for classification modeling and decisions on water quality class attainment in terms of Aquatic Life. The project was funded by Friends of Merrymeeting Bay (FOMB).

Study Objectives

The goal of the macroinvertebrate sampling study was to generate data on the aquatic macroinvertebrate communities in the Androscoggin River between Lewiston and Brunswick and assess these communities in terms of Maine's Aquatic Life Standards. The study was undertaken to better inform current reclassification efforts.

Study Area

In 2021 we placed samples at six (6) sites in the Androscoggin River to study aquatic macroinvertebrates (Figure 1). Table 1 shows the locations of the sample sites.

Figure 1. Location of aquatic macroinvertebrate sampling sites between Lewiston and Brunswick on the Androscoggin River, August, September 2021.

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Table 1. Location of six (6) macroinvertebrate sample sites on the Androscoggin River in 2021 with notes.

Site	Town	Latitude	Longitude	Notes
1	Lewiston	44.058082	70.20023	
2	Durham	44.001923	70.15123	
3	Lisbon	43.992786	70.11391	
4	Lisbon	44.008722	70.08600	Worumbo Impoundment
5	Lisbon Falls	43.990480	70.04998	Pejepscot Impoundment
6	Brunswick	43.932984	70.00109	possibly impounded by Brunswick Dam at times

Water Classification

The Androscoggin River between Lewiston and Brunswick, during the time of the study, was classified Class C ((38 M.R.S.A § 467(1)(B)(1)(b))). With respect to designated uses, the Maine Water Quality Law requires that "Class C waters must be of such quality that they are suitable for the designated uses of drinking water supply after treatment; fishing; agriculture; recreation in and on the water; industrial process and cooling water supply; hydroelectric power generation, except as prohibited under Title 12, section 403; navigation; and as habitat for fish and other aquatic life." (38 M.R.S.A. § 465(4)(A)). In addition, for Class C waters, "Discharges to Class C waters may cause some changes to aquatic life, except that the receiving waters must be of sufficient quality to support all species of fish indigenous to the receiving waters and maintain the structure and function of the resident biological community..." (38 M.R.S.A. § 465(4)(C). The term "community function" means mechanisms of uptake, storage and transfer of life-sustaining materials available to a biological community which determines the efficiency of use and the amount of export of the materials from the community" ((38 M.R.S.A. § 466(3)). The term "community structure" means the organization of a biological community based on numbers of individuals within different taxonomic groups and the proportion each taxonomic group represents of the total community" ((38 M.R.S.A. § 466(4)). The term "resident biological community" is defined as "aquatic life expected to exist in a habitat which is free from the influence of the discharge of any pollutant" ((38 M.R.S.A. § 466(10)).

Study Methods

The objective of the macroinvertebrate sampling study was to determine if the aquatic life, in this case the macroinvertebrate community, attained these Class C standards or; was the aquatic

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life attaining a higher class? The Maine Department of Environmental Protection (DEP) "Methods for Biological Sampling and Analysis of Maine's Inland Waters" (Davies and Tsomides Revised 2014) were used as the basis of the field and laboratory procedures in the macroinvertebrate sampling study. A summary of these methods is given below.

The DEP standard rock bag/basket samplers were used for this study. These samplers hold approximately 16 lbs. of clean, washed, bank-run cobble, graded to uniform diameter range of 1.5 to 3 inches. Three (3) samplers were placed at each sample site; samplers are left in the river for approximately 28 days (± 4 days) to allow for invertebrate colonization. Retrieval of the samplers was done using an aquatic D-net at sites 1, 2, and 3. The net was placed directly downstream of a sampler; the sampler was then picked up and placed in the net. The contents of each sampler and the net were washed through a sieve bucket and preserved in labeled jars. Samplers at Sites 4, 5, and 6 were deployed and retrieved by certified SCUBA diver. At these deeper, non-wadeable, sites a diver is required in order to observe the conditions on the bottom and ensure proper placement and retrieval of the samplers. The diver retrieved the samplers using fine mesh collection bags. After enclosing the samplers, the samplers were brought to the surface.

Habitat measurements including substrate type, depth, current velocity and temperature were collected at sampler collection and retrieval.

The samplers were collected, preserved, and transported to the Moody Mountain Environmental laboratory. The three (3) samplers (replicates) were sorted, identified, and enumerated.

The Maine DEP, Division of Environmental Assessment (DEA) uses a linear discriminant water quality model (LDM) and professional judgment to determine water quality class attainment of aquatic macroinvertebrate communities. The LDM results are percentages indicating the probability of a site attaining water quality classes A, and AA (the biocriteria requirements are the same), B, or C. The LDM numeric criteria results can be supplanted by professional judgment if conditions are such that the data sets are unsuitable for LDM analysis.

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The Method outlines a number of conditions that can trigger the use of professional judgment to analyze data. Among these are:

1. Minimum Provisions - if the sample Mean Total Abundance is less than 50 individuals or Generic Richness is less than 15 genera.
2. Atypical Conditions - where atypical conditions could result in uncharacteristic findings, professional judgment can be used to make adjustments. Examples of these atypical conditions are:

    a. - Habitat Factors

        Lake Outlets
        Impounded Waters
        Substrate Characteristics
        Tidal Waters

    b. - Sampling Factors

        Disturbed Samples
        Unusual Taxa Assemblages
        Human Error in Sampling

    c. - Analytical Factors

        Subsample versus Whole Sample analysis
        Human Error in Processing

In cases where professional judgment is used the Method outlines a process by which adjustments should occur. These are:

a. **Resample** the site if specific sampling factors may have influenced the results

b. **Raise the Finding** of the LDM from non-attainment to indeterminate or attainment of Class C;

c. **Raise the Finding** of the LDM from one class to the next higher class;

d. **Lower the Finding** of the LDM to indeterminate or the next lower class. This would be based on evidence that the narrative aquatic life criteria for the assigned class are not met;

e. **Determination of Non-Attainment**: Minimum Provisions not met by samples for which no evidence exists of atypical conditions.

f. **Determination of Attainment**: Minimum Provisions not met by samples for which there is evidence of factors that could result in minimum provisions not being met, professional judgment may be used to make a professional finding of attainment of the aquatic life criteria for any class. Such decisions will be provisional until appropriate resampling is carried out.

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Results

The samplers were placed in the river on August 4 and 5, 2022. Samplers were retrieved on August 31 (Sites 1-4) and September 3 (Site 5-6). At Site 5 it was found that the samplers had been disturbed so 3 new samplers were deployed and retrieved on September 29, 2022. Habitat measurements are shown in Table 2. Underwater photos of the substrate and sampler placement are included below.

Table 2. Site Information and habitat measurements at six (6) sites in the Androscoggin River between Lewiston and Brunswick for aquatic macroinvertebrate sampling. August, September 2021

Site	Town	Sample Method	Deployment Date	Deployment Time	Number Deployed	Deployed Depth (cm)	Retrieval Date	Retrieval Time	Number Retrieved
1	Lewiston	Rock Bag	8/4/2021	12:10 PM	3	55	8/31/2021	12:40 PM	3
2	Durham	Rock Bag	8/4/2021	1:50 PM	3	52	8/31/2021	10:30 AM	3
3	Lisbon	Rock Bag	8/4/2021	2:45 PM	3	30	8/31/2021	3:20 PM	3
4	Lisbon	RB-Rock Basket	8/4/2021	3:45 PM	3	314	8/31/2021	4:00 PM	3
5	Lisbon Falls	RB-Rock Basket	9/3/2021	11:00 AM	3	344	9/29/2021	9:45 AM	3
6	Brunswick	Rock Bag	8/5/2021	3:45 PM	3	317	9/3/2021	9:45 AM	3

	Physical Characteristics								
Site	Land Use 1	Land Use 2	Land Use 3	Terrain	Canopy Cover	Notes	Notes	Notes	Notes
1	Upland hardwood	Upland conifer		Rolling	Open	Below Urban NPS		Below POTW	
2	Upland hardwood	Upland conifer		Flat	Open	Below Urban NPS		Below POTW	Below Agriculture NPS
3	Upland hardwood	Upland conifer		Rolling	Open	Below Urban NPS		Below POTW	Below Agriculture NPS
4	Upland hardwood	Upland conifer		Rolling	Open	Below Urban NPS	Above Dam	Below POTW	Below Agriculture NPS
5	Upland hardwood	Upland conifer	Urban	Rolling	Open	Below Urban NPS	Above Dam	Below POTW	Below Dam
6	Upland hardwood	Upland conifer		Rolling	Open	Above Dam			

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	Potential Stressor(s)			
Site	Stressor 1	Stressor 2	Stressor 3	Stressor 4
1	NPS Pollution	Urban Runoff		
2	NPS Pollution	Urban Runoff		
3	NPS Pollution	Urban Runoff		
4	NPS Pollution	Urban Runoff	Impounded	Nutrients
5	Impounded	NPS Pollution	Urban Runoff	
6				

	Physical Characteristics of Bottom (%)				
Site	Bedrock	Boulders (>10")	Rubble/Cobble (2.5" – 10")	Gravel (1/8" – 2.5")	Sand (<1/8")
1		10	55	25	10
2			5	15	80
3		80		10	10
4					100
5			50	40	10
6	50	10	40		

	Habitat Characteristics at Placement				
Site	Wetted Width (m)	Depth (cm)	Velocity (cm/sec)	DO (mg/l)	Temperature (°C)
1	152	55	59	9.5	23.3
2	252	52	21	11	24.8
3	139	30	27	10.6	24.3
4	396	314	8.5	9.4	23.6
5	185	344	18	7.9	22
6	176	317	30	8.3	23.5

	Habitat Characteristics at Retrieval				
Site	Wetted Width (m)	Depth (cm)	Velocity (cm/sec)	DO (mg/l)	Temperature (°C)
1	152	40	45	8.4	23.3
2	252	46	21	10	24.9
3	139	37	11	9.4	25.5
4	396	320	5	8.1	24.9
5	185	393	18	8.5	19.5
6	176	310	34	7.6	23.2

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Photo 1. Rock baskets and rock bag samplers before deployment. August, 2021

Photo 2. Deploying rock bags, Androscoggin River. August, 2021 (Site 1).

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Photo 3. Site 1 substrate and typical sample placement and condition at retrieval. Androscoggin R. August, 2021.

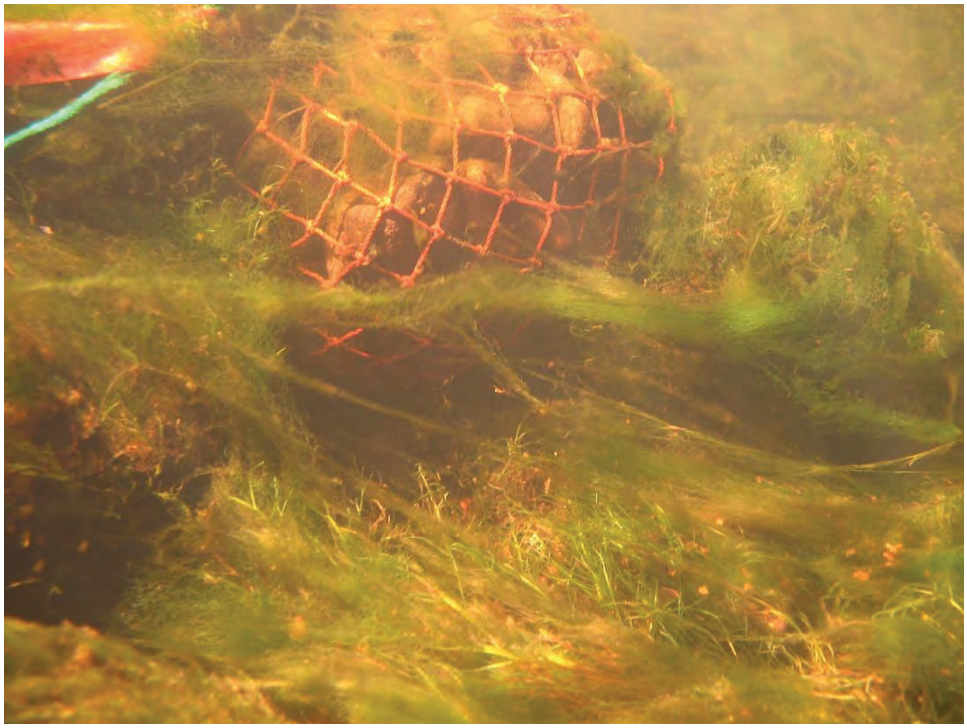

Photo 4. Site 2 substrate and typical sample placement and condition at retrieval. Androscoggin R. August, 2021.

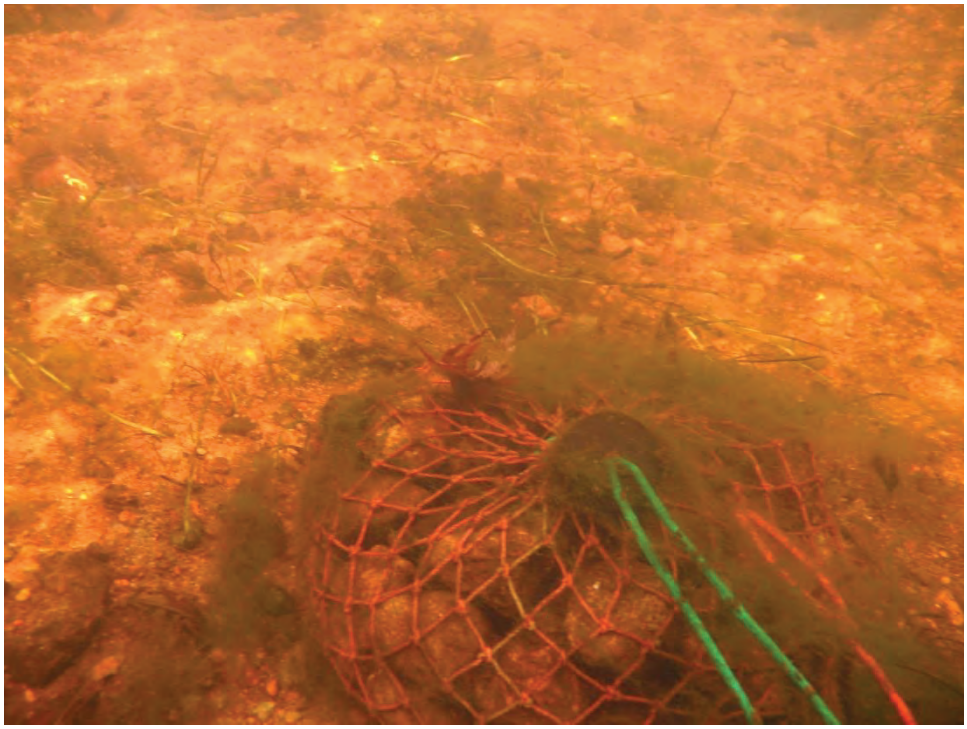

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Photo 5. Site 3 substrate and typical sample placement and condition at retrieval. Androscoggin R. August, 2021.

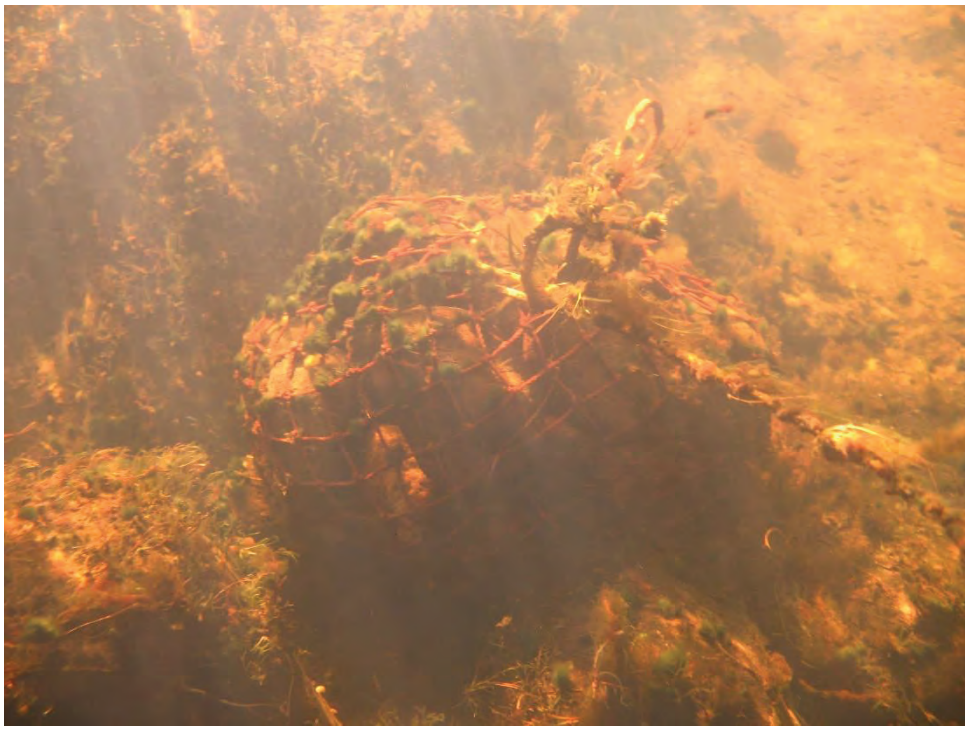

Photo 6. Site 4 substrate and typical sample placement and condition at retrieval. Androscoggin R. August, 2021.

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Photo 7. Site 4 typical substrate. Androscoggin R. August, 2021.

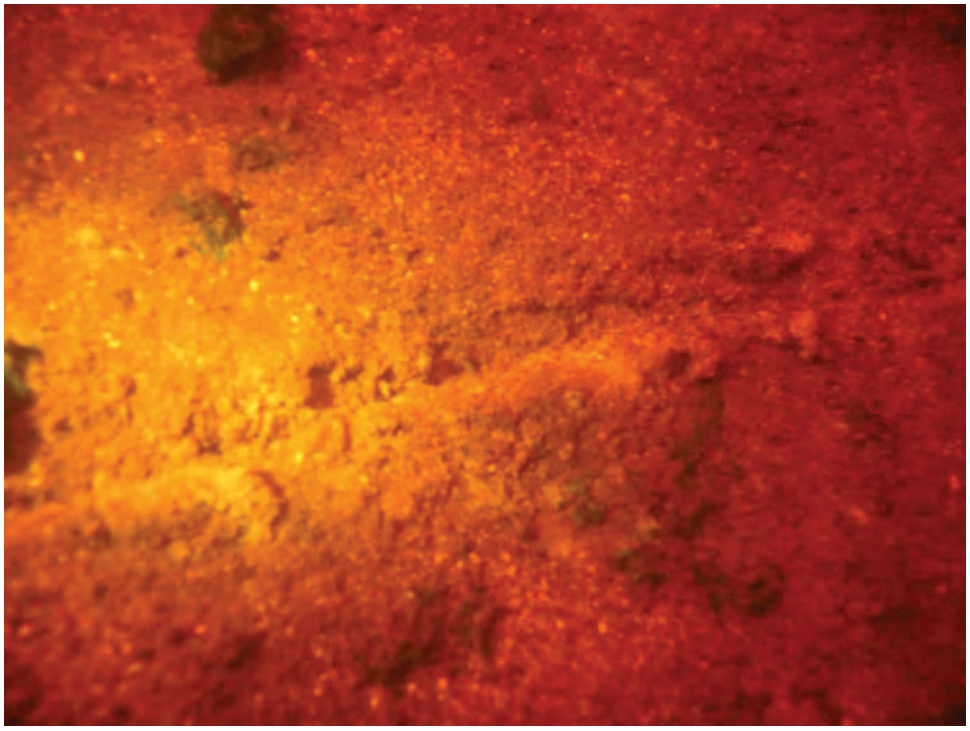

Photo 8. Site 5 substrate and typical sample placement and condition at retrieval. Androscoggin R. September, 2021.

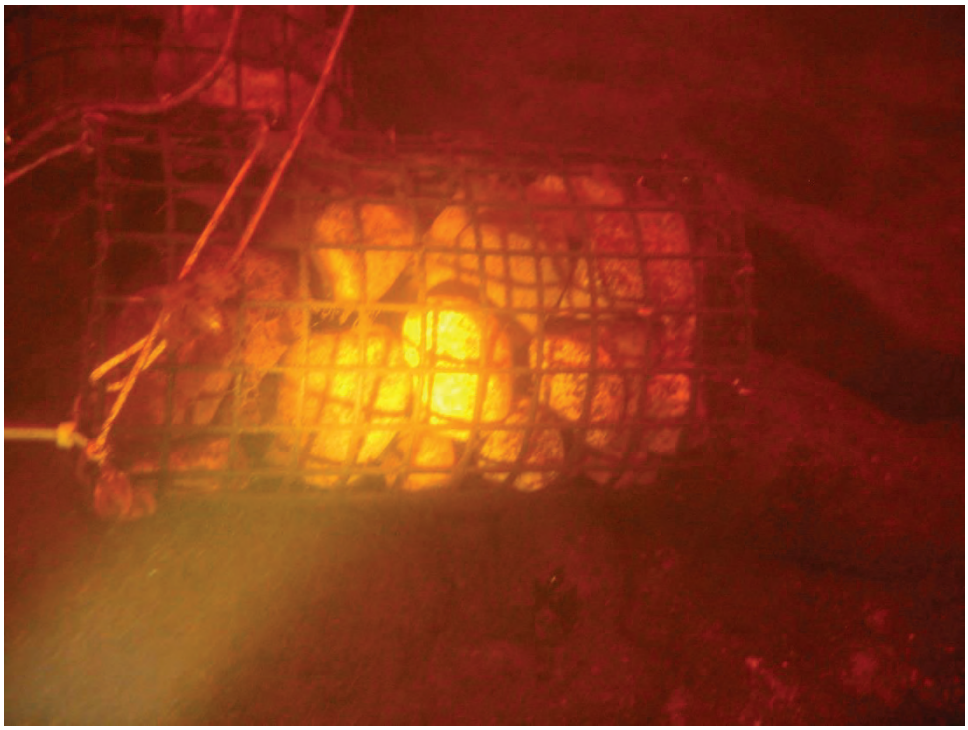

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Photo 9. Site 5 substrate. Androscoggin R. September, 2021.

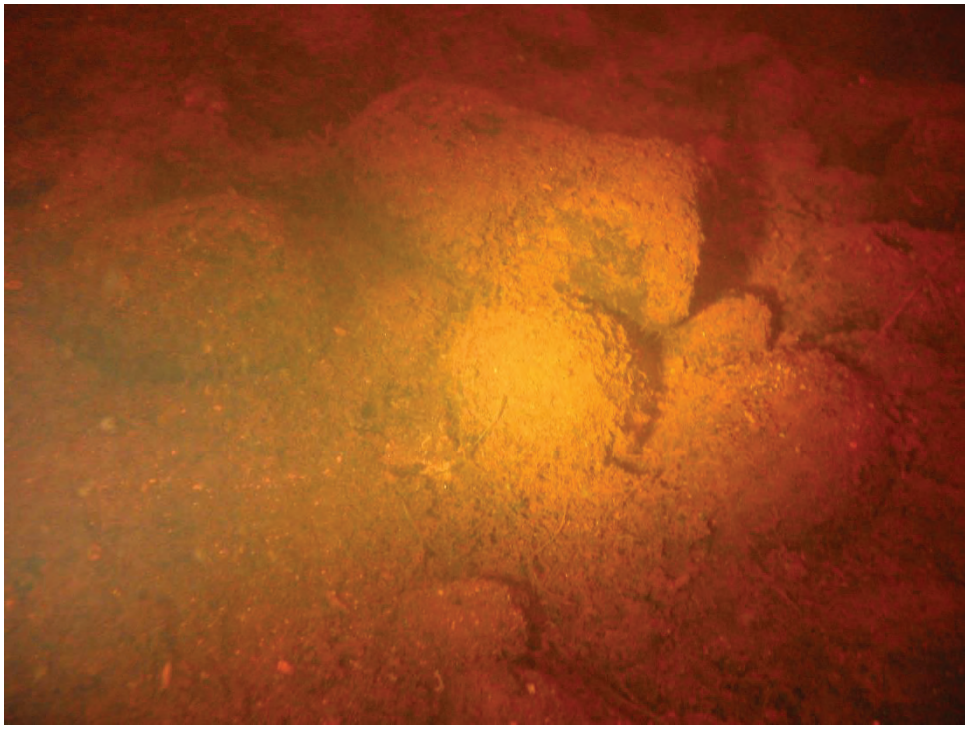

Photo 10. Site 6 substrate and typical sample placement and condition at retrieval. Androscoggin R. September, 2021.

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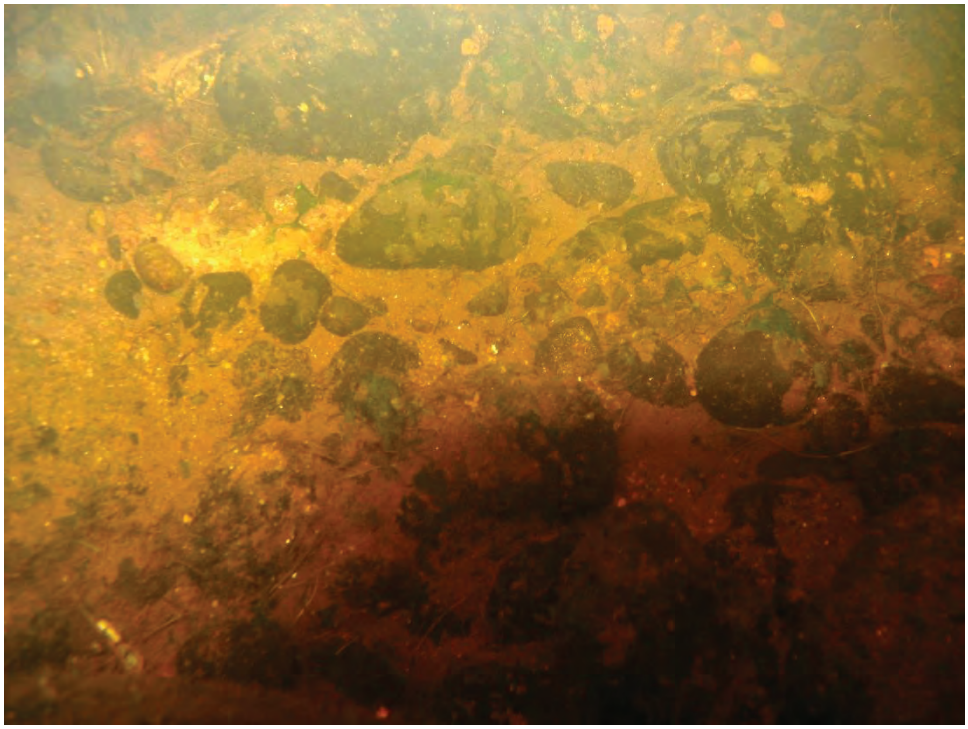
Photo 11. Site 6 substrate. Androscoggin R. September, 2021.



Community Analysis

Structural indices for the sampled communities are shown in Table 3. Dominant organisms (representing over 5% of the Total Abundance) in the communities are shown in Table 4 arranged from the most sensitive organisms to the organisms most tolerant of poor water quality conditions. The make-up of these communities and a discussion of the results are presented below.

Table 3. Indices of community structure for the aquatic invertebrate communities at six (6) sites in the Androscoggin River between Lewiston and Brunswick. August, September 2021.

Site	Tot. Abund.	Taxa Richness	S-W Div.	Hils. Biotic Index (HBN)	Water Quality indication from HBN	Mayfly, Stonefly, Caddisfly (EPT) Richness	Mayfly, Stonefly (EP)		Midge		Worms & Snails
							Rich	% Ab	Rich	% Ab	% Ab
1	2388.3	27	2.85	3.21	Excellent	13	4	7.2%	5	5.1%	26.9%
2	677.3	37	3.71	5.18	Good	16	5	20.6%	10	12.5%	19.9%
3	1359.0	30	3.68	4.06	V. Good	15	6	16.2%	8	12.8%	14.5%
4	295.0	40	3.71	6.4	Fair	16	5	10.5%	11	34.1%	12.5%
5	279.0	34	3.63	6.43	Fair	16	6	21.4%	8	16.2%	7.6%
6	312.7	33	3.55	5.6	Fair	13	4	7.8%	10	4.3%	25.6%

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Table 4. Dominant aquatic invertebrate organisms at six (6) sites in the Androscoggin River between Lewiston and Brunswick. August, September 2021. Organisms are ranked from most sensitive to most tolerant.

Sensitivity to Poor Water Quality		Site 1	2	3	4	5	6
Sensitive	Caddisfly *Chimarra*	42.0%		24.6%			
	Caddisfly *Ochrotrichia*		6.8%				
Intermediate	Caddisfly *Cheumatopsyche*	7.2%	27.4%	11.9%			
	Mayfly Acerpenna	6.7%	16.6%	11.6%			
	Midge *Pentaneura*						20.5%
	Midge *Polypedilum*		5.2%	7.0%			
	Midge *Microtendipes*			5.8%			
	Caddisfly *Polycentropus*				27.3%	6.7%	
Tolerant	Mayfly *Stenacron*				6.1%	13.1%	13.0%
	Caddisfly *Neureclipsis*				5.0%	35.2%	
	Amphipod *Hyalella*				12.5%		
	Caddisfly *Oecetis*				11.2%		
	Midge *Dicrotendipes*					6.0%	27.0%
	Flatworm Planariidae	16.4%	8.4%	13.5%	5.1%		
	Snail Hydrobiidae	10.3%	5.4%				6.2%
	Mussel Physidae				9.5%		

Site 1-

The Site 1 was located in riffle habitat with moderate current velocities and predominantly cobble and gravel substrates. It was just downstream of the Walmart distribution Center in Lewiston. Aquatic vegetation and attached filamentous algae were common. The invertebrate community was numerous and moderately rich and diverse. Indexes measuring the tolerance to poor water quality conditions revealed that sensitive organisms accounted for a large portion of the community. The EPT richness index showed that sensitive mayfly (**E**phemeroptera), stonefly (**P**lecoptera), and caddisfly (**T**richoptera) taxa were well represented. Of those 3 orders, the mayflies and stoneflies are generally more sensitive to environmental stressors. The number of taxa from these 2 orders (EP richness) however, represented 15% of the taxa richness and just 7% of the total abundance. Hilsenhoff's Biotic Index value, 3.2, indicated excellent water quality (Hilsenhoff 1987). The sensitive caddisfly *Chimarra* made up 42% of the community.

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Site-2

Site 2 to was located in a shallow run with predominantly sandy substrates. Attached filamentous algae was present. The invertebrate community was abundant, rich and diverse. EPT taxa were well represented and EP taxa represented 21% of the total abundance. Hilsenhoff's Biotic Index value, 5.2, indicated good water quality. The community was dominated by sensitive or intermediate organisms representing 56% of the community. This site was mid-river near FOMB's water monitoring site DBN.

Site-3

Site-3 was located in boulder strewn riffle midway between the Durham Carry-in Launch and the outlet of Sabbatus Stream. There was less attached filamentous algae at this site compared to the upstream sites. The invertebrate community was very abundant, moderately rich in taxa, and diverse. EPT taxa were well represented and EP taxa represented 16% of the total abundance. Hilsenhoff's Biotic Index value, 4.1, indicated very good water quality. The sensitive caddisfly *Chimarra* made up a quarter of the community and sensitive or intermediate organisms represented 61% of the community.

Site 4-

Site 4 was located approximately 1.75 miles upstream of the Worumbo Dam just downstream of the outlet of Sabbatus Stream. The site was within the impoundment and had a predominantly sandy substrate and low current. The invertebrate community had relatively low abundance compared to upstream, free-flowing communities but was rich in taxa and diverse. EPT taxa were well represented but EP taxa represented just 11% of the total abundance. Hilsenhoff's Biotic Index value, 6.4, indicated fair water quality. The caddisfly *Polycentropus*, an intermediately tolerant organism, represented 27% of the community. The remainder of the dominant organisms fell into the tolerant category and represented almost half of the community.

Site-5

Site 5 was located approximately a half mile downstream of the Worumbo Dam just upstream of the Pejepscot Boat Launch, FOMB's water monitoring site PBL. This site was impounded by the Pejepscot Dam located over 2 miles downstream. This invertebrate community was also less abundant than the upstream, free-flowing communities. The community was

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moderately rich in taxa and diverse. EPT taxa were well represented and EP taxa represented 21% of the total abundance. Hilsenhoff's Biotic Index value, 6.4, indicated fair water quality. The caddisfly *Polycentropus*, an intermediately tolerant organism, represented just 7% of the community. The remainder of the dominant organisms fell into the tolerant category and represented over half of the community.

Site-6

Site 6, at the time of deployment and retrieval, was free-flowing run habitat approximately 2.4 mile upstream of the Brunswick Dam. There is some question whether this location is within the impoundment at higher head pond levels. It is outboard of the ledges marking FOMB monitoring site BIL. The substrates were a combination of ledge, boulders and cobble. Similar to sites 4 and 5 the invertebrate community was less abundant than the upstream, free-flowing communities at site 1, 2, and 3. The community was moderately rich in taxa and diverse. EPT taxa were well represented but EP taxa represented just 8% of the total abundance. Hilsenhoff's Biotic Index value, 5.6, indicated fair water quality. The midge *Pentaneura*, an intermediately tolerant organism, represented over 20% of the community. The remainder of the dominant organisms fell into the tolerant category and represented 46% of the community.

LDM Results

The LDM biocriteria results and DEP determinations are shown in Table 5 and Appendix 1. As mentioned previously, to attain a particular class a site must have a 60% or greater score in the test for that class and Professional Judgement can be used to raise or lower a finding. DEP determined that Sites 1 through 3 attained Class B standards and the downstream site (4-6) attained Class C standards. DEP used professional judgement to raise the finding at Site 2 to Class B based on the community structure. In addition, as mentioned above, Sites 4 and 5 are impounded and it is unclear if Site 6 is impounded at certain head pond water levels. DEP methodology allows for extended sampler exposure periods of 56 days ± 4 days to allow for adequate colonization in the case of assessments of low velocity or impounded. If Sites 4 and 5 are sampled again it is the authors recommendation that samplers remain in the water for the extended exposure period. In addition, if the community in the vicinity of Site 6 is sampled again the location should be changed

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to a documented free flowing area or a documented impounded area. If the new location is in a documented impounded area then the extended exposure period should be used.

Table 5. Results of the DEP linear discriminant model (LDM) and DEP determinations for six (6) sites on the Androscoggin River between Lewiston and Brunswick.

Site	Probability of Class A	Probability of Class B	Probability of Class C	Probability of Non-Attainment	DEP Final Determination
1	16%	**99%**	100%	0%	**B**
2	1%	**51%**	100%	0%	**B***
3	6%	**97%**	100%	0%	**B**
4	0%	0%	**100%**	0%	**C**
5	2%	4%	**100%**	0%	**C**
6	1%	31%	**100%**	0%	**C**

*** DEP used Best Professional Judgement: Indeterminate for Class B (p = 0.51), Raised to Class B based on community structure.**

Summary

1. The objective of the macroinvertebrate sampling study was to generate data on the aquatic macroinvertebrate community in the Androscoggin River between Lewiston and Brunswick and assess this community in terms of Maine's Aquatic Life Standards. The river downstream of Lewiston's Great Falls dam at the time of the study was classified Class C. Six (6) sites were sampled on the river.
2. The Maine Department of Environmental Protection (DEP) "Methods for Biological Sampling and Analysis of Maine's Inland Waters" (Davies and Tsomides 2014) were used as the basis of the field and laboratory procedures in this study.
3. Samplers were retrieved on August 31 (Sites 1-4) and September 3 (Site 6). At Site 5 it was found that the samplers had been disturbed so 3 new samplers were deployed and retrieved on September 29, 2022.
4. Sites 1-3 were located in free-flowing habitat. Sites 4 and 5 were located in impoundments. Site 6 appeared free-flowing during deployment and retrieval but may be impounded when the Brunswick head pond is at higher water levels.
5. The macroinvertebrate communities sampled between Lewiston and Brunswick were rich in taxa. The communities at Site 1, 2, 3 were more numerous than downstream communities and populated with more organisms that are intolerant of poor water quality.

6. Maine DEP found the sites 1, 2, and 3 attained Class B Aquatic Life Standards and sites 4, 5, and 6 attained class C standards.

7. On March 31, 2022 Governor Mills signed into law LD 1964, the DEP triennial water reclassification bill. LD 1964 included an upgrade of the lower Androscoggin River from Worumbo dam in Lisbon Falls to Merrymeeting Bay from Class C to B, encompassing Sites 5 and 6. While DEP found these sites attained Class C, the river as a whole was found to meet Class B conditions including dissolved oxygen and *E. coli* bacteria levels.

   Because of their unique characteristics, hydropower impoundments are granted certain exemptions by the legislature under §464 (See Appendix 2). In summary the statute says that recognizing the aquatic life differences of impoundments, if a river with impoundments is classified as A or B, the impoundment shall also be considered to meet that standard provided it at least meets C criteria; unless:

   > (1) Reasonable changes can be implemented that do not significantly affect existing energy generation capability; and
   >
   > (2) Those changes would result in improvement in the habitat and aquatic life of the impounded waters.

   If the conditions described in (1) and (2) occur, those changes must be implemented and the resulting improvement in habitat and aquatic life must be achieved and maintained. According to statute, a determination should be made whether above conditions 1 or 2 apply to river sections encompassing Sites 4, 5 & 6 and if so, improvements must be implemented (to meet Class B conditions). If 1 and 2 do not apply, Class B conditions are deemed to have been met in these impoundments.

References

Davies, S.P. and L. Tsomides. 2014. Methods for biological sampling and analysis of Maine's rivers and streams. ME Dept. of Env. Prot. Augusta, ME. 31p.

Hilsenhoff, W.L. 1987. An improved biotic index of organic stream pollution. The Great Lake Entomologist. Pgs. 31-39.

Appendix 1 DEP Classification Attainment Reports

MDEP S-1204 = FOMB Site 1

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Classification Attainment Report

Station Information

Station Number:	**S-1204**	River Basin:	Androscoggin
Waterbody:	Androscoggin River - Station 1204	HUC8 Name:	
Town:	Lewiston	Latitude:	44 3 28.97 N
Directions:	FROM DURHAM BOAT LAUNCH GO UPSTREAM 300 YDS DWNSTRM OF OLD DEP SAMPLING SITE "HELO BEACH"	Longitude:	70 12 0.98 W
		Stream Order:	

Sample Information

Log Number:	**2938**	Type of Sample:	ROCK BASKET	Date Deployed:	8/4/2021
Subsample Factor:	X1	Replicates:	3	Date Retrieved:	8/31/2021

Classification Attainment

Statutory Class:	**C**	**Final Determination:**	**B**	Date:	3/29/2022
Model Result with P≥0.6:	B	**Reason for Determination:**	**Model**		
Date Last Calculated:	3/23/2022	Comments:			

Model Probabilities

First Stage Model			
Class A	0.32	Class C	0.04
Class B	0.64	NA	0.00

C or Better Model	
Class A, B, or C	1.00
Non-Attainment	0.00

B or Better Model	
Class A or B	0.99
Class C or Non-Attainment	0.01

A Model	
Class A	0.16
Class B or C or Non-Attainment	0.84

Model Variables

01 Total Mean Abundance	2388.33	18 Relative Abundance Ephemeroptera	0.07
02 Generic Richness	27.00	19 EPT Generic Richness	13.00
03 Plecoptera Mean Abundance	2.67	21 Sum of Abundances: *Dicrotendipes, Micropsectra, Parachironomus, Helobdella*	0.00
04 Ephemeroptera Mean Abundance	169.00	23 Relative Generic Richness- Plecoptera	0.04
05 Shannon-Wiener Generic Diversity	2.85	25 Sum of Abundances: *Cheumatopsyche, Cricotopus, Tanytarsus, Ablabesmyia*	183.33
06 Hilsenhoff Biotic Index	3.21		
07 Relative Abundance - Chironomidae	0.05	26 Sum of Abundances: *Acroneuria, Maccaffertium, Stenonema*	0.67
08 Relative Generic Richness Diptera	0.22		
09 *Hydropsyche* Abundance	32.33	28 EP Generic Richness/14	0.29
11 *Cheumatopsyche* Abundance	172.67	30 Presence of Class A Indicator Taxa/7	0.29
12 EPT Generic Richness/ Diptera Generic Richness	2.17		
13 Relative Abundance - Oligochaeta	0.00		
15 Perlidae Mean Abundance (Family Functional Group)	2.67		
16 Tanypodinae Mean Abundance (Family Functional Group)	10.67		
17 Chironomini Abundance (Family Functional Group)	72.00		

Five Most Dominant Taxa

Rank	Taxon Name	Percent
1	*Chimarra*	41.95
2	Planariidae	16.43
3	Hydrobiidae	10.34
4	*Cheumatopsyche*	7.23
5	*Acerpenna*	6.73

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Appendix 1 continued MDEP S-1204 = FOMB Site 1

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Classification Attainment Report

Station Number: S-1204 Town: Lewiston Date Deployed: 8/4/2021
Log Number: 2938 Waterbody: Androscoggin River - Station 1204 Date Retrieved: 8/31/2021

Sample Collection and Processing Information

Sampling Organization: MOODY MOUNTAIN ENVIRONMENTAL
Taxonomist: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)

Waterbody Information - Deployment		Waterbody Information - Retrieval	
Temperature:	23.3 deg C	Temperature:	
Dissolved Oxygen:	9.5 mg/l	Dissolved Oxygen:	
Dissolved Oxygen Saturation:		Dissolved Oxygen Saturation:	
Specific Conductance:		Specific Conductance:	
Velocity:	59 cm/s	Velocity:	
pH:		pH:	
Wetted Width:	152 m	Wetted Width:	152 m
Bankfull Width:		Bankfull Width:	
Depth:	55 cm	Depth:	55 cm

Water Chemistry

Summary of Habitat Characteristics

Landuse Name	Canopy Cover	Terrain	
Upland Conifer	Open	Rolling	
Upland Hardwood			
Potential Stressor	Location	Substrate	
Nps Pollution	Below POTW	Boulder	10 %
Urban Runoff	Below Urban NPS	Gravel	25 %
		Rubble/Cobble	55 %
		Sand	10 %

Landcover Summary - 2004 Data

Sample Comments

FILAMENTOUS ALGAE, AQ. PLANTS

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Appendix 1 continued MDEP S-1204 = FOMB Site 1

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Taxonomic Inventory Report

Station Number: S-1204 Waterbody: Androscoggin River - Station 1204 Town: Lewiston
Log Number: 2938 Subsample Factor: X1 Replicates: 3 Calculated: 3/23/2022

Taxon	Maine Taxonomic Code	Count (Mean of Samplers) Actual	Adjusted	Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance % Actual	Adjusted
Planariidae	03010101	392.33	392.33		--	16.4	16.4
Annelida	08	2.67	2.67		--	0.1	0.1
Paragnetina	09020209049	2.67	2.67	1	PR	0.1	0.1
Boyeria	09020301004	0.33	0.33	2	PR	0.0	0.0
Acerpenna	09020401007	160.67	160.67	5	CG	6.7	6.7
Maccaffertium	09020402015	0.67	0.67	4	SC	0.0	0.0
Isonychia	09020404018	7.67	7.67	2	CF	0.3	0.3
Chimarra	09020601003	1002.00	1002.00	2	CF	42.0	42.0
Cheumatopsyche	09020604015	172.67	172.67	5	CF	7.2	7.2
Hydropsyche	09020604016	32.33	32.33	4	CF	1.4	1.4
Macrostemum	09020604018	55.67	55.67	3	CF	2.3	2.3
Ochrotrichia	09020607027	65.00	65.00	4	P	2.7	2.7
Oxyethira	09020607028	5.33	5.33	3	P	0.2	0.2
Brachycentrus	09020609043	3.00	3.00	0	CF	0.1	0.1
Nectopsyche	09020618074	9.00	9.00	3	SH	0.4	0.4
Oecetis	09020618078	20.00	20.00	8	PR	0.8	0.8
Pentaneura	09021011014	10.67	10.67	6	PR	0.4	0.4
Cricotopus	09021011037	2.67	2.67	7	SH	0.1	0.1
Eukiefferiella	09021011041	29.33	29.33	8	CG	1.2	1.2
Tanytarsus	09021011076	8.00	8.00	6	CF	0.3	0.3
Polypedilum	09021011102	72.00	72.00	6	SH	3.0	3.0
Simulium	09021012047	78.00	78.00	4	CF	3.3	3.3
Elmidae	09021113	2.67	2.67		--	0.1	0.1
Ancyronyx	09021113063	5.33	5.33	6	--	0.2	0.2
Hydrachna	09030103001	0.33	0.33		--	0.0	0.0
Hydrobiidae	10010104	247.00	247.00		--	10.3	10.3
Physidae	10010202	0.33	0.33		SC	0.0	0.0

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Appendix 1 continued MDEP S-1205 = FOMB Site 2

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Classification Attainment Report

Station Information

Station Number:	**S-1205**	River Basin:	Androscoggin
Waterbody:	Androscoggin River - Station 1205	HUC8 Name:	
Town:	Durham	Latitude:	44° 00' 06.90221700" N
Directions:	FROM DURHAM BOAT LAUNCH GO DOWNSTREAM APPROX. 1 MILE UPSTREAMOFSAND BAR. CONSULTANT SITE NAME: ANDY 2	Longitude:	
		Stream Order:	

Sample Information

Log Number:	**2939**	Type of Sample:	ROCK BASKET	Date Deployed:	8/4/2021
Subsample Factor:	X1	Replicates:	3	Date Retrieved:	8/31/2021

Classification Attainment

Statutory Class:	**C**	**Final Determination:**	**B**	Date:	3/29/2022
Model Result with P≥0.6:	C	**Reason for Determination:**	**Best Professional Judgement**		
Date Last Calculated:	3/23/2022	Comments:	Indeterminate for Class B (p = 0.51). Raised to Class B based on community structure.		

Model Probabilities

First Stage Model				C or Better Model	
Class A	0.12	Class C	0.29	Class A, B, or C	1.00
Class B	0.59	NA	0.00	Non-Attainment	0.00

B or Better Model		A Model	
Class A or B	0.51	Class A	0.01
Class C or Non-Attainment	0.49	Class B or C or Non-Attainment	0.99

Model Variables

01 Total Mean Abundance	677.33	18 Relative Abundance Ephemeroptera	0.20
02 Generic Richness	37.00	19 EPT Generic Richness	16.00
03 Plecoptera Mean Abundance	1.00	21 Sum of Abundances: *Dicrotendipes, Micropsectra, Parachironomus, Helobdella*	8.00
04 Ephemeroptera Mean Abundance	138.33		
05 Shannon-Wiener Generic Diversity	3.71	23 Relative Generic Richness- Plecoptera	0.03
06 Hilsenhoff Biotic Index	5.18	25 Sum of Abundances: *Cheumatopsyche, Cricotopus, Tanytarsus, Ablabesmyia*	195.33
07 Relative Abundance - Chironomidae	0.13		
08 Relative Generic Richness Diptera	0.30	26 Sum of Abundances: *Acroneuria, Maccaffertium, Stenonema*	23.33
09 *Hydropsyche* Abundance	0.33		
11 *Cheumatopsyche* Abundance	185.67	28 EP Generic Richness/14	0.36
12 EPT Generic Richness/ Diptera Generic Richness	1.45	30 Presence of Class A Indicator Taxa/7	0.00
13 Relative Abundance - Oligochaeta	0.00		
15 Perlidae Mean Abundance (Family Functional Group)	1.00		
16 Tanypodinae Mean Abundance (Family Functional Group)	61.67		
17 Chironomini Abundance (Family Functional Group)	18.67		

Five Most Dominant Taxa

Rank	Taxon Name	Percent
1	*Cheumatopsyche*	27.41
2	*Acerpenna*	16.58
3	Planariidae	8.42
4	*Pentaneura*	6.84
5	Hydrobiidae	5.36

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Appendix 1 continued MDEP S-1205 = FOMB Site 2

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Classification Attainment Report

Station Number: S-1205 Town: Durham Date Deployed: 8/4/2021
Log Number: 2939 Waterbody: Androscoggin River - Station 1205 Date Retrieved: 8/31/2021

Sample Collection and Processing Information

Sampling Organization: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)
Taxonomist: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)

Waterbody Information - Deployment		Waterbody Information - Retrieval	
Temperature:	24.8 deg C	Temperature:	24.9 deg C
Dissolved Oxygen:	11 mg/l	Dissolved Oxygen:	10 mg/l
Dissolved Oxygen Saturation:		Dissolved Oxygen Saturation:	
Specific Conductance:		Specific Conductance:	
Velocity:	21 cm/s	Velocity:	
pH:		pH:	
Wetted Width:	252 m	Wetted Width:	252 m
Bankfull Width:		Bankfull Width:	
Depth:	52 cm	Depth:	46 cm

Water Chemistry

Summary of Habitat Characteristics

Landuse Name	Canopy Cover	Terrain	
Upland Conifer	Open	Flat	
Upland Hardwood			
Potential Stressor	**Location**	**Substrate**	
Nps Pollution	Below Agriculture NPS	Gravel	15 %
Urban Runoff	Below POTW	Rubble/Cobble	5 %
	Below Urban NPS	Sand	80 %

Landcover Summary - 2004 Data

Sample Comments

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Appendix 1 continued MDEP S-1205 = FOMB Site 2

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Taxonomic Inventory Report

Station Number: S-1205 Waterbody: Androscoggin River - Station 1205 Town: Durham
Log Number: 2939 Subsample Factor: X1 Replicates: 3 Calculated: 3/23/2022

Taxon	Maine Taxonomic Code	Count (Mean of Samplers) Actual	Adjusted	Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance % Actual	Adjusted
Planariidae	03010101	57.00	57.00		--	8.4	8.4
Annelida	08	0.33	0.33		--	0.0	0.0
Hyalella	09010203006	3.00	3.00	8	CG	0.4	0.4
Orconectes	09010301008		1.00		CG		0.1
Orconectes limosus	09010301008013	1.00			--	0.1	
Acroneuria	09020209042	1.00	1.00	0	PR	0.1	0.1
Amphiagrion	09020309046	11.00	11.00	9	PR	1.6	1.6
Chromagrion	09020309049	0.33	0.33	4	PR	0.0	0.0
Acerpenna	09020401007	112.33	112.33	5	CG	16.6	16.6
Maccaffertium	09020402015	22.33	22.33	4	SC	3.3	3.3
Isonychia	09020404018	0.33	0.33	2	CF	0.0	0.0
Tricorythodes	09020411038	3.33	3.33	4	CG	0.5	0.5
Chimarra	09020601003	7.33	7.33	2	CF	1.1	1.1
Neureclipsis	09020603008	0.33	0.33	7	CF	0.0	0.0
Polycentropus	09020603010	7.00	7.00	6	PR	1.0	1.0
Cheumatopsyche	09020604015	185.67	185.67	5	CF	27.4	27.4
Hydropsyche	09020604016	0.33	0.33	4	CF	0.0	0.0
Macrostemum	09020604018	1.33	1.33	3	CF	0.2	0.2
Ochrotrichia	09020607027	35.33	35.33	4	P	5.2	5.2
Oxyethira	09020607028	13.67	13.67	3	P	2.0	2.0
Ceraclea	09020618072	1.00	1.00	3	CG	0.1	0.1
Nectopsyche	09020618074	9.67	9.67	3	SH	1.4	1.4
Oecetis	09020618078	28.00	28.00	8	PR	4.1	4.1
Ablabesmyia	09021011001	8.33	8.33	8	PR	1.2	1.2
Pentaneura	09021011014	46.33	46.33	6	PR	6.8	6.8
Thienemannimyia	09021011020	7.00	7.00	3	PR	1.0	1.0
Nanocladius	09021011049	1.33	1.33	3	CG	0.2	0.2
Rheotanytarsus	09021011072	1.67	1.67	6	CF	0.2	0.2
Tanytarsus	09021011076	1.33	1.33	6	CF	0.2	0.2
Dicrotendipes	09021011085	8.00	8.00	8	CG	1.2	1.2
Microtendipes	09021011094	2.67	2.67	6	CF	0.4	0.4
Polypedilum	09021011102	7.67	7.67	6	SH	1.1	1.1
Robackia	09021011103	0.33	0.33		CG	0.0	0.0
Simuliidae	09021012	1.33	1.33		--	0.2	0.2
Hydrobiidae	10010104	36.33	36.33		--	5.4	5.4
Physidae	10010202	31.00	31.00		SC	4.6	4.6
Planorbidae	10010203	10.33	10.33		--	1.5	1.5

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Appendix 1 continued MDEP S-1205 = FOMB Site 2

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Taxonomic Inventory Report

Station Number: S-1205 Waterbody: Androscoggin River - Station 1205 Town: Durham
Log Number: 2939 Subsample Factor: X1 Replicates: 3 Calculated: 3/23/2022

Taxon	Maine Taxonomic Code	Count (Mean of Samplers) Actual	Count (Mean of Samplers) Adjusted	Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance % Actual	Relative Abundance % Adjusted
Ancylidae	10010204	12.00	12.00		SC	1.8	1.8

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Appendix 1 continued MDEP S-1206 = FOMB Site 3

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Classification Attainment Report

Station Information

Station Number:	**S-1206**	River Basin:	Androscoggin
Waterbody:	Androscoggin River - Station 1206	HUC8 Name:	
Town:	Lisbon	Latitude:	43° 59' 34.17243456" N
Directions:	FROM SABATTUS STREAM LAUNCH GO UPSTREAM APPROX. 2 MILE TO BOULDER FIELD. CONSULTANT SITE NAME: ANDY 3	Longitude:	
		Stream Order:	

Sample Information

Log Number:	**2940**	Type of Sample:	ROCK BASKET	Date Deployed:	8/4/2021
Subsample Factor:	X1	Replicates:	3	Date Retrieved:	8/31/2021

Classification Attainment

Statutory Class:	**C**	**Final Determination:**	**B**	Date:	3/29/2022
Model Result with P≥0.6:	B	**Reason for Determination:**	**Model**		
Date Last Calculated:	3/23/2022	Comments:			

Model Probabilities

First Stage Model				C or Better Model	
Class A	0.29	Class C	0.05	Class A, B, or C	1.00
Class B	0.66	NA	0.00	Non-Attainment	0.00

B or Better Model		A Model	
Class A or B	0.97	Class A	0.06
Class C or Non-Attainment	0.03	Class B or C or Non-Attainment	0.94

Model Variables

01 Total Mean Abundance	1359.00	18 Relative Abundance Ephemeroptera	0.16
02 Generic Richness	30.00	19 EPT Generic Richness	15.00
03 Plecoptera Mean Abundance	7.00	21 Sum of Abundances: *Dicrotendipes, Micropsectra, Parachironomus, Helobdella*	5.33
04 Ephemeroptera Mean Abundance	213.67		
05 Shannon-Wiener Generic Diversity	3.68	23 Relative Generic Richness- Plecoptera	0.03
06 Hilsenhoff Biotic Index	4.06	25 Sum of Abundances: *Cheumatopsyche, Cricotopus, Tanytarsus, Ablabesmyia*	194.67
07 Relative Abundance - Chironomidae	0.13		
08 Relative Generic Richness Diptera	0.30	26 Sum of Abundances: *Acroneuria, Maccaffertium, Stenonema*	38.00
09 *Hydropsyche* Abundance	40.33		
11 *Cheumatopsyche* Abundance	161.33	28 EP Generic Richness/14	0.43
12 EPT Generic Richness/ Diptera Generic Richness	1.67	30 Presence of Class A Indicator Taxa/7	0.14
13 Relative Abundance - Oligochaeta	0.00		
15 Perlidae Mean Abundance (Family Functional Group)	7.00		
16 Tanypodinae Mean Abundance (Family Functional Group)	22.67		
17 Chironomini Abundance (Family Functional Group)	114.67		

Five Most Dominant Taxa

Rank	Taxon Name	Percent
1	*Chimarra*	24.60
2	Planariidae	13.47
3	*Cheumatopsyche*	11.87
4	*Acerpenna*	11.63
5	*Ochrotrichia*	6.99

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Appendix 1 continued MDEP S-1206 = FOMB Site 3

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Classification Attainment Report

Station Number: S-1206 Town: Lisbon Date Deployed: 8/4/2021
Log Number: 2940 Waterbody: Androscoggin River - Station 1206 Date Retrieved: 8/31/2021

Sample Collection and Processing Information

Sampling Organization: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)
Taxonomist: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)

Waterbody Information - Deployment		Waterbody Information - Retrieval	
Temperature:	24.3 deg C	Temperature:	25.5 deg C
Dissolved Oxygen:	10.6 mg/l	Dissolved Oxygen:	9.4 mg/l
Dissolved Oxygen Saturation:		Dissolved Oxygen Saturation:	
Specific Conductance:		Specific Conductance:	
Velocity:	27 cm/s	Velocity:	11 cm/s
pH:		pH:	
Wetted Width:	139 m	Wetted Width:	139 m
Bankfull Width:		Bankfull Width:	
Depth:	30 cm	Depth:	37 cm

Water Chemistry

Summary of Habitat Characteristics

Landuse Name	Canopy Cover	Terrain	
Upland Conifer	Open	Rolling	
Upland Hardwood			
Potential Stressor	**Location**	**Substrate**	
Nps Pollution	Below Agriculture NPS	Boulder	80 %
Urban Runoff	Below POTW	Gravel	10 %
	Below Urban NPS	Sand	10 %

Landcover Summary - 2004 Data

Sample Comments

BOULDER FIELD

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Appendix 1 continued MDEP S-1206 = FOMB Site 3

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Taxonomic Inventory Report

Station Number: S-1206 Waterbody: Androscoggin River - Station 1206 Town: Lisbon
Log Number: 2940 Subsample Factor: X1 Replicates: 3 Calculated: 3/23/2022

Taxon	Maine Taxonomic Code	Count (Mean of Samplers) Actual	Adjusted	Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance % Actual	Adjusted
Planariidae	03010101	183.00	183.00		--	13.5	13.5
Acroneuria	09020209042	7.00	7.00	0	PR	0.5	0.5
Acerpenna	09020401007	158.00	158.00	5	CG	11.6	11.6
Plauditus	09020401012	13.33	13.33		CG	1.0	1.0
Maccaffertium	09020402015	31.00	31.00	4	SC	2.3	2.3
Isonychia	09020404018	7.33	7.33	2	CF	0.5	0.5
Tricorythodes	09020411038	4.00	4.00	4	CG	0.3	0.3
Chimarra	09020601003	334.33	334.33	2	CF	24.6	24.6
Neureclipsis	09020603008	22.67	22.67	7	CF	1.7	1.7
Cheumatopsyche	09020604015	161.33	161.33	5	CF	11.9	11.9
Hydropsyche	09020604016	40.33	40.33	4	CF	3.0	3.0
Macrostemum	09020604018	46.00	46.00	3	CF	3.4	3.4
Ochrotrichia	09020607027	95.00	95.00	4	P	7.0	7.0
Brachycentrus	09020609043	2.67	2.67	0	CF	0.2	0.2
Nectopsyche	09020618074	9.33	9.33	3	SH	0.7	0.7
Oecetis	09020618078	25.33	25.33	8	PR	1.9	1.9
Petrophila	09020901004	1.00	1.00	5	SC	0.1	0.1
Pentaneura	09021011014	14.67	14.67	6	PR	1.1	1.1
Thienemannimyia	09021011020	8.00	8.00	3	PR	0.6	0.6
Cricotopus	09021011037	17.33	17.33	7	SH	1.3	1.3
Paratanytarsus	09021011071	2.67	2.67	6	--	0.2	0.2
Tanytarsus	09021011076	16.00	16.00	6	CF	1.2	1.2
Dicrotendipes	09021011085	5.33	5.33	8	CG	0.4	0.4
Microtendipes	09021011094	30.67	30.67	6	CF	2.3	2.3
Polypedilum	09021011102	78.67	78.67	6	SH	5.8	5.8
Simulium	09021012047	13.33	13.33	4	CF	1.0	1.0
Elmidae	09021113	4.00	4.00		--	0.3	0.3
Macronychus	09021113065	12.00	12.00	4	--	0.9	0.9
Hydrobiidae	10010104	12.33	12.33		--	0.9	0.9
Physidae	10010202	2.33	2.33		SC	0.2	0.2

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Appendix 1 continued MDEP S-1207 = FOMB Site 4

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Classification Attainment Report

Station Information

Station Number:	**S-1207**	River Basin:	Androscoggin
Waterbody:	Androscoggin River - Station 1207	HUC8 Name:	
Town:	Lisbon	Latitude:	44° 00' 31.44009501" N
Directions:	FROM SABATTUS STREAM LAUNCH GO DOWNTREAM APPROX. 350 YDS. CONSULTANT SITE NAME: ANDY 4	Longitude:	
		Stream Order:	

Sample Information

Log Number:	**2941**	Type of Sample:	ROCK BASKET	Date Deployed:	8/4/2021
Subsample Factor:	X1	Replicates:	3	Date Retrieved:	8/31/2021

Classification Attainment

Statutory Class:	**C**	**Final Determination:**	**C**	Date:	3/29/2022
Model Result with P≥0.6:	C	**Reason for Determination:**	**Model**		
Date Last Calculated:	3/23/2022	Comments:			

Model Probabilities

First Stage Model				C or Better Model	
Class A	0.00	Class C	0.94	Class A, B, or C	1.00
Class B	0.01	NA	0.05	Non-Attainment	0.00

B or Better Model		A Model	
Class A or B	0.00	Class A	0.00
Class C or Non-Attainment	1.00	Class B or C or Non-Attainment	1.00

Model Variables

01 Total Mean Abundance	295.00	18 Relative Abundance Ephemeroptera	0.11
02 Generic Richness	40.00	19 EPT Generic Richness	16.00
03 Plecoptera Mean Abundance	0.00	21 Sum of Abundances: *Dicrotendipes, Micropsectra, Parachironomus, Helobdella*	1.00
04 Ephemeroptera Mean Abundance	31.00		
05 Shannon-Wiener Generic Diversity	3.71	23 Relative Generic Richness- Plecoptera	0.00
06 Hilsenhoff Biotic Index	6.40	25 Sum of Abundances: *Cheumatopsyche, Cricotopus, Tanytarsus, Ablabesmyia*	13.00
07 Relative Abundance - Chironomidae	0.34		
08 Relative Generic Richness Diptera	0.28	26 Sum of Abundances: *Acroneuria, Maccaffertium, Stenonema*	11.67
09 *Hydropsyche* Abundance	0.67		
11 *Cheumatopsyche* Abundance	2.00	28 EP Generic Richness/14	0.36
12 EPT Generic Richness/ Diptera Generic Richness	1.45	30 Presence of Class A Indicator Taxa/7	0.00
13 Relative Abundance - Oligochaeta	0.00		
15 Perlidae Mean Abundance (Family Functional Group)	0.00		
16 Tanypodinae Mean Abundance (Family Functional Group)	11.33		
17 Chironomini Abundance (Family Functional Group)	85.33		

Five Most Dominant Taxa

Rank	Taxon Name	Percent
1	*Microtendipes*	27.34
2	*Polycentropus*	12.54
3	*Hyalella*	11.19
4	*Oecetis*	9.49
5	Physidae	6.10

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Appendix 1 continued MDEP S-1207 = FOMB Site 4

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Classification Attainment Report

Station Number: S-1207 Town: Lisbon Date Deployed: 8/4/2021
Log Number: 2941 Waterbody: Androscoggin River - Station 1207 Date Retrieved: 8/31/2021

Sample Collection and Processing Information

Sampling Organization: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)
Taxonomist: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)

Waterbody Information - Deployment		Waterbody Information - Retrieval	
Temperature:	23.6 deg C	Temperature:	24.9 deg C
Dissolved Oxygen:	9.4 mg/l	Dissolved Oxygen:	8.1 mg/l
Dissolved Oxygen Saturation:		Dissolved Oxygen Saturation:	
Specific Conductance:		Specific Conductance:	
Velocity:	8.5 cm/s	Velocity:	5 cm/s
pH:		pH:	
Wetted Width:	396 m	Wetted Width:	396 m
Bankfull Width:		Bankfull Width:	
Depth:	314 cm	Depth:	320 cm

Water Chemistry

Summary of Habitat Characteristics

Landuse Name	Canopy Cover	Terrain	
Upland Conifer	Open	Rolling	
Upland Hardwood			
Potential Stressor	**Location**	**Substrate**	
Impounded	Below Agriculture NPS	Sand	100 %
Nps Pollution	Below POTW		
Nutrients	Below Urban NPS		
Urban Runoff			

Landcover Summary - 2004 Data

Sample Comments

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Appendix 1 continued MDEP S-1207 = FOMB Site 4

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Taxonomic Inventory Report

Station Number: S-1207 Waterbody: Androscoggin River - Station 1207 Town: Lisbon
Log Number: 2941 Subsample Factor: X1 Replicates: 3 Calculated: 3/23/2022

Taxon	Maine Taxonomic Code	Count (Mean of Samplers) Actual	Adjusted	Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance % Actual	Adjusted
Planariidae	03010101	15.00	15.00		--	5.1	5.1
Annelida	08	0.33	0.33		--	0.1	0.1
Hirudinidae	08030201	1.67	1.67		--	0.6	0.6
Amphipoda	090102	0.33	0.33	8	--	0.1	0.1
Hyalella	09010203006	33.00	33.00	8	CG	11.2	11.2
Orconectes	09010301008		0.67		CG		0.2
Orconectes limosus	09010301008013	0.67			--	0.2	
Somatochlora	09020305027	0.33	0.33	1	PR	0.1	0.1
Argia	09020309048	1.00	1.00	7	PR	0.3	0.3
Coenagrion	09020309050	1.00	1.00	8	PR	0.3	0.3
Acerpenna	09020401007	1.00	1.00	5	CG	0.3	0.3
Plauditus	09020401012	0.33	0.33		CG	0.1	0.1
Stenacron	09020402014	14.67	14.67	7	SC	5.0	5.0
Maccaffertium	09020402015	11.67	11.67	4	SC	4.0	4.0
Caenis	09020412040	3.33	3.33	7	CG	1.1	1.1
Chimarra	09020601003	0.67	0.67	2	CF	0.2	0.2
Neureclipsis	09020603008	0.33	0.33	7	CF	0.1	0.1
Polycentropus	09020603010	37.00	37.00	6	PR	12.5	12.5
Cheumatopsyche	09020604015	2.00	2.00	5	CF	0.7	0.7
Hydropsyche	09020604016	0.67	0.67	4	CF	0.2	0.2
Ochrotrichia	09020607027	2.00	2.00	4	P	0.7	0.7
Oxyethira	09020607028	0.33	0.33	3	P	0.1	0.1
Brachycentridae	09020609	1.00	1.00		--	0.3	0.3
Nectopsyche	09020618074	8.33	8.33	3	SH	2.8	2.8
Triaenodes	09020618077	0.33	0.33	6	SH	0.1	0.1
Oecetis	09020618078	28.00	28.00	8	PR	9.5	9.5
Ablabesmyia	09021011001	9.00	9.00	8	PR	3.1	3.1
Nilotanypus	09021011012	0.33	0.33	6	PR	0.1	0.1
Pentaneura	09021011014	0.67	0.67	6	PR	0.2	0.2
Thienemannimyia	09021011020	1.33	1.33	3	PR	0.5	0.5
Cricotopus	09021011037	0.67	0.67	7	SH	0.2	0.2
Eukiefferiella	09021011041	0.67	0.67	8	CG	0.2	0.2
Rheotanytarsus	09021011072	1.33	1.33	6	CF	0.5	0.5
Tanytarsus	09021011076	1.33	1.33	6	CF	0.5	0.5
Dicrotendipes	09021011085	1.00	1.00	8	CG	0.3	0.3
Microtendipes	09021011094	80.67	80.67	6	CF	27.3	27.3
Polypedilum	09021011102	3.67	3.67	6	SH	1.2	1.2

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Appendix 1 continued MDEP S-1207 = FOMB Site 4

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Taxonomic Inventory Report

Station Number: S-1207 Waterbody: Androscoggin River - Station 1207 Town: Lisbon

Log Number: 2941 Subsample Factor: X1 Replicates: 3 Calculated: 3/23/2022

Taxon	Maine Taxonomic Code	Count (Mean of Samplers) Actual	Count (Mean of Samplers) Adjusted	Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance % Actual	Relative Abundance % Adjusted
Elmidae	09021113	0.33	0.33		--	0.1	0.1
Ancyronyx	09021113063	0.33	0.33	6	--	0.1	0.1
Hydrobiidae	10010104	2.67	2.67		--	0.9	0.9
Physidae	10010202	18.00	18.00		SC	6.1	6.1
Planorbidae	10010203	1.00	1.00		--	0.3	0.3
Pisidium	10020201002	7.00	7.00		CF	2.4	2.4

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Appendix 1 continued MDEP S-1202 = FOMB Site 5

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Classification Attainment Report

Station Information

Station Number:	**S-1202**	River Basin:	Androscoggin
Waterbody:	Androscoggin River - Station 1202	HUC8 Name:	Lower Androscoggin
Town:	Lisbon	Latitude:	43° 59' 25.812" N
Directions:	FROM PEJEPSCOT BOAT RAMP IN LISBON FALLS, UPSTREAM 100YDS, MID CHANNEL	Longitude:	70° 2' 59.882" W
		Stream Order:	

Sample Information

Log Number:	**2936**	Type of Sample:	ROCK BASKET	Date Deployed:	9/3/2021
Subsample Factor:	X1	Replicates:	3	Date Retrieved:	9/29/2021

Classification Attainment

Statutory Class:	**C**	**Final Determination:**	**C**	Date:	1/28/2022
Model Result with P≥0.6:	C	**Reason for Determination:**	**Model**		
Date Last Calculated:	1/27/2022	Comments:			

Model Probabilities

First Stage Model				C or Better Model	
Class A	0.03	Class C	0.65	Class A, B, or C	1.00
Class B	0.32	NA	0.00	Non-Attainment	0.00

B or Better Model		A Model	
Class A or B	0.04	Class A	0.02
Class C or Non-Attainment	0.96	Class B or C or Non-Attainment	0.98

Model Variables

01 Total Mean Abundance	279.00	18 Relative Abundance Ephemeroptera	0.21
02 Generic Richness	34.00	19 EPT Generic Richness	16.00
03 Plecoptera Mean Abundance	1.00	21 Sum of Abundances: *Dicrotendipes, Micropsectra, Parachironomus, Helobdella*	16.67
04 Ephemeroptera Mean Abundance	58.67		
05 Shannon-Wiener Generic Diversity	3.63	23 Relative Generic Richness- Plecoptera	0.03
06 Hilsenhoff Biotic Index	6.43	25 Sum of Abundances: *Cheumatopsyche, Cricotopus, Tanytarsus, Ablabesmyia*	14.00
07 Relative Abundance - Chironomidae	0.16		
08 Relative Generic Richness Diptera	0.24	26 Sum of Abundances: *Acroneuria, Maccaffertium, Stenonema*	14.37
09 *Hydropsyche* Abundance	0.67		
11 *Cheumatopsyche* Abundance	8.33	28 EP Generic Richness/14	0.43
12 EPT Generic Richness/ Diptera Generic Richness	2.00	30 Presence of Class A Indicator Taxa/7	0.14
13 Relative Abundance - Oligochaeta	0.00		
15 Perlidae Mean Abundance (Family Functional Group)	1.00		
16 Tanypodinae Mean Abundance (Family Functional Group)	1.33		
17 Chironomini Abundance (Family Functional Group)	21.33		

Five Most Dominant Taxa

Rank	Taxon Name	Percent
1	*Neureclipsis*	35.24
2	*Stenacron*	13.13
3	*Polycentropus*	6.69
4	*Dicrotendipes*	5.97
5	*Maccaffertium*	4.79

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Appendix 1 continued MDEP S-1202 = FOMB Site 5

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Classification Attainment Report

Station Number: S-1202 Town: Lisbon Date Deployed: 9/3/2021
Log Number: 2936 Waterbody: Androscoggin River - Station 1202 Date Retrieved: 9/29/2021

Sample Collection and Processing Information

Sampling Organization: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)
Taxonomist: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)

Waterbody Information - Deployment		Waterbody Information - Retrieval	
Temperature:	22 deg C	Temperature:	19.5 deg C
Dissolved Oxygen:	7.9 mg/l	Dissolved Oxygen:	8.5 mg/l
Dissolved Oxygen Saturation:		Dissolved Oxygen Saturation:	
Specific Conductance:		Specific Conductance:	90 uS/cm
Velocity:	18 cm/s	Velocity:	
pH:		pH:	
Wetted Width:	185 m	Wetted Width:	185 m
Bankfull Width:		Bankfull Width:	
Depth:	344 cm	Depth:	393 cm

Water Chemistry

Summary of Habitat Characteristics

Landuse Name	Canopy Cover	Terrain	
Upland Conifer	Open	Rolling	
Upland Hardwood			
Urban			
Potential Stressor	**Location**	**Substrate**	
Impounded	Below Dam	Gravel	40 %
Nps Pollution	Below POTW	Rubble/Cobble	50 %
Urban Runoff	Below Urban NPS	Sand	10 %

Landcover Summary - 2004 Data

Sample Comments

MIDCHANNEL 100 YDS UPSTREAM OF PEJEPSCOT BOAT LAUNCH

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Appendix 1 continued MDEP S-1202 = FOMB Site 5

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Taxonomic Inventory Report

Station Number: S-1202 Waterbody: Androscoggin River - Station 1202 Town: Lisbon
Log Number: 2936 Subsample Factor: X1 Replicates: 3 Calculated: 1/27/2022

Taxon	Maine Taxonomic Code	Count (Mean of Samplers) Actual	Count (Mean of Samplers) Adjusted	Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance % Actual	Relative Abundance % Adjusted
Planariidae	03010101	8.00	8.00		--	2.9	2.9
Annelida	08	10.00	10.00		--	3.6	3.6
Hyalella	09010203006	0.67	0.67	8	CG	0.2	0.2
Orconectes	09010301008		0.33		CG		0.1
Orconectes limosus	090103010080l3	0.33			--	0.1	
Acroneuria	09020209042	1.00	1.00	0	PR	0.4	0.4
Chromagrion	09020309049	6.33	6.33	4	PR	2.3	2.3
Acerpenna	09020401007	7.33	7.33	5	CG	2.6	2.6
Heptageniidae	09020402	21.33			--	7.6	
Stenacron	09020402014	21.00	36.63	7	SC	7.5	13.1
Maccaffertium	09020402015	7.67	13.37	4	SC	2.7	4.8
Leptophlebiidae	09020406	0.67	0.67		--	0.2	0.2
Eurylophella	09020410036	0.67	0.67	3	CG	0.2	0.2
Chimarra	09020601003	0.67	0.67	2	CF	0.2	0.2
Neureclipsis	09020603008	98.33	98.33	7	CF	35.2	35.2
Polycentropus	09020603010	18.67	18.67	6	PR	6.7	6.7
Cheumatopsyche	09020604015	8.33	8.33	5	CF	3.0	3.0
Hydropsyche	09020604016	0.67	0.67	4	CF	0.2	0.2
Agraylea	09020607024	2.67	2.67	8	P	1.0	1.0
Hydroptila	09020607026	4.00	4.00	6	P	1.4	1.4
Oxyethira	09020607028	4.00	4.00	3	P	1.4	1.4
Mystacides	09020618075	0.67	0.67	4	CG	0.2	0.2
Oecetis	09020618078	5.33	5.33	8	PR	1.9	1.9
Thienemannimyia	09021011020	1.33	1.33	3	PR	0.5	0.5
Cricotopus	09021011037	5.67	5.67	7	SH	2.0	2.0
Eukiefferiella	09021011041	7.00	7.00	8	CG	2.5	2.5
Nanocladius	09021011049	5.33	5.33	3	CG	1.9	1.9
Psectrocladius	09021011056	2.00	2.00	8	CG	0.7	0.7
Paratanytarsus	09021011071	2.67	2.67	6	--	1.0	1.0
Dicrotendipes	09021011085	16.67	16.67	8	CG	6.0	6.0
Microtendipes	09021011094	4.67	4.67	6	CF	1.7	1.7
Hydrobiidae	10010104	1.33	1.33		--	0.5	0.5
Physidae	10010202	1.33	1.33		SC	0.5	0.5
Planorbidae	10010203	0.67	0.67		--	0.2	0.2
Elliptio	10020102009	0.33	0.33		CF	0.1	0.1
Sphaeriidae	10020201	1.67	1.67		CF	0.6	0.6

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Appendix 1 continued MDEP S-1203 = FOMB Site 6

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Classification Attainment Report

Station Information

Station Number:	**S-1203**	River Basin:	Androscoggin
Waterbody:	Androscoggin River - Station 1203	HUC8 Name:	Lower Androscoggin
Town:	Brunswick	Latitude:	43° 55' 58.841" N
Directions:	FROM CARRY IN ACCESS IN BRUNSWICK, PROCEED UP RIVER, UNDER 295 TO LEDGE RIVER LEFT	Longitude:	70° 0' 3.895" W
		Stream Order:	

Sample Information

Log Number:	**2937**	Type of Sample:	ROCK BASKET	Date Deployed:	8/5/2021
Subsample Factor:	X1	Replicates:	3	Date Retrieved:	9/3/2021

Classification Attainment

Statutory Class:	**C**	**Final Determination:**	**C**	Date:	1/28/2022
Model Result with P≥0.6:	C	**Reason for Determination:**	**Model**		
Date Last Calculated:	1/27/2022	Comments:			

Model Probabilities

First Stage Model				C or Better Model	
Class A	0.16	Class C	0.28	Class A, B, or C	1.00
Class B	0.56	NA	0.00	Non-Attainment	0.00

B or Better Model		A Model	
Class A or B	0.31	Class A	0.01
Class C or Non-Attainment	0.69	Class B or C or Non-Attainment	0.99

Model Variables

01 Total Mean Abundance	312.67	18 Relative Abundance Ephemeroptera	0.07
02 Generic Richness	33.00	19 EPT Generic Richness	13.00
03 Plecoptera Mean Abundance	3.33	21 Sum of Abundances: *Dicrotendipes, Micropsectra, Parachironomus, Helobdella*	1.00
04 Ephemeroptera Mean Abundance	21.00		
05 Shannon-Wiener Generic Diversity	3.55	23 Relative Generic Richness- Plecoptera	0.03
06 Hilsenhoff Biotic Index	5.60	25 Sum of Abundances: *Cheumatopsyche, Cricotopus, Tanytarsus, Ablabesmyia*	66.33
07 Relative Abundance - Chironomidae	0.04		
08 Relative Generic Richness Diptera	0.36	26 Sum of Abundances: *Acroneuria, Maccaffertium, Stenonema*	8.68
09 *Hydropsyche* Abundance	11.33		
11 *Cheumatopsyche* Abundance	64.00	28 EP Generic Richness/14	0.29
12 EPT Generic Richness/ Diptera Generic Richness	1.08	30 Presence of Class A Indicator Taxa/7	0.00
13 Relative Abundance - Oligochaeta	0.00		
15 Perlidae Mean Abundance (Family Functional Group)	3.33		
16 Tanypodinae Mean Abundance (Family Functional Group)	3.00		
17 Chironomini Abundance (Family Functional Group)	3.33		

Five Most Dominant Taxa

Rank	Taxon Name	Percent
1	*Neureclipsis*	26.97
2	*Cheumatopsyche*	20.47
3	Physidae	13.01
4	Hydrobiidae	6.18
5	*Hydropsyche*	3.62

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Appendix 1 continued MDEP S-1203 = FOMB Site 6

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Classification Attainment Report

Station Number: S-1203 Town: Brunswick Date Deployed: 8/5/2021
Log Number: 2937 Waterbody: Androscoggin River - Station 1203 Date Retrieved: 9/3/2021

Sample Collection and Processing Information

Sampling Organization: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)
Taxonomist: PAUL LEEPER (MOODY MOUNTAIN ENVIRONMENTAL)

Waterbody Information - Deployment		Waterbody Information - Retrieval	
Temperature:	23.5 deg C	Temperature:	23.2 deg C
Dissolved Oxygen:	8.3 mg/l	Dissolved Oxygen:	7.6 mg/l
Dissolved Oxygen Saturation:		Dissolved Oxygen Saturation:	
Specific Conductance:		Specific Conductance:	
Velocity:	30 cm/s	Velocity:	34 cm/s
pH:		pH:	
Wetted Width:	176 m	Wetted Width:	176 m
Bankfull Width:		Bankfull Width:	
Depth:	317 cm	Depth:	310 cm

Water Chemistry

Summary of Habitat Characteristics

Landuse Name	Canopy Cover	Terrain	
Upland Conifer	Open	Rolling	
Upland Hardwood			
Potential Stressor	Location	Substrate	
	Above Dam	Bedrock	50 %
		Boulder	10 %
		Rubble/Cobble	40 %

Landcover Summary - 2004 Data

Sample Comments

WATCH OUT FOR CRIPBS UNDERWATER

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Appendix 1 continued MDEP S-1203 = FOMB Site 6

Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Taxonomic Inventory Report

Station Number: S-1203 Waterbody: Androscoggin River - Station 1203 Town: Brunswick
Log Number: 2937 Subsample Factor: X1 Replicates: 3 Calculated: 1/27/2022

Taxon	Maine Taxonomic Code	Count (Mean of Samplers) Actual	Count (Mean of Samplers) Adjusted	Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance % Actual	Relative Abundance % Adjusted
Planariidae	03010101	11.00	11.00		--	3.5	3.5
Annelida	08	9.00	9.00		--	2.9	2.9
Hyalella	09010203006	0.33	0.33	8	CG	0.1	0.1
Acroneuria	09020209042	3.33	3.33	0	PR	1.1	1.1
Somatochlora	09020305027	1.67	1.67	1	PR	0.5	0.5
Chromagrion	09020309049	10.67	10.67	4	PR	3.4	3.4
Acerpenna	09020401007	5.33	5.33	5	CG	1.7	1.7
Heptageniidae	09020402	2.00			--	0.6	
Stenacron	09020402014	9.00	10.32	7	SC	2.9	3.3
Maccaffertium	09020402015	4.67	5.35	4	SC	1.5	1.7
Chimarra	09020601003	5.33	5.33	2	CF	1.7	1.7
Neureclipsis	09020603008	84.33	84.33	7	CF	27.0	27.0
Polycentropus	09020603010	4.33	4.33	6	PR	1.4	1.4
Cheumatopsyche	09020604015	64.00	64.00	5	CF	20.5	20.5
Hydropsyche	09020604016	11.33	11.33	4	CF	3.6	3.6
Macrostemum	09020604018	0.67	0.67	3	CF	0.2	0.2
Ceraclea	09020618072	0.33	0.33	3	CG	0.1	0.1
Mystacides	09020618075	1.33	1.33	4	CG	0.4	0.4
Oecetis	09020618078	4.67	4.67	8	PR	1.5	1.5
Tipulidae	09021001	1.00	1.00		--	0.3	0.3
Ablabesmyia	09021011001	0.33	0.33	8	PR	0.1	0.1
Pentaneura	09021011014	2.00	2.00	6	PR	0.6	0.6
Thienemannimyia	09021011020	0.67	0.67	3	PR	0.2	0.2
Cricotopus	09021011037	1.67	1.67	7	SH	0.5	0.5
Eukiefferiella	09021011041	2.33	2.33	8	CG	0.7	0.7
Paratanytarsus	09021011071	2.67	2.67	6	--	0.9	0.9
Tanytarsus	09021011076	0.33	0.33	6	CF	0.1	0.1
Microtendipes	09021011094	1.33	1.33	6	CF	0.4	0.4
Parachironomus	09021011097	1.00	1.00	10	PR	0.3	0.3
Polypedilum	09021011102	1.00	1.00	6	SH	0.3	0.3
Cnephia	09021012046	4.33	4.33	0	CF	1.4	1.4
Elmidae	09021113	0.67	0.67		--	0.2	0.2
Hydrobiidae	10010104	19.33	19.33		--	6.2	6.2
Physidae	10010202	40.67	40.67		SC	13.0	13.0

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Appendix 2. Hydropower Impoundment Classification Exceptions for Aquatic Life Standards- Title 38 Sections 464 and 465

https://www.mainelegislature.org/legis/statutes/38/title38sec464.html

https://www.mainelegislature.org/legis/statutes/38/title38sec465.html

Summary: *The statute says that recognizing the aquatic life differences of impoundments, if a river with impoundments is classified as A or B, the impoundment shall also be considered to meet that standard provided it at least meets C criteria; unless, (1) Reasonable changes can be implemented that do not significantly affect existing energy generation capability; and (2) Those changes would result in improvement in the habitat and aquatic life of the impounded waters. If the conditions described in (1) and (2) occur, those changes must be implemented and the resulting improvement in habitat and aquatic life must be achieved and maintained.*

§464. Classification of Maine waters

10. Existing hydropower impoundments managed under riverine classifications; habitat and aquatic life criteria. For the purposes of water quality certification under the Federal Water Pollution Control Act, Public Law 92-500, section 401, as amended, and the licensing of modifications under section 636, hydropower projects in existence on the effective date of this subsection, the impoundments of which are classified under section 465, are subject to the provisions of this subsection in recognition of some changes to aquatic life and habitat that have occurred due to the existing impoundments of these projects.

A. Except as provided in paragraphs B and D, the habitat characteristics and aquatic life criteria of Classes A and B are deemed to be met in the existing impoundments classified A or B of those projects if:

(1) The impounded waters achieve the aquatic life criteria of section 465, subsection 4, paragraph C. [PL 1991, c. 813, Pt. B, §1 (NEW).] (author's note- underlined and boldfaced, see section 465, subsection 4, paragraph C below)

B. The habitat characteristics and aquatic life criteria of Classes A and B are not deemed to be met in the existing impoundments of those projects referred to in paragraph A if:

(1) Reasonable changes can be implemented that do not significantly affect existing energy generation capability; and

(2) Those changes would result in improvement in the habitat and aquatic life of the impounded waters.

If the conditions described in subparagraphs (1) and (2) occur, those changes must be implemented and the resulting improvement in habitat and aquatic life must be achieved and maintained. [PL 1991, c. 813, Pt. B, §1 (NEW).]

C. If the conditions described in paragraph B, subparagraphs (1) and (2) occur at a project in existence on the effective date of this subsection, the impoundment of which is classified C, the changes described in paragraph B, subparagraphs (1) and (2) must be implemented and the resulting improvement in habitat and aquatic life must be achieved and maintained. [PL 1991, c. 813, Pt. B, §1 (NEW).]

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D. When the actual water quality of waters affected by this subsection attains any more stringent characteristic or criteria of those waters' classification under sections 465, 467 and 468, that water quality must be maintained and protected. [PL 1991, c. 813, Pt. B, §1 (NEW).]
[PL 1991, c. 813, Pt. B, §1 (NEW).]
11. Downstream stretches affected by existing hydropower projects. Hydropower projects in existence on the effective date of this subsection that are located on water bodies referenced in section 467, subsection 4, paragraph A, subparagraphs (1) and (7), and section 467, subsection 12, paragraph A, subparagraphs (7) and (9) are subject to the provisions of this subsection.
For the purposes of water quality certification of hydropower projects under the Federal Water Pollution Control Act, Public Law 92-500, Section 401, as amended, and licensing of modifications to these hydropower projects under section 636, the habitat characteristics and aquatic life criteria of Class A are deemed to be met in the waters immediately downstream of and measurably affected by the projects listed in this subsection if the criteria contained in section 465, subsection 4, paragraph C are met.
[RR 1993, c. 1, §114 (COR).]

Section 465, subsection 4, paragraph C

C. Discharges to Class C waters may cause some changes to aquatic life, except that the receiving waters must be of sufficient quality to support all species of fish indigenous to the receiving waters and maintain the structure and function of the resident biological community. For the purpose of allowing the discharge of aquatic pesticides or chemicals approved by the department and conducted by the department, the Department of Inland Fisheries and Wildlife or an agent of either agency to restore biological communities affected by an invasive species, the department may find that the discharged effluent will not cause unacceptable changes to aquatic life as long as the materials and methods used will ensure the support of all species of indigenous fish and the structure and function of the resident biological community and will allow restoration of nontarget species. [PL 2017, c. 319, §9 (AMD).]

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Exhibit 6

https://www.mainelegislature.org/legis/statutes/38/title38sec464.html

10. Existing hydropower impoundments managed under riverine classifications; habitat and aquatic life criteria. For the purposes of water quality certification under the Federal Water Pollution Control Act, Public Law 92-500, Section 401, as amended, and the licensing of modifications under section 636, hydropower projects in existence on the effective date of this subsection, the impoundments of which are classified under section 465, are subject to the provisions of this subsection in recognition of some changes to aquatic life and habitat that have occurred due to the existing impoundments of these projects.

A. Except as provided in paragraphs B and D, the habitat characteristics and aquatic life criteria of Classes A and B are deemed to be met in the existing impoundments classified A or B of those projects if:

(1) The impounded waters achieve the aquatic life criteria of section 465, subsection 4, paragraph C. [PL 1991, c. 813, Pt. B, §1 (NEW).]

B. The habitat characteristics and aquatic life criteria of Classes A and B are not deemed to be met in the existing impoundments of those projects referred to in paragraph A if:

(1) Reasonable changes can be implemented that do not significantly affect existing energy generation capability; and

(2) Those changes would result in improvement in the habitat and aquatic life of the impounded waters.

If the conditions described in subparagraphs (1) and (2) occur, those changes must be implemented and the resulting improvement in habitat and aquatic life must be achieved and maintained. [PL 1991, c. 813, Pt. B, §1 (NEW).]

C. If the conditions described in paragraph B, subparagraphs (1) and (2) occur at a project in existence on the effective date of this subsection, the impoundment of which is classified C, the changes described in paragraph B, subparagraphs (1) and (2) must be implemented and the resulting improvement in habitat and aquatic life must be achieved and maintained. [PL 1991, c. 813, Pt. B, §1 (NEW).]

D. When the actual water quality of waters affected by this subsection attains any more stringent characteristic or criteria of those waters' classification under sections 465, 467 and 468, that water quality must be maintained and protected. [PL 1991, c. 813, Pt. B, §1 (NEW).] [RR 2021, c. 2, Pt. A, §130 (COR).]

11. Downstream stretches affected by existing hydropower projects. Hydropower projects in existence on the effective date of this subsection that are located on water bodies referenced in section 467, subsection 4, paragraph A, subparagraphs (1) and (7), and section 467, subsection 12, paragraph A, subparagraphs (7) and (9) are subject to the provisions of this subsection.

For the purposes of water quality certification of hydropower projects under the Federal Water Pollution Control Act, Public Law 92-500, Section 401, as amended, and licensing of modifications to these hydropower projects under section 636, the habitat characteristics and aquatic life criteria of Class A are deemed to be met in the waters immediately downstream of and measurably affected by the projects listed in this subsection if the criteria contained in section 465, subsection 4, paragraph C are met.