

## **Existing Use Determination and Rationale:**

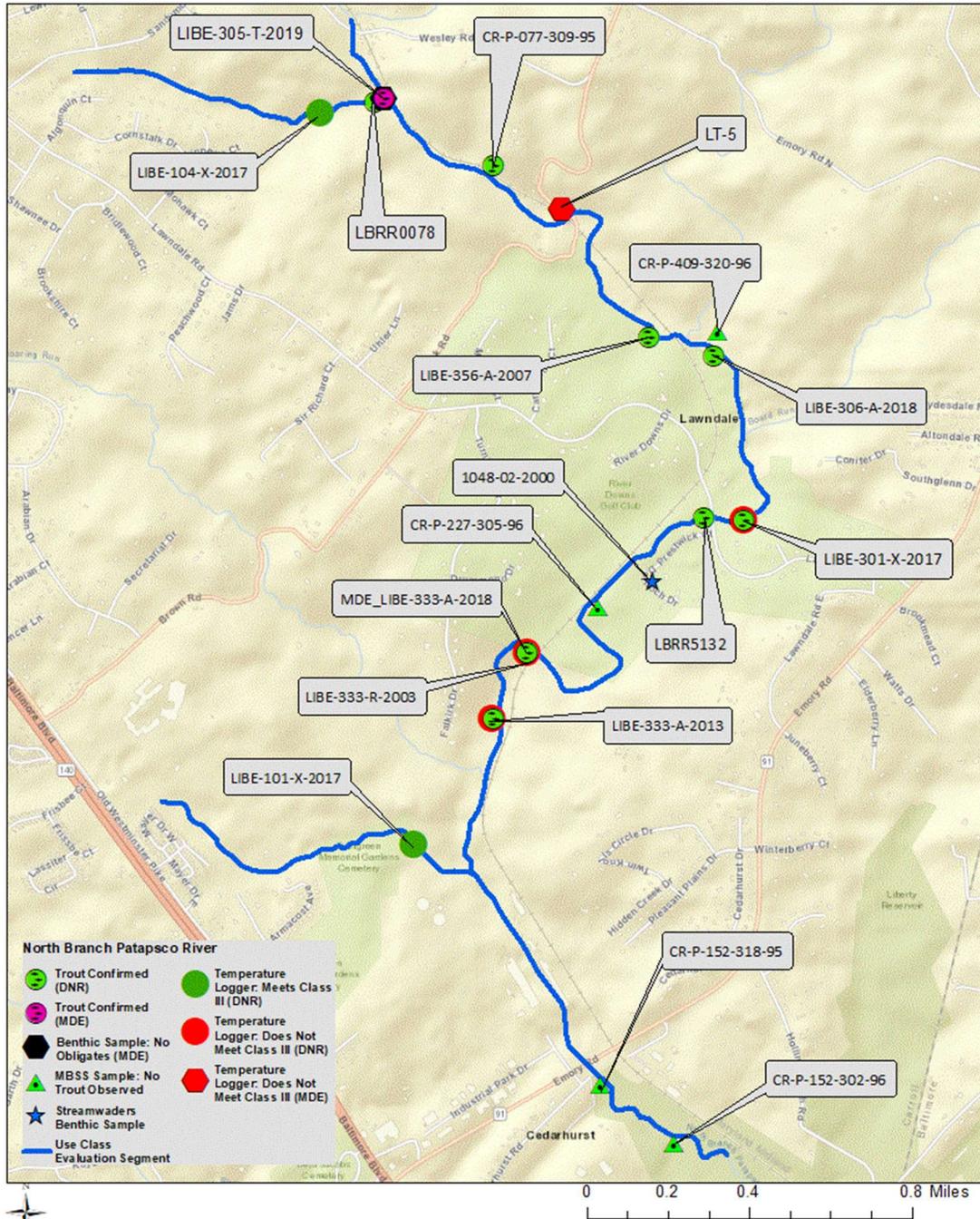
### **North Branch Patapsco River and Two Unnamed Tributaries (Carroll County)**

**April 13, 2020**

#### **Description of Setting and Data Sources**

The North Branch Patapsco River main stem (12-digit 021309071048) from the unnamed tributary at Hollingsworth Road and north to the main stem's confluence with the West Branch Patapsco River is currently designated as a Class IV-P waterbody. Carroll County, MDE Field Services, the MDDNR Fisheries Program, MBSS and Core Trend scientists, and Stream Waders volunteers conducted surveys of this section of the North Branch Patapsco River main stem and several tributaries. The figure below shows the location of the sampling stations and the stream segments being reviewed. The resulting data describing water temperature and information on the presence of trout is shown in Tables 1 and 2, respectively. For the purposes of determining the existing uses at an appropriate level of specificity, this document examines the available data for North Branch Patapsco River mainstem and two unnamed tributaries to the North Branch Patapsco River both separately and in aggregate.

Figure 1. North Branch Patapsco



## Temperature Data Summary for the North Branch Patapsco River

### Main stem

Water temperature data were collected during 4 separate sampling events in 2003, 2013, 2017 and 2019. None of these 4 met the Class III criterion. MDDNR Core Trend station NPA0165, not listed in Table 1, is located on the stream evaluation segment but temperature logger data is not included in the survey methodology.

### Unnamed tributary to the North Branch Patapsco River near Wesley Road

Temperature collected during the LIBE-104-X-2017 sampling event demonstrated the attainment of Class III criterion (20° C).

### Unnamed tributary to the North Branch Patapsco River near Armacost Avenue

Temperature collected during the LIBE-101-X-2017 sampling event demonstrated the attainment of Class III criterion (20° C).

Table 1. North Branch Patapsco River Water Temperature Logger Data

Date	Station ID	Stream	Data Submitter	# Temp Readings	Percent> 20°C	Percent> 24°C	Avg Daily Mean	Daily Max
2019	LT-5	North Branch Patapsco River	MDE Field Services	8735	70.2%	6.8%	21.01	26.53
2018	MDE_LIBE-333-A-2018	North Branch Patapsco River	MDE Field Services	-	-	-	-	-
2018	LIBE-306-A-2018	North Branch Patapsco River	MDDNR MBSS	-	-	-	-	-
2017	LBRR5132	North Branch Patapsco River	MDDNR Fisheries Program	-	-	-	-	-
2015	LBRR5132	North Branch Patapsco River	MDDNR Fisheries Program	-	-	-	-	-
2017	LIBE-104-X-2017	Unnamed tributary to the North Branch Patapsco River near Wesley Road	MDDNR MBSS	6624	8%	0%	18.08	22.51

Date	Station ID	Stream	Data Submitter	# Temp Readings	Percent> 20°C	Percent> 24°C	Avg Daily Mean	Daily Max
2017	LIBE-101-X-2017	Unnamed tributary to the North Branch Patapsco River near Armacost Avenue	MDDNR MBSS	6624	10%	0%	17.98	23.21
2017	LIBE-301-X-2017	North Branch Patapsco River	MDDNR MBSS	6624	73%	8%	21.14	25.87
2013	LIBE-333-A-2013	North Branch Patapsco River	MDDNR MBSS	6624	63%	8%	20.81	27.58
2007	LIBE-356-A-2007	North Branch Patapsco River	MDDNR MBSS	-	-	-	-	-
2003	LIBE-333-R-2003	North Branch Patapsco River	MDDNR MBSS	6191	47%	0.2%	19.14	24.39
1996	CR-P-227-305-96	North Branch Patapsco River	MDDNR MBSS	-	-	-	-	-
1996	CR-P-152-302-96	North Branch Patapsco River	MDDNR MBSS	-	-	-	-	-
1996	CR-P-409-320-96	North Branch Patapsco River	MDDNR MBSS	-	-	-	-	-
1995	CR-P-077-309-95	North Branch Patapsco River	MDDNR MBSS	-	-	-	-	-
1995	CR-P-152-318-95	North Branch Patapsco River	MDDNR MBSS	-	-	-	-	-

\*Water temperature logger data assessed from June to August. The “Daily Max” represents the maximum temperature from June to August. Temperature loggers were not deployed for MDDNR MBSS round 1 (1994-1997).

## **Biological Data Summary for North Branch Patapsco River**

### Main stem

Brown trout were found at 10 biological sampling locations (Level 3 data) along the main stem of the water segment. Most importantly, young-of-year and multiple age classes were confirmed during 5 and 7 of these sampling events, respectively. Though not shown in the table below, MDDNR MBSS staff noted the capture of one young of year brown trout (length not noted) downstream of the station LIBE-301-X-2017. Since this individual was sampled outside of the 75-meter sampling reach, it was not counted or measured as part of the record for LIBE-301-X-2017. During a fish tissue survey, MDE field staff also recorded 4 brown trout at the Lawndale Road bridge (length not noted).

MDDNR Fisheries did not attempt to collect coldwater obligate benthic macroinvertebrate species, and MDE Field Services and MDDNR MBSS sampling events did not demonstrate the presence of coldwater obligate benthic macroinvertebrate species. The MDDNR Core Trend Monitoring Program sampled at station NPA0165 for benthic macroinvertebrate species from 1974 to 2018 (not listed in Table 2) but coldwater obligate benthic macroinvertebrate species were not found.

There was 1 MDDNR Stream Waders sampling event (Level 2 data) that occurred in March 2000 which also did not yield any coldwater obligate benthic macroinvertebrate species. Unless otherwise noted, benthic data submitted by MDDNR Stream Waders was identified to family level.

### Unnamed tributary to the North Branch Patapsco River near Wesley Road

An additional DNR fisheries survey (at station LBRR0078) conducted in 2019 confirmed the presence of multiple year classes of adults in the northern unnamed tributary. No young-of-year were found during this sampling event. However, a survey conducted in the main stem by MDE directly upstream of this confluence (LIBE-305-T-2019) did confirm the presence of young-of-year.

### Unnamed tributary to the North Branch Patapsco River near Armacost Avenue

An MBSS survey conducted in 2017 did not demonstrate the presence of brown trout within this tributary.

Table 2. North Branch Patapsco River Biological Data

Date	Station ID	Stream	Data Submitter	Species	Count	Maturity
2019	LINE-305-T-2019	North Branch Patapsco River	MDE Field Services	brown trout	19	Multiple Year Classes with YOY
2019	LBRR0078	Unnamed Tributary to the North Branch Patapsco near Wesley Road	MDDNR Fisheries Program	brown trout	23	Multiple Year Classes of Adults
7/12/2018	MDE_LIBE-333-A-2018	North Branch Patapsco River	MDE Field Services	brown trout	7	Unknown
8/4/2017	LBRR5132	North Branch Patapsco River	MDDNR Fisheries Program	brown trout	1	Adult
7/26/2017	LBRR5132	North Branch Patapsco River	MDDNR Fisheries Program	brown trout	9	Multiple Year Classes of Adults
9/1/2016	LBRR5132	North Branch Patapsco River	MDDNR Fisheries Program	brown trout	15	Multiple Year Classes with YOY
7/11/2018	LIBE-306-A-2018	North Branch Patapsco River	MDDNR MBSS & MDE Field Services	brown trout	7	Multiple Year Classes with YOY
7/26/2017	LIBE-301-X-2017	North Branch Patapsco River	MDDNR MBSS	brown trout	9	Multiple Year Classes Adult
7/19/2017	LIBE-104-X-2017	Unnamed Tributary to the North Branch Patapsco near Wesley Road	MDDNR MBSS	-	-	-

Date	Station ID	Stream	Data Submitter	Species	Count	Maturity
7/18/2017	LIBE-101-X-2017	Unnamed Tributary to the North Branch Patapsco near Armacost Avenue	MDDNR MBSS	-	-	-
8/26/2013	LIBE-333-A-2013	North Branch Patapsco River	MDDNR MBSS	brown trout	6	Multiple Year Classes with YOY
10/21/2008	NPA 0165	North Branch Patapsco River	MDE Field Services	Brown Trout	4	-
7/19/2007	LIBE-356-A-2007	North Branch Patapsco River	MDDNR MBSS	brown trout	18	Multiple Year Classes with YOY
8/4/2003	LIBE-333-R-2003	North Branch Patapsco River	MDDNR MBSS	-	-	-
9/4/1996	CR-P-227-305-96	North Branch Patapsco River	MDDNR MBSS	-	-	-
8/21/1996	CR-P-152-302-96	North Branch Patapsco River	MDDNR MBSS	-	-	-
7/11/1996	CR-P-409-320-96	North Branch Patapsco River	MDDNR MBSS	-	-	-
8/8/1995	CR-P-077-309-95	North Branch Patapsco River	MDDNR MBSS	brown trout	1	Adult
8/1/1995	CR-P-152-318-95	North Branch Patapsco River	MDDNR MBSS	-	-	-
3/18/2000	1048-02-2000	North Branch Patapsco River	MDDNR Stream Waders	-	-	-

\*YOY - young-of-year

## **DNR Fish Stocking**

In a personal communication, Mark Staley (Maryland DNR Inland Fisheries Service Central Region Manager) has stated that the Freshwater Fisheries program has not stocked the North Branch of the Patapsco River upstream of the Liberty Reservoir since at least 1988. Records of stocking before this time may be unavailable, but the reproducing trout populations in this segment are not the result of recent stocking.

## **Existing Use Determination and Rationale**

### North Branch Patapsco River Main stem

*Current Use Class:* Class IV-P

*Existing Use Determination:* The main stem of the North Branch Patapsco River, from the confluence with the unnamed tributary located near Armacost Avenue (39.506847° N, -76.888267° W) upstream to the confluence with the West Branch Patapsco River near Wesley Road (39.534581° N, -76.891829° W), supports naturalized self-sustaining brown trout (*Salmo trutta*) and has an average daily mean temperature below 22°C, a daily maximum of less than 28°C, stays below 24°C for at least 90% of the time and stays below 20°C for at least 27% of the time (Figure 2).

*Is this Existing Use Determination Consistent with the Current (March 2020) Designated Use Class?* **No.** The biological data demonstrate that the main stem of the North Branch Patapsco River supports a naturalized self-sustaining brown trout population. This existing use is different from the definition of a Use Class IV/IV-P water body which is described as “Capable of holding or supporting adult trout for put-and-take fishing; and (b) Managed as a special fishery by periodic stocking and seasonal catching.” Therefore, the existing use of this section of the North Branch Patapsco requires protections to maintain the naturalized self-sustaining brown trout population found here.

*Changes Proposed to the Current Designated Use Class:* Though it is clear that the designated use class of the North Branch Patapsco River should be revised to reflect and be protective of the existing use, a self-sustaining trout stream, current temperature data do not support the re-designation of the North Branch Patapsco River to Class III-P without conducting a use attainability analysis (UAA). Since Maryland is in the process of redefining Class IV (or IV-P) and potentially developing a new ‘cool water’ use class as part of the work of the Cold Water Advisory Committee, it is not prudent to redesignate the North Branch Patapsco at this time. Instead, and until Maryland conducts either a UAA or establishes new definitions for Class IV

and a cool water use class, MDE will formally recognize the North Branch Patapsco River as having an existing use that is different than its current designated use class.

*Rationale for the Existing Use Determination:* Recent monitoring efforts in the North Branch Patapsco River have found multiple year classes and young-of-year (YOY) brown trout (*Salmo trutta*). The furthest downstream evidence of reproducing brown trout populations is located at the LIBE-333-A-2013 station. Furthermore, two MBSS sampling events (CR-P-152-318-95 and CR-P-152-302-96) did not confirm brown trout presence and no temperature data were collected. Furthermore, MDE staff have observed possible poor stream habitat located at the Congoleum corporation property which is situated just north of the Emory Road Bridge. The existing use determination will therefore extend south beyond the LIBE-333-A-2013 sampling location to the confluence with the unnamed tributary near Armacost Avenue. Beyond this confluence the existing use will not change.

MDE will be coordinating with stakeholders to refine the current Designated Use Classification structure to include a ‘cool water’ use class. The main stem water temperature data may support a redesignation to this conceptualized ‘cool water’ use. However since this effort has not yet commenced, the State plans to protect this stream with the protections under Tier I Antidegradation Policy until those regulations are properly revised and/or developed.

#### Unnamed tributary to the North Branch Patapsco River near Wesley Road

*Current Use Class:* Class I-P

*Existing Use Determination:* The unnamed tributary to the North Branch Patapsco River, located near Wesley Road, supports a self-sustaining brown trout (*Salmo trutta*) population and has water temperatures that have a 90<sup>th</sup> percentile below 20°C, an average daily mean below 20°C, and daily max below 24°C.

*Is this Existing Use Determination Consistent with the Currently (March 2020) Designated Use Class?* **No.** The existing use of this tributary, as described above, requires that water temperatures remain significantly colder than the water quality criterion established to protect the current use class (Class I-P) designation. As a result, the existing use of this tributary to the North Branch Patapsco requires protections to maintain the coldwater water temperatures currently found in this tributary and different than those afforded by the current use class designation of I-P.

*Changes Proposed to the Current Designated Use Class:* The Department recommends the redesignation of this unnamed tributary to the North Branch Patapsco (near Wesley Road).

*Rationale for the Existing Use Determination:* This unnamed tributary demonstrated attainment of the Use Class III temperature criterion at the LIBE-104-X-2017 station. The LBRR0078

sampling event (2019) confirmed the presence of multiple year-classes of brown trout, although no young-of-year were observed at that time. However, an MDE sampling event (LIBE-305-T-2019) located on the North Branch Patapsco River main stem at the confluence with this unnamed tributary did confirm the presence of young-of-year (and also multiple year classes of adult) brown trout. No barriers are currently present that would prevent trout movement between these water segments. Therefore, due to the geographic proximity of the sample showing young-of-year and multiple year classes of adult brown trout (LIBE-305-T-2019) coupled with the multiple year classes found in the unnamed tributary (LBRR078) and temperature readings (LIBE-104-X-2017) which meet the Class III criterion, the Department has determined that this unnamed tributary has an existing use consistent with Use Class III-P.

Unnamed tributary to the North Branch Patapsco River near Armacost Avenue

*Current Use Class:* Class I-P

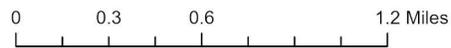
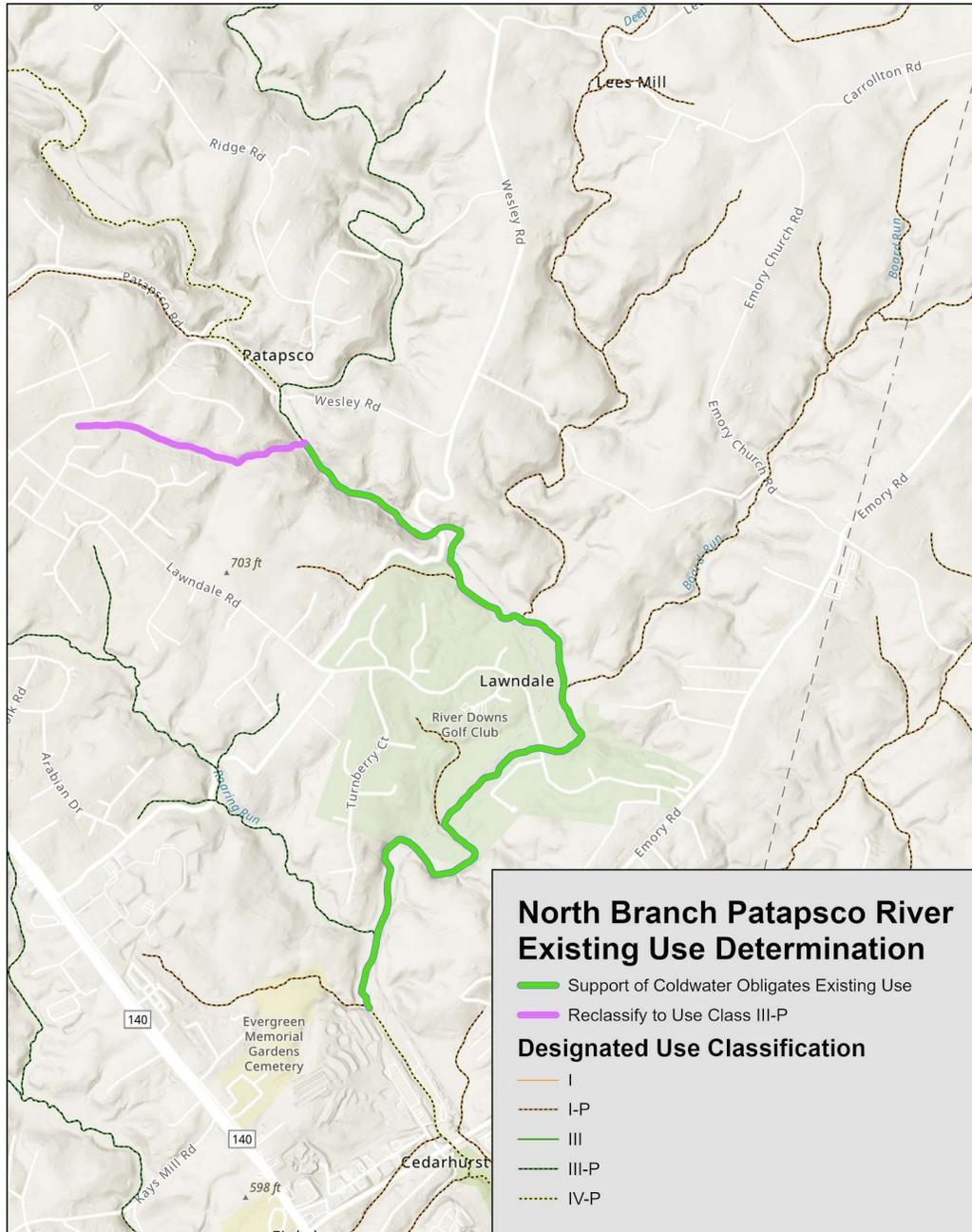
*Existing Use Determination:* The existing use of this unnamed tributary to the North Branch Patapsco River, located near Armacost Avenue is no different than its currently designated use class of I-P.

*Is this Existing Use Determination Consistent with the Currently (March 2020) Designated Use Class?* **Yes.** Since no cold water obligate species (e.g. trout, tallaperla, etc) were found within this water segment, the existing use of this tributary does not require that water temperatures remain significantly colder than the water quality criterion established to protect the current use class (Class I-P) designation. As a result, the existing use of the unnamed tributary to the North Branch Patapsco River (located near Armacost Avenue) does not require a different level of protection than that afforded by the current use class designation of I-P.

*Changes Proposed to the Current Designated Use Class:* No changes are currently proposed to the designated use of this stream segment. Although this tributary is attaining the Class III temperature criterion, reproducing trout populations or cold water obligates have not been confirmed in this tributary. If it can be demonstrated that the trout population of the main stem extends into this tributary, a use class change may be justified in the future.

*Rationale for the Existing Use Determination:* The water temperature of this unnamed tributary meets the Use Class III-P temperature criterion. However, because brown trout or other cold water obligate species have not yet been confirmed within this tributary, MDE does not recognize this tributary as having an existing use associated with self-sustaining trout populations or otherwise different from Use Class I-P.

Figure 2. North Branch Patapsco Existing Use Determinations



**Public Review Process:** These existing use determinations were provided for public review and comment with Maryland’s 2019 Triennial Review of Water Quality Standards which went public with the March 11, 2022 edition of the Maryland Register.