Draft Existing Use Determination and Rationale:

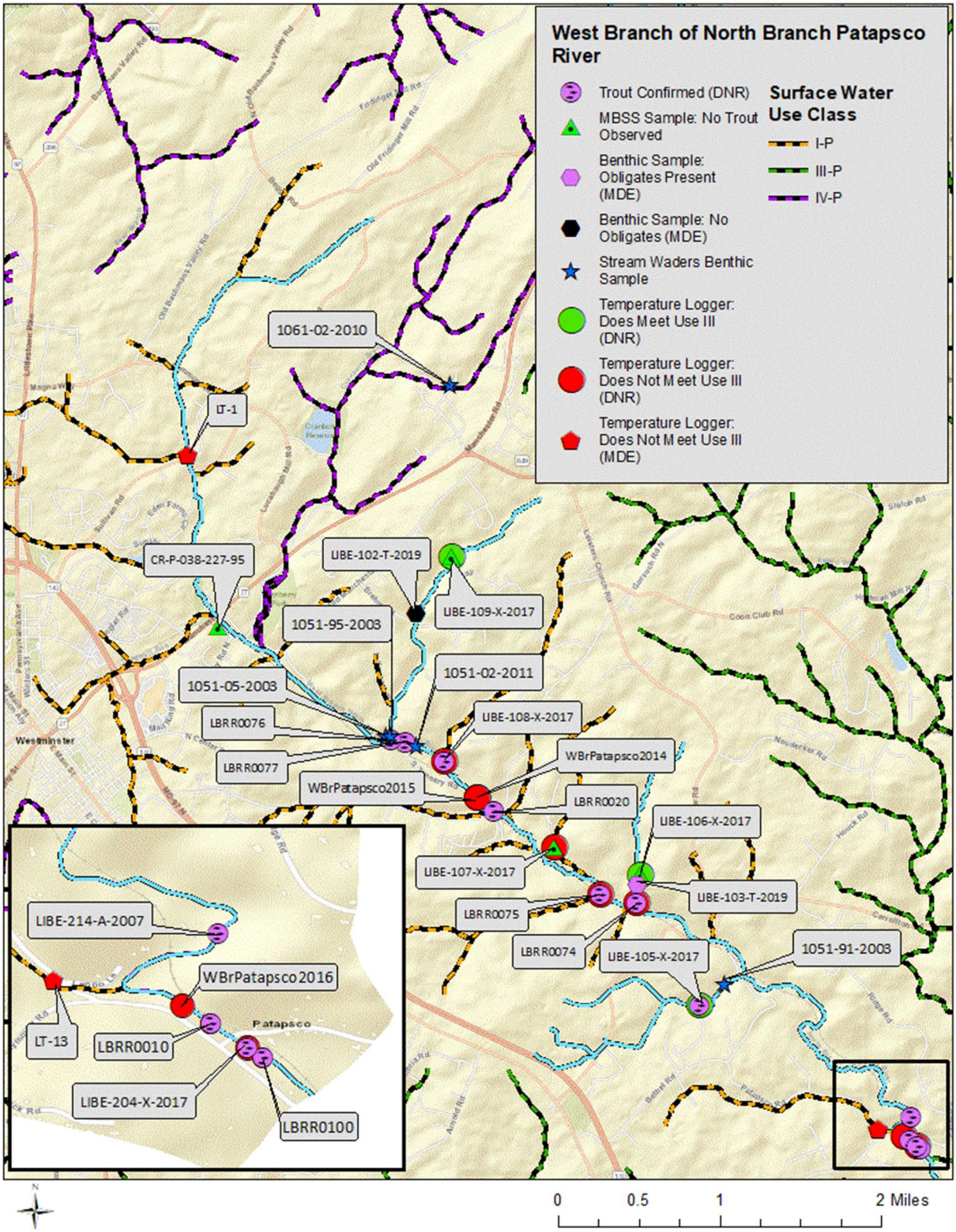
West Branch North Branch Patapsco River and Three Unnamed Tributaries (Carroll County)

May 1, 2020

Description of Setting and Data Sources

The West Branch North Branch Patapsco main stem (12-digit 021309071051 and 021309071062) upstream of the confluence with the North Branch Patapsco River is located north and east of Westminster and is approximately 9 miles in length. It is currently designated as a Class IV-P water, while many of its tributaries are Class I-P. The MDDNR Fisheries and MBSS Programs, MDE Field Service Program, and Stream Waders volunteers conducted surveys of this waterbody segment. The figure below shows the location of the West Branch North Branch Patapsco River along with relevant sampling stations. The data from these sampling stations (Tables 1 and 2), including water temperature, trout species and benthic cold water obligate information, are summarized below. For the purposes of determining the existing uses at an appropriate level of specificity, this document examines the available data for West Branch North Branch Patapsco main stem and three unnamed tributaries to the main stem both separately and in aggregate.

Figure 1. West Branch North Branch Patapsco River



Temperature Data for the West Branch North Branch Patapsco River

Main stem

Water temperature data were collected during 6 separate sampling events from 2014 to 2019. None of these 6 met the Class III criterion.

Unnamed tributary to the West Branch North Branch Patapsco River near Tannery Road

Temperature data collected during the LIBE-109-X-2017 sampling event demonstrated the attainment of Class III criterion (20° C).

Unnamed tributary to the West Branch North Branch Patapsco River near Dutrow Road

Temperature data collected during the LIBE-106-X-2017 sampling event demonstrated the attainment of the Class III criterion (20° C). However, the LBRR0074 sampling event did not attain the Class III criterion.

Unnamed tributary to the West Branch North Branch Patapsco River near Reese Road

Temperature data collected during the LIBE-105-X-2017 sampling event demonstrated the attainment of Class III criterion (20° C).

Table 1. Water Temperature Logger Data from the West Branch North Branch (WBNB) Patapsco River and Three Unnamed Tributaries (UT)

Date	Station ID	Stream	Data Submitter	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2019	LT-1	WBNB. Patapsco River	MDE Field Services	8735	37.5%	0.4%	19.3	25.0
2019	LBRR0075	UT near Hemlock Ln	Trout Unlimited	6624	27.4%	0.0%	18.7	23.4
2019	LBRR0074	UT near Dutrow Road	Trout Unlimited					
2016	WBrPatapsco2016	WBNB Patapsco River	MDDNR Fisheries Program	6624	78%	13%	21.62	27.20

Date	Station ID	Stream	Data Submitter	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2015	WBrPatapsco2015	WBNB Patapsco River	MDDNR Fisheries Program	1930	62%	2%	20.53	24.94
2014	WBrPatapsco2014	WBNB Patapsco River	MDDNR Fisheries Program	5355	35%	0%	19.34	23.11
2017	LIBE-105-X-2017	UT near Reese Road	MDDNR MBSS	6624	8%	0%	17.88	21.77
2017	LIBE-106-X-2017	UT near Dutrow Road	MDDNR MBSS	6624	5%	0%	17.47	21.78
2017	LIBE-107-X-2017	UT south of Phyllis's Reward Drive	MDDNR MBSS	6624	20%	0%	18.41	22.71
2017	LIBE-108-X-2017	UT west of Carriage Hill Drive	MDDNR MBSS	6624	25%	0%	18.63	22.99
2017	LIBE-109-X-2017	UT near near Tannery Road	MDDNR MBSS	6624	0%	0%	17.10	19.98
2017	LIBE-204-X-2017	WBNB Patapsco River	MDDNR MBSS	6624	71%	7%	21.00	26.01
2007	LIBE-214-A-2007	WBNB Patapsco River	MDDNR MBSS	-	-	-	-	-

Date	Station ID	Stream	Data Submitter	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
1995	CR-P-038-227-95	WBNB 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) – CR-P-038-227-95.

Biological Data for the West Branch North Branch Patapsco River

Main Stem

A total of 9 sampling events demonstrated the presence of brown trout. No trout have been sampled north of the unnamed tributary near Tannery Road. The northernmost sampling event showing multiple year classes of brown trout occurred at the LBRR0077 sampling station. The northernmost sampling event showing young-of-year brown trout occurred at the LBRR0020 sampling station. A total of three streamwader sampling events were reexamined by MDE and demonstrated the presence of cold water obligates. Since streamwader samples do not meet Level 3 data quality standards, this area will be prioritized for future sampling.

Though not shown in the table below, DNR MBSS staff noted the capture of 3 brown trout (length measurements not provided) downstream of the station LIBE-204-X-2017. Since these fish were sampled outside of the 75-meter sampling reach, they were not counted or measured as part of the record for LIBE-204-X-2017.

Unnamed tributary to the West Branch North Branch Patapsco River near Tannery Road

The LIBE-109-X-2017 MBSS sampling event did not demonstrate the presence of trout or cold water obligates. The LIBE-102-T-2019 MDE field services sampling event found one possible *sweltsa*, but it could not be confirmed. Specifically, MDE Field Services have stated:

· *Mature Sweltsa have clothing hairs on their mesosternum. They can grow to be 12 mm, and the largest of the immature Chloroperlidae found was 7 mm. These immature Chloroperlidae had "pimples", also referred to as "stubble" in keys, indicating mesosternal clothing hairs were starting to develop. Based on Jane Earle's (PA-DEP) and Ellen Freidman's (MD-DNR) past findings these immature Chloroperlidae are likely Sweltsa. Stonefly experts recommend caution in attempting to identify immature specimens. Keys are written for mature specimens.*

The LBRR0076 sampling event was located near the confluence with the West Branch North Branch Patapsco River and showed the presence of multiple year classes of brown trout, but no young-of-year.

Unnamed tributary to the West Branch North Branch Patapsco River near Dutrow Road

The LIBE-106-X-2017 MBSS sampling event did not demonstrate the presence of any cold water obligates. However, a sampling event located at the LBRR0074 station did demonstrate the presence of young-of-year brown trout. Also, the LIBE-103-T-2019 sampling event confirmed the presence of the cold water macroinvertebrate *Sweltsa*.

Unnamed tributary to the West Branch North Branch Patapsco River near Reese Road

The LIBE-105-X-2017 sampling event demonstrated the presence of multiple year classes of brown trout. One streamwader sampling event was reexamined by MDE and reported finding the cold water benthic macroinvertebrate *Sweltsa*.

Table 2. West Branch Patapsco River Biological Data

Date	Station ID	Stream	Datat SubmitterR	Species	Count	Maturity
2019	LIBE-102-T-2019	UT near Tannery Road	MDE Field Services			
2019	LIBE-103-T-2019	UT near Dutrow Road	MDE Field Services	*Sweltsa*	1	
2019	LBRR0077	WBNB Patapsco River	MDDNR Fisheries Program	brown trout	14	Multiple Year Classes
2019	LBRR0076	UT near Tannery Road	MDDNR Fisheries Program	brown trout	10	Multiple Year Classes
2019	LBRR0075	UT near Hemlock ln	MDDNR Fisheries Program	brown trout	3	YOY
2019	LBRR0074	UT near Dutrow Road	MDDNR Fisheries Program	brown trout	5	YOY
7/26/2017	LBRR0100	WBNB Patapsco River	MDDNR Fisheries Program	brown trout	1	YOY
6/15/2016	LBRR0010	WBNB Patapsco River	MDDNR Fisheries Program	brown trout	19	Multiple Year Classes with YOY

Date	Station ID	Stream	Datat SubmitterR	Species	Count	Maturity
9/15/2014	LBRR0020	WBNB Patapsco River	MDDNR Fisheries Program	brown trout	15	Multiple Year Classes with YOY
7/19/2017	LIBE-105-X-2017	UT near Reese Road	MDDNR MBSS	brown trout	12	Multiple Year Classes of Adults
7/19/2017	LIBE-106-X-2017	UT near Dutrow Road	MDDNR MBSS	-	-	-
7/5/2017	LIBE-107-X-2017	UT south of Phyllis's Reward Drive	MDDNR MBSS	-	-	-
7/5/2017	LIBE-108-X-2017	UT west of Carriage Hill Drive	MDDNR MBSS	brown trout	1	Adult
7/5/2017	LIBE-109-X-2017	UT near Tannery Road	MDDNR MBSS	-	-	-
7/26/2017	LIBE-204-X-2017	WBNB Patapsco River	MDDNR MBSS	brown trout	1	YOY
8/3/2007	LIBE-214-A-2007	WBNB Patapsco River	MDDNR MBSS	brown trout	14	Multiple Year Classes with YOY
7/18/1995	CR-P-038-227-95	WBNB Patapsco River	MDDNR MBSS	-	-	-
3/26/2011	1051-02-2011	WBNB Patapsco River	MDDNR Stream Waders	*Tallaperla*	1	-
4/3/2010	1061-02-2010	UT to Cranberry Branch	MDDNR Stream Waders	*Tallaperla*	1	-
4/29/2003	1051-91-2003	UT near Reese Road	MDDNR Stream Waders	*Sweltsa*	1	-
4/29/2003	1051-95-2003	UT near Tannery Road	MDDNR Stream Waders	*Sweltsa*	2	-

Date	Station ID	Stream	Datat SubmitterR	Species	Count	Maturity
4/13/2003	1051-05-2003	UT near Tannery Road	MDDNR Stream Waders	*Sweltsa*	2	-

*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

<u>West Branch North Branch Patapsco River Main Stem</u>

Current Use Class: Class IV-P

Existing Use Determination: The main stem of the West Branch North Branch Patapsco River from its confluence with the North Branch Patapsco River (39.537265° N, -76.893326° W), to the confluence with the unnamed tributary near Tannery Road (39.574643° N, -76.955119° W), supports naturalized self-sustaining brown trout (*Salmo trutta*) and has an average daily mean temperature below 21.62°C, a daily maximum of less than 27.2°C, and stays below 24°C for at least 87% of the time and below 20°C at least 22% of the time.

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 West Branch 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 West Branch North Branch Patapsco requires protections to maintain the naturalized self-sustaining brown trout population found here.

Changes Proposed to the Currently Designated Use Class: Though it is clear that the designated use class of the West Branch 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 West Branch 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 West Branch 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 West Branch 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 West Branch North Branch Patapsco River have found multiple year classes and young-of-year (YOY) brown trout (*Salmo trutta*). The furthest downstream evidence of naturalized self-sustaining brown trout occurred at the LBRR0100 station. This is located in relative proximity to the confluence with the North Branch Patapsco River. The farthest upstream evidence of naturalized self-sustaining brown trout occurred at the LBRR0077 sampling location. Although there is some variation, temperature logger data in the main stem does not differ greatly between upstream areas and downstream areas. This suggests that temperature does not limit trout movement in the main stem. Furthermore, there are no barriers to fish movement between trout observations, suggesting that the observed naturalized self-sustaining trout populations are linked.

Data retrieved from the LT-1 station suggest that temperature may not prevent cold water obligates from utilizing the West Branch North Branch Patapsco River upstream of the confluence with the unnamed tributary near Tannery Road. However, there is no recent evidence demonstrating that trout are indeed present upstream of this confluence. The existing use will therefore extend upstream to this confluence, but not beyond it.

Since none of the water temperature data collected in this section of the West Branch North Branch Patapsco River meet the Class III temperature criterion, the State cannot justify redesignating any portion of this section of the West Branch North Branch Patapsco River to Class III without further improvements in water temperature or conducting a UAA. 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.

<u>Unnamed tributary to the West Branch North Branch Patapsco River near Tannery Road</u>

Current Use Class: Class I-P

Existing Use Determination: The unnamed tributary to the West Branch North Branch Patapsco River near Tannery Road (39.574623 °N, -76.955109°W) supports a naturalized self-sustaining brown trout (*Salmo trutta*) population and has water temperatures that have a 90th 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 West Branch 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 that the unnamed tributary to the West Branch North Branch Patapsco (near Tannery Road) be redesignated to Class III-P.

Rationale for the Existing Use Determination: This unnamed tributary demonstrated attainment of the Use Class III temperature criterion at the LIBE-109-X-2017 station. The LBRR0076 yielded 10 adult brown trout of multiple year classes. Although no young-of-year brown trout have been confirmed in this tributary, there are no barriers between this tributary and the young-of-year found at station LBRR0020. The habitat utilized by the naturalized self-sustaining brown trout population extends into this tributary.

<u>Unnamed tributary to the West Branch North Branch Patapsco River near Dutrow Road</u>

Current Use Class: Class I-P

Existing Use Determination: The unnamed tributary to the West Branch North Branch Patapsco River near Dutrow Road (39.559758 °N, -76.927383°W) has water temperatures that have a 90th percentile below 20°C, an average daily mean below 20°C, and daily max below 24°C. This segment also supports a naturalized reproducing trout population and the cold water obligate benthic macroinvertebrate *Sweltsa*.

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 West Branch 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 that the unnamed tributary to the West Branch North Branch Patapsco (near Dutrow Road) be redesignated to Class III-P.

Rationale for the Existing Use Determination: This unnamed tributary demonstrated attainment of the Use Class III temperature criterion at the LIBE-106-X-2017 station. The LBRR0074 sampling event yielded 4 young-of-year brown trout, confirming that this tributary provides habitat for a naturalized self-sustaining brown trout population. Finally, one *Sweltsa* was identified at the LIBE-103-T-2019 station.

<u>Unnamed tributary to the West Branch North Branch Patapsco River near Reese Road</u>

Current Use Class: Class I-P

Existing Use Determination: The unnamed tributary to the West Branch North Branch Patapsco River near Reese Road (39.553998 °N, -76.915000 °W) has water temperatures that have a 90th percentile below 20°C, an average daily mean below 20°C, and daily max below 24°C. This segment also supports a naturalized reproducing trout population.

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 West Branch North Branch Patapsco requires protections to maintain the cold 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 that the unnamed tributary to the West Branch North Branch Patapsco near Reese Road be redesignated to Class III-P.

Rationale for the Existing Use Determination: Data collected at the LIBE-105-X-2017 station showed that this unnamed tributary attains the Use Class III temperature criteria and confirmed the presence of multiple year classes of adult brown trout. Although the presence of young-of-year have not been confirmed in this tributary, they have been observed in the West Branch North Branch Patapsco River both upstream and downstream of the confluence. No barriers are currently present that would prevent trout movement into this tributary from the main stem. Therefore, due to the numerous young-of-year observations in the West Branch North Branch Patapsco River coupled with the multiple year classes confirmed in this unnamed tributary and temperature data (LIBE-105-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.

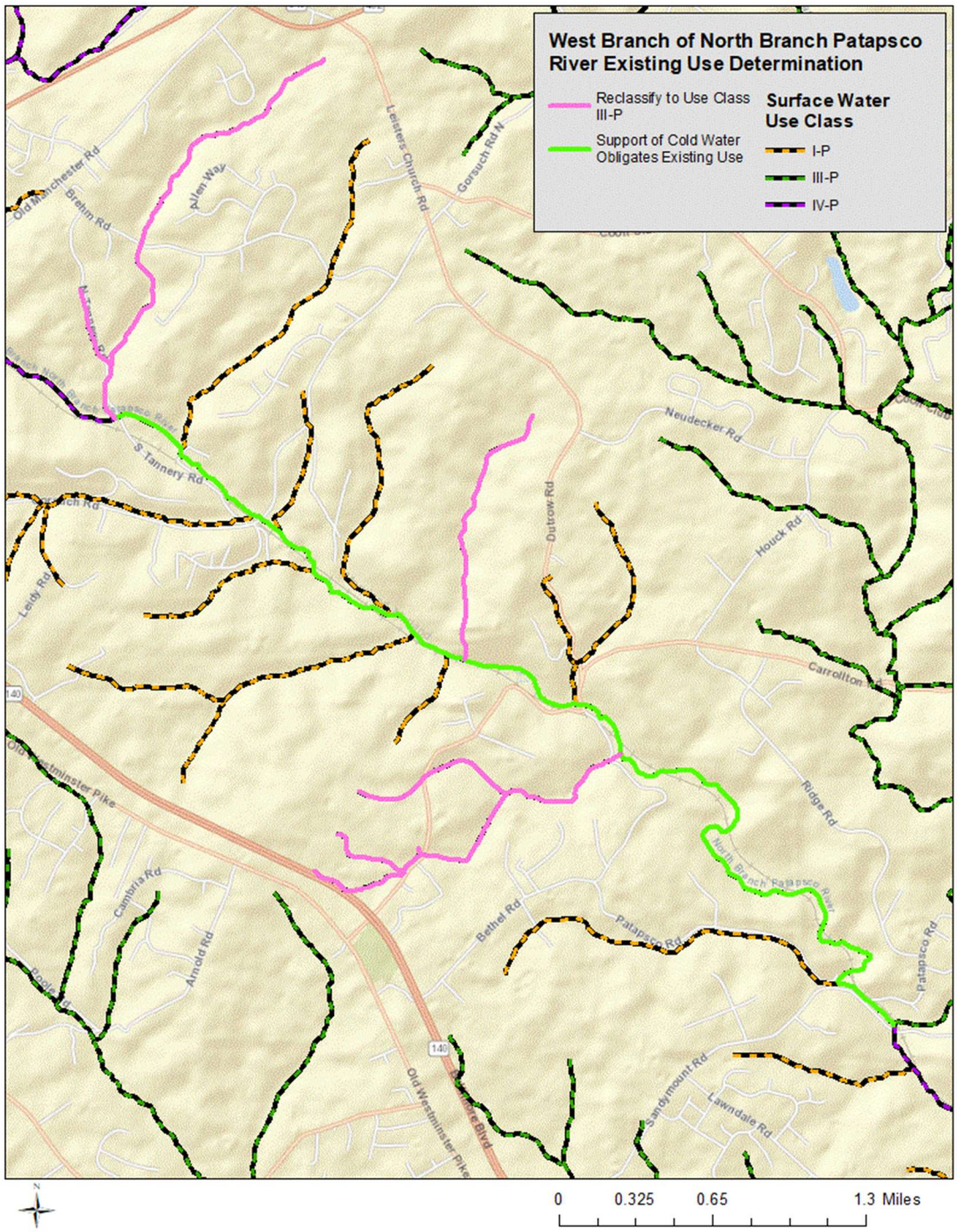



Figure 2: Final Existing Use Determination for the West Branch South Branch Patapsco River