Existing Use Determination and Rationale: Unnamed Tributary to Octoraro Creek (Cecil County)

September 3, 2020

An unnamed tributary (12-digit 021202030346) in the Octoraro Creek watershed, located south of Rock Springs, MD in Cecil County, is currently designated as a Use Class I water. The waterbody segment currently supports naturally reproducing populations of brown trout and cold water obligate benthic invertebrates. The MDDNR Fisheries Program, MBSS biologists, and Stream Waders volunteers conducted surveys of the waterbody segment in 2004, 2006, 2009, 2015, and 2018. Temperature and biological data show that the eastern and western branches of this unnamed tributary have distinct existing uses and as a result, they are considered separately within this document. Figures 1 and 2 below show the location and sampling stations of the waterbody segments being evaluated. Tables 1 through 4 present temperature logger and biological data results.

Figure 1: Unnamed Tributary to Octoraro Creek (eastern branch)

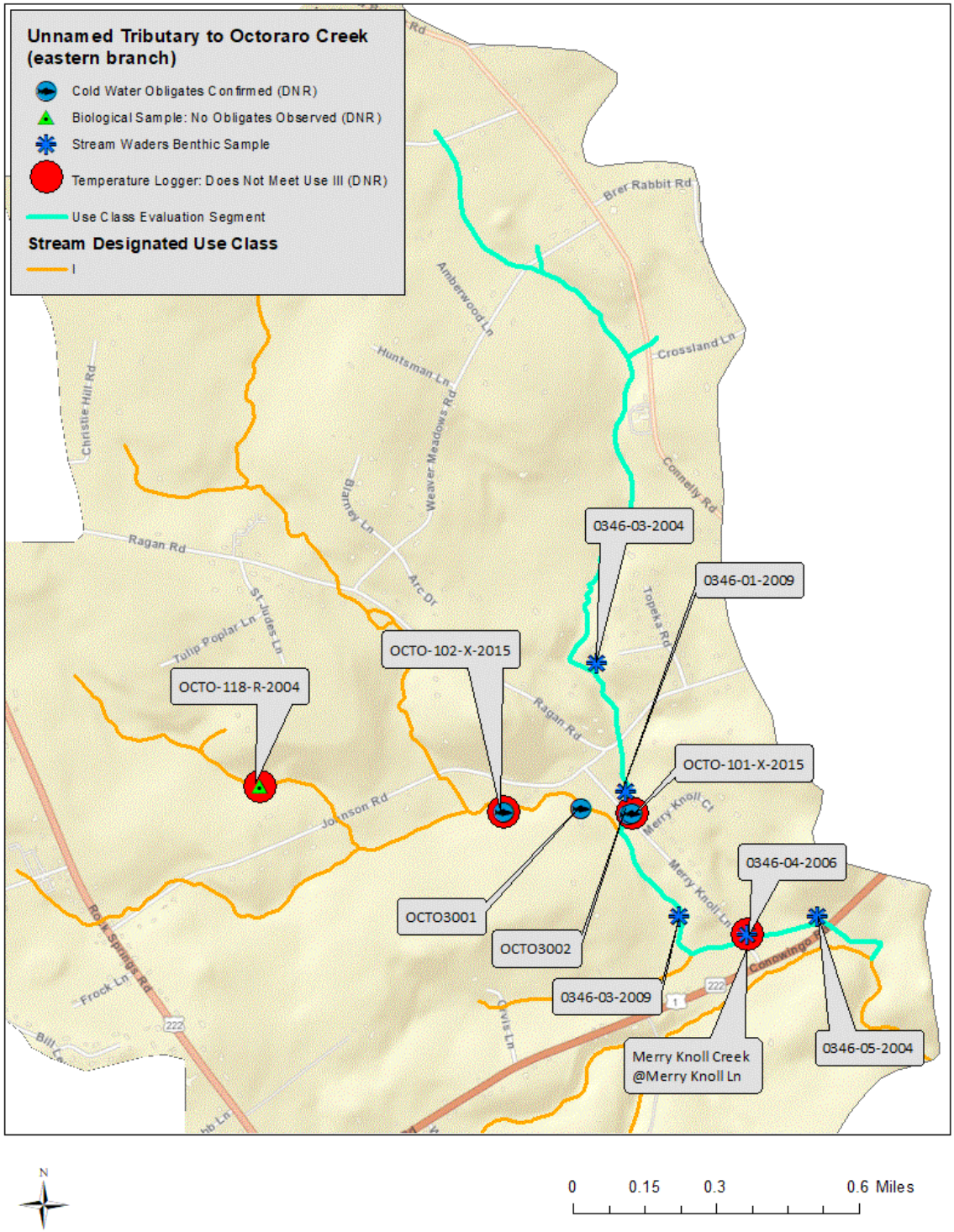
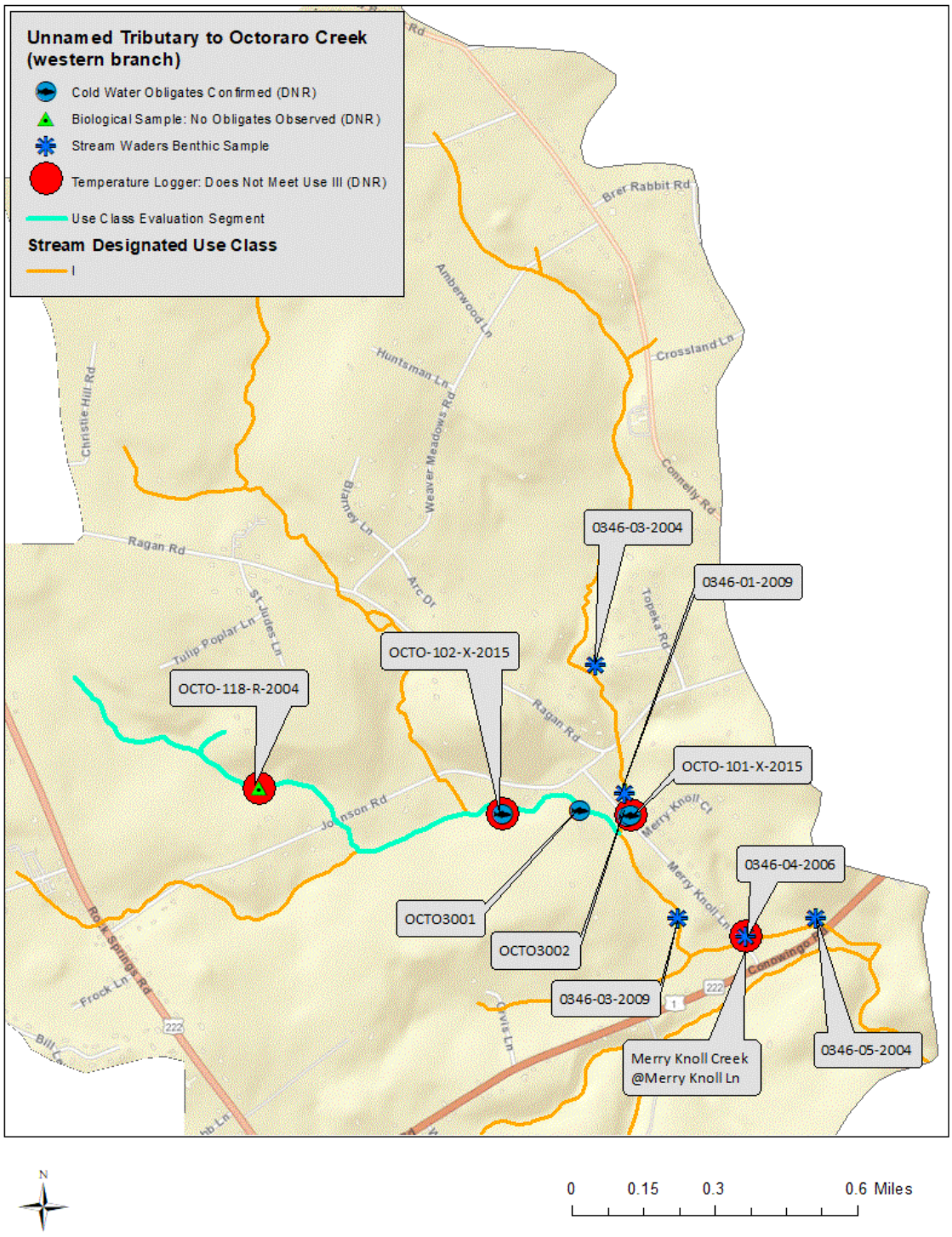


Figure 2: Unnamed Tributary to Octoraro Creek (western branch)



Unnamed Tributary to Octoraro Creek Existing Use Determination (eastern branch)

Biological and temperature data are available for this section of the unnamed tributary. A reproducing brown trout population and cold water obligates have been observed in this tributary, and water temperature data show that the Use Class III temperature criteria are not being attained.

Temperature Data Summary for Unnamed Tributary to Octoraro Creek (eastern branch)

Water temperature data were collected at 2 sampling events in 2004 and 2015 by MDDNR Fisheries Program and MBSS respectively. Water temperature results at these stations do not meet the Class III criteria.

Table 1: Octoraro Creek Temperature Logger Data (eastern branch)

Date	Station ID	Stream	Data Submitter	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2004	Merry Knoll Creek @Merry Knoll Ln	UT to Octoraro Creek	MDDNR Fisheries Program	2202	22%	0%	18.6	22.7
2015	OCTO-101-X-2015	UT to Octoraro Creek	MDDNR MBSS	6624	29%	0%	19.1	23.2

*Water temperature logger data assessed from June to August. The "Daily Max" represents the maximum temperature from June to August.

Biological Data Summary for Unnamed Tributary to Octoraro Creek (eastern branch)

Brown trout were found at 2 biological sampling stations (Level 3 data)[1] in 2015, and 2018. The MDDNR MBSS program identified the coldwater obligate benthic macroinvertebrate species *Sweltsa* as present in 1 (station ID OCTO-101-X-2015) preserved sample from 2015. The number of individual *Sweltsa* was not recorded. The MDDNR Fisheries Program did not attempt to collect coldwater obligate benthic macroinvertebrate species.

[1] Level 3 data can be used to identify existing uses, justify a changing designated use classification, or making other regulatory decisions. Level 3 data must be accompanied by a Quality Assurance Project Plan (QAPP) consistent with USEPA guidelines, Documentation of protocol or SOP, and be consistent with Maryland's assessment methodologies.

There were 4 MDDNR Stream Waders sampling events (Level 2 data)[2] that occurred in 2004, 2006, and 2009. These sampling events did not yield any coldwater obligate benthic macroinvertebrate species.

Table 2: Octoraro Creek Biological Data (eastern branch)

Date	Station ID	Stream	Data Submitter	Species	Count	Maturity
8/16/2018	OCTO3002	UT to Octoraro Creek	MDDNR Fisheries Program	brown trout	1	Adult
7/29/2015	OCTO-101-X-2015	UT to Octoraro Creek	MDDNR MBSS Supplemental	Sweltsa	Present	-
			MDDNR MBSS	brown trout	6	Multiple Age Classes with YOY
4/9/2009	0346-01-2009	UT to Octoraro Creek	MDDNR Stream Waders	-	-	-
4/3/2006	0346-04-2006	UT to Octoraro Creek	MDDNR Stream Waders	-	-	-
4/24/2004	0346-05-2004	UT to Octoraro Creek	MDDNR Stream Waders	-	-	-
4/24/2004	0346-03-2004	UT to Octoraro Creek	MDDNR Stream Waders	-	-	-

* YOY - young-of-year 1. MDDNR MBSS Supplemental data provides presence/absence results, it does not provide species quantities.

DNR Fish Stocking

The Maryland Department of Natural Resources regional manager for Cecil County stated that Octoraro Creek and all tributaries have not been stocked with brown trout in over 10 years. The observed brown trout are not the result of recent stocking.

[2] Level 2 Data cannot be used to identify existing uses, justify changing designated use classification, or making other regulatory decisions. It can be used to prioritize future monitoring.

Existing Use Determination and Rationale for unnamed tributary to Octoraro Creek (eastern branch)

Current Use Class: Class I

Existing Use Determination: The eastern branch of the unnamed tributary to Octoraro Creek, from the confluence with an unnamed tributary located at [39.689023ºN, -76.146365ºW], to the confluence with small stream near Crossland Lane located at [39.703473ºN, -76.145909ºW] supports cold water obligates and has an average daily mean temperature below 20°C, a daily maximum of less than 24°C, stays below 20°C for at least 71% of the time and stays below 24°C for at least 90% of the time.

Is this Existing Use Determination Consistent with the Current (March 2020) Designated Use Class? **No.** The existing use of the eastern branch of the unnamed tributary to Octoraro Creek, as described above, requires that water temperatures remain significantly colder than the water quality criterion established to protect the current use class (Class I) designation. As a result, the existing use of the eastern branch of the unnamed tributary to Octoraro Creek requires protections to maintain the cold water temperatures currently found in this tributary and different from those afforded by the current use class designation of I.

Changes Proposed to the Currently Designated Use Class: Though it is clear that the designated use class of the eastern branch of the unnamed tributary to Octoraro Creek should be revised to reflect and be protective of the existing use, support of cold water obligates, current temperature data do not support the re-designation of this section of the unnamed tributary to Class III 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 eastern branch of the unnamed tributary to Octoraro Creek 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 this section of the eastern branch of the unnamed tributary to Octoraro Creek as having an existing use that is different than its current designated use class (Figure 3).

Rationale for the Existing Use Determination: The biological data obtained from the OCTO-101-X-2015 station not only confirm the presence of self-sustaining brown trout, but also the presence of cold water obligate benthic macroinvertebrates. This existing use extends downstream to a confluence near Merry Knoll Ct located at [39.689023ºN, -76.146365ºW]. No cold water obligates have been observed downstream of this confluence. The existing use extends upstream to a confluence with a small stream near Crossland Lane located at [39.703473ºN, -76.145909ºW]. This tributary is associated with a drainage pond that may prevent trout from traveling upstream of this confluence. Therefore, the existing use will extend upstream to this confluence but not beyond it. Figure 3 shows the locations of the final existing use changes.

Unnamed Tributary to Octoraro Creek Existing Use Determination (western branch)

Biological and temperature data are available for this section of the unnamed tributary to Octoraro Creek. This western section of the tributary supports a self-sustaining brown trout population but does not attain Use Class III criteria.

Temperature Data Summary for Unnamed Tributary to Octoraro Creek (western branch)

Two temperature loggers were deployed in this unnamed tributary in 2015. Neither logger showed attainment of Use Class III criteria, however the most upstream logger achieved significantly lower temperatures.

Table 3: Octoraro Creek Temperature Logger Data (western branch)

Date	Station ID	Stream	Data Submitter	# Temp Readings	Percent>20°C	Percent>24°C	Avg Daily Mean	Daily Max
2015	OCTO-102-X-2015	UT to Octoraro Creek	MDDNR MBSS	6624	49%	2%	19.8	24.3
2015	OCTO-118-R-2004	UT to Octoraro Creek	MDDNR MBSS	6695	14%	0%	18.1	22.5

*Water temperature logger data assessed from June to August. The "Daily Max" represents the maximum temperature from June to August.

Biological Data Summary for Unnamed Tributary to Octoraro Creek (western branch)

Brown trout were found at 2 biological sampling events (Level 3 data) in 2015, and 2018. Recently, the MDDNR MBSS identified the coldwater obligate benthic macroinvertebrate species *Sweltsa* as present in one (station ID OCTO-102-X-2015) preserved sample from 2015. The MDDNR Fisheries Program did not attempt to collect coldwater obligate benthic macroinvertebrate species.

Table 4: Octoraro Creek Biological Logger Data (western branch)

Date	Station ID	Stream	Data Submitter	Species	Count	Maturity
8/16/2018	OCTO3001	UT to Octoraro Creek	MDDNR Fisheries Program	brown trout	3	Multiple Age Classes with YOY

Date	Station ID	Stream	Data Submitter	Species	Count	Maturity
7/29/2015	OCTO-102-X-2015	UT to Octoraro Creek	MDDNR MBSS Supplemental	*Sweltsa*	Present	-
			MDDNR MBSS	brown trout	3	YOY
7/22/2004	OCTO-118-R-2004	UT to Octoraro Creek	MDDNR MBSS	-	-	-

* YOY - young-of-year 1. MDDNR MBSS Supplemental data provides presence/absence results, it does not provide species quantities.

DNR Fish Stocking

The Maryland Department of Natural Resources has confirmed that this tributary to Octoraro Creek has not been stocked in over 15 years.

Existing Use Determination and Rationale for unnamed tributary to Octoraro Creek (western branch)

Current Use Class: Class I

Existing Use Determination: The western branch of the unnamed tributary to Octoraro Creek, from the confluence with an unnamed tributary located at [39.689023ºN, -76.146365ºW], to the confluence with a stream located at [39.689690ºN, -76.152371ºW] supports cold water obligates and has an average daily mean temperature below 20°C, a daily maximum of less than 24.5°C, stays below 20°C for at least 51% of the time and stays below 24°C for at least 90% of the time.

Is this Existing Use Determination Consistent with the Current (March 2020) Designated Use Class? **No.** The existing use of the western branch of the unnamed tributary to Octoraro Creek, as described above, requires that water temperatures remain significantly colder than the water quality criterion established to protect the current use class (Class I) designation. As a result, the existing use of the western branch of the unnamed tributary to Octoraro Creek requires protections to maintain the cold water temperatures currently found in this tributary and different from those afforded by the current use class designation of I.

Changes Proposed to the Currently Designated Use Class: Though it is clear that the designated use class of the western branch of the unnamed tributary to Octoraro Creek should be revised to reflect and be protective of the existing use, support of cold water obligates, current temperature data do not support the re-designation of this section of the unnamed tributary to Class III 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 western branch of the unnamed tributary to Octoraro Creek 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 this section of the western branch of the unnamed tributary to Octoraro Creek as having an existing use that is different than its current designated use class (Figure 4).

Rationale for the Existing Use Determination: The biological data obtained from the OCTO-102-X-2015 and OCTO3001 stations not only confirm the presence of self-sustaining brown trout, but also the presence of cold water obligate benthic macroinvertebrates. This existing use extends downstream to a confluence near Merry Knoll Ct located at [39.689023ºN, -76.146365ºW]. No cold water obligates have been observed downstream of this confluence. The existing use extends upstream to a confluence located at [39.689690ºN, -76.152371ºW]. Temperature logger data suggests that water temperatures are significantly colder in the upstream reaches of this stream segment. However, no cold water obligates have been observed upstream of this confluence. Figure 4 shows the locations of the final existing use changes.

Figure 3: Final Existing Use Determination for eastern branch of the unnamed tributary to Octoraro Creek

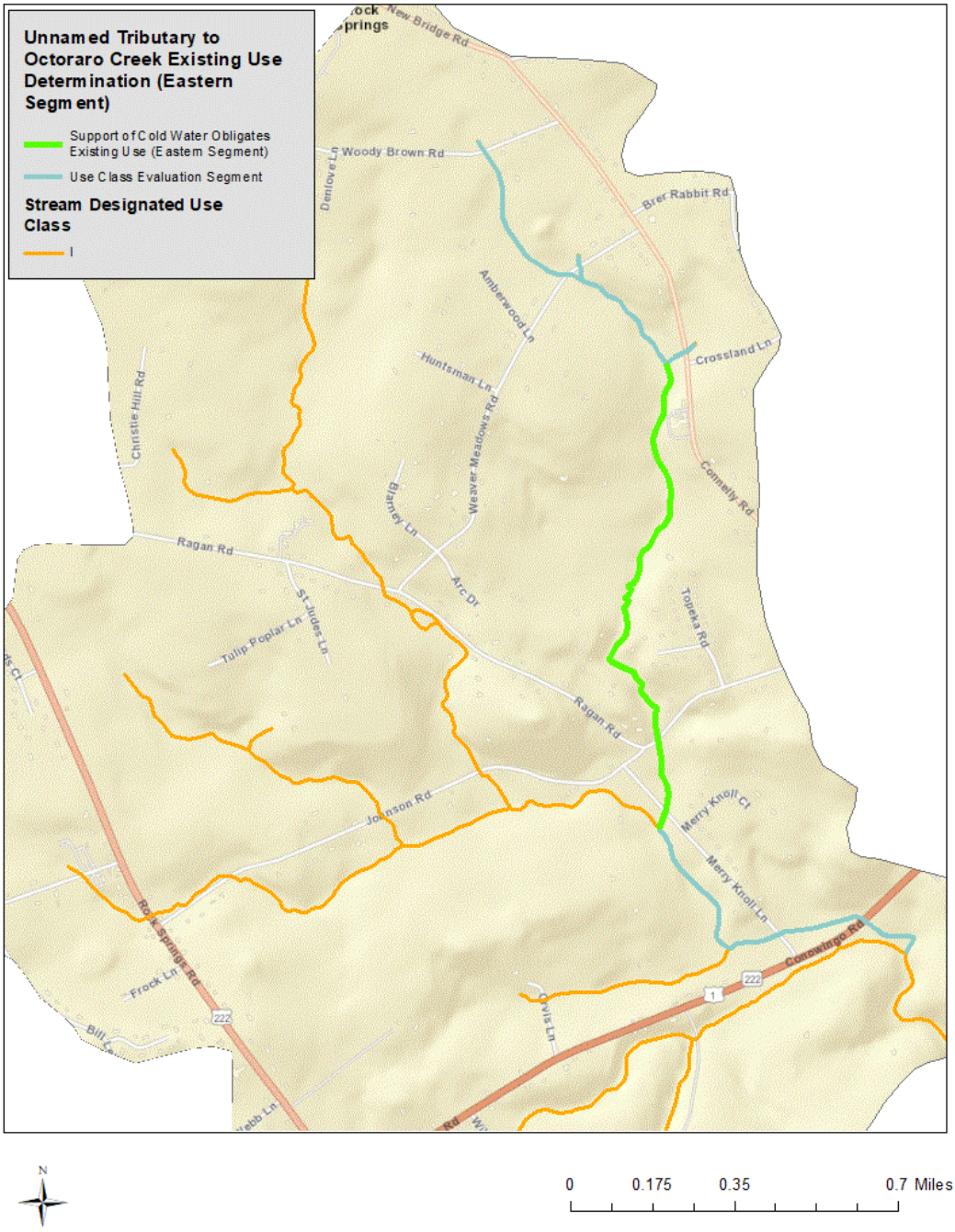
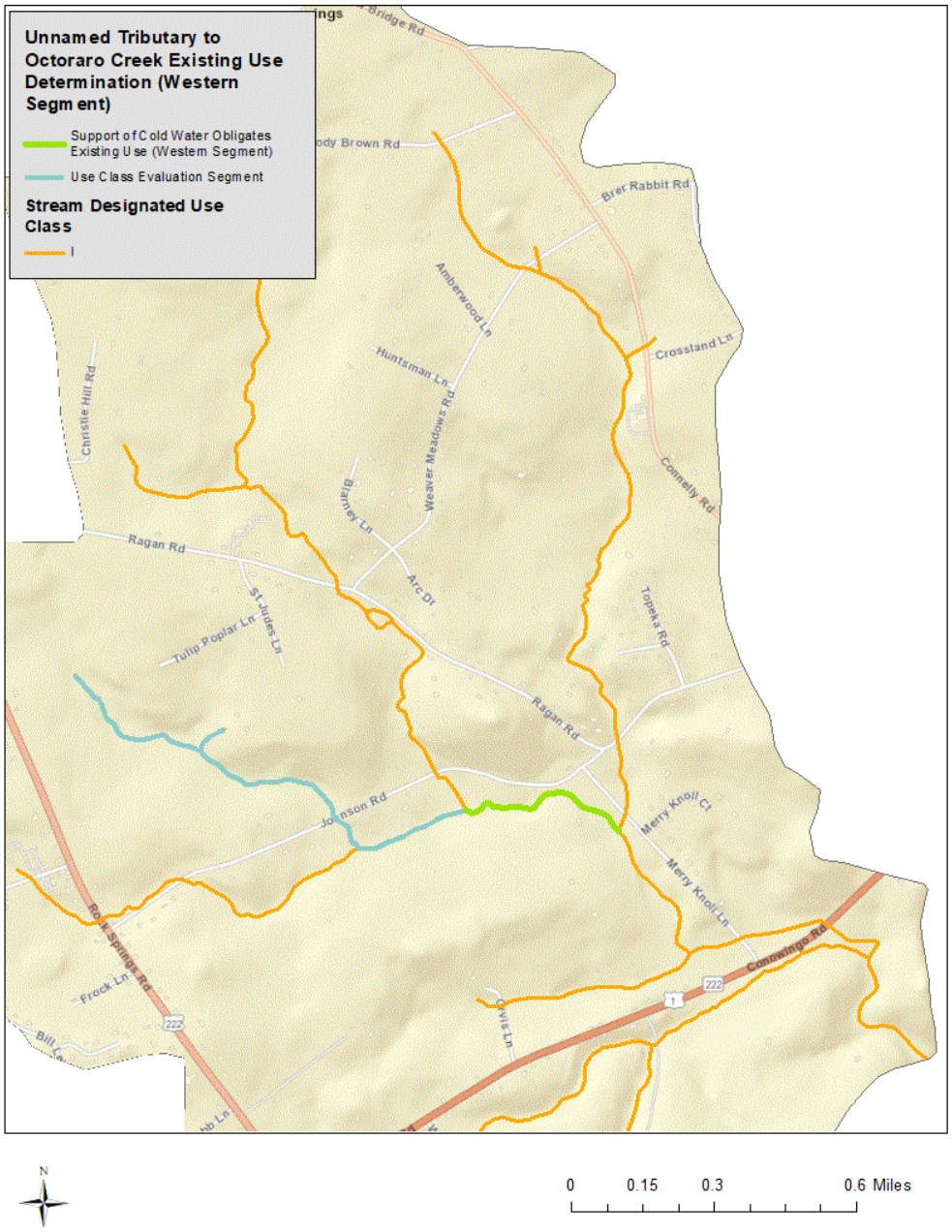


Figure 4: Final Existing Use Determination for western branch of the unnamed tributary to Octoraro Creek



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.