

Noxon Rapids Reservoir and Cabinet Gorge Reservoir Herbicide Treatment Survey Report

2020 Season

Prepared for: The Sanders County Aquatic Invasive Plants Task Force

December 2, 2020



THE **OUTSIDE** IS IN US ALL.

Craig R McLane

Montana Department of Fish, Wildlife, & Parks

1420 E 6th Ave, Helena, MT 59601

[Contents](#)

Overview.....	3
Sampling Method:	4
Results:	5
Species level differences among plots in 2018 - 2020	9
Untreated Control Plot Maps – Eurasian Watermilfoil (<i>Myriophyllum spicatum</i>)	13
Untreated Control Plot Maps – Curlyleaf Pondweed (<i>Potamogeton crispus</i>).....	20
Treatment Plot Maps – Eurasian Watermilfoil (<i>Myriophyllum spicatum</i>)	27
Treatment Plot Maps – Curlyleaf Pondweed (<i>Potamogeton crispus</i>)	46

Overview

Montana Fish, Wildlife, & Parks partnered with The Sanders County Aquatic Invasive Plants Task Force to survey multiple plots within Noxon Rapids Reservoir and Cabinet Gorge Reservoir. This effort helps guide annual treatment of Eurasian watermilfoil within the reservoirs. Eighteen plots scheduled for treatment and six untreated, control plots were surveyed during the week of July 6th, 2020. Those locations, noted in Figure 1, cover the length of both reservoirs.

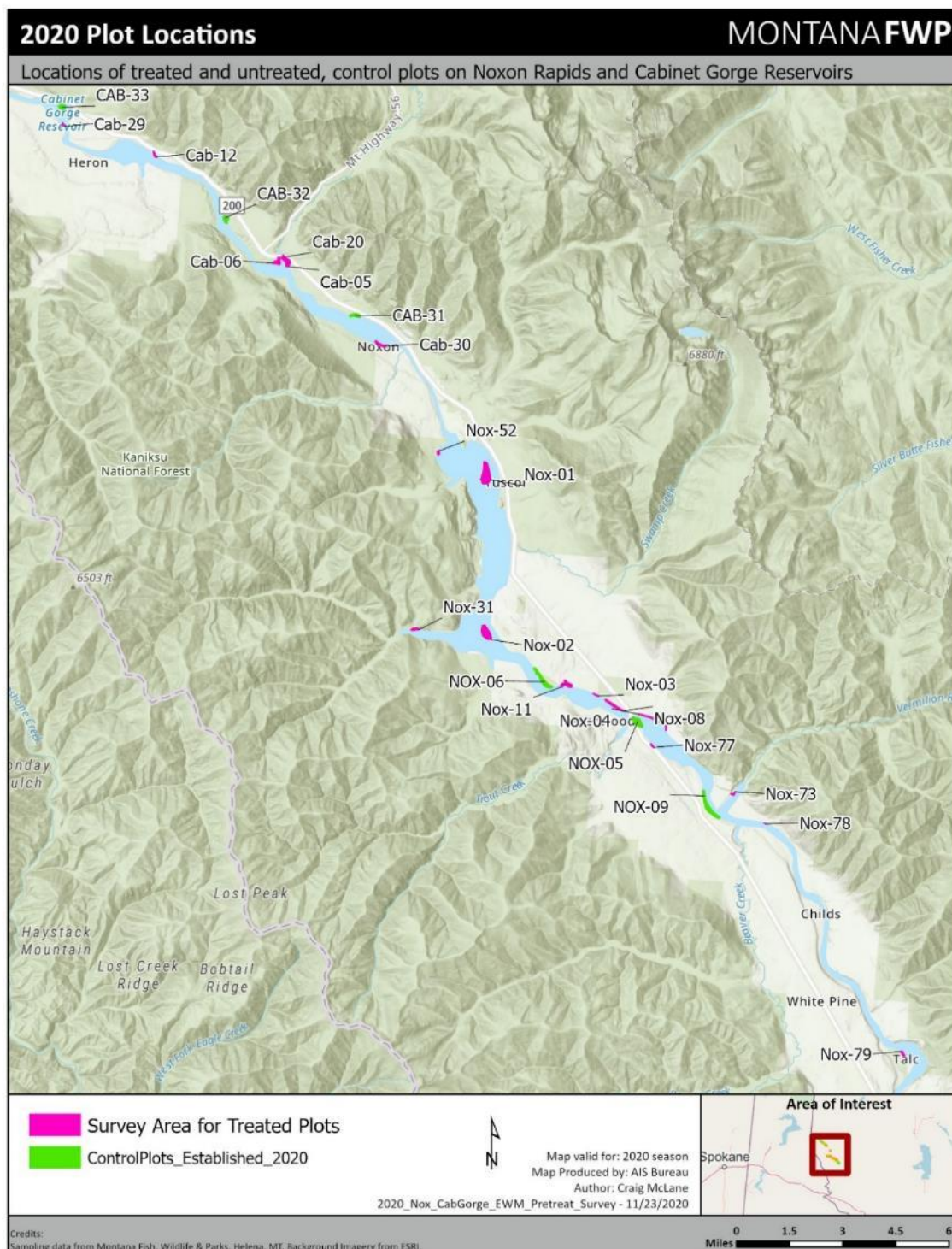


Figure 1. Locations of Survey Plots on Noxon Rapids and Cabinet Gorge Reservoirs, 2020.

Sampling Methods:

Within each plot a predetermined number of random points were sampled. Table 1 shows each plot, acreage, and number of points sampled in 2020. Plots sizes were based on previous survey efforts and adjusted if it was determined that more points were needed. The number of points within each plot were based upon the acreage of the plot with larger plots having more points. Additionally, more complex plot shapes needed more points.

At each point, samples were collected with rakes attached to telescoping poles dropped to the bottom. One sample was collected on each the starboard and port sides. The rakes were spun 720 degrees and then the crew members provided a percent of rake fullness. This method allows a consistent sampled area for each sample.

At the sample point level, these scores were then averaged together and a cover class was assigned to each point. Similar to a Daubenmire Method of estimating cover percentages (Coulloudon et al, 1999), we utilized a predefined set of cover classes. The cover classes used for 2020 and 2019 analyses are listed in Table 2. They varied from 2018, as 2018 cover classes seemed too coarse to detect changes among years.

These points were used to find the average canopy cover of each species within each plot. Potential areas of treatments were then determined based upon Eurasian watermilfoil and curlyleaf pondweed densities and are provided in the maps within the results section.

In addition, the results were compared among years. The percent change was calculated among 2019 and 2020.

The sampling in 2018 followed a different cover class set (Table 3) so results could have inconsistencies between 2018 and both 2019 and 2020. However, calculations of 2018 cover class were normalized so that the 2018 results are comparable to 2019 results in the following section. The sampling methods in 2019 and 2020 are the same so results are directly comparable.

Table 1. List of plots surveyed and their approximate surveyed areas and number of sample points.

Plot	Potentially Treat/ Control	Approx. Plot Size (ac)	#Sample Points
C05	Potential Treat	27.8	43
C06	Potential Treat	4	25
C12	Potential Treat	1.5	19
C20	Potential Treat	1	10
C29	Potential Treat	0.5	10
C30	Potential Treat	2	26
C31	Control	3.7	10
C32	Control	3.6	10
C33	Control	6.4	10
N01	Potential Treat	69.7	50
N02	Potential Treat	44.1	40
N03	Potential Treat	2.3	19
N04	Potential Treat	13	31
N05	Control	16.4	8
N06	Control	13.6	10
N08	Potential Treat	15.9	38
N09	Control	16.8	11
N11	Potential Treat	17.3	41
N31	Potential Treat	6.1	30
N52	Potential Treat	3.2	9
N73	Potential Treat	2	15
N77	Potential Treat	0.5	18
N78	Potential Treat	0.3	9
N79	Potential Treat	4	23

Table 2. Cover class and range of coverage for 2019 and 2020 sampling efforts.

Cover Class – 2019 & 2020	Range of Coverage	Midpoint of Range
0	0	0.0
1	1 to 2	1.5
2	3 to 5	3.6
3	6 to 15	10.1
4	16 to 25	20.1
5	26 to 40	32.6
6	41 to 60	50.1
7	61 to 75	67.6
8	76 to 85	80.1
9	86 to 95	90.1
10	96-100	97.6

Table 3. Cover class and range of coverage for 2018 sampling efforts.

Cover Class - 2018	Range of Coverage	Midpoint of Range
0	0	0.0
1	1 to 20	10.5
2	21 to 40	30.5
3	41 to 60	50.5
4	61 to 80	70.5
5	81 to 100	90.5

Results:

Table 4 contains the survey results showing acreage of Eurasian watermilfoil within the potential treatment areas and untreated control plots in 2018-2020. Table 5 shows the estimated acreage of curlyleaf pondweed within each plot for 2020. Table 6-9 show the 2018-2020 estimated cover based on rake fullness calculations.

Table 4. Pre-treatment acres of Eurasian watermilfoil within each plot (2018-2020). An *, †, or ‡ after plot name denotes plot treated for Eurasian watermilfoil in 2020, 2019, or 2018 respectively.

Plot	Acres of EWM - 2020	Acres of EWM - 2019	Acres of EWM - 2018	Plot Location
Cab-05[†]	1.8	12.1	11.4	Southeast of Bull River Bridge on Hwy 200
Cab-06^{*†}	3.7	4.2	6.1	Southwest of Bull River Bridge on Hwy 200
Cab-12^{*†‡}	0.3	1.7	1.2	Big Eddy Campground
Cab-20[‡]	0.0	0.0	0.4	Bull River Campground
Cab-29^{†‡}	1.2	0.5	0.8	Heron Boat Ramp
Cab-30^{*†‡}	2.1	2.3	3.4	Noxon Community Park
Cab-31 (Untreated Control)	1.9	Did Not Survey	Did Not Survey	Northwest of Heron Bridge
Cab-32 (Untreated Control)	2.9	Did Not Survey	Did Not Survey	Downstream Bull River at Power Lines
Cab-33 (Untreated Control)	0	Did Not Survey	Did Not Survey	North of Heron Boat Ramp
Nox-01[†]	0	34.0	12.3	Near Rock Island - Mid Lake
Nox-02[†]	25.6	21.3	2.1	Mid Lake at entrance to Marten Creek Bay
Nox-03^{*†‡}	1.2	1.4	2.3	North Shore Campground
Nox-04^{*†‡}	5.9	7.7	6.2	North Shore Shoreline East of Hwy 200 Bridge
Nox-05 (Untreated Control)	1.2	Did Not Survey	Did Not Survey	South Shoreline E of Hwy 200 Bridge
Nox-06 (Untreated Control)	approx. 1	Did Not Survey	Did Not Survey	North shoreline West of Train Bridge
Nox-08^{†‡}	0.3	8.2	10.6	North Shore Shoreline W of Hwy 200 Bridge
Nox-09 (Untreated Control)	0	Did Not Survey	Did Not Survey	South Shoreline across from Vermillion Bay
Nox-11[†]	0.1	9.6	6.7	West of Train Bridge on N side
Nox-31^{*†‡}	2.1	3.7	2.3	Marten Creek Campground
Nox-52^{†‡}	0	0.8	1.9	South Shore Campground
Nox-61	Did Not Survey	Did Not Survey	0.0	Flatiron Fishing Access Site
Nox-73[†]	0.0	0.6	0.0	Vermillion Bay Boat Ramp
Nox-77^{†‡}	0.2	0.4	0.5	Trout Creek Boat Ramp
Nox-78^{†‡}	0.0	0.1	0.2	Kirby Gulch Boat Ramp
Nox-79^{†‡}	0.0	0.7	1.1	Finley Flats Campground

* = plots treated in 2020; † = plots treated in 2019; ‡ = plots treated in 2018

Table 5. Pre-treatment acres of curlyleaf pondweed within each plot for 2020. No treatments targeting curlyleaf pondweed have been conducted. An *, †, or ‡ after plot name denotes plot treated for Eurasian watermilfoil in 2020, 2019, or 2018 respectively.

Plot	Acres of curlyleaf pondweed - 2020	Plot Location
Cab-05 [†]	8.1	SE of Bull River Bridge on Hwy 200
Cab-06 ^{*†}	3.7	SW of Bull River Bridge on Hwy 200
Cab-12 ^{*†‡}	1.1	Big Eddy Campground
Cab-20 [‡]	0.4	Bull River Campground
Cab-29 ^{†‡}	0.0	Heron Boat Ramp
Cab-30 ^{*†‡}	0.4	Noxon Community Park
Cab-31 (Untreated Control)	Plot – 3.7 ac; 0.6 ac CLPW	NW of Heron Bridge
Cab-32 (Untreated Control)	Plot – 3.6 ac; 0.0 ac CLPW	Downstream Bull River at Power Lines
Cab-33 (Untreated Control)	Plot – 6.4 ac; 0.0 ac CLPW	North of Heron Boat Ramp
Nox-01 [†]	17.8	Near Rock Island - Mid Lake
Nox-02 [†]	17.4	Mid Lake at entrance to Marten Creek Bay
Nox-03 ^{*†‡}	1.2	North Shore Campground
Nox-04 ^{*†‡}	5.9	North Shore Shoreline E of Hwy 200 Bridge
Nox-05 (Untreated Control)	Plot - 16.4 ac; 0.0 ac CLPW	South Shoreline E of Hwy 200 Bridge
Nox-06 (Untreated Control)	Plot - 13.6 ac; 1.4 ac CLPW	North shoreline West of Train Bridge
Nox-08 ^{†‡}	7.9	North Shore Shoreline W of Hwy 200 Bridge
Nox-09 (Untreated Control)	Plot – 16.8 ac; 0.0 ac CLPW	South Shoreline across from Vermillion Bay
Nox-11 [†]	5.8	W of Train Bridge on N side
Nox-31 ^{*†‡}	4.4	Marten Creek Campground
Nox-52 ^{†‡}	0.1	South Shore Campground
Nox-61	Did Not Survey	Flatiron Fishing Access Site
Nox-73 [†]	0.6	Vermillion Bay Boat Ramp
Nox-77 ^{†‡}	0.1	Trout Creek Boat Ramp
Nox-78 ^{†‡}	0.0	Kirby Gulch Boat Ramp
Nox-79 ^{†‡}	0.1	Finley Flats Campground

* = plots treated in 2020; † = plots treated in 2019; ‡ = plots treated in 2018

Tables 6-9. Calculated % canopy cover (based on modified Daubenmire Method using rake fullness as a substitute of percent cover for 2018-2020.) An *, †, or ‡ after plot name denotes plot treated for Eurasian watermilfoil in 2020, 2019, or 2018 respectively.

Previously Treated Plots - 2020

2020	C05	C06*	C12*	C20	C29	C30*	N01	N02	N03*	N04*	N08	N11	N31*	N52	N61	N73	N77	N78	N79
Elodea spp.	3.6	7.8	18.1	11.9	9.4	23.8	1.1	3.6	12.4	5.8	13.2	0.5	13.3	0	NA	0.1	0.6	5.3	1.8
Coontail	12.9	13.8	11.8	0	0	2.3	6.2	13.3	6.5	7.7	9.5	4.1	12.4	11.3	NA	11.6	3.3	0	12.1
Eurasian watermilfoil	0.1	0.6	1.2	0	0.7	1.1	0	0.8	2.8	4.9	0.1	0	1.5	0	NA	0.1	3.0	0	0.1
Curlyleaf pondweed	15.2	1.0	1.2	11.2	0	0	0.6	1.5	3.8	5.5	10.6	8.7	20.9	0.6	NA	4.0	0.2	0	0.1
Native narrow-leaved pondweed spp.	0	0	0	0	0	1.7	0.9	1.4	0.1	0	4.6	2.8	0.3	0.5	NA	0	0.2	9.4	1.2
White water buttercup	10.1	15.3	0.7	0	0	0.3	4.3	0	2.0	1.8	4.0	0.1	0.8	0	NA	1.0	0.0	0	0.1
Chara spp.	0.2	0	0	0	0	0.4	0.2	0.3	0	0.2	0.1	0	0.1	2.7	NA	0	0.1	0	0.6
Richardson's pondweed	0	0	0	0	0	0.1	0.1	0	0	0	0.1	0	0	0	NA	0	0.0	0	0.1
Flowering rush	0	0	0	0	0	0.1	0.1	0	0	0	0	0	0	0.2	NA	0	0.0	0	0
White-stemmed pondweed	0	0	0	0	0	0	0	0	0	0.6	0.8	0	1.5	0.2	NA	0	0.0	0	0
Northern watermilfoil	0	0	0	0	0	0	0.1	0	0.1	0	0	0	0	0	NA	0.1	0.0	0	0

* = plots treated in 2020

Untreated Control - First Surveyed in 2020

2020	C31	C43	C33	N05	N06	N09
Elodea spp.	4.7	11.0	7.6	1.6	12.5	0.5
Coontail	27.4	9.1	71.8	14.5	28.4	11.3
Eurasian watermilfoil	4.1	19.1	0	4.5	26.7	0
Curlyleaf pondweed	0.7	0	0	0	0.9	0
Native narrow-leaved pondweed spp.	0	0	0	1.7	1.2	1.6
White water buttercup	0	9.9	0	0	0	0
Chara spp.	0	0	0	0	0	0
Richardson's pondweed	0	0	0	0	0	0
Flowering rush	0	0	0	0	0	0
White-stemmed pondweed	0	0	0	0.2	1.0	0
Northern watermilfoil	0	0	0	0.6	0	0

2019	C05 [†]	C06 [†]	C12 [†]	C20	C29 [†]	C30 [†]	N01	N02 [†]	N03 [†]	N04 [†]	N08 [†]	N11 [†]	N31 [†]	N52 [†]	N61	N73 [†]	N77 [†]	N78 [†]	N79 [†]
Elodea spp.	7	19	24	30	31	5	6	40	0.2	19	3	9	12	1	NA	20	2	44	6
Coontail	18	14	17	0.2	0	2	17	27	10	23	18	53	12	12	NA	27	2	0.25	21
Eurasian watermilfoil	7	3	5	0	1	2	33	26	1	5	2	26	4	1	NA	26	3	6	0.3
Curlyleaf pondweed	10	0.1	4	10	0	0	0.03	0.1	2	5	7	1	28	1	NA	2	0	0	0.1
Native narrow-leaved pondweed spp.	0.1	0.2	0	0	0	3	1	1	0.3	0.1	1	2	0.4	1	NA	0	0	1	7
White water buttercup	6	5	0.1	0	0	0	1	0.1	0	0.4	0.5	0.6	0	0	NA	1	1	2	0.1
Chara spp.	1	0	0.1	0	0	0.2	0.1	0.1	0	0.1	0.2	0.3	0	1	NA	0	0	0	1
Richardson's pondweed	0	0	0	0.2	0	1	0.03	0	0	0	0.1	0.1	0	1	NA	0	0.2	0	0.1
Flowering rush	0	0	0	0	0	0.1	0	0	0	0	0	0.05	0	1	NA	0	0	0	0
White-stemmed pondweed	0	0	0	0	0	0	0	0.1	0	0	0.2	0	0	0	NA	0	0	0	0
Northern watermilfoil	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0	NA	0	0	0	0
Grass leaved pondweed	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	NA	0	0	0	0
Waternymph spp.	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	NA	0	0	0	0

† = plots treated in 2019

2018	C05	C06	C12	C20	C29	C30	N01	N02	N03 [‡]	N04 [‡]	N08 [‡]	N11	N31 [‡]	N52 [‡]	N61	N73	N77 [‡]	N78 [‡]	N79 [‡]
Elodea spp.	19	30	11	24	7	7	25	8	2	11	6	12	15	2	0	10	2	17	9
Coontail	25	29	19	0	0	11	13	15	29	16	25	19	32	4	0	19	6	0	20
Eurasian watermilfoil	22	18	21	5	25	9	23	6	13	11	19	28	14	13	0	6	7	7	2
Curlyleaf pondweed	23	3	5	4	0	0.6	2	1	8	6	8	6	1	0	0	4	1	0	3
Leafy pondweed	0.5	3	1	2	0	7	6	7	0.5	6	14	15	14	4	0	0	1	7	2
White water buttercup	7	5	2	0.6	0	0	4	0	0	0	0	2	0	0	0	1	0	2	0
Chara spp.	5	0	1	0	0	3	3	0.5	0.5	8	9	8	0	20	0	4	3	0	0
Richardson's pondweed	0	2	2	1	0	9	4	7	2	2	2	3	0	5	0	1	3	0	0
Flowering rush	0	0	0	0	0	0.6	0.6	3	0	0	1	0	0	4	0	0	0	2	0.6
Northern watermilfoil	2	0	0	0	0	0	5	1	0.5	1	0	0.6	0	2	0	0.9	2	0	0.6
Grass leaved pondweed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Isoetes spp.	0.5	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alpine pondweed	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
Ribbon leaf pondweed	0	0	0	0	0	0	2	0	0	0	0	0	0	0.5	0	0	0	0	0.6
Sheathed pondweed	0	0.5	0	0	0	3	0	0	0.5	0	0	0	0	0	0	0	0	0	0

‡ = plots treated in 2018

Species level differences among plots in 2018 - 2020

Percent change among years were calculated and results are in the tables below for each species. It is difficult to make much inference of change due to herbicide treatments alone as several different factors could contribute to said changes. Natural environmental variations such as water flows, temperatures, and hybridization strains could cause significant local macrophyte community variations and responses to herbicide between years. Additionally, sample methods varied with the use of a rake attached to a rope in 2018 versus a pole-attached rake in 2019 and 2020. More sampling points per plot were collected in 2019 and again in 2020 compared to 2018 in order to increase analysis power. We switched to the pole-attached rake to have a repeatable sample method with regards to sample area in 2019. A rope attached rake can have variations in sampled area due to distance the rake was tossed, the depth of the water thus changing the angle of retrieval, and the rate of retrieval. In general, the pole-attached method appears more precise, but anecdotal evidence suggests it underestimates plant cover at the plot level. Subsequent consistent sampling among years will improve the overall sampling effort's precision but accuracy needs to be further evaluated. Even if the rake-pole sampling method underestimates cover, inference of variations among years can still be made in the future. Three control plots for each reservoir were added in 2020 to help decipher changes in abundances due to environmental changes such as water temperature, water clarity, etc. Subsequent sampling on control plots will continue in 2021.

<i>Butomus umbellatus</i>					<i>Myriophyllum spicatum</i>				
Flowering rush					Eurasian watermilfoil				
	2018	2019	2020	2019-2020 % Change	2018	2019	2020	2019-2020 % Change	
C05	0.0	0.0	0.0	0	21.9	7.4	0.1	-99	
C06	0.0	0.0	0.0	0	17.9	3.4	0.6	-82	
C12	0.0	0.0	0.0	0	21.0	5.2	1.2	-76	
C20	0.0	0.0	0.0	0	4.6	0.0	0.0	0	
C29	0.0	0.0	0.0	0	24.8	0.9	0.7	-17	
C30	0.6	0.08	0.06	-23	8.7	1.9	1.1	-38	
C31 ^ε	No Survey	No Survey	0.0	N/A	No Survey	No Survey	4.1	N/A	
C32 ^ε	No Survey	No Survey	0.0	N/A	No Survey	No Survey	19.1	N/A	
C33 ^ε	No Survey	No Survey	0.0	N/A	No Survey	No Survey	0.0	N/A	
N01	0.6	0.0	0.1	0.1*	23.0	33.1	0.0	-100	
N02	3.1	0.0	0.0	0	6.2	26.0	0.8	-97	
N03	0.0	0.0	0.0	0	13.3	0.5	2.8	434	
N04	0.0	0.0	0.0	0	11.4	4.7	4.9	4	
N05 ^ε	No Survey	No Survey	0.0	N/A	No Survey	No Survey	4.5	N/A	
N06 ^ε	No Survey	No Survey	0.0	N/A	No Survey	No Survey	26.7	N/A	
N08	1.1	0.0	0.0	0	19.4	1.9	0.1	-94	
N09 ^ε	No Survey	No Survey	0.0	N/A	No Survey	No Survey	0.0	N/A	
N11	0.0	0.05	0.0	-100	27.8	26.0	0.0	-100	
N31	0.0	0.0	0.0	0	14.1	4.2	1.5	-65	
N52	4.2	1.0	0.2	-83	12.8	0.8	0.0	-100	
N61	0.0	No Survey	No Survey	N/A	0.0	No Survey	No Survey	N/A	
N73	0.0	0.0	0.0	0	6.1	25.9	0.1	-100	
N77	0.0	0.0	0.0	0	6.6	3.4	3.0	-12	
N78	1.8	0.0	0.0	0	7.0	5.6	0.0	-100	
N79	0.6	0.0	0.0	0	1.7	0.3	0.1	-78	

^ε = Control Plots (First surveyed in 2020)

<i>Potamogeton crispus</i> Curlyleaf pondweed				
	2018	2019	2020	2019-2020 % Change
C05	23.3	10.1	15.2	50
C06	2.6	0.1	1.0	904
C12	4.8	4.3	1.2	-71
C20	3.5	9.7	11.2	16
C29	0.0	0.0	0.0	0
C30^ε	0.6	0.0	0.0	0
C31^ε	No Survey	No Survey	0.7	N/A
C32^ε	No Survey	No Survey	0.0	N/A
C33^ε	No Survey	No Survey	0.0	N/A
N01	1.7	0.0	0.6	1692
N02	1.1	0.1	1.5	1113
N03	7.9	1.5	3.8	146
N04	6.3	4.8	5.5	15
N05^ε	No Survey	No Survey	0.0	N/A
N06^ε	No Survey	No Survey	0.9	N/A
N08	7.6	6.5	10.6	63
N09^ε	No Survey	No Survey	0.0	N/A
N11	6.1	0.8	8.7	976
N31	0.6	28.2	20.9	-26
N52	0.0	1.0	0.6	-44
N61	0.0	No Survey	No Survey	N/A
N73	3.5	2.0	4.0	96
N77	1.0	0.0	0.2	0.2*
N78	0.0	0.0	0.0	0
N79	2.8	0.1	0.1	-48

<i>Ceratophyllum demersum</i> Coontail				
	2018	2019	2020	2019-2020 % Change
	25.4	18.2	12.9	-29
	28.9	14.5	13.8	-4
	18.9	17.3	11.8	-32
	0.0	0.2	0.0	-100
	0.0	0.0	0.0	0
	10.7	1.6	2.3	39
	No Survey	No Survey	27.4	N/A
	No Survey	No Survey	9.1	N/A
	No Survey	No Survey	71.8	N/A
	12.8	17.4	6.2	-64
	15.4	27.0	13.3	-51
	29.0	10.2	6.5	-36
	15.8	22.7	7.7	-66
	No Survey	No Survey	14.5	N/A
	No Survey	No Survey	28.4	N/A
	24.6	18.3	9.5	-48
	No Survey	No Survey	11.3	N/A
	18.8	53.1	4.1	-92
	32.1	12.4	12.4	0
	4.2	12.2	11.3	-7
	0.0	No Survey	No Survey	N/A
	18.8	26.7	11.6	-57
	5.7	1.5	3.3	121
	0.0	0.3	0.0	-100
	20.2	20.9	12.1	-42

<i>Chara</i> species Muskgrass species				
	2018	2019	2020	2019-2020 % Change
	4.5	0.9	0.2	-75
	0.0	0.0	0.0	0
	1.4	0.1	0.0	-100
	0.0	0.0	0.0	0
	0.0	0.0	0.0	0
	3.3	0.2	0.4	97
	No Survey	No Survey	0.0	N/A
	No Survey	No Survey	0.0	N/A
	No Survey	No Survey	0.0	N/A
	3.3	0.1	0.2	99
	0.5	0.1	0.3	121
	0.5	0.0	0.0	0
	8.2	0.1	0.2	38
	No Survey	No Survey	0.0	N/A
	No Survey	No Survey	0.0	N/A
	8.6	0.2	0.1	-53
	No Survey	No Survey	0.0	N/A
	8.0	0.3	0.0	-89
	0.0	0.0	0.1	0.1
	19.8	1.5	2.7	88
	0.0	No Survey	No Survey	N/A
	4.3	0.0	0.0	0
	2.9	0.0	0.1	0.1
	0.0	0.0	0.0	0
	0.0	0.5	0.6	8

^ε = Control Plots (First surveyed in 2020)

<i>Elodea</i> species Waterweed species				
	2018	2019	2020	2019-2020 % Change
C05	19.4	6.6	3.6	-46
C06	29.9	18.7	7.8	-58
C12	11.1	24.3	18.1	-26
C20	24.3	30.0	11.9	-60
C29	6.9	30.6	9.4	-69
C30	6.6	5.3	23.8	352
C31^ε	No Survey	No Survey	4.7	N/A
C32^ε	No Survey	No Survey	11.0	N/A
C33^ε	No Survey	No Survey	7.6	N/A
N01	25.1	5.8	1.1	-80
N02	8.3	39.6	3.6	-91
N03	2.0	0.2	12.4	7332
N04	10.8	18.5	5.8	-69
N05^ε	No Survey	No Survey	1.6	N/A
N06^ε	No Survey	No Survey	12.5	N/A
N08	6.1	3.0	13.2	344
N09^ε	No Survey	No Survey	0.5	N/A
N11	11.9	9.4	0.5	-95
N31	14.5	11.6	13.3	15
N52	1.6	0.5	0.0	-100
N61	0.0	No Survey	No Survey	N/A
N73	10.3	20.0	0.1	-99
N77	1.9	1.7	0.6	-61
N78	17.0	43.6	5.3	-88
N79	8.6	5.9	1.8	-70

<i>Myriophyllum sibiricum</i> Northern watermilfoil				
	2018	2019	2020	2019-2020 % Change
	1.6	0.0	0.0	0
	0.0	0.0	0.0	0
	0.0	0.0	0.0	0
	0.0	0.0	0.0	0
	0.0	0.0	0.0	0
	0.0	0.0	0.0	0
	No Survey	No Survey	0.0	N/A
	No Survey	No Survey	0.0	N/A
	No Survey	No Survey	0.0	N/A
	4.9	0.0	0.1	0.1*
	1.1	0.0	0.0	0
	0.5	0.0	0.1	0.1*
	1.1	0.0	0.0	0
	No Survey	No Survey	0.6	N/A
	No Survey	No Survey	0.0	N/A
	0.0	0.0	0.0	0
	No Survey	No Survey	0.0	N/A
	0.6	0.2	0.0	-100
	0.0	0.0	0.0	0
	1.6	0.0	0.0	0
	0.0	No Survey	No Survey	N/A
	0.9	0.0	0.1	0.1*
	1.9	0.0	0.0	0
	0.0	0.0	0.0	0
	0.6	0.0	0.0	0

Narrow leaved <i>Potamogeton</i> species Pondweed species (sago, leafy, etc.)				
	2018	2019	2020	2019-2020 % Change
	0.5	0.1	0.0	-100
	2.6	0.2	0.0	-100
	1.4	0.0	0.0	0
	1.8	0.0	0.0	0
	0.0	0.0	0.0	0
	7.0	2.7	1.7	-37
	No Survey	No Survey	0.0	N/A
	No Survey	No Survey	0.0	N/A
	No Survey	No Survey	0.0	N/A
	6.0	1.0	0.9	-5
	6.8	1.4	1.4	-3
	0.5	0.3	0.1	-68
	5.7	0.1	0.0	-3
	No Survey	No Survey	1.7	N/A
	No Survey	No Survey	1.2	N/A
	14.1	0.8	4.6	462
	No Survey	No Survey	1.6	N/A
	15.1	1.8	2.8	52
	13.8	0.4	0.3	-14
	4.2	0.5	0.5	-1
	0.0	No Survey	No Survey	N/A
	0.0	0.0	0.0	0
	1.0	0.0	0.2	0
	7.0	0.8	9.4	1011
	2.2	6.8	1.2	-82

^ε = Control Plots (First surveyed in 2020)

<i>Ranunculus aquatilis</i> White waterbuttercup				
	2018	2019	2020	2019-2020 % Change
C05	7.3	5.9	10.1	71
C06	4.7	4.7	15.3	223
C12	2.0	0.1	0.7	633
C20	0.6	0.0	0.0	0
C29	0.0	0.0	0.0	0
C30	0.0	0.0	0.3	0.3*
C31 ^ε	No Survey	No Survey	0.0	N/A
C32 ^ε	No Survey	No Survey	9.9	N/A
C33 ^ε	No Survey	No Survey	0.0	N/A
N01	3.9	0.9	4.3	392
N02	0.0	0.1	0.0	-40
N03	0.1	0.0	2.0	2.0*
N04	0.0	0.4	1.8	378
N05 ^ε	No Survey	No Survey	0.0	N/A
N06 ^ε	No Survey	No Survey	0.0	N/A
N08	0.0	0.5	4.0	771
N09 ^ε	No Survey	No Survey	0.0	N/A
N11	2.2	0.6	0.1	-84
N31	0.0	0.0	0.8	0.8*
N52	0.0	0.0	0.0	0
N61	0.0	No Survey	No Survey	N/A
N73	0.9	0.5	1.0	92
N77	0.0	1.2	0.0	-100
N78	1.8	1.9	0.0	-100
N79	0.0	0.1	0.1	-48

<i>Potamogeton praelongus</i> White-stemmed pondweed				
	2018	2019	2020	2019-2020 % Change
	0.0	0.0	0.0	0
	0.0	0.0	0.0	0
	0.0	0.0	0.0	0
	0.0	0.0	0.0	0
	0.0	0.0	0.0	0
	0.0	0.0	0.0	0
	No Survey	No Survey	0.0	N/A
	No Survey	No Survey	0.0	N/A
	No Survey	No Survey	0.0	N/A
	0.0	0.0	0.0	0
	0.0	0.1	0.0	-75
	0.0	0.0	0.0	0
	0.0	0.0	0.6	0.6*
	No Survey	No Survey	0.2	N/A
	No Survey	No Survey	1.0	N/A
	0.0	0.2	0.8	259
	No Survey	No Survey	0.0	N/A
	0.0	0.0	0.0	0
	0.0	0.0	1.5	1.5*
	0.0	0.0	0.2	0.2*
	0.0	No Survey	No Survey	N/A
	0.0	0.0	0.0	0
	0.0	0.0	0.0	0
	0.0	0.0	0.0	0
	0.0	0.0	0.0	0
	0.0	0.0	0.0	0

<i>Potamogeton richardsonii</i> Richardson's pondweed				
	2018	2019	2020	2019-2020 % Change
	0.0	0.0	0.0	0
	1.6	0.0	0.0	0
	2.1	0.0	0.0	0
	1.2	0.2	0.0	-100
	0.0	0.0	0.0	0
	8.7	1.2	0.1	-90
	No Survey	No Survey	0.0	N/A
	No Survey	No Survey	0.0	N/A
	No Survey	No Survey	0.0	N/A
	3.9	0.0	0.1	88
	6.7	0.0	0.0	0
	1.5	0.0	0.0	0
	1.6	0.0	0.0	0
	No Survey	No Survey	0.0	N/A
	No Survey	No Survey	0.0	N/A
	2.2	0.1	0.1	3
	No Survey	No Survey	0.0	N/A
	3.3	0.1	0.0	-100
	0.0	0.0	0.0	0
	4.7	1.0	0.0	-100
	0.0	No Survey	No Survey	N/A
	0.9	0.0	0.0	0
	2.8	0.2	0.0	-100
	0.0	0.0	0.0	0
	0.0	0.1	0.1	-48

^ε = Control Plots (First surveyed in 2020)

Untreated Control Plot Maps – Eurasian Watermilfoil
(*Myriophyllum spicatum*)

Sampling Results - Untreated Controlled Plots 2020

MONTANA FWP

Plot: CAB-31

Eurasian Watermilfoil Results



Untreated Control Plots Established 2020

Eurasian Watermilfoil Coverage Rank

- + 0 - Not Present
- 1 - (1-2%)
- 2 - (3-5%)
- 3 - (6-15%)
- 4 - (16-25%)

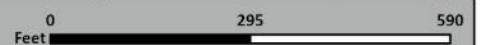
- 5 - (26-40%)
- 6 - (41-60%)
- 7 - (61-75%)
- 8 - (76-85%)
- 9 - (86-95%)
- 10 - (96-100%)

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane

2020_NoX_CabGorge_EWM_Pretreat_Survey - July 10, 2020



Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results - Untreated Controlled Plots 2020

MONTANA FWP

Plot: CAB-32

Eurasian Watermilfoil Results



Untreated Control Plots Established 2020

Eurasian Watermilfoil Coverage Rank

- + 0 - Not Present
- 1 - (1-2%)
- 2 - (3-5%)
- 3 - (6-15%)
- 4 - (16-25%)

- 5 - (26-40%)
- 6 - (41-60%)
- 7 - (61-75%)
- 8 - (76-85%)
- 9 - (86-95%)
- 10 - (96-100%)

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane

2020_NoX_CabGorge_EWM_Pretreat_Survey - July 10, 2020



Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results - Untreated Controlled Plots 2020

MONTANA FWP

Plot: CAB-33

Eurasian Watermilfoil Results



■ Untreated Control Plots Established 2020

Eurasian Watermilfoil Coverage Rank

- + 0 - Not Present
- 1 - (1-2%)
- 2 - (3-5%)
- 3 - (6-15%)
- 4 - (16-25%)

- 5 - (26-40%)
- 6 - (41-60%)
- 7 - (61-75%)
- 8 - (76-85%)
- 9 - (86-95%)
- 10 - (96-100%)

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane

2020_NoX_CabGorge_EWM_Pretreat_Survey - July 10, 2020



Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results - Untreated Controlled Plots 2020

MONTANA FWP

Plot: NOX-05

Eurasian Watermilfoil Results



NOX-05

■ Untreated Control Plots Established 2020

Eurasian Watermilfoil Coverage Rank

- + 0 - Not Present
- 1 - (1-2%)
- 2 - (3-5%)
- 3 - (6-15%)
- 4 - (16-25%)

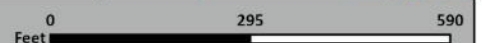
- 5 - (26-40%)
- 6 - (41-60%)
- 7 - (61-75%)
- 8 - (76-85%)
- 9 - (86-95%)
- 10 - (96-100%)

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane

2020_Nox_CabGorge_EWM_Pretreat_Survey - July 10, 2020



Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results - Untreated Controlled Plots 2020

MONTANA FWP

Plot: NOX-06

Eurasian Watermilfoil Results



█ Untreated Control Plots Established 2020

Eurasian Watermilfoil Coverage Rank

- + 0 - Not Present
- 1 - (1-2%)
- 2 - (3-5%)
- 3 - (6-15%)
- 4 - (16-25%)

- 5 - (26-40%)
- 6 - (41-60%)
- 7 - (61-75%)
- 8 - (76-85%)
- 9 - (86-95%)
- 10 - (96-100%)

Map valid for: 2020 season

Map Produced by: AIS Bureau

Author: Craig McLane

2020_Nox_CabGorge_EWM_Pretreat_Survey - July 10, 2020



Credits:
Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results - Untreated Controlled Plots 2020

MONTANA FWP

Plot: NOX-09

Eurasian Watermilfoil Results



█ Untreated Control Plots Established 2020

Eurasian Watermilfoil Coverage Rank

- + 0 - Not Present
- 1 - (1-2%)
- 2 - (3-5%)
- 3 - (6-15%)
- 4 - (16-25%)

- 5 - (26-40%)
- 6 - (41-60%)
- 7 - (61-75%)
- 8 - (76-85%)
- 9 - (86-95%)
- 10 - (96-100%)

Map valid for: 2020 season

Map Produced by: AIS Bureau

Author: Craig McLane

2020_NoX_CabGorge_EWM_Pretreat_Survey - July 10, 2020



Credits:
Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.

Untreated Control Plot Maps – Curlyleaf
Pondweed (*Potamogeton crispus*)

Sampling Results - Untreated Control Plots 2020

MONTANA FWP

Plot: CAB-31

Curlyleaf Pondweed Results



CAB-31

Untreated Control Plots Established 2020

Curlyleaf Pondweed Coverage Rank

- + 0 - Not Present
- 1 - (1-2%)
- 2 - (3-5%)
- 3 - (6-15%)
- 4 - (16-25%)

- 5 - (26-40%)
- 6 - (41-60%)
- 7 - (61-75%)
- 8 - (76-85%)
- 9 - (86-96%)
- 10 - (96-100%)

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane

2020_Nox_CabGorge_EWM_Pretreat_Survey - June 24, 2020



Sampling Results - Untreated Control Plots 2020

MONTANA FWP

Plot: CAB-32

Curlyleaf Pondweed Results



Untreated Control Plots Established 2020

Curlyleaf Pondweed Coverage Rank

- 0 - Not Present
- 1 - (1-2%)
- 2 - (3-5%)
- 3 - (6-15%)
- 4 - (16-25%)

- 5 - (26-40%)
- 6 - (41-60%)
- 7 - (61-75%)
- 8 - (76-85%)
- 9 - (86-96%)
- 10 - (96-100%)

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane

2020_Nox_CabGorge_EWM_Pretreat_Survey - June 24, 2020



Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results - Untreated Control Plots 2020

MONTANA FWP

Plot: CAB-33

Curlyleaf Pondweed Results



Untreated Control Plots Established 2020

Curlyleaf Pondweed Coverage Rank

- 0 - Not Present
- 1 - (1-2%)
- 2 - (3-5%)
- 3 - (6-15%)
- 4 - (16-25%)

- 5 - (26-40%)
- 6 - (41-60%)
- 7 - (61-75%)
- 8 - (76-85%)
- 9 - (86-96%)
- 10 - (96-100%)

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane

2020_Nox_CabGorge_EWM_Pretreat_Survey - June 24, 2020



Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results - Untreated Control Plots 2020

MONTANA FWP

Plot: CAB-33

Curlyleaf Pondweed Results



Untreated Control Plots Established 2020

Curlyleaf Pondweed Coverage Rank

- 0 - Not Present
- 1 - (1-2%)
- 2 - (3-5%)
- 3 - (6-15%)
- 4 - (16-25%)

- 5 - (26-40%)
- 6 - (41-60%)
- 7 - (61-75%)
- 8 - (76-85%)
- 9 - (86-96%)
- 10 - (96-100%)

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane

2020_Nox_CabGorge_EWM_Pretreat_Survey - June 24, 2020



Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results - Untreated Control Plots 2020

MONTANA FWP

Plot: NOX-06

Curlyleaf Pondweed Results



Untreated Control Plots Established 2020

Curlyleaf Pondweed Coverage Rank

- + 0 - Not Present
- 1 - (1-2%)
- 2 - (3-5%)
- 3 - (6-15%)
- 4 - (16-25%)

- 5 - (26-40%)
- 6 - (41-60%)
- 7 - (61-75%)
- 8 - (76-85%)
- 9 - (86-96%)
- 10 - (96-100%)

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane

2020_Nox_CabGorge_EWM_Pretreat_Survey - June 24, 2020



Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results - Untreated Control Plots 2020

MONTANA FWP

Plot: NOX-09

Curlyleaf Pondweed Results



Untreated Control Plots Established 2020

Curlyleaf Pondweed Coverage Rank

- + 0 - Not Present
- 1 - (1-2%)
- 2 - (3-5%)
- 3 - (6-15%)
- 4 - (16-25%)

- 5 - (26-40%)
- 6 - (41-60%)
- 7 - (61-75%)
- 8 - (76-85%)
- 9 - (86-96%)
- 10 - (96-100%)

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane

2020_Nox_CabGorge_EWM_Pretreat_Survey - June 24, 2020



Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.

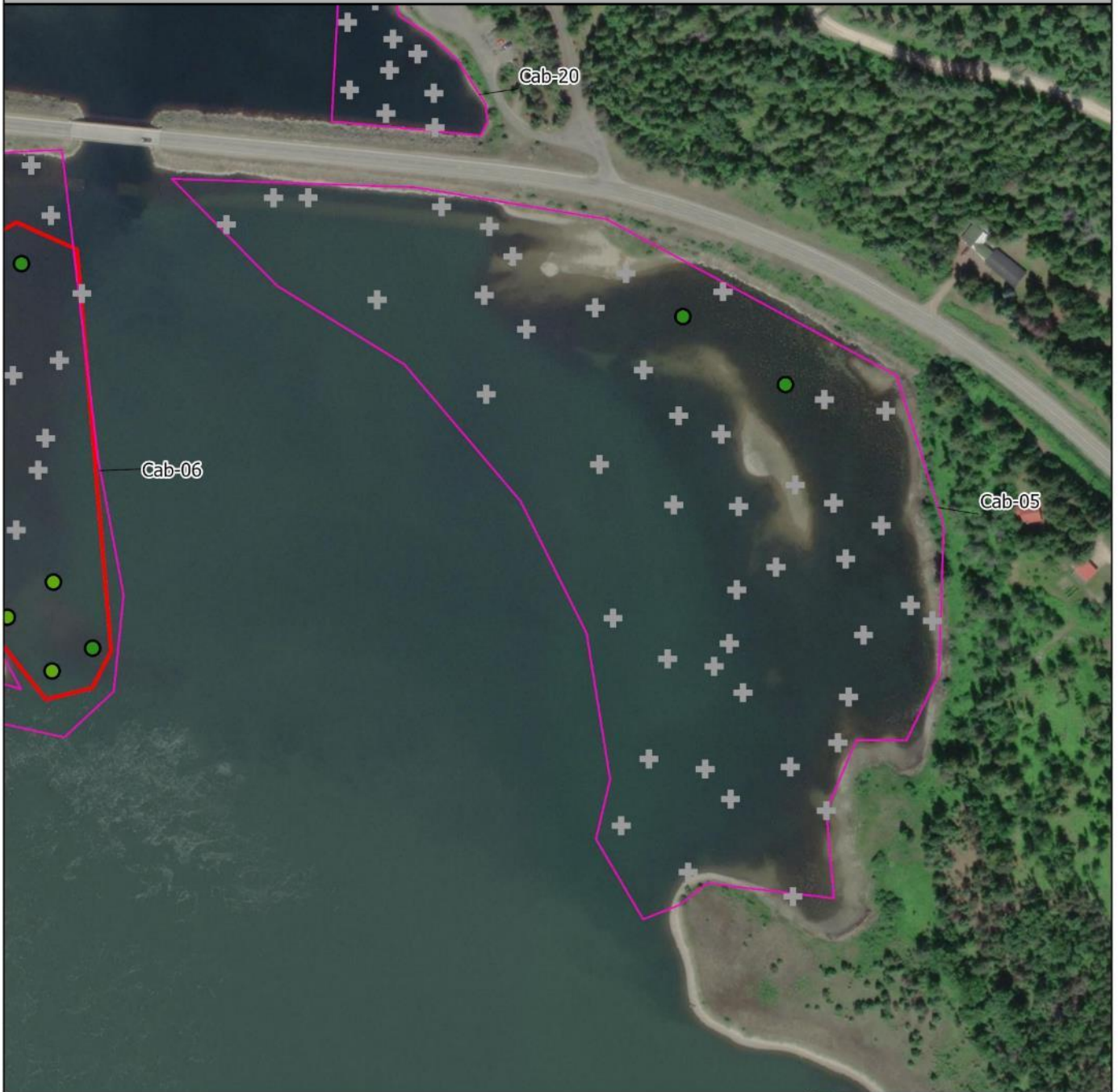


Treatment Plot Maps – Eurasian
Watermilfoil (*Myriophyllum spicatum*)

Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Cab-05

Eurasian Watermilfoil Results



Eurasian Watermilfoil Coverage Rank	7 - (61-75%)	●
0 - Not Present	8 - (76-85%)	●
1 - (1-2%)	9 - (86-95%)	●
2 - (3-5%)	10 - (96-100%)	●
3 - (6-15%)	Survey Area for Treated Plots	□
4 - (16-25%)	Potential Eurasian Watermilfoil Treatment Area	□
5 - (26-40%)		
6 - (41-60%)		

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_NoX_CabGorge_EWM_Pretreat_Survey - 07/10/2020



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Cab-06

Eurasian Watermilfoil Results



Cab-05

Cab-06

Eurasian Watermilfoil Coverage Rank	7 - (61-75%)	●
0 - Not Present	8 - (76-85%)	●
1 - (1-2%)	9 - (86-95%)	●
2 - (3-5%)	10 - (96-100%)	●
3 - (6-15%)	Survey Area for Treated Plots	□
4 - (16-25%)	Potential Eurasian Watermilfoil Treatment Area	□
5 - (26-40%)		
6 - (41-60%)		

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_NoX_CabGorge_EWM_Pretreat_Survey - 07/10/2020

Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.

Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Cab-12

Eurasian Watermilfoil Results



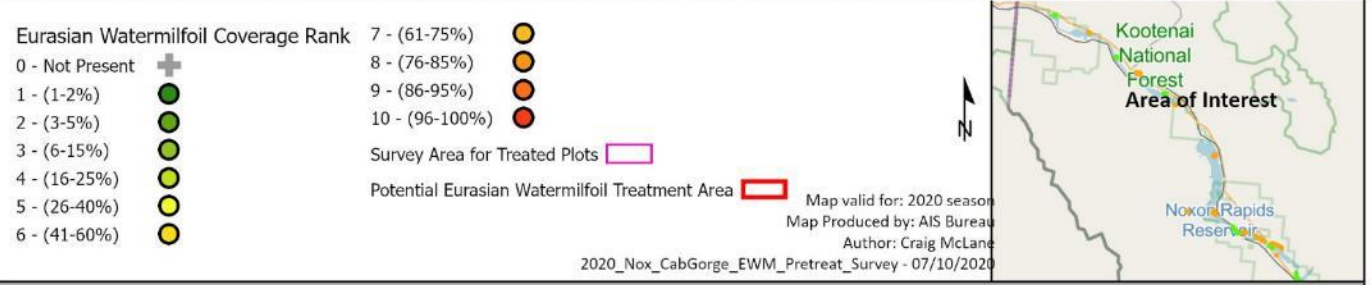
Eurasian Watermilfoil Coverage Rank	7 - (61-75%)	●
0 - Not Present	8 - (76-85%)	●
1 - (1-2%)	9 - (86-95%)	●
2 - (3-5%)	10 - (96-100%)	●
3 - (6-15%)	Survey Area for Treated Plots	□
4 - (16-25%)	Potential Eurasian Watermilfoil Treatment Area	□
5 - (26-40%)		
6 - (41-60%)		

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_NoX_CabGorge_EWM_Pretreat_Survey - 07/10/2020

Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Cab-20

Eurasian Watermilfoil Results



Credits:
Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.

Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Cab-29

Eurasian Watermilfoil Results



Eurasian Watermilfoil Coverage Rank	7 - (61-75%)	●
0 - Not Present	8 - (76-85%)	●
1 - (1-2%)	9 - (86-95%)	●
2 - (3-5%)	10 - (96-100%)	●
3 - (6-15%)	Survey Area for Treated Plots	□
4 - (16-25%)	Potential Eurasian Watermilfoil Treatment Area	□
5 - (26-40%)		
6 - (41-60%)		

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_NoX_CabGorge_EWM_Pretreat_Survey - 07/10/2020

Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Cab-30

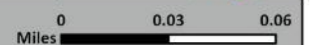
Eurasian Watermilfoil Results



Eurasian Watermilfoil Coverage Rank	7 - (61-75%)	●
0 - Not Present	8 - (76-85%)	●
1 - (1-2%)	9 - (86-95%)	●
2 - (3-5%)	10 - (96-100%)	●
3 - (6-15%)	Survey Area for Treated Plots	□
4 - (16-25%)	Potential Eurasian Watermilfoil Treatment Area	□
5 - (26-40%)		
6 - (41-60%)		

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_NoX_CabGorge_EWM_Pretreat_Survey - 07/10/2020

Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-01

Eurasian Watermilfoil Results



Eurasian Watermilfoil Coverage Rank		7 - (61-75%)	●
0 - Not Present	+	8 - (76-85%)	●
1 - (1-2%)	●	9 - (86-95%)	●
2 - (3-5%)	●	10 - (96-100%)	●
3 - (6-15%)	●	Survey Area for Treated Plots	□
4 - (16-25%)	●	Potential Eurasian Watermilfoil Treatment Area	□
5 - (26-40%)	●	Map valid for: 2020 season	
6 - (41-60%)	●	Map Produced by: AIS Bureau	
		Author: Craig McLane	
		2020_Nox_CabGorge_EWM_Pretreat_Survey - 07/10/2020	



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-02

Eurasian Watermilfoil Results



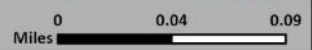
Nox-02

Eurasian Watermilfoil Coverage Rank	7 - (61-75%)	●
0 - Not Present	8 - (76-85%)	●
1 - (1-2%)	9 - (86-95%)	●
2 - (3-5%)	10 - (96-100%)	●
3 - (6-15%)		
4 - (16-25%)	Survey Area for Treated Plots	□
5 - (26-40%)	Potential Eurasian Watermilfoil Treatment Area	□
6 - (41-60%)		

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_Nox_CabGorge_EWM_Pretreat_Survey - 07/10/2020



Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-03

Eurasian Watermilfoil Results



Eurasian Watermilfoil Coverage Rank	7 - (61-75%)	
0 - Not Present	8 - (76-85%)	
1 - (1-2%)	9 - (86-95%)	
2 - (3-5%)	10 - (96-100%)	
3 - (6-15%)	Survey Area for Treated Plots	
4 - (16-25%)	Potential Eurasian Watermilfoil Treatment Area	
5 - (26-40%)		
6 - (41-60%)		

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_Nox_CabGorge_EWM_Pretreat_Survey - 07/10/2020

Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-04

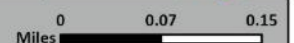
Eurasian Watermilfoil Results



Eurasian Watermilfoil Coverage Rank	7 - (61-75%)	
0 - Not Present	8 - (76-85%)	
1 - (1-2%)	9 - (86-95%)	
2 - (3-5%)	10 - (96-100%)	
3 - (6-15%)	Survey Area for Treated Plots	
4 - (16-25%)	Potential Eurasian Watermilfoil Treatment Area	
5 - (26-40%)		
6 - (41-60%)		

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_Nox_CabGorge_EWM_Pretreat_Survey - 07/10/2020

Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-08

Eurasian Watermilfoil Results



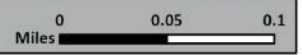
Eurasian Watermilfoil Coverage Rank	7 - (61-75%)	●
0 - Not Present	8 - (76-85%)	●
1 - (1-2%)	9 - (86-95%)	●
2 - (3-5%)	10 - (96-100%)	●
3 - (6-15%)	Survey Area for Treated Plots	□
4 - (16-25%)	Potential Eurasian Watermilfoil Treatment Area	□
5 - (26-40%)		
6 - (41-60%)		



Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane

2020_Nox_CabGorge_EWM_Pretreat_Survey - 07/10/2020

Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-11

Eurasian Watermilfoil Results



Nox-11

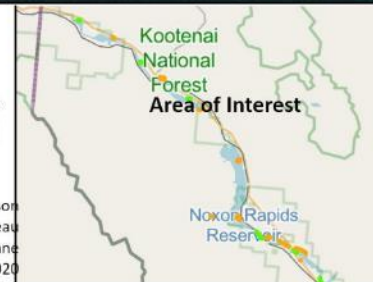
Eurasian Watermilfoil Coverage Rank		
0 - Not Present	+	
1 - (1-2%)	●	
2 - (3-5%)	●	
3 - (6-15%)	●	
4 - (16-25%)	●	
5 - (26-40%)	●	
6 - (41-60%)	●	
7 - (61-75%)	●	
8 - (76-85%)	●	
9 - (86-95%)	●	
10 - (96-100%)	●	

Survey Area for Treated Plots

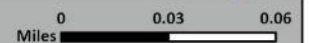
Potential Eurasian Watermilfoil Treatment Area

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane

2020_Nox_CabGorge_EWM_Pretreat_Survey - 07/10/2020



Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-31

Eurasian Watermilfoil Results

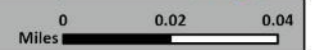


Eurasian Watermilfoil Coverage Rank	7 - (61-75%)	●
0 - Not Present	8 - (76-85%)	●
1 - (1-2%)	9 - (86-95%)	●
2 - (3-5%)	10 - (96-100%)	●
3 - (6-15%)	Survey Area for Treated Plots	□
4 - (16-25%)	Potential Eurasian Watermilfoil Treatment Area	□
5 - (26-40%)		
6 - (41-60%)		

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_Nox_CabGorge_EWM_Pretreat_Survey - 07/10/2020



Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-52

Eurasian Watermilfoil Results



Nox-52

Eurasian Watermilfoil Coverage Rank		
0 - Not Present	+	
1 - (1-2%)	●	
2 - (3-5%)	●	
3 - (6-15%)	●	
4 - (16-25%)	●	
5 - (26-40%)	●	
6 - (41-60%)	●	
7 - (61-75%)	●	
8 - (76-85%)	●	
9 - (86-95%)	●	
10 - (96-100%)	●	

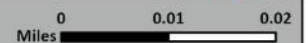
Survey Area for Treated Plots
 Potential Eurasian Watermilfoil Treatment Area

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane

2020_Nox_CabGorge_EWM_Pretreat_Survey - 07/10/2020



Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-73

Eurasian Watermilfoil Results



Eurasian Watermilfoil Coverage Rank	7 - (61-75%)	
0 - Not Present	8 - (76-85%)	
1 - (1-2%)	9 - (86-95%)	
2 - (3-5%)	10 - (96-100%)	
3 - (6-15%)	Survey Area for Treated Plots	
4 - (16-25%)	Potential Eurasian Watermilfoil Treatment Area	
5 - (26-40%)		
6 - (41-60%)		

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_Nox_CabGorge_EWM_Pretreat_Survey - 07/10/2020

Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.

Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-77

Eurasian Watermilfoil Results



Eurasian Watermilfoil Coverage Rank	7 - (61-75%)	●
0 - Not Present	8 - (76-85%)	●
1 - (1-2%)	9 - (86-95%)	●
2 - (3-5%)	10 - (96-100%)	●
3 - (6-15%)	Survey Area for Treated Plots	□
4 - (16-25%)	Potential Eurasian Watermilfoil Treatment Area	□
5 - (26-40%)		
6 - (41-60%)		

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_Nox_CabGorge_EWM_Pretreat_Survey - 07/10/2020

Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-78

Eurasian Watermilfoil Results



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-79

Eurasian Watermilfoil Results



Eurasian Watermilfoil Coverage Rank		7 - (61-75%)	●
0 - Not Present	+	8 - (76-85%)	●
1 - (1-2%)	●	9 - (86-95%)	●
2 - (3-5%)	●	10 - (96-100%)	●
3 - (6-15%)	●	Survey Area for Treated Plots	□
4 - (16-25%)	●	Potential Eurasian Watermilfoil Treatment Area	□
5 - (26-40%)	●	Map valid for: 2020 season	
6 - (41-60%)	●	Map Produced by: AIS Bureau	
		Author: Craig McLane	
		2020_Nox_CabGorge_EWM_Pretreat_Survey - 07/10/2020	

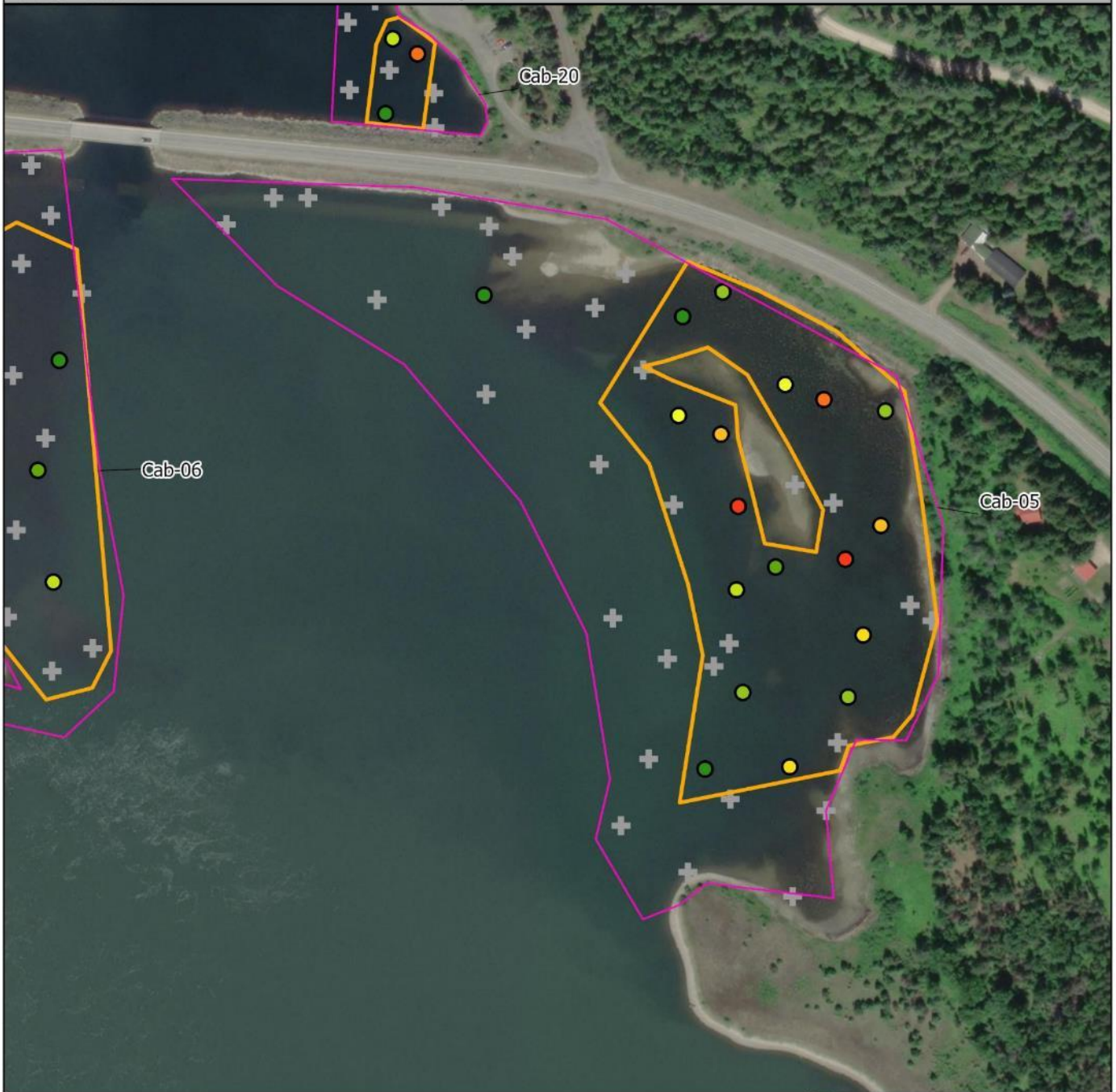
Kootenai National Forest Area of Interest

Noxon Rapids Reservoir

Treatment Plot Maps – Curlyleaf Pondweed
(*Potamogeton crispus*)

Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

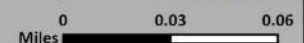
Plot: Cab-05 Curlyleaf Pondweed Results



Survey Area for Treated Plots		4 - (16-25%)	
Potential Curlyleaf Treatment Area		5 - (26-40%)	
Curlyleaf Pondweed Coverage Rank		6 - (41-60%)	
0 - Not Present		7 - (61-75%)	
1 - (1-2%)		8 - (76-85%)	
2 - (3-5%)		9 - (86-96%)	
3 - (6-15%)		10 - (96-100%)	



Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_NoX_CabGorge_EWM_Pretreat_Survey - 7/10/2020















Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.








Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Cab-06

Curlyleaf Pondweed Results



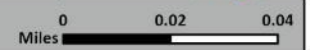
Survey Area for Treated Plots		4 - (16-25%)	
Potential Curlyleaf Treatment Area		5 - (26-40%)	
Curlyleaf Pondweed Coverage Rank		6 - (41-60%)	
0 - Not Present		7 - (61-75%)	
1 - (1-2%)		8 - (76-85%)	
2 - (3-5%)		9 - (86-96%)	
3 - (6-15%)		10 - (96-100%)	

	4 - (16-25%)
	5 - (26-40%)
	6 - (41-60%)
	7 - (61-75%)
	8 - (76-85%)
	9 - (86-96%)
	10 - (96-100%)



Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_NoX_CabGorge_EWM_Pretreat_Survey - 7/10/2020

Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Cab-12

Curlyleaf Pondweed Results

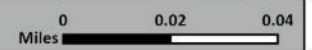


Survey Area for Treated Plots		4 - (16-25%)	
Potential Curlyleaf Treatment Area		5 - (26-40%)	
Curlyleaf Pondweed Coverage Rank		6 - (41-60%)	
0 - Not Present		7 - (61-75%)	
1 - (1-2%)		8 - (76-85%)	
2 - (3-5%)		9 - (86-96%)	
3 - (6-15%)		10 - (96-100%)	



Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_NoX_CabGorge_EWM_Pretreat_Survey - 7/10/2020

Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Cab-20

Curlyleaf Pondweed Results



Survey Area for Treated Plots		4 - (16-25%)	
Potential Curlyleaf Treatment Area		5 - (26-40%)	
Curlyleaf Pondweed Coverage Rank		6 - (41-60%)	
0 - Not Present		7 - (61-75%)	
1 - (1-2%)		8 - (76-85%)	
2 - (3-5%)		9 - (86-96%)	
3 - (6-15%)		10 - (96-100%)	



Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_NoX_CabGorge_EWM_Pretreat_Survey - 7/10/2020

Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.

Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Cab-29

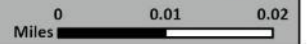
Curlyleaf Pondweed Results



Survey Area for Treated Plots		4 - (16-25%)	
Potential Curlyleaf Treatment Area		5 - (26-40%)	
Curlyleaf Pondweed Coverage Rank		6 - (41-60%)	
0 - Not Present		7 - (61-75%)	
1 - (1-2%)		8 - (76-85%)	
2 - (3-5%)		9 - (86-96%)	
3 - (6-15%)		10 - (96-100%)	

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_NoX_CabGorge_EWM_Pretreat_Survey - 7/10/2020

Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.
















Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP


Plot: Cab-30

Curlyleaf Pondweed Results

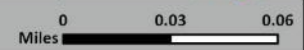


Survey Area for Treated Plots		4 - (16-25%)	
Potential Curlyleaf Treatment Area		5 - (26-40%)	
Curlyleaf Pondweed Coverage Rank		6 - (41-60%)	
0 - Not Present		7 - (61-75%)	
1 - (1-2%)		8 - (76-85%)	
2 - (3-5%)		9 - (86-96%)	
3 - (6-15%)		10 - (96-100%)	

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_NoX_CabGorge_EWM_Pretreat_Survey - 7/10/2020



Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-01 Curlyleaf Pondweed Results



Nox-01

- Survey Area for Treated Plots
- Potential Curlyleaf Treatment Area
- Curlyleaf Pondweed Coverage Rank
- 0 - Not Present +
- 1 - (1-2%) ●
- 2 - (3-5%) ●
- 3 - (6-15%) ●
- 4 - (16-25%) ●
- 5 - (26-40%) ●
- 6 - (41-60%) ●
- 7 - (61-75%) ●
- 8 - (76-85%) ●
- 9 - (86-96%) ●
- 10 - (96-100%) ●

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_NoX_CabGorge_EWM_Pretreat_Survey - 7/10/2020



Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-02 Curlyleaf Pondweed Results



Nox-02

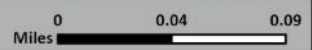
- Survey Area for Treated Plots
- Potential Curlyleaf Treatment Area
- Curlyleaf Pondweed Coverage Rank
- 0 - Not Present +
- 1 - (1-2%) ●
- 2 - (3-5%) ●
- 3 - (6-15%) ●
- 4 - (16-25%) ●
- 5 - (26-40%) ●
- 6 - (41-60%) ●
- 7 - (61-75%) ●
- 8 - (76-85%) ●
- 9 - (86-96%) ●
- 10 - (96-100%) ●

2020_Nox_CabGorge_EWM_Pretreat_Survey - 7/10/2020



Map valid for: 2020 season
Map Produced by: AIS Bureau
Author: Craig McLane

Credits:
Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-03

Curlyleaf Pondweed Results



Survey Area for Treated Plots		4 - (16-25%)	
Potential Curlyleaf Treatment Area		5 - (26-40%)	
Curlyleaf Pondweed Coverage Rank		6 - (41-60%)	
0 - Not Present		7 - (61-75%)	
1 - (1-2%)		8 - (76-85%)	
2 - (3-5%)		9 - (86-96%)	
3 - (6-15%)		10 - (96-100%)	

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_NoX_CabGorge_EWM_Pretreat_Survey - 7/10/2020

Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-04

Curlyleaf Pondweed Results

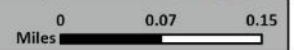


Curlyleaf Pondweed Coverage Rank	7 - (61-75%)	
0 - Not Present	8 - (76-85%)	
1 - (1-2%)	9 - (86-96%)	
2 - (3-5%)	10 - (96-100%)	
3 - (6-15%)		
4 - (16-25%)		
5 - (26-40%)		
6 - (41-60%)		
	Survey Area for Treated Plots	
	Potential Curlyleaf Treatment Area	



Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_NoX_CabGorge_EWM_Pretreat_Survey - 7/10/2020

Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-08

Curlyleaf Pondweed Results



Curlyleaf Pondweed Coverage Rank	7 - (61-75%)	
0 - Not Present	8 - (76-85%)	
1 - (1-2%)	9 - (86-96%)	
2 - (3-5%)	10 - (96-100%)	
3 - (6-15%)		
4 - (16-25%)		
5 - (26-40%)		
6 - (41-60%)		
	Survey Area for Treated Plots	
	Potential Curlyleaf Treatment Area	

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_Nox_CabGorge_EWM_Pretreat_Survey - 7/10/2020



Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-11

Curlyleaf Pondweed Results

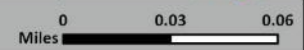


Curlyleaf Pondweed Coverage Rank	7 - (61-75%)	
0 - Not Present	8 - (76-85%)	
1 - (1-2%)	9 - (86-96%)	
2 - (3-5%)	10 - (96-100%)	
3 - (6-15%)		
4 - (16-25%)		
5 - (26-40%)		
6 - (41-60%)		
	Survey Area for Treated Plots	
	Potential Curlyleaf Treatment Area	

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_NoX_CabGorge_EWM_Pretreat_Survey - 7/10/2020



Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-31

Curlyleaf Pondweed Results



Nox-31

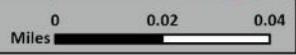
- Curlyleaf Pondweed Coverage Rank**
- 0 - Not Present +
 - 1 - (1-2%) ●
 - 2 - (3-5%) ●
 - 3 - (6-15%) ●
 - 4 - (16-25%) ●
 - 5 - (26-40%) ●
 - 6 - (41-60%) ●
 - 7 - (61-75%) ●
 - 8 - (76-85%) ●
 - 9 - (86-96%) ●
 - 10 - (96-100%) ●

Survey Area for Treated Plots
 Potential Curlyleaf Treatment Area

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_Nox_CabGorge_EWM_Pretreat_Survey - 7/10/2020



Credits: Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-52 Curlyleaf Pondweed Results



Nox-52

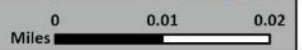
Curlyleaf Pondweed Coverage Rank	7 - (61-75%)	
0 - Not Present	8 - (76-85%)	
1 - (1-2%)	9 - (86-96%)	
2 - (3-5%)	10 - (96-100%)	
3 - (6-15%)		
4 - (16-25%)		
5 - (26-40%)		
6 - (41-60%)		

	Survey Area for Treated Plots	
	Potential Curlyleaf Treatment Area	

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_NoX_CabGorge_EWM_Pretreat_Survey - 7/10/2020



Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-73

Curlyleaf Pondweed Results



Curlyleaf Pondweed Coverage Rank	7 - (61-75%)	
0 - Not Present	8 - (76-85%)	
1 - (1-2%)	9 - (86-96%)	
2 - (3-5%)	10 - (96-100%)	
3 - (6-15%)		
4 - (16-25%)		
5 - (26-40%)		
6 - (41-60%)		

	Survey Area for Treated Plots	
	Potential Curlyleaf Treatment Area	

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_NoX_CabGorge_EWM_Pretreat_Survey - 7/10/2020



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-77

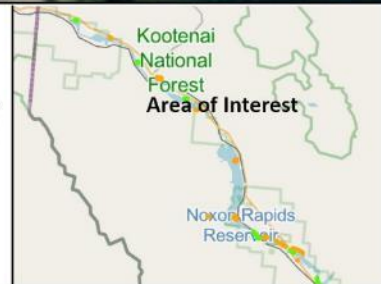
Curlyleaf Pondweed Results



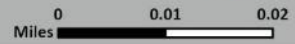
Curlyleaf Pondweed Coverage Rank	7 - (61-75%)	●
0 - Not Present	8 - (76-85%)	●
1 - (1-2%)	9 - (86-96%)	●
2 - (3-5%)	10 - (96-100%)	●
3 - (6-15%)		
4 - (16-25%)		
5 - (26-40%)		
6 - (41-60%)		

Survey Area for Treated Plots
 Potential Curlyleaf Treatment Area

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_NoX_CabGorge_EWM_Pretreat_Survey - 7/10/2020



Credits:
 Sampling data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI.



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-78 Curlyleaf Pondweed Results



Curlyleaf Pondweed Coverage Rank	7 - (61-75%)	●
0 - Not Present	8 - (76-85%)	●
1 - (1-2%)	9 - (86-96%)	●
2 - (3-5%)	10 - (96-100%)	●
3 - (6-15%)		
4 - (16-25%)	Survey Area for Treated Plots	□
5 - (26-40%)	Potential Curlyleaf Treatment Area	□
6 - (41-60%)		

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_NoX_CabGorge_EWM_Pretreat_Survey - 7/10/2020



Sampling Results and Potential Treatment Plots for 2020 MONTANA FWP

Plot: Nox-79 Curlyleaf Pondweed Results



Curlyleaf Pondweed Coverage Rank	7 - (61-75%)	
0 - Not Present	8 - (76-85%)	
1 - (1-2%)	9 - (86-96%)	
2 - (3-5%)	10 - (96-100%)	
3 - (6-15%)		
4 - (16-25%)		
5 - (26-40%)		
6 - (41-60%)		

	Survey Area for Treated Plots	
	Potential Curlyleaf Treatment Area	

Map valid for: 2020 season
 Map Produced by: AIS Bureau
 Author: Craig McLane
 2020_NoX_CabGorge_EWM_Pretreat_Survey - 7/10/2020

