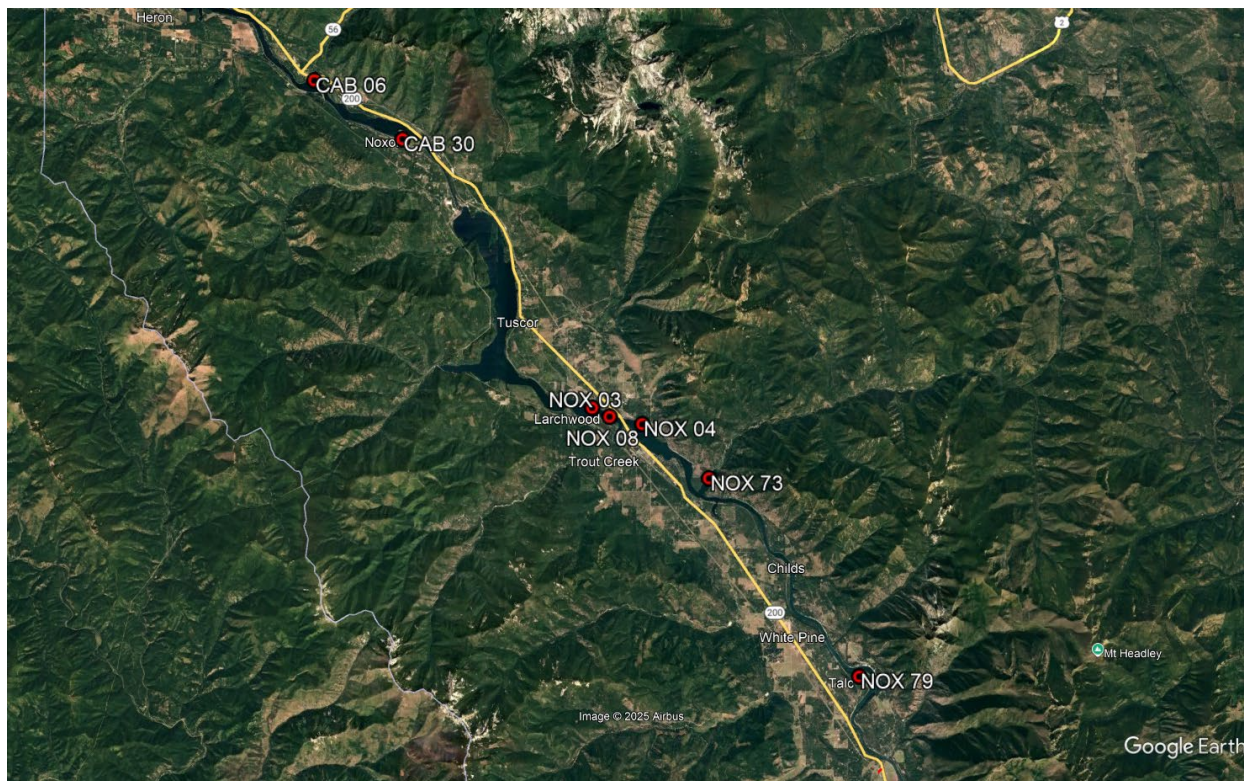


**NOXON RAPIDS AND CABINET GORGE RESERVOIRS
SANDERS COUNTY, MONTANA**

**2025 Aquatic Invasive Species (AIS)
Aquatic Pesticide Application Report (APAR)**



Prepared By:
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August 2025

BACKGROUND INFORMATION: Clean Lakes, Inc. (CLI) was contracted by Sanders County, Montana to provide aquatic herbicide applications for the control of Aquatic Invasive Species (AIS) within specific areas of Noxon Rapids and Cabinet Gorge Reservoirs in July 2025. Aquatic herbicide applications were conducted in compliance with the Montana Department of Environmental Quality, Montana Pollutant Discharge Elimination System (NPDES) Pesticide General Permit (PGP) for Pesticide Application (NOI Permit # MTG870011), as well as the Pesticide Discharge Management Plan (PDMP) developed as part of the PGP. The Permit related information is included in the Noxon Rapids Reservoir, Sanders County, Montana 2025 Aquatic Invasive Species Aquatic Pesticide Application Plan (APAP) prepared by CLI.

SCOPE OF WORK: The scope of work was for the application of aquatic herbicides for the control of Eurasian watermilfoil (EWM) in a total of 29.17 acres within previously identified and delineated areas of Noxon Rapids and Cabinet Gorge Reservoirs.

PRE-TREATMENT SURVEYS: In June 2025 Craig McLane (Montana Fish, Wildlife and Parks (MTFWP)) carried out visual and point intercept surveys in areas where nuisance growths of aquatic invasive species (AIS) were identified in previous surveys. On July 1, 2025, CLI received the potential 2025 treatment GIS polygons and survey points from Kim McMahon (Sanders County Aquatic Invasive Species Task Force) as developed by Craig McLane (MTFWP). CLI developed a tentative budgetary plan on July 1, 2025 with a final plan approved on July 2, 2025 based on reviewing conditions prior to treatment. Due to more EWM visible on the water surface the day of treatment management area, NOX-04 treatment area was expanded to 4.77 acres from 3.0 acres from the final treatment plan (See APAP). A treatment was scheduled for the week of July 21, with treatments ultimately carried out on July 22 and 23, 2025.

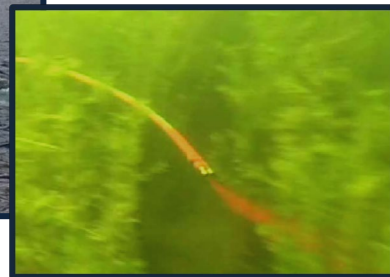
SUMMARY OF ACRES TREATED: The final plan consisted of treating 29.17 acres of EWM in Noxon Rapids and Cabinet Gorge Reservoirs. Treatment plots were identified through GIS shapefiles and treatment plans at the direction of the county. The aquatic herbicide Littora® (diquat dibromide) and Semera SC® (flumioxazin) were used in combination for treatment at all sites.

TREATMENT SCHEDULE: The aquatic herbicide applications were performed on July 22 and 23, 2025 by CLI staff Thomas McNabb and field support staff as outlined in Table 1 below:

Table 1: Treatment Plots, Dates and Times

Plot Number	Plot Description	Acreage (Ac)	Mean Depth (ft)	Volume (Ac ft)	Date	Start	Stop	Applicator	Applicator Number	Wind (mph)	Wind from Direction	Sky	Water Temp (F)
	Noxon Rapids and Cabinet Gorge												
Nox79	Finley Flats Ramp	3	5.5	16.50	7/22/2025	10:40 AM	10:50 AM	Thomas McNabb	103231-12	0	None	cloudy	72.00
Nox73	Vermillion Bay Ramp	1.6	5.5	8.80	7/22/2025	11:30 AM	11:48 AM	Thomas McNabb	103231-12	0	None	cloudy	73.00
Nox03	North Shore Campground	2.5	5.5	13.75	7/22/2025	1:50 PM	2:05 PM	Thomas McNabb	103231-12	0	None	cloudy	73.00
Nox04	North Shore E of Hwy 200 Bridge	4.77	5.5	26.24	7/22/2025	12:10 PM	12:30 PM	Thomas McNabb	103231-12	1.4	E	cloudy	73.00
Nox08	North Shore W of Hwy 200 Bridge	9.1	5.5	50.05	7/22/2025	1:15 PM	1:40 PM	Thomas McNabb	103231-12	1	E	cloudy	73.00
	subtotal	20.97											
Cab30	Noxon Community Park	5.7	3	17.10	7/23/2025	9:02 AM	9:20 AM	Thomas McNabb	103231-12	5	SW	cloudy	68.60
Cab06	SW of Bull River Bridge	2.5	3.2	8.00	7/23/2025	9:35 AM	9:47 AM	Thomas McNabb	103231-12	5	SW	cloudy	68.60
	subtotal	8.20											
	Total	29.17											

EQUIPMENT USED: A CLI Littoral Zone Treatment vessel (LittLine®) was used to perform the aquatic herbicide applications on July 22 and 23, 2025. The herbicide applications were made to the lower portion of the water column to increase herbicide concentration and exposure time (CET) relationships for the control of the target species. The application vessel was inspected on July 22, 2025 at the Clark Fork, Idaho Aquatic Invasive Species inspection station prior to entering Montana.



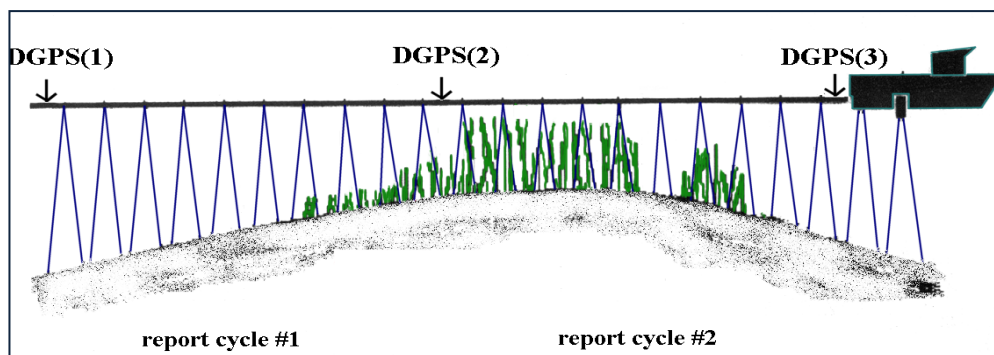
The AIS treatment area GIS shapefiles were loaded into the LittLine® GPS system for vessel guidance and herbicide application data recording. The LittLine® can place herbicides at any depth within the water column (2 - 30 feet), as well as within the bottom 2 foot of the water



column. Impacts from currents, wind and wave action are reduced in deep water applications through the use of the LittLine® application system when compared to conventional subsurface applications. The herbicide application in all of the plots was within the bottom portion of the water column.

The LittLine system's computerized rate controllers regulate the aquatic herbicide applications through preset treatment rates.

A Digital Echosounder System with a Structure Scan Module (Lowrance model) was used to record data of the submerged aquatic vegetation (SAV) profile in the control plots during treatment and during the post treatment survey. Data was collected in both the .SLG (traditional sonar on HDS line) and the .SL2 (multi-channel structure scan) formats and processed through Biobase, a cloud based subscription service.



The sonar data collected was processed and analyzed for At Time of Treatment Submerged Aquatic Vegetation (SAV) in the treatment plots (July 22, 2025 in Noxon Rapids Reservoir and July 23, 2025 in Cabinet Gorge Reservoir), and at six (6) Weeks Post Treatment (September 4 and 5, 2024). Data was collected to compare At Time of Treatment and six (6) Week Post

Treatment for SAV coverage, height in the water column, and bio-volume to support post-treatment efficacy evaluations. An example of SAV conditions At Time of Treatment for NOX08, Noxon Rapids Reservoir, is pictured at right.



AQUATIC HERBICIDES CLI provided the aquatic herbicides for the project, the required support equipment, as well as support vehicles for the vessels assigned to the project. The aquatic herbicides were applied to the specified areas of Noxon Rapids and Cabinet Gorge Reservoirs for the control of Eurasian watermilfoil, as outlined in the Site Data Tables below (Herbicide Label's and Material Safety Data Sheets (MSDS's) are included in the Aquatic Pesticide Application Plan (APAP), provided previously). Provided in Table 2 is the Treatment Site Data outlining treatment information for each plot. Kim McMahon (Pinnacle Research) was on site the day of treatment.

TREATMENT SITE DATA

Table 2: Noxon Rapids and Cabinet Gorge Reservoirs
Reservoir, Plot Treatment Site Data, Aquatic Herbicides Used:

2025 Noxon-Cabinet Reservoirs Treatment Plan					USEPA Reg. # 67690-53 Littora (Diquat)			USEPA Reg # 9123-204 Semera SC (Flumioxazin)		
Plot Number	Plot Description	Acreage (Ac)	Mean Depth (ft)	Volume (Ac ft)	Rate ppm	Gal/Ac ft	Gallons Total Site	Rate ppb	Gsl/Ac ft	Gals Total Site
Noxon Rapids Reservoir										
Nox79	Finley Flats Ramp	3	5.5	16.50	0.37	0.5	8.2	200.0	0.14	2.3
Nox73	Vermillion Bay Ramp	1.6	5.5	8.80	0.37	0.5	4.4	200.0	0.14	1.2
Nox03	North Shore Campground	2.5	5.5	13.75	0.37	0.5	6.9	200.0	0.14	1.9
Nox04	North Shore E of Hwy 200 Bridge	4.77	5.5	26.24	0.37	0.5	13.2	200.0	0.14	3.7
Nox08	North Shore W of Hwy 200 Bridge	9.1	5.5	50.05	0.37	0.5	25.1	200.0	0.14	7.0
	subtotal	20.97					57.8			16.1
Cabinet Gorge Reservoir										
Cab30	Noxon Community Park	5.7	3	17.10	0.37	0.5	8.5	200.0	0.14	2.4
Cab06	SW of Bull River Bridge	2.5	3.2	8.00	0.37	0.5	4.0	200.0	0.14	1.1
	subtotal	8.20					12.5			3.5
	Total	29.17					70			20
Aquatic herbicide used recommended by Sanders County, Clean Lakes, Inc.										

PERMIT COMPLIANCE: CLI developed the Aquatic Pesticide Application Plan on July 16, 2025, as well as the Pesticide Discharge Management Plan (PDMP- July 15, 2025) required for the new NPDES Permit cycle. Sanders County provided the required permits and approvals for the herbicide treatments from the Montana Department of Environmental Quality. There were no adverse incidents to report. Herbicide equipment calibration occurred on July 8, 2025.

Pesticide Discharge Management Plan (PDMP)
Threatened and Sensitive Species Reservoirs Aquatic Invasive Plant Management Project 2025

Pesticide Discharge Management Plan
for:
Eurasian watermilfoil and Curly-leaf Pondweed
Sanders County Aquatic Invasive Plant
Management Project

Decision-maker(s):
Sanders County Aquatic Invasive Plant Task Force
Kim McMahon, Facilitator
PO Box 1690
Plains, MT 59859
(406) 346-2447
kim.mcmahon@sciaquatic.com

PDMP Contact(s):
Clean Lakes, Inc.
Thomas Moorhouse
PO Box 1548
208-928-2727
tommoorhouse@cleanlakes.com

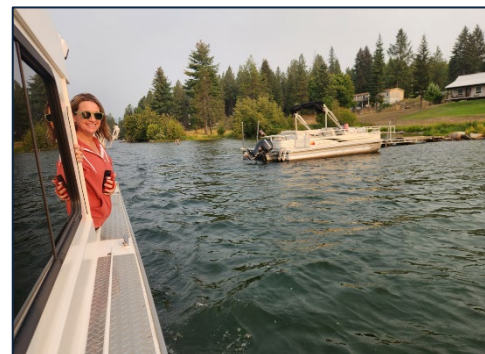
PDMP Preparation Date:
July 2025

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SERVICES PROVIDED BY CLI: All manpower, materials, insurance, equipment and technical advice required to perform aquatic herbicide applications in the project areas.

SERVICES PROVIDED BY SANDERS COUNTY: Sanders County provided the required permits, published legal notices in newspapers, provided notification to property owners, posting at public boat launch facilities, and provided the project area GIS shapefiles from the 2025 Pre-Treatment Surveys that were used to generate the final 2025 Treatment Plan.

POST TREATMENT SURVEY: The Post Treatment survey was carried out by Kim McMahon and CLI (Tom Moorhouse, Drew McNabb) on a vessel provided by CLI at Noxon Rapids Reservoir on September 5, 2025, approximately six weeks after treatment. Cabinet Gorge Reservoir was surveyed by CLI staff (Moorhouse, McNabb) on September 4, 2025. Surveys were conducted through a combination of techniques, including visual estimates of injury/control, rake tosses, and via the use of a Lowrance HDS-9 where depth allowed. Sonar logs were processed through Biobase, as described above. Table 3 provides information related to efficacy in each plot compared to At-Time of Treatment and Post Treatment Control. In Noxon Rapids Reservoir the change in SAV Biovolume (BV), as measured through sonar surveys, shows a reduction range of 64% to 83%, while Post Treatment EWM Injury ranged from 95 to



100%. Post EWM Injury was determined through visual observation from the survey boat and by throwing a weed rake randomly within the management area. In Cabinet Gorge Reservoir the change in SAV Biovolume (BV) shows a gain of 28% at one management area to a reduction of 18% in the other area, while Post Treatment EWM Injury was 50 to 75%.

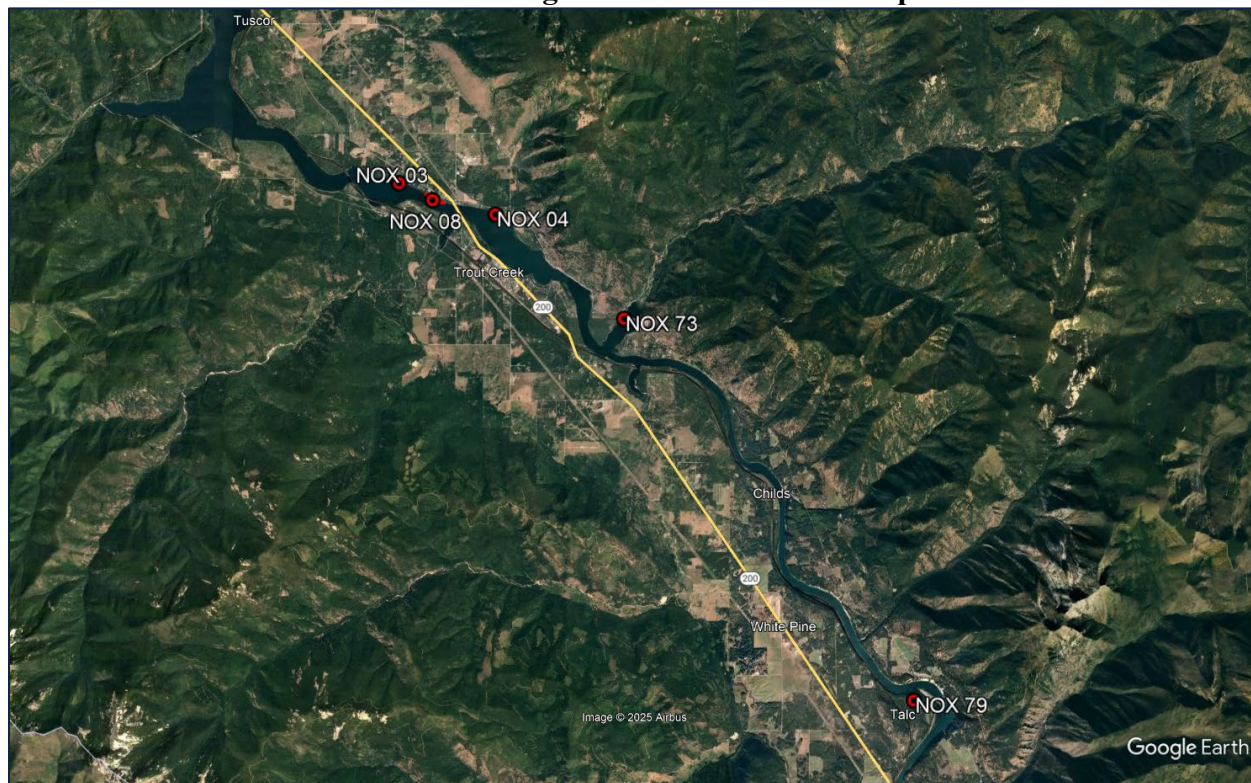
Table 3: Plot Percent Submersed Aquatic Vegetation (SAV) Cover and SAV Bio-Volume Present At Time of Application and Six (6) Weeks Post Treatment

2025 Noxon Rapids Reservoir AIS Treatment Plots: At Time of and ~ Six (6) Week Post Plot SAV % Cover and SAV BioVolume Data (Grid Data)									
Plot Number	Date Data Collected Pre Treatment	SAV % Cover	SAV % Bio-Volume	Date Data Collected- Post Treatment	SAV % Cover	SAV % Bio-Volume	SAV % BV Change	Post Treatment EWM Injury Rank	Herbicides Used
Noxon Rapids Reservoir									
Nox 79	7/22/2025	100.0	95.0	9/5/2025	31.9	15.9	-83%	100%	Littora + Semera SC
Nox 73	7/22/2025	100.0	31.3	9/5/2025	61.4	9.6	-69%	100%	Littora + Semera SC
Nox 03	7/22/2025	100.0	45.6	9/5/2025	77.6	13.3	-71%	>95%	Littora + Semera SC
Nox 04	7/22/2025	99.9	50.3	9/5/2025	83.7	18.1	-64%	98%	Littora + Semera SC
Nox 08	7/22/2025	100.0	49.4	9/5/2025	88.1	9.2	-81%	>95%	Littora + Semera SC
2025 Cabinet Gorge Reservoir AIS Treatment Plots: At Time of and ~ Six (6) Week Post Plot SAV % Cover and SAV BioVolume Data (Grid Data)									
Plot Number	Date Data Collected Pre Treatment	SAV % Cover	SAV % Bio-Volume	Date Data Collected- Post Treatment	SAV % Cover	SAV % Bio-Volume	SAV % BV Change	Post Treatment EWM Injury Rank	Herbicides Used
Cabinet Gorge Reservoir									
Cab30	7/23/2025	100	41	9/4/2025	100.0	52.4	28%	50%	Littora + Semera SC
Cab06	7/23/2025	100	45	9/4/2025	100.0	37.0	-18%	75%	Littora + Semera SC

The observations contained in this report (see below) are general six (6) week Post Treatment observations and should not be used for control efficacy evaluations. In addition, it should be noted that a Post Treatment change in Submerged Aquatic Vegetation (SAV) Percent Area Coverage, height in the water column, and bio-volume can many times be attributed to a recovery or increase in native vegetation in response to selectively controlling the target species.

TREATMENT AREA PLOT MAPS

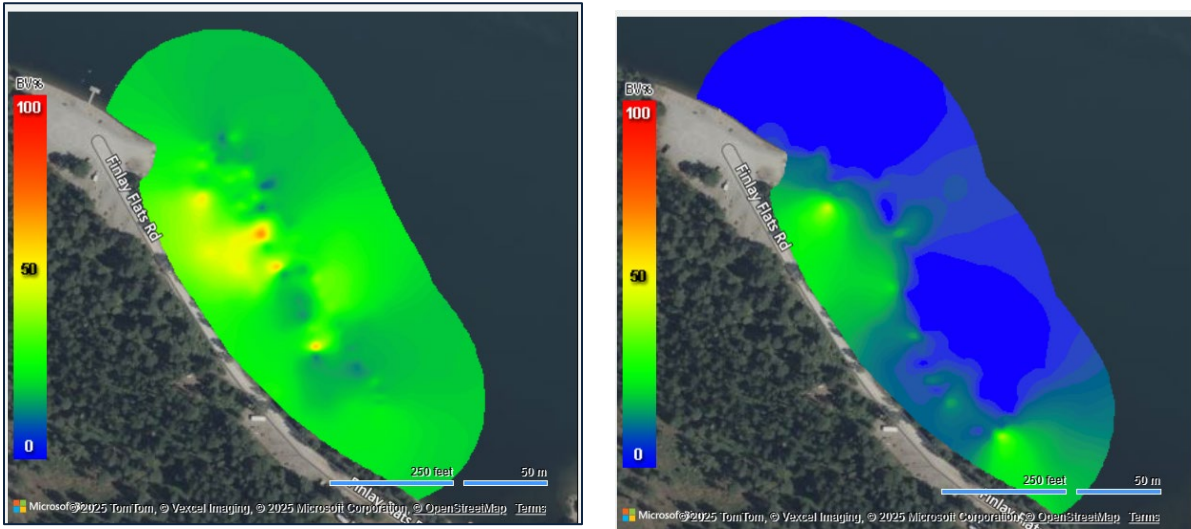
Overview of the 2025 Management Areas – Noxon Rapids Reservoir



PRE AND POST TREATMENT SUBMERSED AQUATIC VEGETATION (SAV) DATA,
SAV PERCENT COVER, AND BIO-VOLUME DATA SETS

NOXON RAPIDS RESERVOIR

Plot NOX-79: At Time of Treatment (July 22, 2025 – Left),
~ Six (6) Weeks Post (September 5, 2024 - Right)

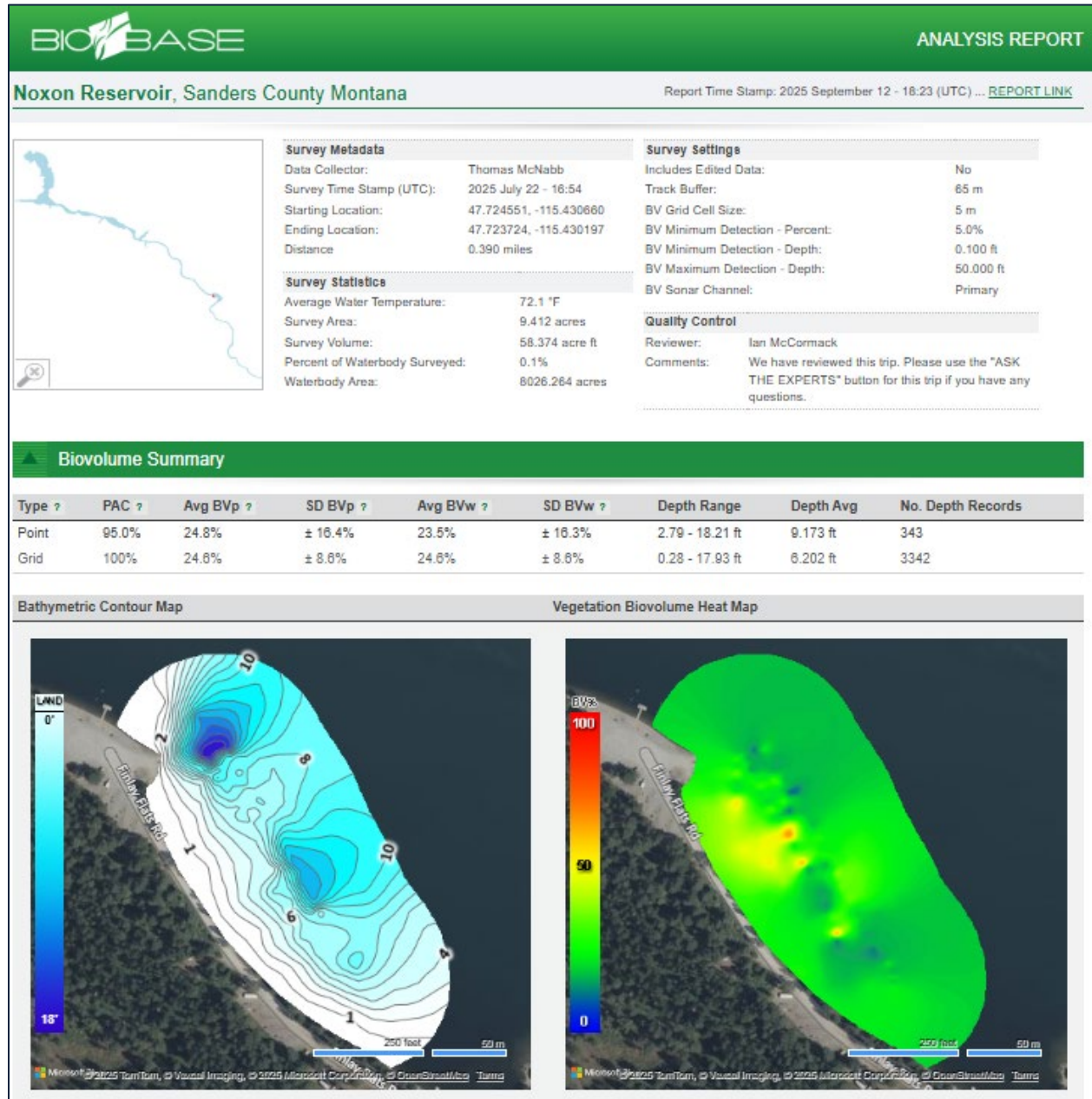


2025 Noxon Rapids Reservoir AIS Treatment Plots: At Time of and ~ Six (6) Week Post Plot SAV % Cover and SAV BioVolume Data (Grid Data)									
Plot Number	Date Data Collected Pre Treatment	SAV % Cover	SAV % Bio-Volume	Date Data Collected-Post Treatment	SAV % Cover	SAV % Bio-Volume	SAV % BV Change	Post Treatment EWM Injury Rank	Herbicides Used
Noxon Rapids Reservoir									
Nox 79	7/22/2025	100.0	95.0	9/5/2025	31.9	15.9	-83%	100%	Littora + Semera SC

Observations/Notes NOX-79: Control visually estimated at 100%. Control excellent throughout plot. Scant amount of EWM present, probably from fragment rooting and establishment with single stems rising from roots. Chara present mostly, some pondweeds and coontail.



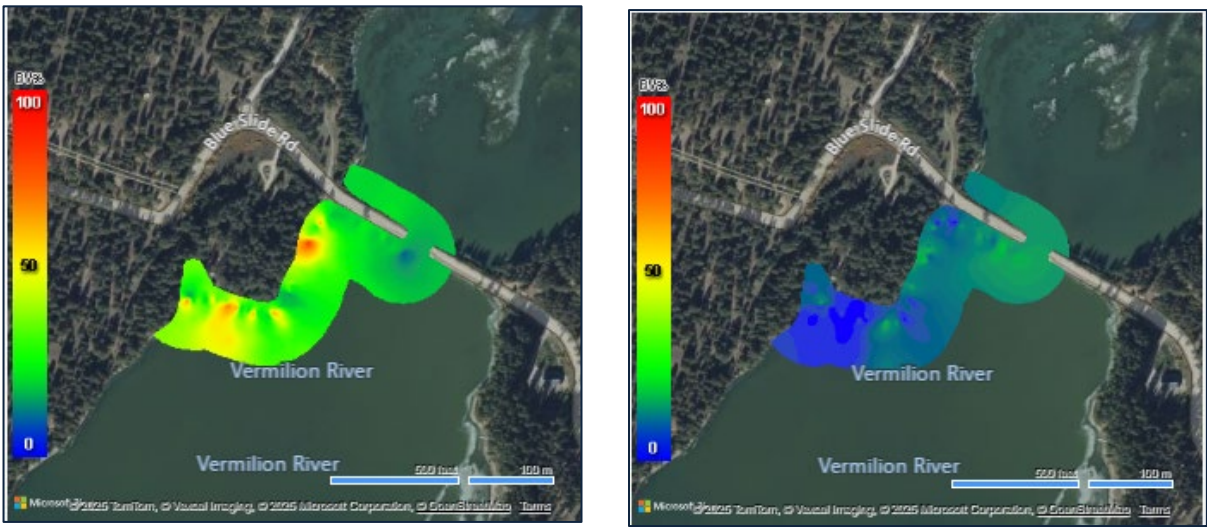
Plot NOX-79: At Time of Treatment (July 22, 2025)



Plot NOX-79: ~ Six (6) Weeks Post (September 5, 2025)



Plot NOX-73: At Time of Treatment (July 22, 2025 – Left),
~ Six (6) Weeks Post (September 5, 2025 - Right)

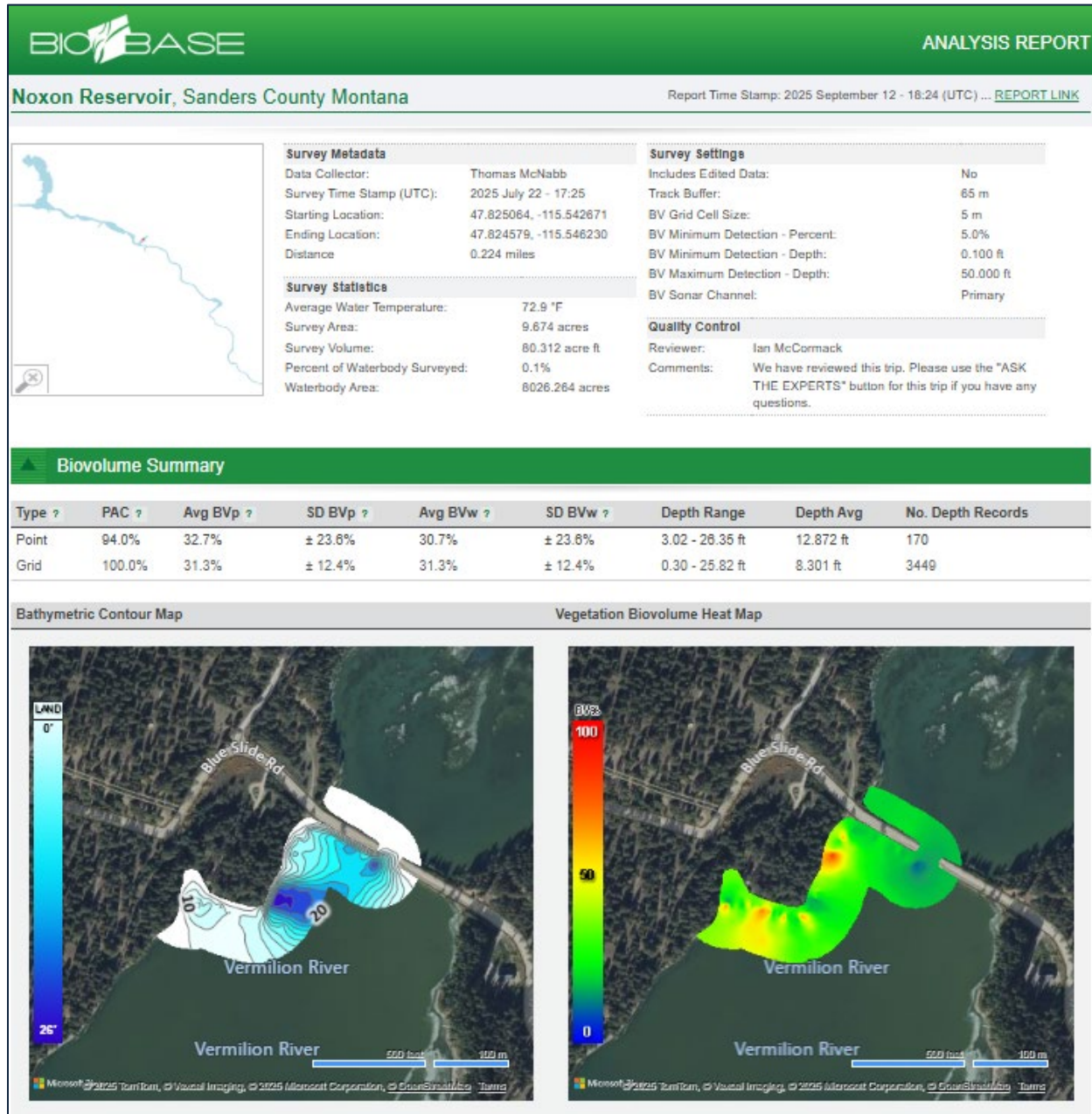


2025 Noxon Rapids Reservoir AIS Treatment Plots: At Time of and ~ Six (6) Week Post Plot SAV % Cover and SAV BioVolume Data (Grid Data)									
Plot Number	Date Data Collected Pre Treatment	SAV % Cover	SAV % Bio-Volume	Date Data Collected Post Treatment	SAV % Cover	SAV % Bio-Volume	SAV % BV Change	Post Treatment EWM Injury Rank	Herbicides Used
Noxon Rapids Reservoir									
Nox 73	7/22/2025	100.0	31.3	9/5/2025	61.4	9.6	-69%	100%	Littora + Semera SC

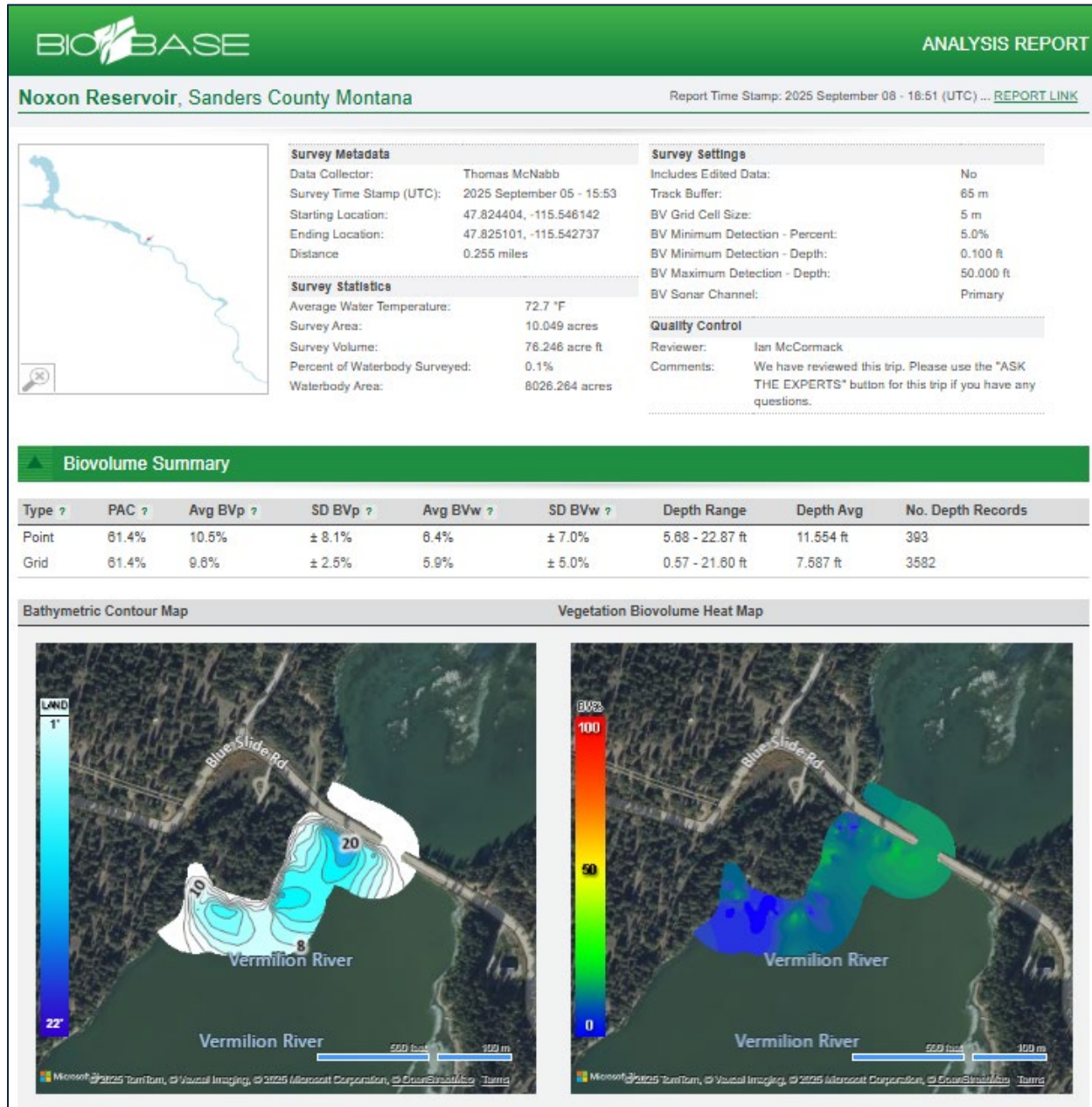
Observations/Notes NOX-73: Control visually estimated at 100%. Control excellent throughout plot. Richardson Pondweed, Coontail, and dead EWM stems on rake toss.



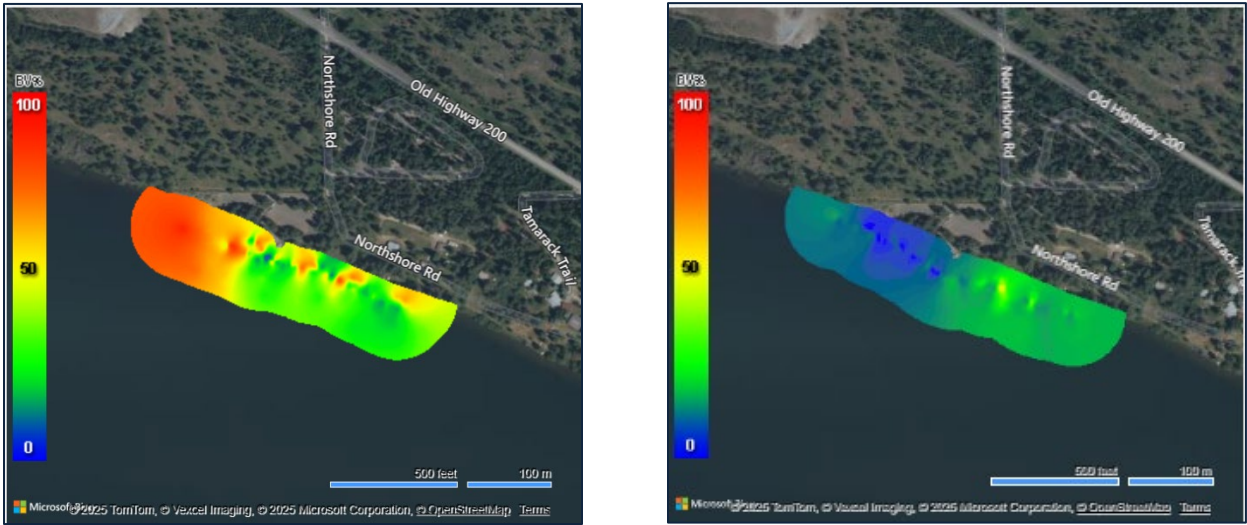
Plot NOX-73: At Time of Treatment (July 22, 2025)



Plot NOX-73: ~ Six (6) Weeks Post (September 5, 2025)

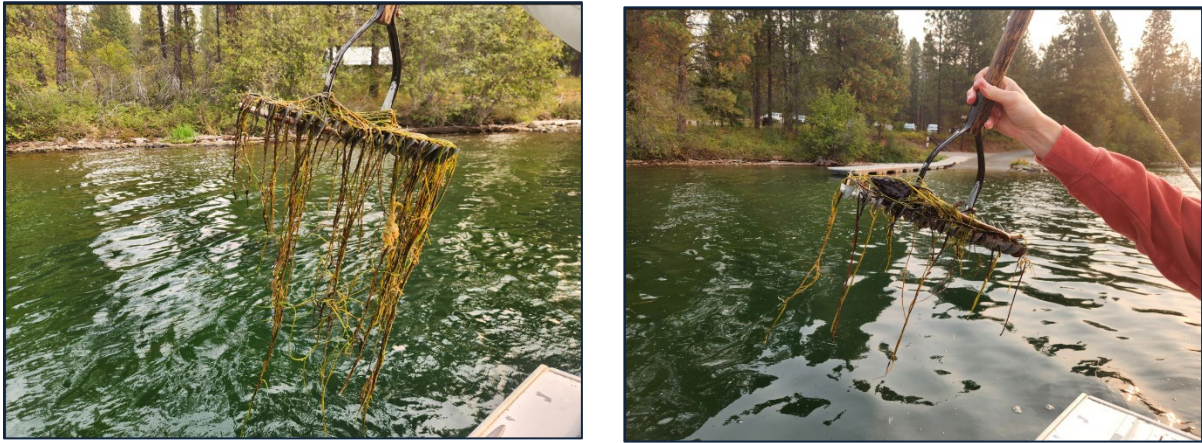


Plot NOX-03: At Time of Treatment (July 22, 2025 – Left),
~ Six (6) Weeks Post (September 5, 2025 - Right)

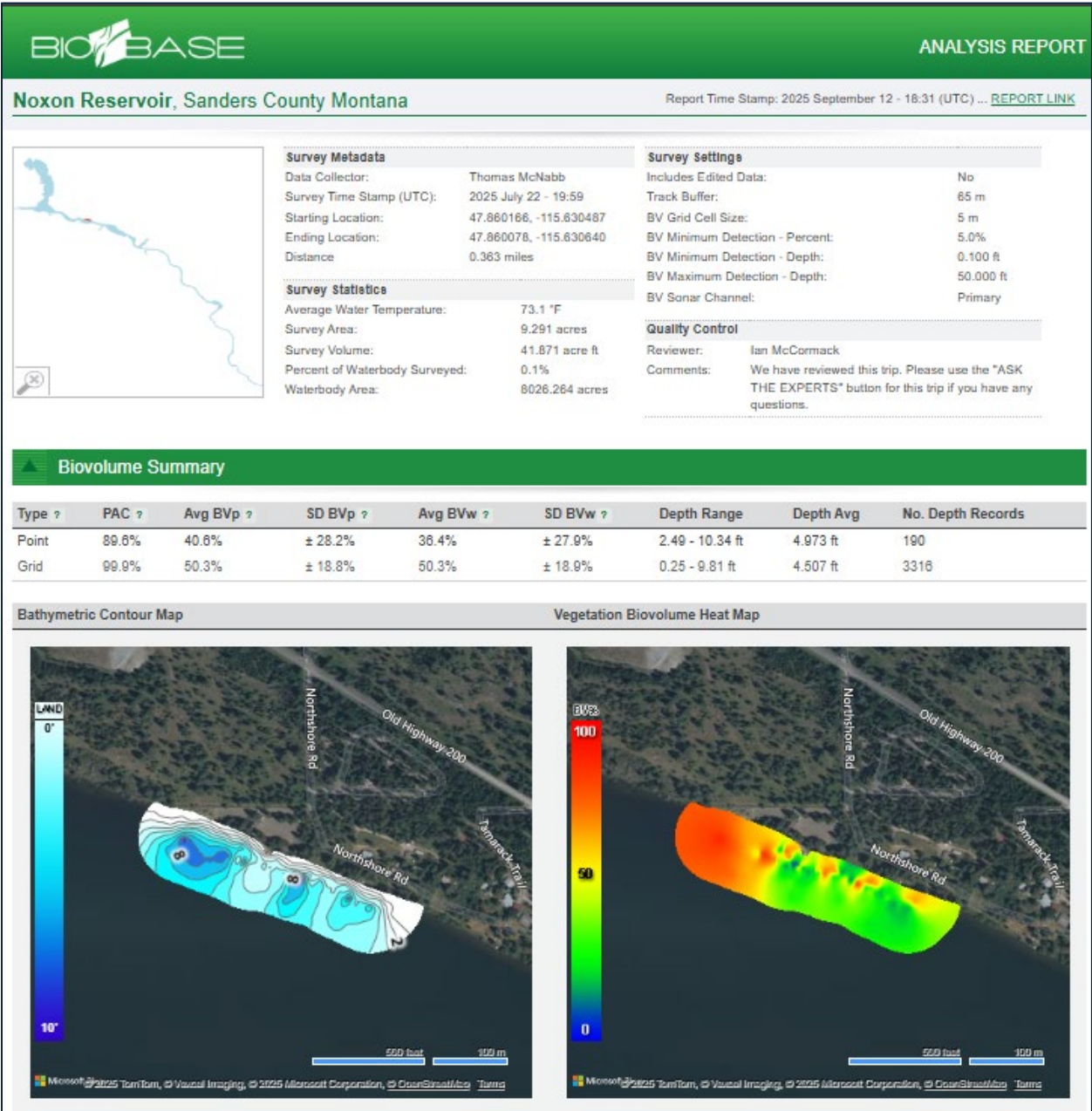


2025 Noxon Rapids Reservoir AIS Treatment Plots:									
At Time of and ~ Six (6) Week Post Plot SAV % Cover and SAV BioVolume Data (Grid Data)									
Plot Number	Date Data Collected Pre Treatment	SAV % Cover	SAV % Bio-Volume	Date Data Collected- Post Treatment	SAV % Cover	SAV % Bio-Volume	SAV % BV Change	Post Treatment EWM Injury Rank	Herbicides Used
Noxon Rapids Reservoir									
Nox 03	7/22/2025	100.0	45.6	9/5/2025	77.6	13.3	-71%	>95%	Littora + Semera SC

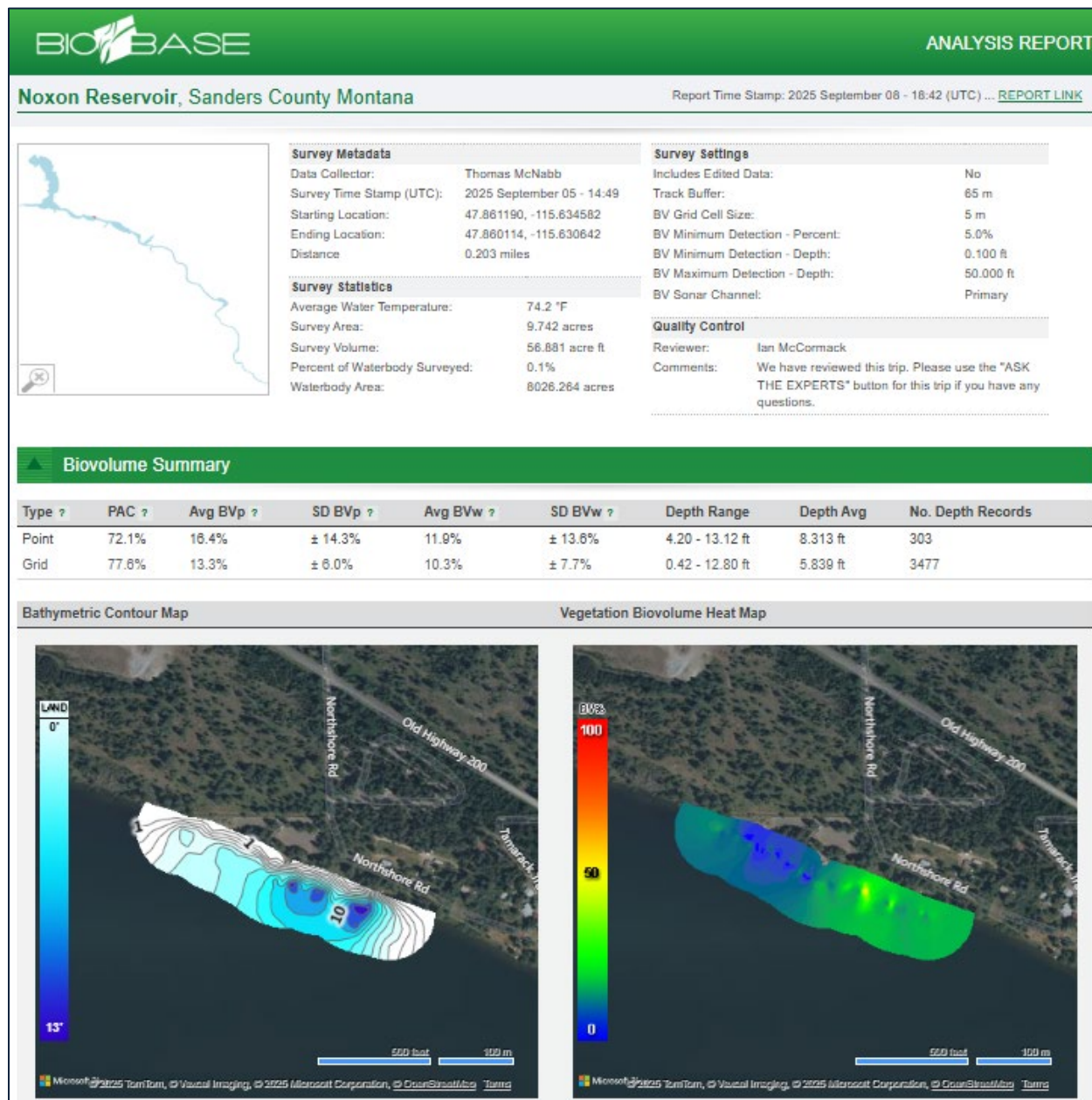
Observations/Notes NOX-03: Control visually estimated at >95% Control excellent throughout plot. Some sago pondweed and Coontail present, dead EWM stems.



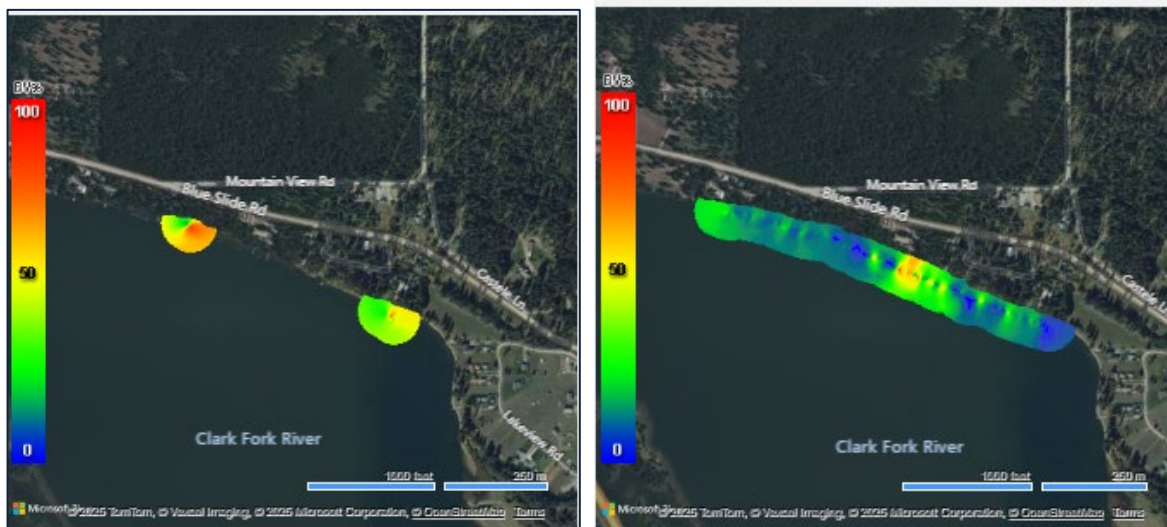
Plot NOX-03: At Time of Treatment (July 22, 2025)



Plot NOX-03: ~ Six (6) Weeks Post (September 5, 2025)

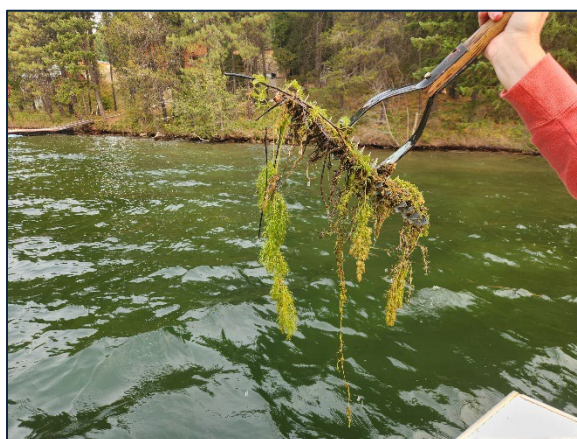


**Plot NOX-04: At Time of Treatment (July 22, 2025 – Left),
~ Six (6) Weeks Post (September 5, 2025 - Right)**

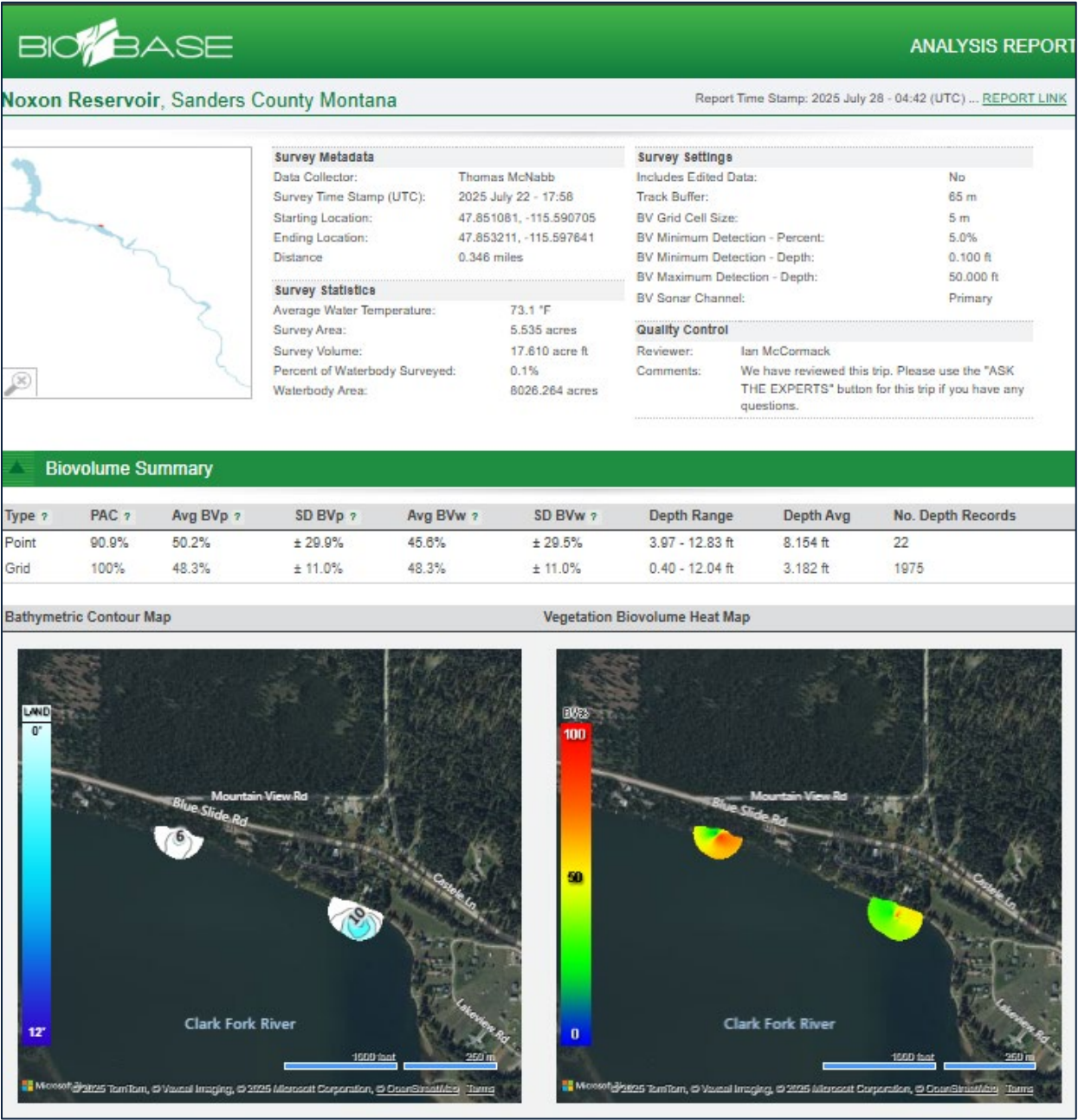


2025 Noxon Rapids Reservoir AIS Treatment Plots: At Time of and ~ Six (6) Week Post Plot SAV % Cover and SAV BioVolume Data (Grid Data)									
Plot Number	Date Data Collected Pre Treatment	SAV % Cover	SAV % Bio-Volume	Date Data Collected Post Treatment	SAV % Cover	SAV % Bio-Volume	SAV % BV Change	Post Treatment EWM Injury Rank	Herbicides Used
Noxon Rapids Reservoir									
Nox 04	7/22/2025	99.9	50.3	9/5/2025	83.7	18.1	-64%	98%	Littora + Semera SC

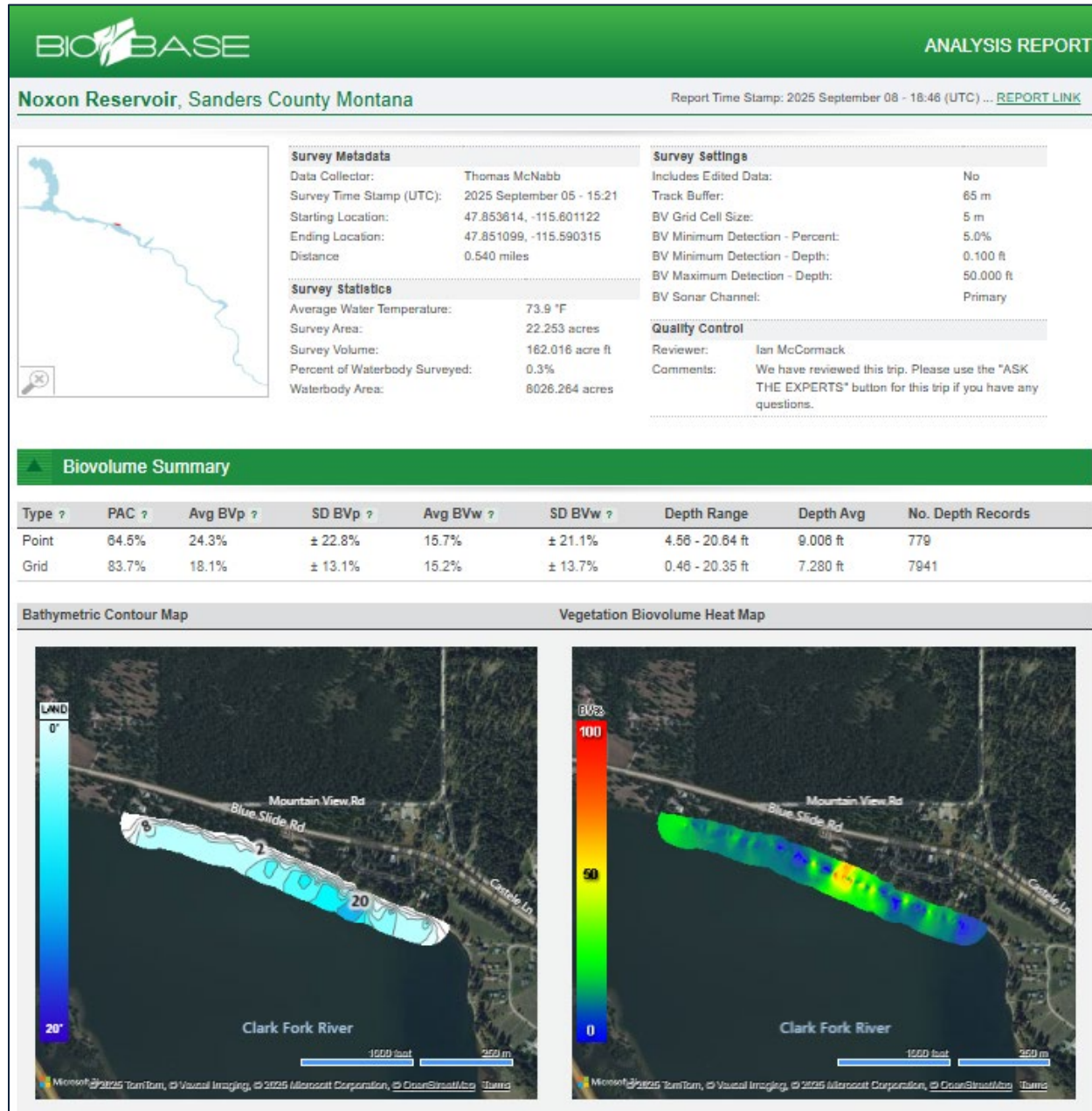
Observations/Notes NOX-04: Control visually estimated at 98%. Control excellent throughout plot. Coontail present and dead EWM stems on rake toss. Note: Density of topped out plants of water on surface prevented transducer from capturing data At Time of Treatment on July 22, 2025. Property owner very happy at east end of plot expressed opinion to survey crew about the level of control that she “Loves it!”



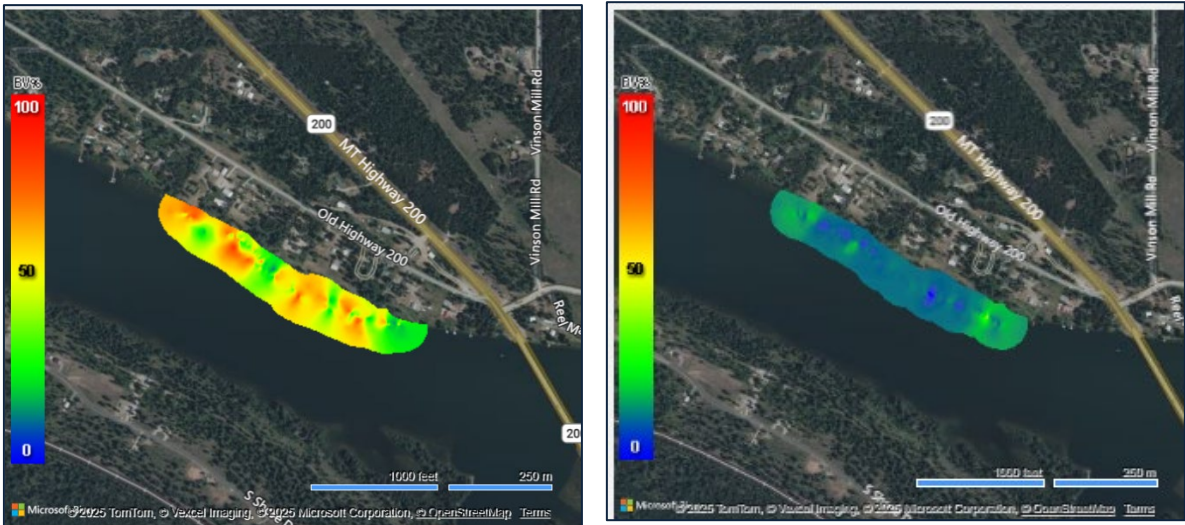
Plot NOX-04: At Time of Treatment (July 22, 2025)



Plot NOX-04: ~ Six (6) Weeks Post (September 5, 2025)



Plot NOX-08: At Time of Treatment (July 22, 2025 – Left),
~ Six (6) Weeks Post (September 5, 2025 - Right)

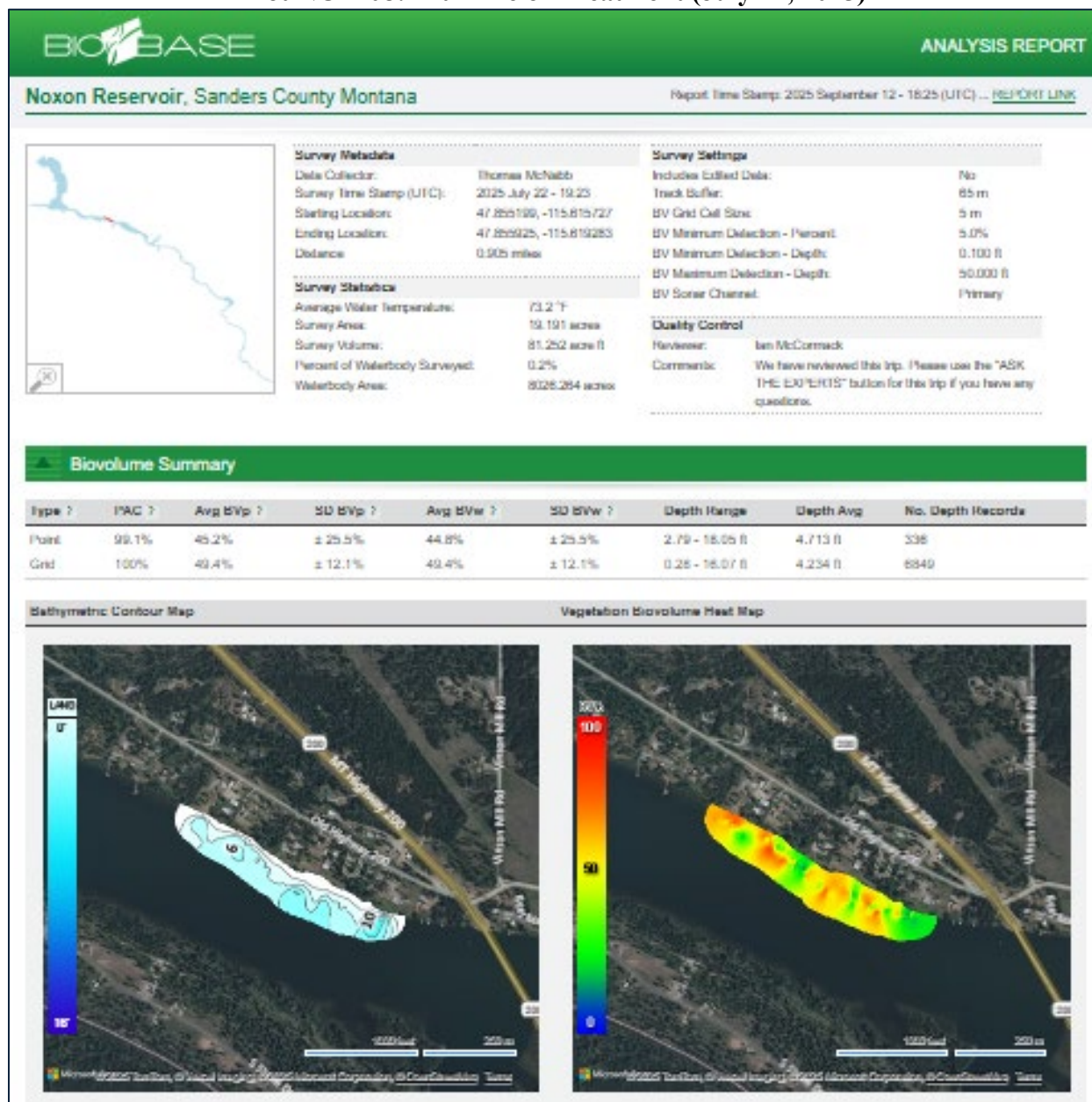


2025 Noxon Rapids Reservoir AIS Treatment Plots: At Time of and ~ Six (6) Week Post Plot SAV % Cover and SAV BioVolume Data (Grid Data)									
Plot Number	Date Data Collected Pre Treatment	SAV % Cover	SAV % Bio-Volume	Date Data Collected- Post Treatment	SAV % Cover	SAV % Bio-Volume	SAV % BV Change	Post Treatment EWM Injury Rank	Herbicides Used
Noxon Rapids Reservoir									
Nox 08	7/22/2025	100.0	49.4	9/5/2025	88.1	9.2	-81%	>95%	Littora + Semera SC

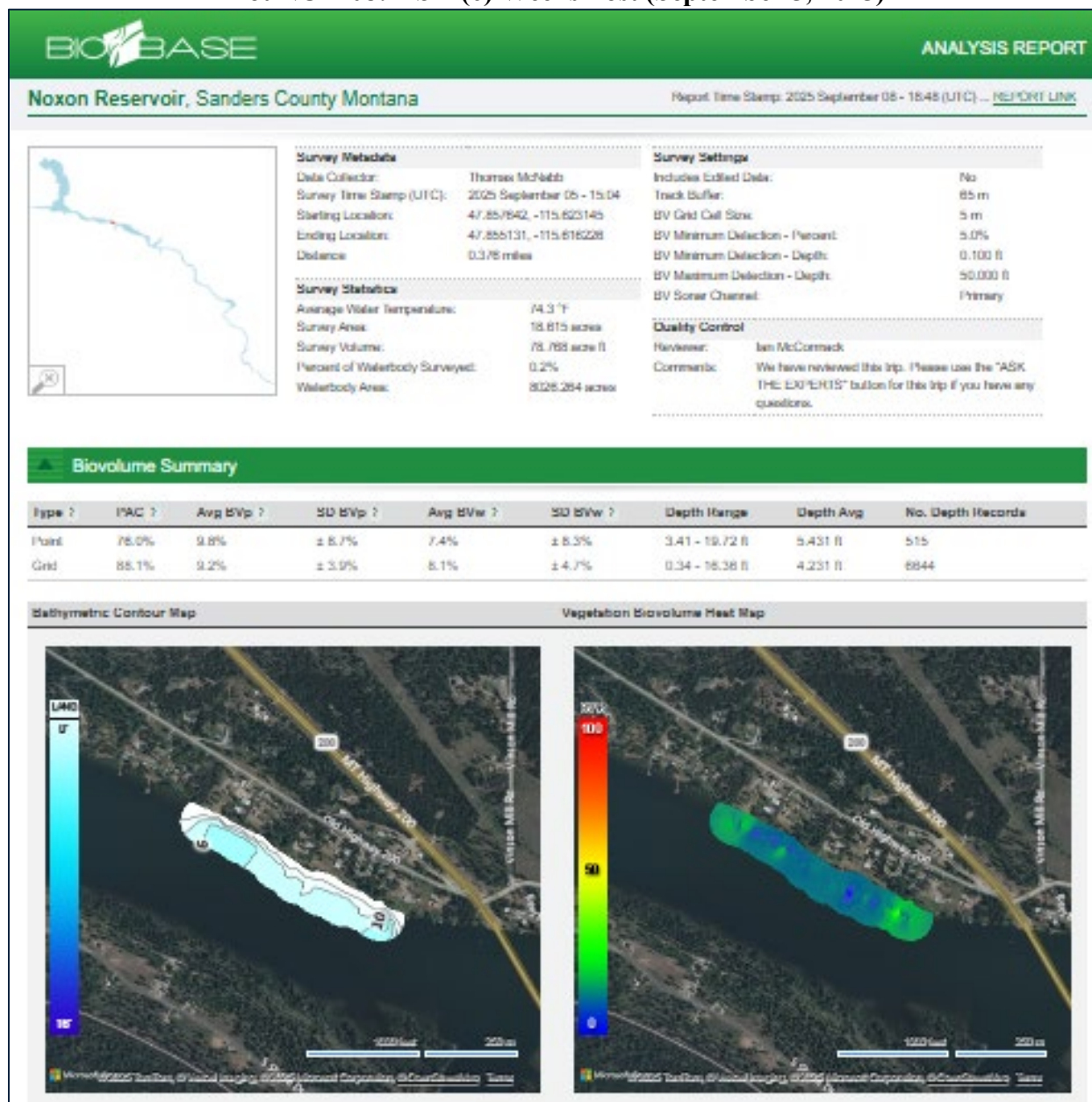
Observations/Notes NOX-08: Control visually estimated at >95%. Control excellent throughout plot. Elodea, Chara, and dead EWM stems on rake toss.



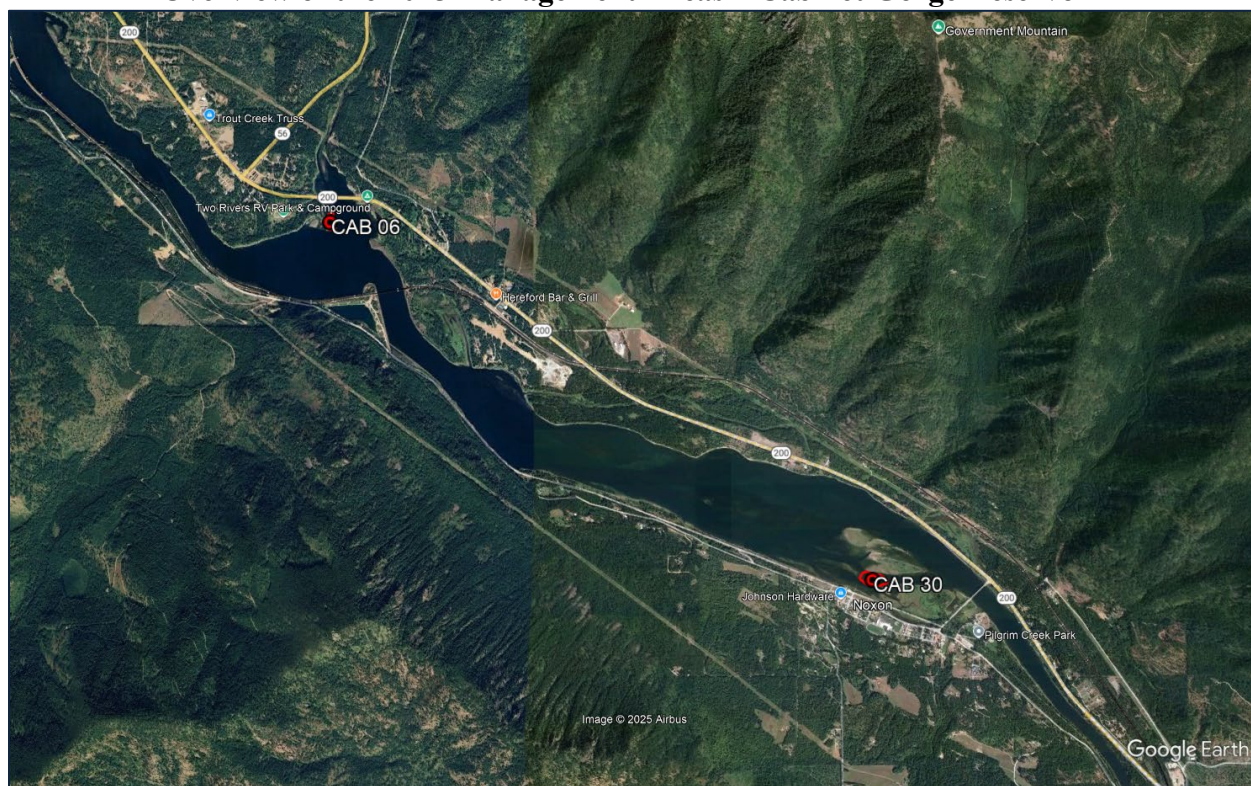
Plot NOX-08: At Time of Treatment (July 22, 2025)



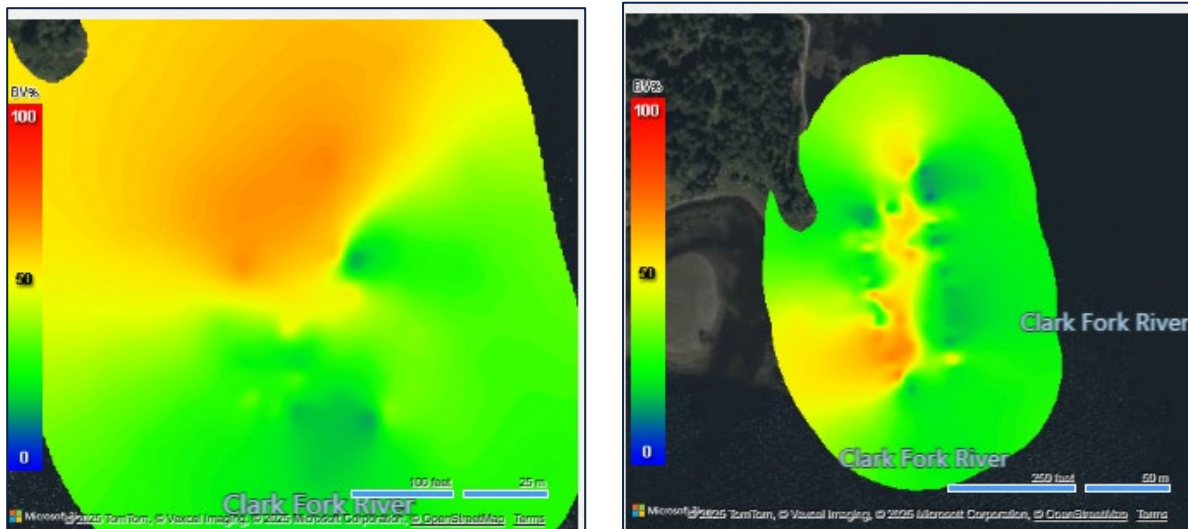
Plot NOX-08: ~ Six (6) Weeks Post (September 5, 2025)



Overview of the 2025 Management Areas – Cabinet Gorge Reservoir

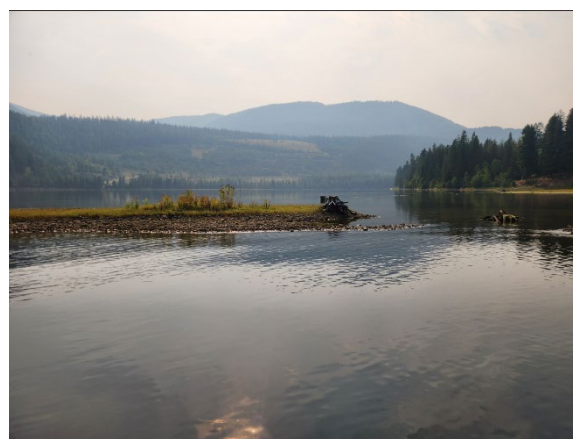


**Plot CAB-06: At Time of Treatment (July 23, 2025 – Left),
~ Six (6) Weeks Post (September 4, 2025 - Right)**

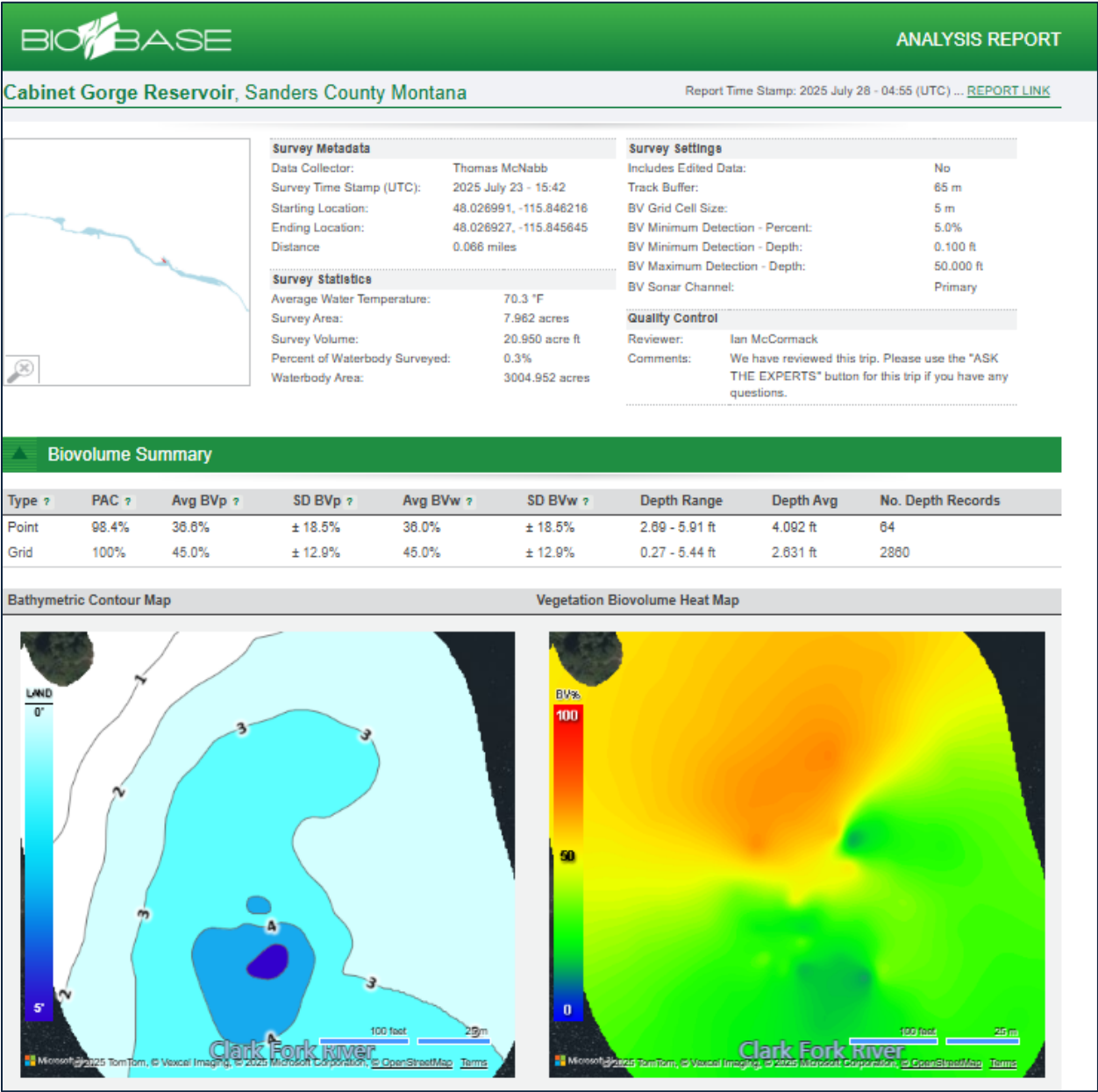


2025 Cabinet Gorge Reservoir AIS Treatment Plots:									
At Time of and ~ Six (6) Week Post Plot SAV % Cover and SAV BioVolume Data (Grid Data)									
Plot Number	Date Data Collected Pre Treatment	SAV % Cover	SAV % Bio-Volume	Date Data Collected- Post Treatment	SAV % Cover	SAV % Bio-Volume	SAV % BV Change	Post Treatment EWM Injury Rank	Herbicides Used
Cabinet Gorge Reservoir									
Cab06	7/23/2025	100	45	9/4/2025	100.0	37.0	-18%	75%	Littora + Semera SC

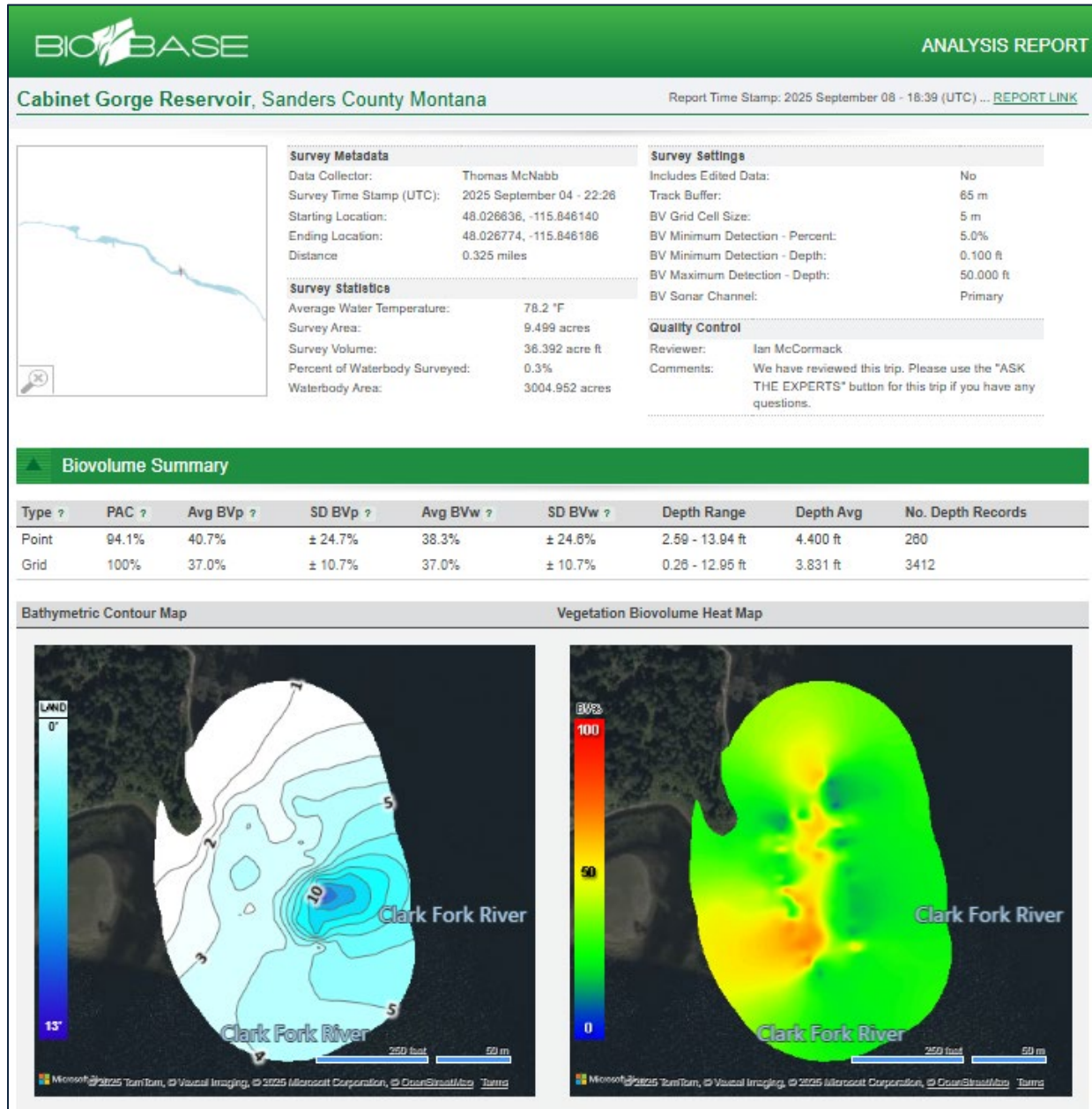
Observations/Notes CAB-06: Control visually estimated at 75% control. Control better on north side of plot, south end of plot could have been impacted by water currents diluting treatment too rapidly. Plots varies in depth from very shallow (1 to 2 feet) to thirteen (13) feet deep with an average depth of 3.8 feet. Elodea abundant in better controlled areas.



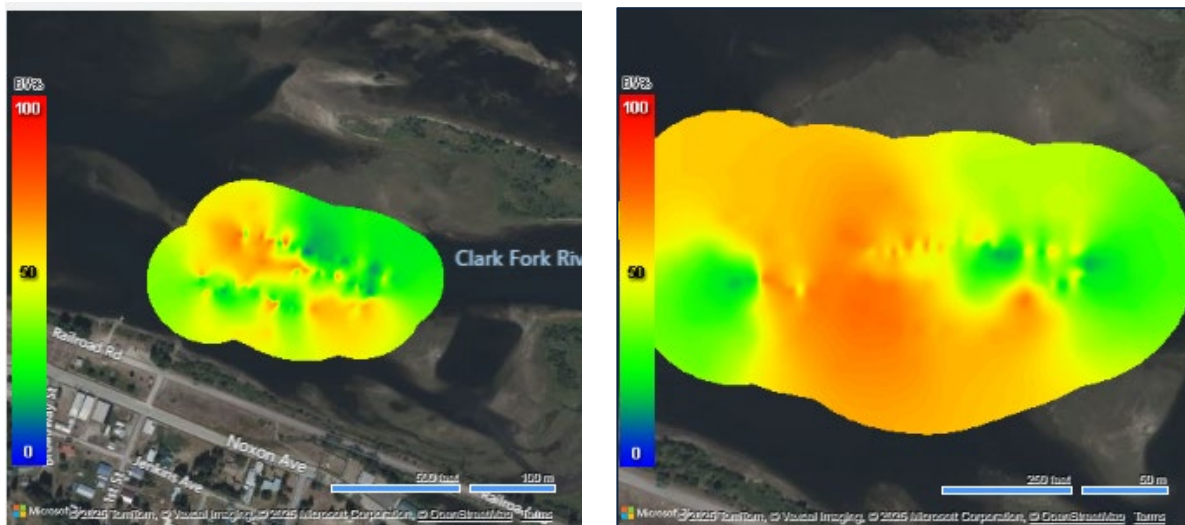
Plot CAB-06: At Time of Treatment (July 23, 2025)



Plot CAB-06 ~ Six (6) Weeks Post (September 4, 2025)

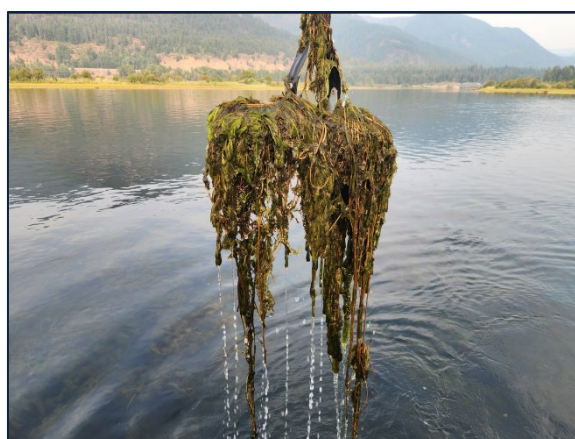
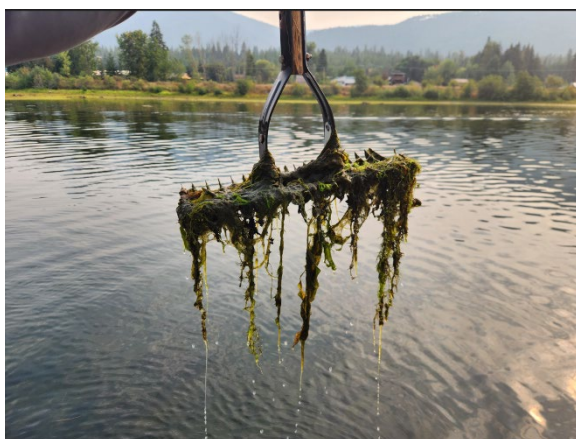


**Plot CAB-30: At Time of Treatment (July 23, 2025 – Left),
~ Six (6) Weeks Post (September 4, 2024 - Right)**



2025 Cabinet Gorge Reservoir AIS Treatment Plots:									
At Time of and ~ Six (6) Week Post Plot SAV % Cover and SAV BioVolume Data (Grid Data)									
Plot Number	Date Data Collected Pre Treatment	SAV % Cover	SAV % Bio-Volume	Date Data Collected- Post Treatment	SAV % Cover	SAV % Bio-Volume	SAV % BV Change	Post Treatment EWM Injury Rank	Herbicides Used
Cabinet Gorge Reservoir									
Cab30	7/23/2025	100	41	9/4/2025	100.0	52.4	28%	50%	Littora + Semera SC

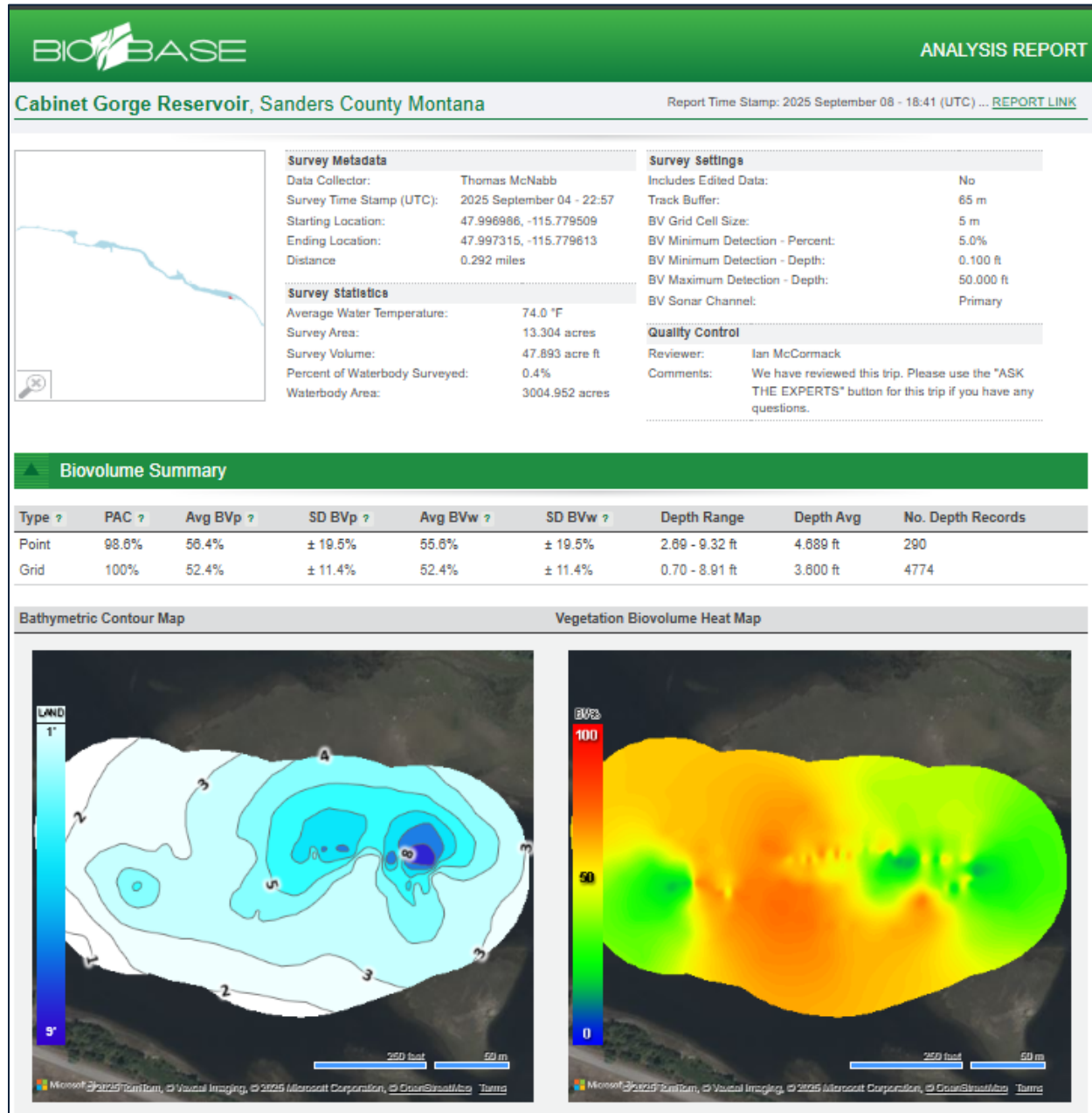
Observations/Notes CAB-30: Control visually estimated at 50% control. Control moderate throughout plot, EWM present. Water very shallow. Control better upstream (east) and less good moving to middle and downstream in plot. Plots varies in depth from very shallow (2 to 3 feet) to eight (8) feet deep with an average depth of 3.6 feet. Perhaps water currents impacted treatment. Coontail present upstream. Filamentous algae present on submersed aquatic vegetation.



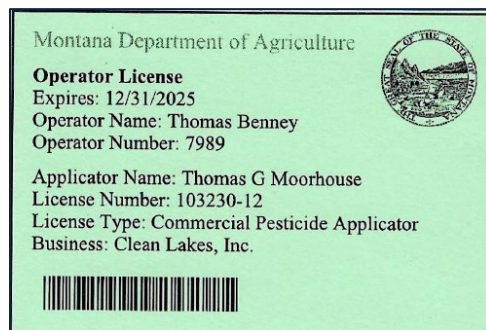
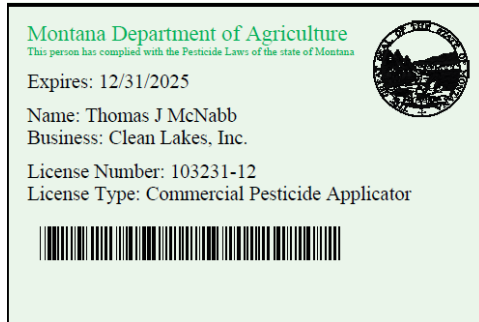
Plot CAB-30: At Time of Treatment (July 23, 2025)



Plot CAB-30 ~ Six (6) Weeks Post (September 4, 2025)



LIST OF PROJECT PERSONNEL



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END OF AQUATIC PESTICIDE APPLICATION REPORT