NCCN Invasive Plant Management Team
Project Report

Park and Location: Ross Lake National Recreation Area

Date: July 31st, 2019 – August 7th, 2019

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Trip Participants: Miles Berkey, Sophie Wilhoit, Christine Davis, Dave Riddell, Collin McAvinchey, Brian Maupin.

Project Purpose:

- Perform herbicide treatments on known populations of reed canary grass (*Phalaris arundinacea*) located in and around wetlands within the Big Beaver Creek watershed.
- Conduct preliminary feasibility assessments to plan future management of target invasive species.

Work Accomplished: The North Coast and Cascades Invasive Plant Management Team (IPMT) performed foliar applications of Polaris (active ingredient imazapyr, EPA # 228-524) on 2.2 acres of reed canary grass. 108 L of 1% Polaris solution were applied at the previously scouted and mapped Hoe-dee-doe and Purgatory sites.

IPMT performed ocular estimates of reed canary grass at treatment sites and observed significant amounts of reed canary grass outside of readily accessible areas. We estimate an additional 8.3 acre area at Hoe-dee-doe site alone.

Recommendations for Future Action:

Logistical Considerations:

IPMT recommends a more effective utilization of equine resources to ease transportation difficulties inherent in this remote project site. Pack animal staff should be contacted well in advance to arrange transportation for heavy or cumbersome supplies like herbicides, spray packs, lightweight watercraft, and water storage containers.

Additionally, we request a temporary IPMT specific storage container to be placed in the Big Beaver drainage about halfway between 39 Mile Camp and Big Beaver Campground. This will serve as a base camp for more efficient dispersal of supplies and personnel to the reed canary grass hotspots within the drainage. This could take the form of a Knack Box or some other bear- and water-proof container in which to store herbicide and other supplies while treatments continue.

IPMT recommends implementing pack rafts or similar lightweight watercraft for ease and safety of treatment and intra-site transportation within some high water sites.

Strategic Considerations:

Our first priority moving forward is to gain an accurate assessment of the extent of the reed canary grass infestation. A trip solely dedicated to inventorying *Phalaris arundinacea* populations along the banks of Big Beaver Creek and its associated wetlands should be made during the 2020 season.

But due to the inaccessibility of most of the drainage, an aerial survey by drone or remote sensing is advisable due to the largely inaccessible landscape. Big Beaver's wetlands are comprised of topographically complicated, confusing, and difficult terrain that present significant barriers to effective surveys on foot. For example, the distance between the trail and the Purgatory site, around .5 km, took two hours to traverse.

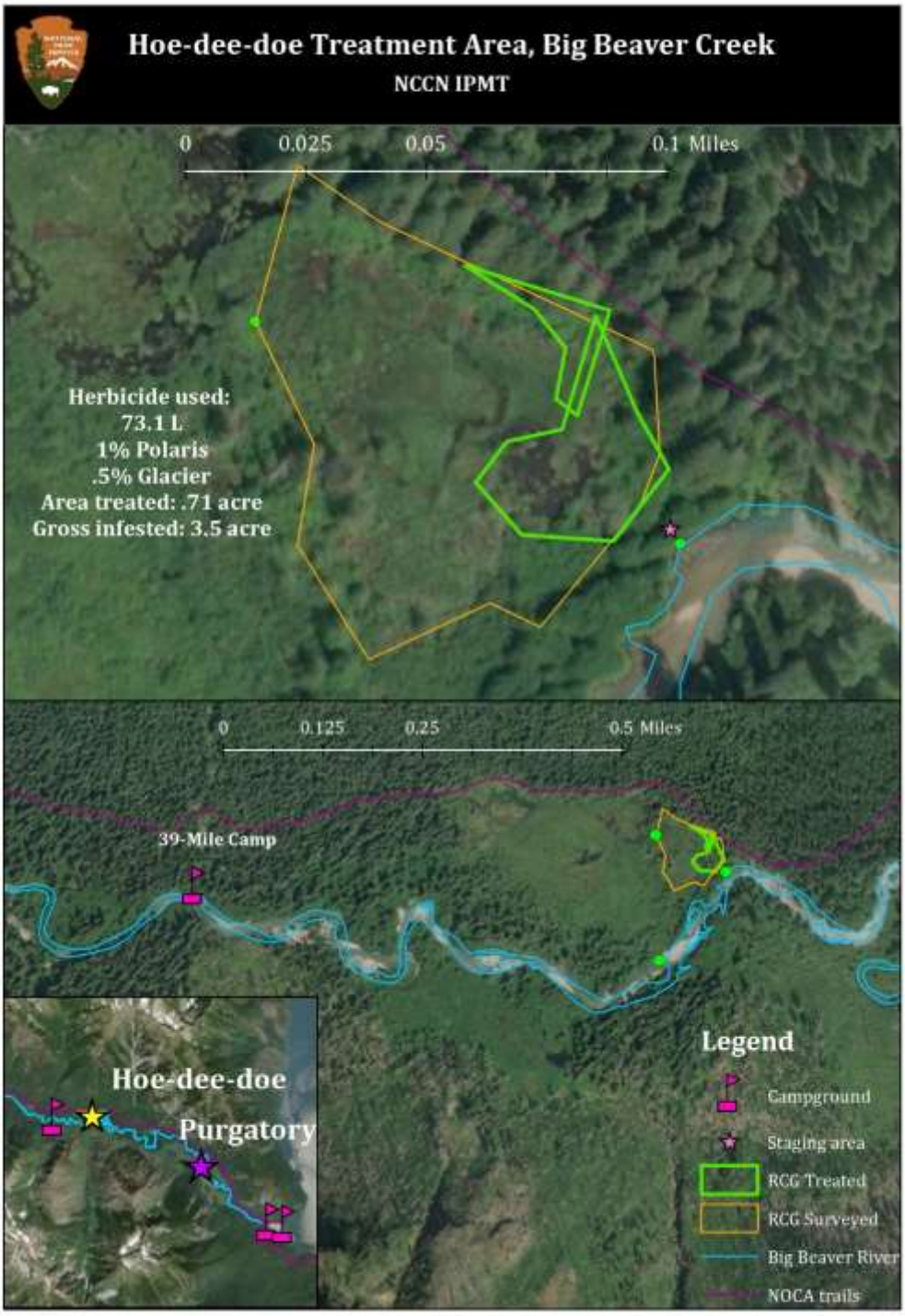
Timing of further treatment should also be considered. Early August 2019 was too late to prevent the production of another year's reed canary grass seed. However, site access due to dynamic seasonal water levels may be limited if the project is performed earlier in the season. The Hoe-dee-doe treatment site was submerged in excess of 1 meter of water during the August 2019 treatment. Treatment was impractical on foot, with a significant portion of the backpack sprayer, including the pump handle, beneath the water's surface. Two treatment trips per year may be necessary to optimize results. Even then, seeding of some plants is likely to occur, and accessing some populations may not be possible by foot at any time.

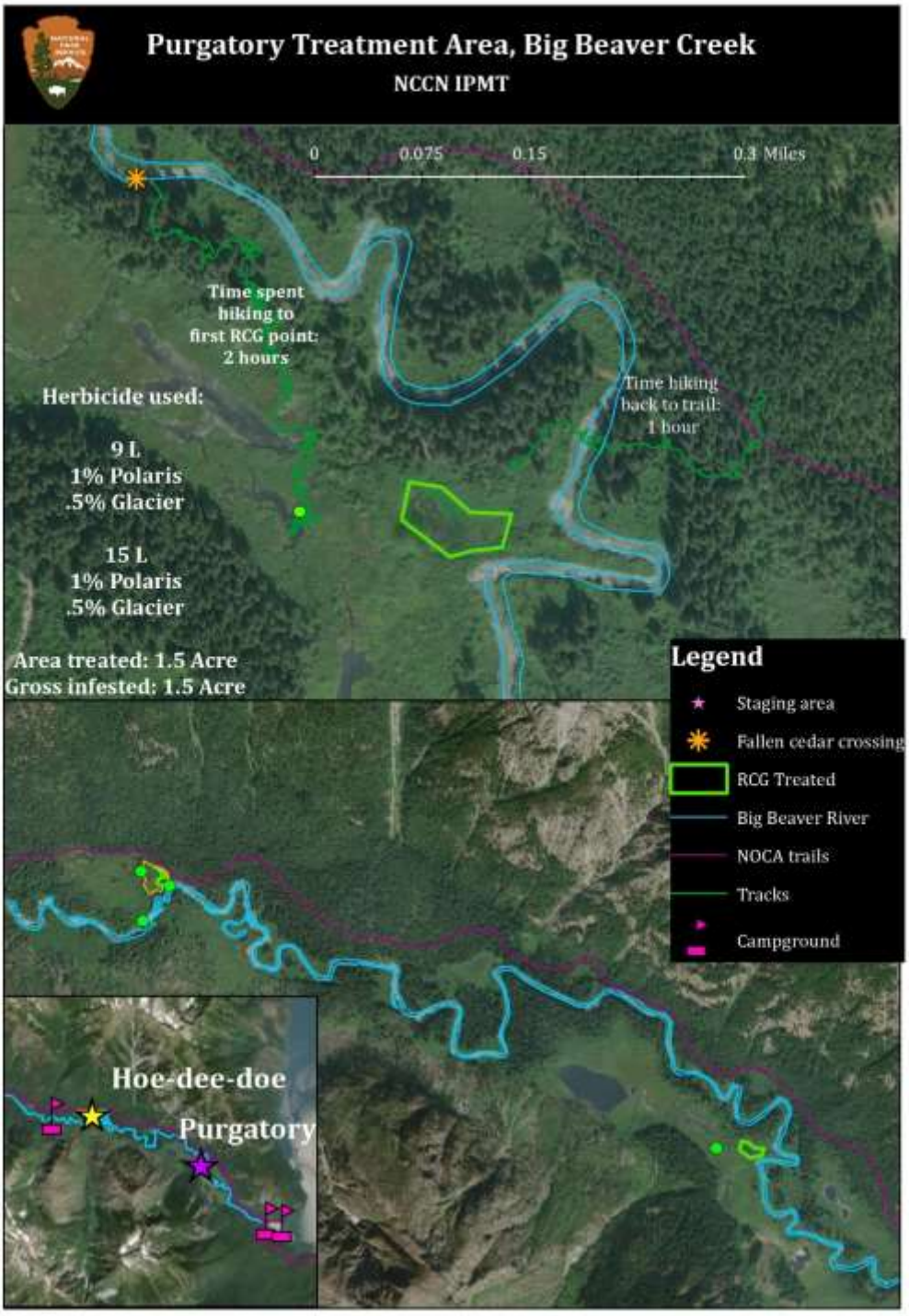
Budgetary Considerations:

	#	**cost/pp**	**cost/project**		**total**
GS 7	2	2330			$ 4,660.00
GS 5	3	1556			$ 4,668.00
GS 6	2	1706			$ 3,412.00
Herbicide	1		1500		$ 1,500.00
GSA Truck	1		400		$ 400.00
Per diem	1	1147.5			$ 1,147.50
PPE	1		200		$ 200.00
Ferry	1		100		$ 100.00
Boat fuel	1		200		$ 200.00
			Grand total		**$ 15,287.50**

IPMT estimates $15.3K to treat the most accessible 2.2 acres of reed canary grass, excluding packing and planning costs. At present we estimate around 8 more acres of infested ground at a minimum. This is a very rough estimate; a 50% margin of error on this number is conservative, further highlighting the need for a comprehensive survey.

Maps:

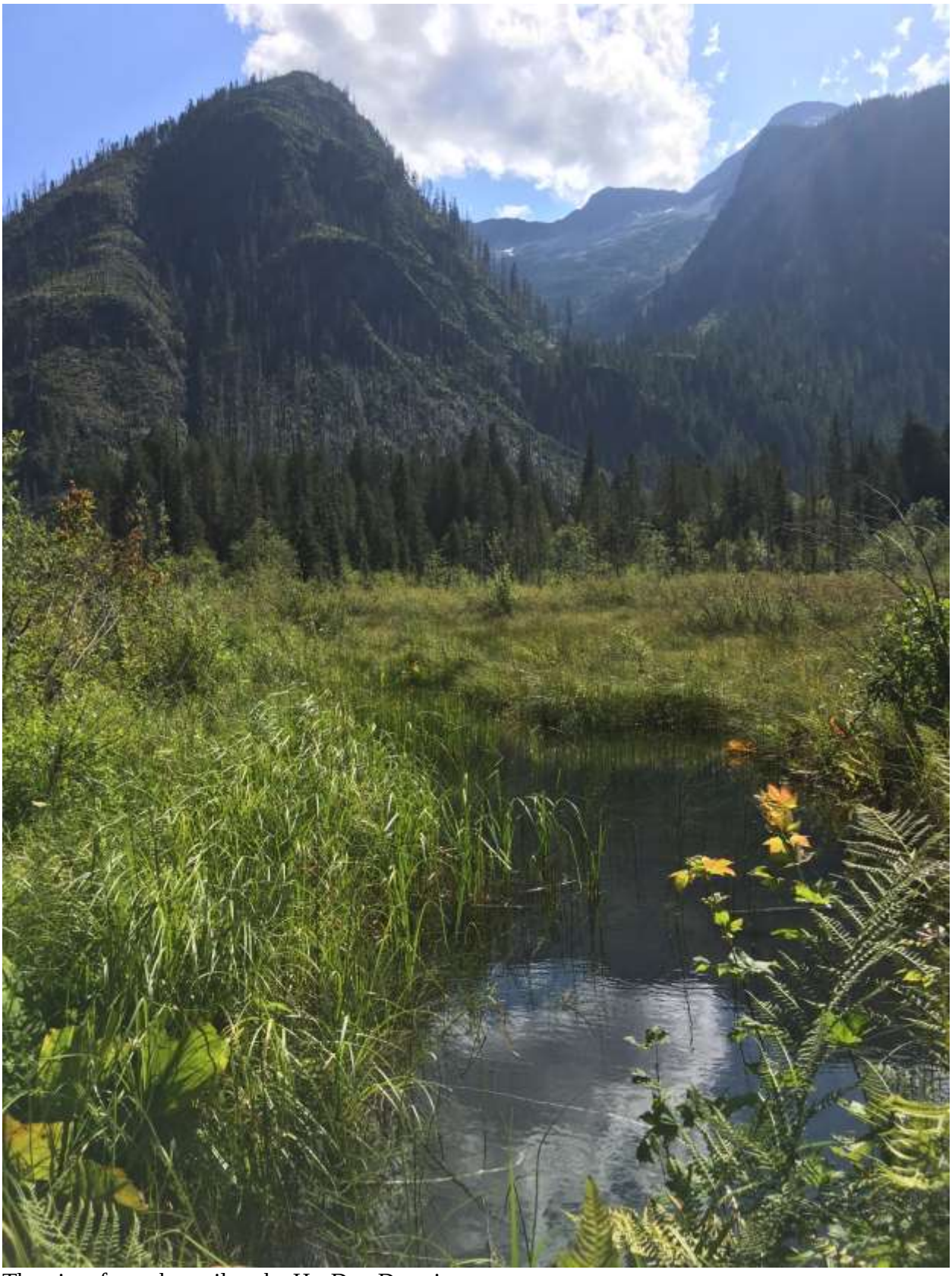

Hoe-dee-doe Treatment Area, Big Beaver Creek
NCCN IPMT
0
0.025
0.05
0.1 Miles
Herbicide used:
73.1 L
1% Polaris
.5% Glacier
Area treated: .71 acre
Gross infested: 3.5 acre
0
0.125
0.25
0.5 Miles
39-Mile Camp
Hoe-dee-doe
Purgatory
Legend
Campground
Staging area
RCG Treated
RCG Surveyed
Big Beaver River
NOCA trails


Purgatory Treatment Area, Big Beaver Creek
NCCN IPMT
0
0.075
0.15
0.3 Miles
Time spent hiking to first RCG point: 2 hours
Time hiking back to trail: 1 hour
Herbicide used:
9 L
1% Polaris
.5% Glacier
15 L
1% Polaris
.5% Glacier
Area treated: 1.5 Acre
Gross infested: 1.5 Acre
Legend
Staging area
Fallen cedar crossing
RCG Treated
Big Beaver River
NOCA trails
Tracks
Campground
Hoe-dee-doe
Purgatory

Photos:

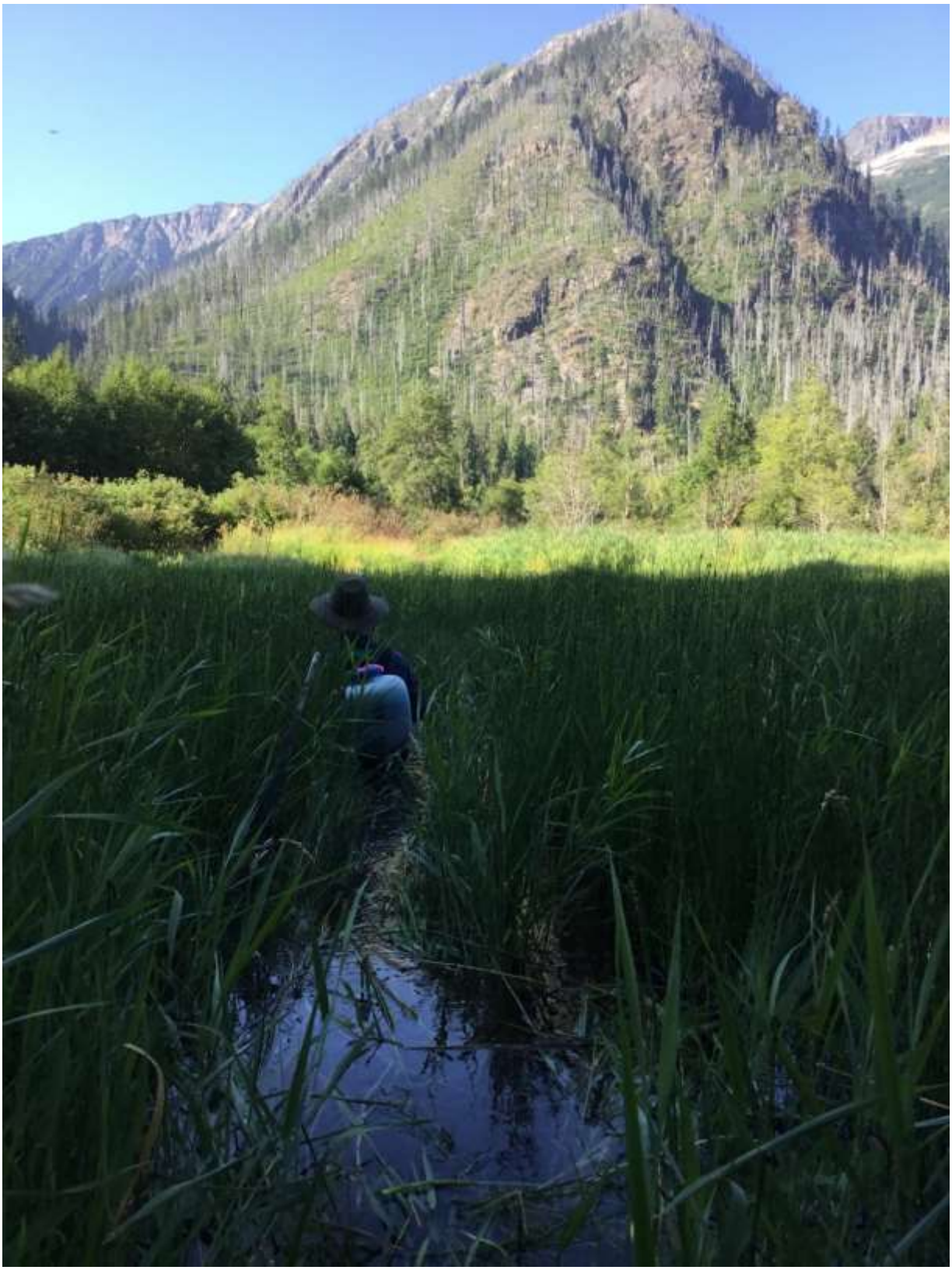
Reed canary grass grows amongst lily pads at Hoe-dee-doe.

A typical scene of the treatment area at Hoe-dee-doe. Reed canary grass is interspersed with *Equisetum*. Grass photo is taken at eye-height; water is approximately 1 meter deep.



The view from the trail at the Ho-Dee-Doe site.

Technician Miles Berkey treats reed canary grass along the Big Beaver drainage.



Technician Collin McAvinchey treats reed canary grass in waist-deep water at Hoe-dee-doe.


Reed canary grass grows along the high water mark along the shore of Ross Lake near Big Beaver Campground.

Appendix: Work Log

Day 1; August 1st, 2019

EPMT departed Marblemount Ranger Station at 0800 headed for Colonial Creek boat launch. We loaded supplies onto one of the work skiffs and, with the assistance of Miles Berkey and two NOCA vegetation management staff members, had our gear shuttled up Diablo Lake to the Diablo-Ross Dam access road, where it was loaded onto a truck and driven up to the boat launch adjacent to the Ross Dam Guard Station. Supplies were unloaded onto the dock here and the truck was then driven back down to the Diablo-Ross access road. NOCA staff then hiked back up the trail to Ross Dam, down 6 flights of stairs and into Ross Guard itself, where they boarded another boat (the Oozle) and piloted to where the crew and supplies would be waiting at the Ross boat ramp. Meanwhile, the remaining EPMT members parked a work truck at the Ross Dam Trailhead and hiked the ~1 mile down to the Ross Boat Launch. Supplies and most staff were loaded onto the Oozle and ferried to Big Beaver Campground, around seven miles up-lake. The

boat was not large enough to accommodate all staff and supplies, so two trips up and down the lake were necessary.
All personnel and supplies were safely ashore at Big Beaver around 1200. Supplies too heavy for the five mile hike up the river valley were stowed in bear bins at the campsite. Herbicides for the project had been packed in by NOCA mule packers prior to the trip's beginning and stowed in a knack box at 39 Mile Camp. Upon arrival at 39 Mile stock camp, we realized that the knack box containing our herbicides was locked and we did not have the appropriate key.
Miles radioed dispatch for assistance and we arranged to be met by a maintenance technician back at Big Beaver Camp the following morning.

Day 2, August 2, 2019

Staff departed around 0800 for Big Beaver Camp to retrieve additional supplies, backpack sprayers, and knack box key. We arrived around 1030, gathered necessary supplies, and returned to Big Beaver around 1545. We spent the remaining part of the day loading herbicide into portable containers, going over herbicide labels, and discussing safety issues.

Day 3, August 3rd, 2019

Began treatment of *Phalaris arundinacea* at the Hoe-dee-doe treatment site. Treated in waist-to-chest-high water in an area now flooded by a newly constructed beaver dam. Treatment was performed until 1100. Many areas of the site covered in reed canary grass were inaccessible without becoming submerged in water went untreated. Rafts of some kind will be necessary to access these areas if water levels remain at this height.
Our current complement of spray packs was deemed insufficient for the visible populations, so Collin returned back down valley to retrieve an additional spray pack and some sprayer nozzles. This entailed a 10-mile round trip.
We decided to depart from Hoe-dee-doe to treat the Fireswamp due to its presumed large *Phalaris* population before the trip's time ran out. A backpack sprayer full of mixed herbicide was left behind at Hoe-dee-doe to finish treatment at a later time.
After several hours' survey, we were unable to locate any *Phalaris arundinacea* at the Fireswamp. Either the grass had been misidentified or changing water levels had killed or submerged any previously visible populations. Conditions were difficult; terrain was not easily navigable and heat exceeded 85 degrees Fahrenheit.
On the way back to camp we staged gear at the entrance to the newly-dubbed Purgatory treatment site, where we would begin treatment the following day.

Day 4, August 4th, 2019

En route to the Purgatory site, one of the secondary containers holding imazapyr ruptured in Miles' pack and spilled onto the backs of his legs. This highlighted the need for a more watertight method of herbicide portage. Miles returned to camp to change clothes, leaving the rest of the crew with a map to Purgatory's reed canary grass populations.
We spent the next two hours navigating through thick vegetation and reached the first of the target populations around 1200. Miles rendezvoused with us around this time and we

commenced treatment. All apparent populations were treated within two hours. A total of 37 L 1% Polaris mixture was applied.
The crew returned to camp, where we were met by Brian Maupin.

Day 5, August 5th, 2019

The morning began with the crew breaking down camp for a re-location to Big Beaver Camp. Staff completed treatment of the accessible areas at Hoe-dee-doe. Brian went up to his neck in the beaver pond's water in order to access and assess reed canary grass populations that had been previously out of our reach.
Meanwhile, the rest of the crew headed back to Big Beaver Camp, ferrying supplies and gear along the way. After arriving back at Big Beaver and setting up camp, we began to lay out herbicides and backpack sprayers for an afternoon treatment of adjacent reed canary grass. Unfortunately, temperatures were in excess of 95 degrees Fahrenheit; above the volatilization limit of imazapyr. We deemed conditions unfit and unsafe for treatment. We used the remaining time to meet and discuss ways in which the project could be improved upon subsequent visits.

Our main points of concern were as follows:

- Bring along a reliable form of herbicide concentrate containers to avoid contamination of personnel and supplies.
- Utilize some form of floatation of device to ease access of waterlogged reed canary grass populations.
- Perform a float survey, preferably by kayak, of the entire Big Beaver system. We deemed this to be the next necessary step in this project's progression.
- Employ the NOCA mule packers to reduce strain on personnel. If possible, we would like to establish a staging area at Purgatory camp to act as a good halfway point between 39 Mile and Big Beaver to ease foot transport up and down the valley.
- Perform treatments earlier in the season, before reed canary grass has set seed.
- Consider using an herbicide that might act faster and thereby prevent seed set. Perhaps glyphosate?
- Assess the feasibility of cutting heads off reed canary grass, bagging them, and destroying them.
- Perhaps instead of a floating trip down the creek to scout populations, consider the use of an unmanned aerial drone to perform reconnaissance in areas too rugged for reasonable survey.
- Use surfactants at a rate of at least 1% to ensure herbicide efficacy and adherence.

Day 6, August 6th, 2019

The crew broke camp and began treating reed canary grass populations scattered around Big Beaver Camp.
The Oozle returned to pick us up around 1215 and again required two trips down lake to shuttle all of us and our equipment back to the Ross Lake boat ramp. Upon arrival, Dave and Christine proceeded up the hill to where we had parked the crew vehicles. Miles, Sophie, and Collin parked the Oozle back at Ross Guard and followed Dave and Christine along the 1 mile trail

back to Ross Dam trailhead. Both trucks proceeded to Colonial Creek boat launch, where Collin, Sophie, and Miles boarded one of the work skiffs and proceeded up Diablo Lake to the Diablo-Ross access landing. They entered the truck at the landing and drove up to the Ross boat ramp where they loaded gear onto the truck, then proceeded back to the parked work skiff, loaded gear onto the boat, and boated back down Diablo to Colonial Creek.
We returned to Marblemount ranger station at around 1630.