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Summary of Diver Assisted Suction Harvesting Efforts

Squash Lake – Oneida County, WI

2015 WDNR Mechanical Harvesting Permit Annual Report

Permit ID NO-2015-44-50M

Date: 11.28.2015

Submitted To:

Squash Lake Association, Inc.
and
Wisconsin Department of Natural Resources

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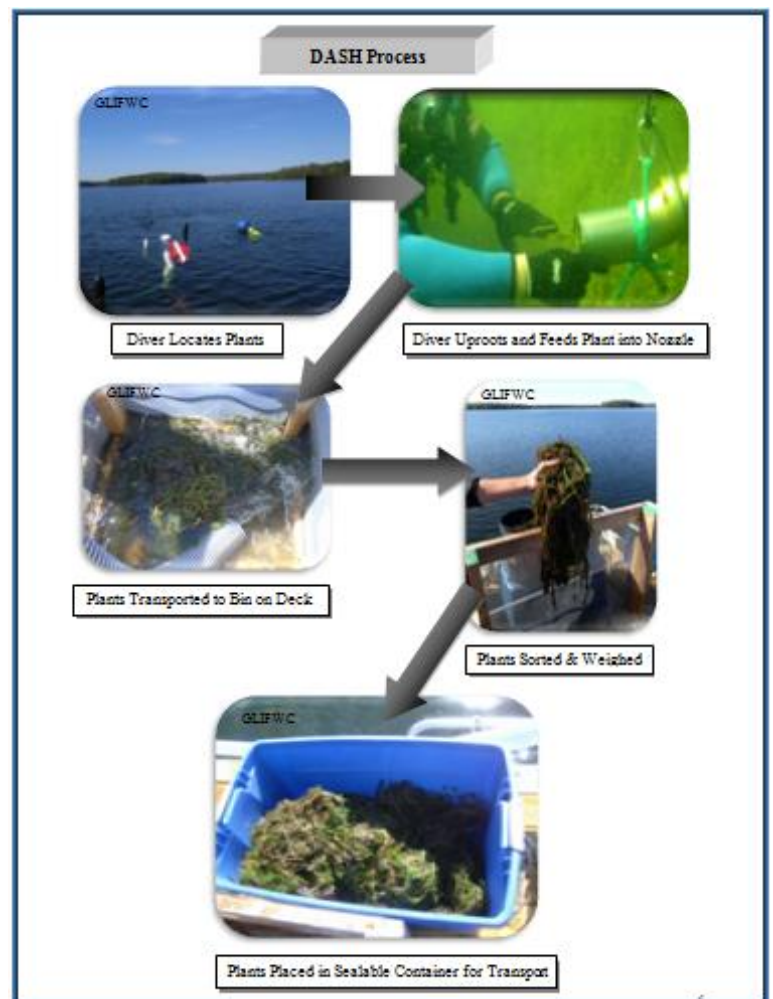
Introduction

The Squash Lake Association solicited the services of Many Waters, LLC to use Diver Assisted Suction Harvesting (DASH) to manage for Eurasian watermilfoil (EWM) on Squash Lake located in Oneida County, WI. DASH is a mechanical process and requires a mechanical harvesting permit (Form 3200-113 (R 3/04)) from the Wisconsin Department of Natural Resources (WDNR). The 2015 WDNR Permit ID is NO-2015-44-50M.

Dive Methods

While using DASH, a diver typically will begin by locating the invasive plant such as Eurasian watermilfoil from the surface, and then descend next to the plant while simultaneously lowering the nozzle. Divers work along the bottom by using fin pivots, kneeling on the bottom or hovering above the bottom at a distance where the root mass of the plant is within hands reach. The diver will either feed the top of the plant into the hose first and then uproot the plant or uproot the plant and feed it root wad first into the hose. It is very important that the diver shake as much sediment from the root wad before getting the root wad near the nozzle. Shaking the root wad away from the nozzle helps maintain visibility for the diver and minimizes debris and sediment in the holding bins. The diver carefully observes plants fed into the nozzle for possible fragments. Fragments are caught by hand and fed into the nozzle.

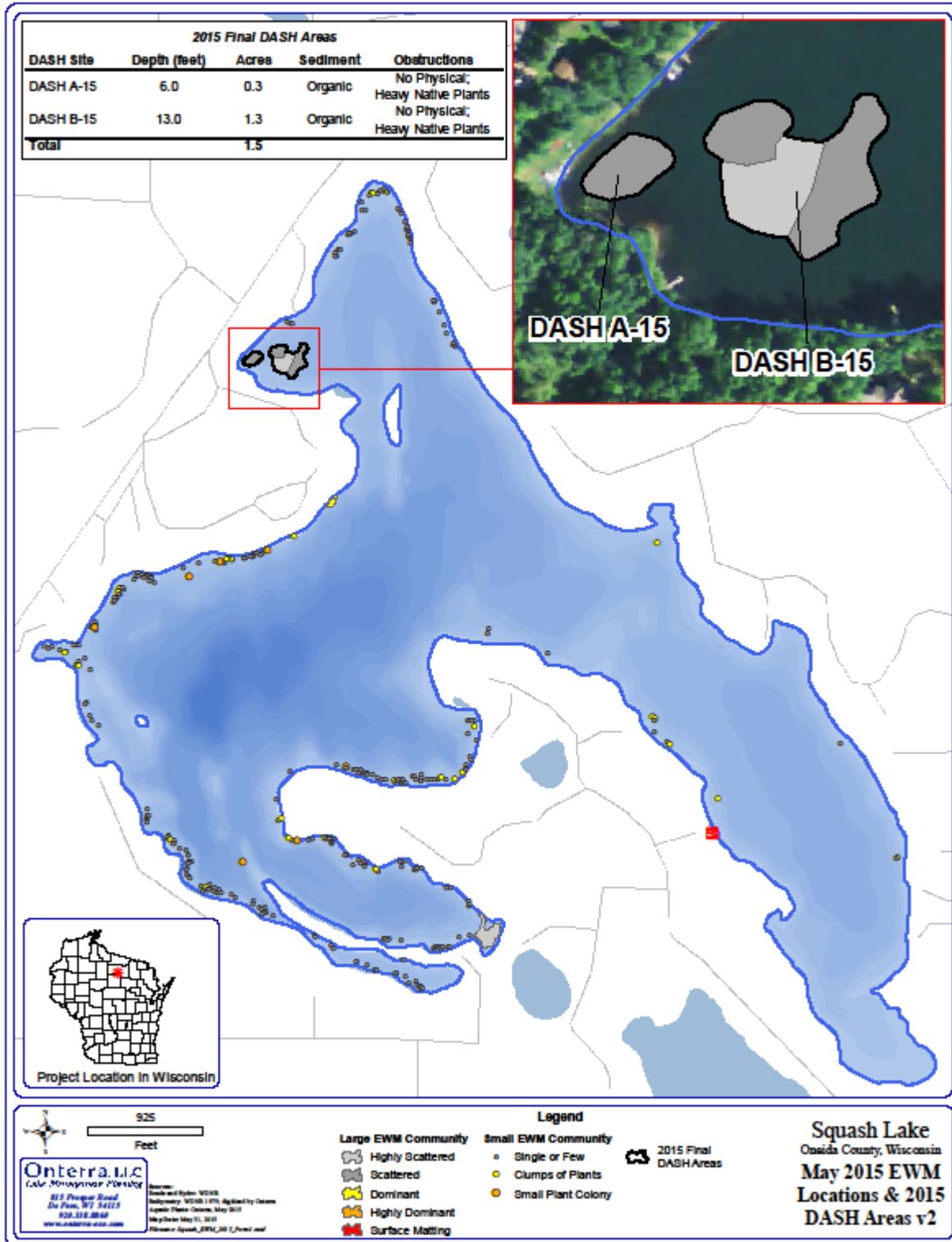
Work sites that have dense monotypic beds of EWM, the initial DASH efforts are quite simple. The diver will descend adjacent to the bed and begin hand pulling or harvesting systematically across the bed to dismantle the bed. Once the majority of the bed is removed, a more systematic approach follows to target remaining clustered, scattered or outlier plants in the work site. As part of our method for covering a work area while using DASH (or divers alone), a grid pattern is used. A diver will start at either the port or starboard side of the boat and work to and from the boat perpendicular to the direction the boat is facing. For example, with the boat facing north and the diver starting on the port side, the diver begins by heading west. The diver will continue to work perpendicular to the boat until reaching the end of the suction hose. The diver then works back to the boat on a new transect line. Distance between each transect is dictated by visibility, density of EWM, and obstructions. This process is repeated on the opposite side and in front of the boat. Depending on the site, once the diver has adequately covered the area, which the suction hose can reach, they will signal the deckhand to let out more anchor line or determine that the boat needs re-positioning.



Once plants reach the surface, a hose dispenses the plant material into a series of screened bins located on the deck of the boat. These bins capture plants and allow water to drain out back into the lake. Plants on deck are sorted into two categories: the targeted invasive plant and native vegetation. A wet weight of both

the invasive plant and all native species combined is taken. Plants are placed in sealable containers or bags for transport to the dumping site. The dumping site is a pre-determined site upland, away from any water body.

Figure 1: 2015 DASH Work Areas (Onterra, 2015)



Summary

Table 1: Daily DASH Efforts Summary

Date	Location	Size (acres)	Ave. Depth (ft)	DASH Boat Location		Working Direction	Dive Time (hrs)	EWM (lbs*)	Native (lbs*)	Percent Bi-Catch	Total (lbs*)
				Lat (NAD 83)	Long (NAD 83)						
6/10/2015	A-15	0.3	~6	45.603583	89.555400	S	5.00	60.5	1.50	2%	62.00
6/11/2015	A-15	0.3	~6	45.603700	89.555433	WSW	2.25	19.5	1.00	5%	20.50
				45.603650	89.555500	WSW	0.75	11.5	<.25	2%	11.75
				45.603533	89.555533	NNW	0.75	5.0	<.25	5%	5.00
	B-15	1.3	~13	45.603733	89.554683	NNE	0.50	6.0	<.25	4%	6.00
				45.603700	89.554367	ENE	0.75	10.0	0.5	5%	10.50
				45.603500	89.554117	NNE	0.50	8.0	0.25	3%	8.25
				45.603367	89.554317	SSW	0.50	8.0	0.25	3%	8.25
							11.00	128.5	4.25	4% (average)	132.25

* wet weight

Daily Conditions

DASH efforts initiated on A-15. The strategy was to complete A-15 before moving onto B-15. Some time was dedicated to B-15, however, efforts did not complete B-15.

June 10th 2015

Weather – Mostly sunny, 65°F, wind south-southwest 5-10 mph

Five hours of dive time removed 60.5 pounds of EWM. Incidental harvest of native plant species consisted of fern pondweed (*P. robbinsii*), large leaf pondweed (*P. amplifolius*), waterweed species, (*Elodea* sp.) and native milfoil (*Myriophyllum* sp.)

June 11th 2015

Weather- Overcast, rain most of the day, winds mostly calm

Overcast skies and rain, lowered water visibility, which did not affect efforts in A-15 that much, however, did make diving in the deeper water of B-15 a little more challenging. Plants were not detectable from the surface and the diver had to remain close to the bottom to observe new plants to pull. Six hours of diving removed 68 pounds of EWM. Incidental harvest of native plant species remained similar to the previous day.