Stantec Consulting Services Inc.
209 Commerce Parkway
Cottage Grove, WI 53527
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January 13, 2014

Grindstone Lake Association
c/o Bruce Paulsen
Hayward, Wisconsin 54843

Reference: 2013 Aquatic Plant Management Report for Little Grindstone Lake

Dear Grindstone Lake Association Members:

The Grindstone Lake Association (GLA) is a group responsible for the management of Little Grindstone Lake's aquatic invasive species (AIS), with the species of particular concern being *Potamogeton crispus* (curly-leaf pondweed – CLP). Stantec Consulting Services, Incorporated (Stantec) was contacted by the Association to provide a chemical herbicide treatment and an aquatic plant survey. Stantec furnished all labor, materials, tools and equipment necessary to perform all operations in connection with the chemical application of herbicides in select locations of the GLA. This report provides a summary of observations, conclusions and recommendations for the chemical treatment of AIS and nuisance aquatic plant growth from 2013 and for the upcoming 2014 season.

PROJECT SUMMARY

This Aquatic Plant Management Report was produced as part of the aquatic plant management activities for Little Grindstone Lake. The goal of the project was to control stands of CLP aquatic plant growth, to encourage growth of native aquatic plants that are out competed by CLP, to help improve the health of the lake ecosystem by restoring native habitat, and to improve the recreational and aesthetic value of the Lake. The report reviews existing and historical data for the Lake and activities that were conducted during 2013.

BACKGROUND

Little Grindstone Lake is a 24 acre lake located in the Towns of Bass Lake, Sawyer County, Wisconsin near the City of Hayward. Little Grindstone Lake has a maximum depth of 4 feet and a mean depth of 2 feet. The Grindstone Lake Association is an active lake district that has been managing aquatic plants on the lake through surveys and chemical treatments. Curly-leaf pondweed, an AIS, has been treated on the Lake within the past few years.

2013 AQUATIC PLANT MANAGEMENT

GLA contracted Stantec for the 2013 chemical treatment of CLP. Stantec, on behalf of the GLA, was successfully issued a permit to chemically treat up to 2.00 acres of aquatic invasive species (CLP) for the 2013 season by the Wisconsin Department of Natural Resources (WDNR) as follows. A copy of the permit is included in Attachment A.

Before treatments began, a pre-treatment survey was necessary to verify the presence of CLP within the proposed treatment areas outlined in the permit. The survey was completed as a point-intercept aquatic plant survey on May 28, 2013. CLP was present in at 4 sample locations, all in the northern portion of the lake. Full results are found in the following section.

Chemical treatment for CLP was completed on June 4, 2013 treating 2.0 acres for CLP growth. Due to the treatment area being directly at the mouth of the creek from Grindstone Lake and current flowing on site, past management activities have been below target when using conventional herbicides (endothall based) for CLP. These herbicides require longer contact time to be effective and, with the water flow through the

treatment area, did not achieve required contact times to achieve desired efficacy before being quickly diluted because of high water exchange rates in this area.

Due to these factors, a new treatment regimen was created in 2013 by Stantec and WDNR. In Little Grindstone Lake, Tribune® (active ingredient diquat) was applied at 300 parts per billion (ppb) within areas of active CLP growth mapped during the 2013 pre-treatment survey. This herbicide and active ingredient were chosen based on its quicker action requiring shorter contact time for effective control of the target plant. In compliance with WDNR regulations, treatment records were completed and are included in Attachment B.

In accordance with the treatment and WDNR grant funding protocol, a post-treatment survey was conducted on July 12, 2013 to document treatment success. During the post-treatment survey, all pre-treatment survey points were sampled with any remaining and new areas of CLP (3.00 ac) mapped, as shown in Figure 1.

PRE & POST-TREATMENT AQUATIC PLANT SURVEYS AND ANALYSIS

Prior to and after treatment, the aquatic plant community of Little Grindstone Lake was surveyed by Stantec, Inc. The survey was completed using a modified point-intercept sampling method according to the pre and post-treatment protocols as outlined by the WDNR. This survey at all sample locations was completed on May 28, 2013 pre-treatment and July 12, 2013 post-treatment.

The point intercept method was used to evaluate the existing emergent, submergent, floating-leaf, and free-floating aquatic plants. If a species was not collected at a specific point, the space on the datasheet was left blank. For the survey, the data for each sample point was entered into the WDNR "Worksheets" (i.e., a data-processing spreadsheet) to calculate the following statistics:

- **Taxonomic richness** - total number of taxa detected.
- **Maximum depth of plant growth**
- **Community frequency of occurrence** - number of intercept points where aquatic plants were detected divided by the number of intercept points shallower than the maximum depth of plant growth.
- **Mean intercept point taxonomic richness** - average number of taxa per intercept point.
- **Mean intercept point native taxonomic richness** - average number of native taxa per intercept point.
- **Taxonomic frequency of occurrence within vegetated areas** - number of intercept points where a particular taxon (e.g., genus, species, etc.) was detected divided by the total number of intercept points where vegetation was present.
- **Taxonomic frequency of occurrence at sites within the photic zone** - number of intercept points where a particular taxon (e.g., genus, species, etc.) was detected divided by the total number of intercept points which are equal to or shallower than the maximum depth of plant growth.
- **Relative taxonomic frequency of occurrence** - number of intercept points where a particular taxon (e.g., genus, species, etc.) was detected divided by the sum of all species' occurrences).
- **Mean density** - sum of the density values for a particular species divided by the number of sampling sites.
- **Simpson Diversity Index (SDI)** - an indicator of aquatic plant community diversity. SDI is calculated by taking one minus the sum of the relative frequencies squared for each species present. Based upon

the index of community diversity, the closer the SDI is to one, the greater the diversity within the population.

- **Floristic Quality Index (FQI) -** This method uses a predetermined Coefficient of Conservatism (C), which has been assigned to each native plant species in Wisconsin, based on that species' tolerance for disturbance. Non-native plants are not assigned conservatism coefficients. The aggregate conservatism of all the plants inhabiting a site determines its floristic quality. The mean C value for a given lake is the arithmetic mean of the coefficients of all native vascular plant species occurring on the entire site, without regard to dominance or frequency. The FQI value is the mean C times the square root of the total number of native species. This formula combines the conservatism of the species present with a measure of the species richness of the site.

AQUATIC PLANT ECOLOGY

Aquatic plants are vital to the health of a water body. Unfortunately, people all too often refer to rooted aquatic plants as "weeds" and ultimately wish to eradicate them. This type of attitude, and the misconceptions it breeds, must be overcome in order to properly manage a lake ecosystem. Rooted aquatic plants (macrophytes) are extremely important for the well-being of a lake community and possess many positive attributes. Despite their importance, aquatic macrophytes sometimes grow to nuisance levels that hamper recreational activities. This is especially prevalent in degraded ecosystems. The introduction of certain aquatic invasive species (AIS), such as CLP, often can exacerbate nuisance conditions, particularly when they successfully out-compete native vegetation and occupy large portions of a lake.

When "managing" aquatic plants, it is important to maintain a well-balanced, stable, and diverse aquatic plant community that contains high percentages of desirable native species. To be effective, aquatic plant management in most lakes must maintain a plant community that is robust, species rich, and diverse.

AQUATIC INVASIVE SPECIES

Aquatic Invasive Species (AIS) are aquatic plants and animals that have been introduced by human action to a location, area, or region where they did not previously exist. AIS often lack natural control mechanisms they may have had in their native ecosystem and may interfere with the native plant and animal interactions in their new "home". Some AIS have aggressive reproductive potential and contribute to a decline of a lake's ecology and interfere with recreational use of a lake. Common Wisconsin AIS include:

- Eurasian Watermilfoil
- Curly Leaf Pondweed
- Zebra Mussels
- Rusty Crayfish
- Spiny Water Flea
- Purple Loosestrife

PRE AND POST TREATMENT AQUATIC PLANT DATA ANALYSIS – MUSKY BAY

The pre-treatment survey was carried out May 28, 2013, and included sampling at the same 37 intercept points used for the 2013 post-treatment survey on July 12, 2013. The aquatic macrophyte community of Little Grindstone Lake was moderately diverse each year, given its small size. Table 1 lists the aquatic plant community statistics during the 2011 - 2013 post-treatment aquatic plant surveys.

Table 1: Aquatic Plant Community Statistics, Little Grindstone Lake, Sawyer County, Wisconsin.

	2011	2012	2013
F.o.o. at sites shallower than maximum depth of plants	90.24	86.49	97.3
Simpson Diversity Index	0.86	0.90	0.91
Avergage number of all species per site	1.83	1.95	2.97
Average number of all species per vegetated site	2.03	2.25	3.06
Average Number of native species per site	1.80	1.84	2.81
Average Number of native species per vegetated site	2.00	2.13	2.97
Species Richness	13	15	18
Community FQI	6.25	6.14	6.19
Average Coefficient of Conservatism	21.65	22.98	24.75

In 2013, Aquatic vegetation was detected at 97.3 percent (%) of photic zone intercept points. A diverse plant community was sampled during the 2013 post-treatment survey. The Simpson Diversity Index value of the community was 0.91, taxonomic richness was 18 species, and there was an average of 2.81 species identified at points that were within the photic zone and an average of 3.06 species present at points with vegetation present. Nearly all aquatic plant community indices remained stable throughout the project period from 2011-2013.

The most abundant aquatic plants identified during the 2013 aquatic plants survey were slender naiad (*Najas flexilis*), white water lily (*Nymphaea odorata*), and fern pondweed (*Potamogeton robbinsii*). All three species were also the most common sampled during the 2012 post-treatment survey. Table 2 includes the abundance statistics for each species found during the surveys.

Table 2: Frequency of Occurrence of Aquatic Plant Species by Year, Little Grindstone Lake, Sawyer County, Wisconsin

	2011 Survey		2012 Survey		2013 Survey	
Specie	**% F.o.O.***	**Avg. Density**	**% F.o.O.***	**Avg. Density**	**% F.o.O.***	**Avg. Density**
Curly-leaf pondweed	**2.44**	**1.00**	**10.81**	**1.25**	**16.22**	**1.17**
Watershield	7.32	1.00	---	---	8.11	1.00
Muskgrass	2.44	1.00	13.51	1.00	27.03	1.00
Swamp loosestrife	---	---	---	---	2.7	1.00
Common waterweed	21.95	1.00	13.51	1.00	27.03	1.00
Water star-grass	---	---	16.22	1.00	2.7	1.00
Water marigold	7.32	1.00	5.41	1.00	16.22	1.00
Northern water-milfoil	---	---	2.7	1.00	---	---
Slender naiad	14.63	1.00	21.62	1.00	40.54	1.00
Spatterdock	---	---	5.41	1.00	2.7	1.00
White water lily	17.07	1.00	32.43	1.00	40.54	1.00
Pickerelweed	2.44	1.00	---	---	---	---
Large-leaf pondweed	14.63	1.00	8.11	1.00	18.92	1.00
Floating-leaf pondweed	7.32	1.33	10.81	1.00	5.41	1.00
Clasping-leaf pondweed	9.76	1.00	5.41	1.00	2.7	1.00
Fern pondweed	53.66	1.00	35.14	1.00	29.73	1.00
Flat-stem pondweed	---	---	---	---	18.92	1.00
Stiff water crowfoot	---	---	8.11	1.00	---	---
Arrowhead species	---	---	---	---	21.62	1.00
Common bladderwort	---	---	---	---	8.11	1.00
Wild celery	21.95	1.00	5.41	1.00	8.11	1.00

* - F.o.O = Frequency of Occurrence

To compare between years, statistical analysis completed using a Chi-square test with a 5% Type-I error rate. This error rate is standard in ecological studies and equals that there is a 5% chance of claiming statistically significant change when no real change occurred. Only those species that display a p-value of

0.05 or lower changed significantly population-wise between years. To calculate these values, the total number of sample locations each species was found at is compared between years. The following table displays statistical changes, if any, for each species sampled in 2013 versus the 2011 and 2012 post-treatment surveys.

Table 3: Statistical Significance of Specie between Sampling Events, Little Grindstone Lake, Sawyer County, Wisconsin

	2013 vs 2012			2013 vs 2011		
Specie	**+/-**	**P-Value**	**significance**	**+/-**	**P-Value**	**significance**
Curly-leaf pondweed	↑	0.496457907	n.s.	↑	**0.0335198**	*
Watershield	↑	0.077016638	n.s.	↑	0.895841482	n.s.
Muskgrass	↑	0.148227694	n.s.	↑	**0.0018363**	**
Swamp loosestrife	↑	0.314018389	n.s.	↑	0.289380964	n.s.
Common waterweed	↑	0.148227694	n.s.	↑	0.602028443	n.s.
Water star-grass	↓	**0.0470231**	*	↑	0.289380964	n.s.
Water marigold	↑	0.134270325	n.s.	↑	0.219294013	n.s.
Northern water-milfoil	↓	0.314018389	n.s.	---	---	---
Slender naiad	↑	0.078715814	n.s.	↑	**0.0100029**	*
Spatterdock	↓	0.55557848	n.s.	↑	0.289380964	n.s.
White water lily	↑	0.468791676	n.s.	↑	**0.0214568**	*
Pickerelweed	---	---	---	↓	0.339013313	n.s.
Large-leaf pondweed	↑	0.173783394	n.s.	↑	0.612128972	n.s.
Floating-leaf pondweed	↓	0.394348909	n.s.	↓	0.730698737	n.s.
Clasping-leaf pondweed	↓	0.55557848	n.s.	↓	0.204096989	n.s.
Fern pondweed	↓	0.619432022	n.s.	↓	**0.0326808**	*
Flat-stem pondweed	↑	**0.005427**	**	↑	**0.0035097**	**
Stiff water crowfoot	↓	0.077016638	n.s.	---	---	---
Arrowhead species	↑	**0.0027449**	**	↑	**0.0016727**	**
Common bladderwort	↑	0.077016638	n.s.	↑	0.062973168	n.s.
wild celery	↑	0.64326859	n.s.	↓	0.090637909	n.s.

*, **, *** - Levels of significance.
n.s. - Change not significant
--- - Specie was not sampled in both comparison years

Reduction of CLP, the main goal of the treatments, was marginally successful prior to 2013, which saw an increase in CLP remaining after treatment within Little Grindstone Lake. From historical levels in 2011 (2.25) to a 3.0 acres after treatment in 2013, CLP has remained constant with a slight increase from 2012 to 2013. These treatments were with a targeted dose of approximately 3.0 ppm with the granular herbicide endothall as active ingredient. The 2013 post-treatment survey showed CLP to be present at 3.00 acres resulting in an over-all increase of 33% from 2011.

Protection of native species was also an important aspect of AIS management in Little Grindstone Lake by limiting non-target impact. CLP management within Little Grindstone Lake has no visible impacts to the native aquatic plant community, which has remained stable and healthy throughout the project. All community metrics, average coefficient of conservatism, FQI, and Simpson Diversity Index, either remained stable or increased over time. Additionally, only one species showed a decline over the project; fern pondweed. Though fern pondweed has declined, it should not be of concern. Similar declines were noted in nearby waters, whether in AIS management areas or not, during the same time period and it was still found at nearly 30% of sample points in 2013.

MANAGEMENT SUGGESTIONS

It is important that appropriate management actions continue on a yearly basis to ensure that nuisance invasive aquatic plant growth, in this case CLP does not reach unmanageable levels. While the level of

physical plant control experienced in 2013 was not what was desired, there were increases in many of the native plant species in numbers and densities. There are essentially two basic schools of thought regarding invasive species management; simplistically one is to control the invasive at all costs, the other is augment the native plant community as true control of the invasive plant will likely never be achieved and the best defense is a robust healthy plant native plant community. We try to walk a line between both approaches in recommending management strategies.

For 2013 CLP growth was not slightly reduced from pre-treatment levels, but the overall trend is still positive with native plant numbers remaining healthy compared to previous years. However, turions from the invasive plant are viable for many years within the lake bottom and can continue to provide a seed bank of CLP growth for that an extended period of time. Because of the location of the CLP bed in a high water turnover area to due incoming flow, control is difficult due to limited contact time for any chose herbicide's active ingredient.

Given the data from this year, as well as the last several years, we would recommend the following course of action with two different options;

Option A – Stop herbicide management of CLP and consider either early season (prior to the start of turion production) hand pulling with use of SCUBA divers or local volunteers. The water flowing into and through the treatment area seriously hampers the effect of herbicide management by reducing contact / exposure times. Even in light of varying methods, control has been minimal between years. The current population of CLP, though slightly higher than 2011 levels, has remained stable and localized within the lake without adverse impact to native species present.

Option B – If herbicide management is to be continued it is strongly recommended that in-lake barriers be installed on the upstream side of the treatment and possibly encompassing the entire treatment area in order to reduce herbicide dilution and increase residency time. The barrier would be similar to a typical sediment curtain with a poly coated canvas wall, which should remain in place for 48 to 72 hours after treatment and this would likely require a Chapter 30 permit from WDNR. The herbicide of choice should be contact herbicide given the short exposure time, active ingredient either diquat or endothall applied at maximum label rates with preference given to granular herbicide verses liquid because of high dilution concerns.

Additionally we recommend, at minimum, an annual AIS survey or citizen monitoring of the population's extent to gauge the size and any changes in the infestation from year to year. If active management is again chosen in the future, we recommend continued pre and post treatment surveys and mapping of both CLP and native species. Though CLP may be reduced through management, complete extirpation of this AIS from the Lake is extremely unlikely. Current populations of AIS will fluctuate yearly and control actions should be altered accordingly. It is possible, if GLA is interested, as AIS populations come under control to a small and more manageable size, that GLA members can monitor the lake for historic and new AIS infestations and contract with a qualified consultant on as needed basis, as a cost saving measure.

Because of GLA's proactive approach in dealing with AIS, the current populations of CLP within the lake, though stable, have not impacted the native plant community or adversely affected the system. This protects the health and ecosystem present. However, the Grindstone Lake Association should continue to be involved in some type of aquatic plant management program to help manage invasive aquatic plant growth of CLP. AIS are extremely opportunistic plants and can grow to nuisance levels in a very short period of time. Continued management should occur to ensure the health, aesthetic and recreational value of the lake is not degraded. This should occur through a two pronged approach of augmenting the native plant community while targeting reductions in the invasive plants.

The Grindstone Lake Association must remain proactive in their approach. With GLA's continued commitment to ensuring the health, aesthetic and recreational values of Little Grindstone Lake are preserved with active aquatic plant management; the quantity of exotic species such as CLP found on Little Grindstone will be

appropriately controlled. Stantec appreciates working for GLA this past treatment season and we look forward to working with you on future projects. Please feel free to contact us if you have any questions regarding the 2013 chemical treatment or with additional concerns.

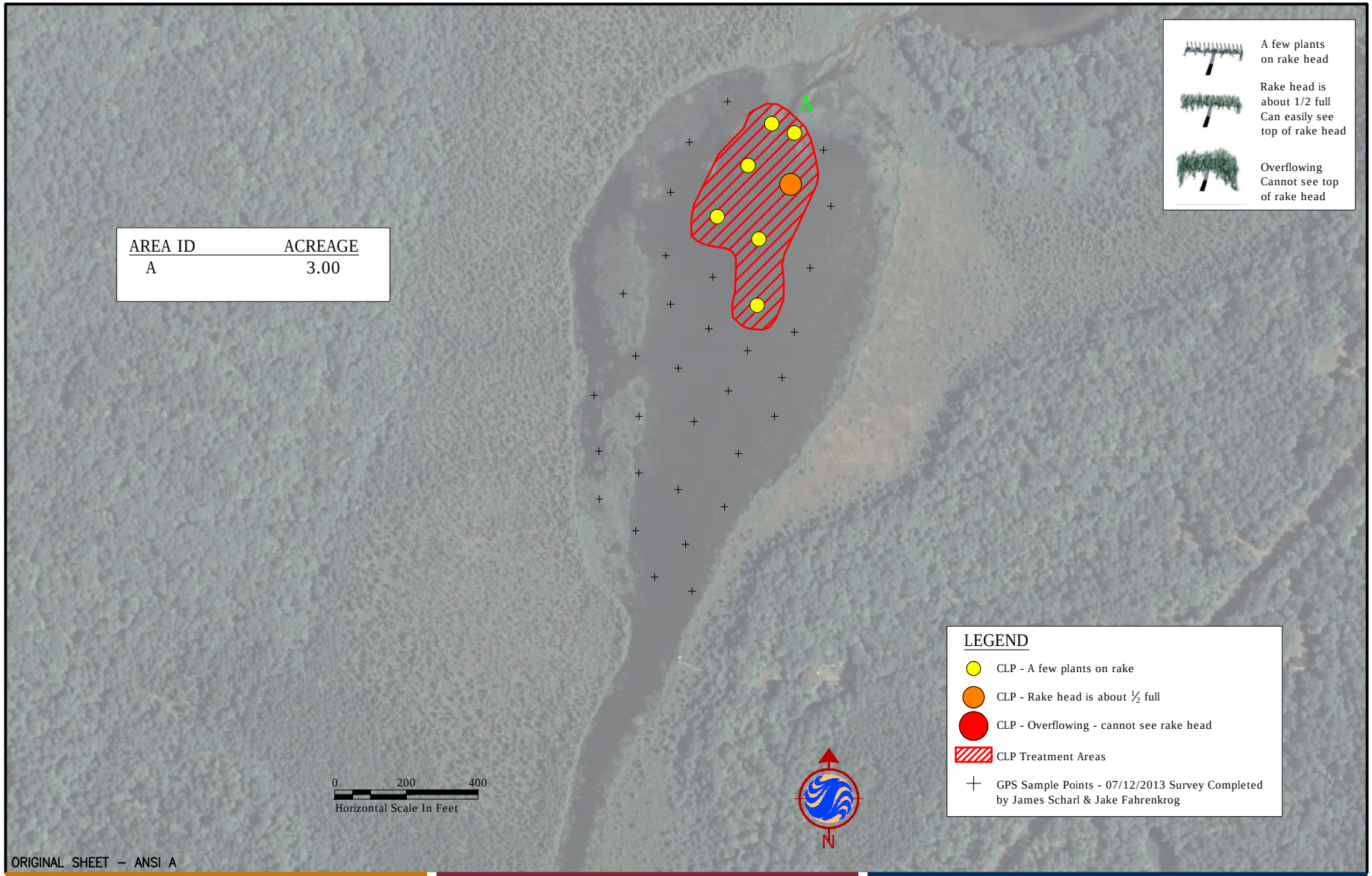
Respectfully,
STANTEC CONSULTING SERVICES INC.

James T. Scharl
Staff Scientist/WI Licensed Applicator
Tel: (608) 839-1998 ext. 2026
Fax: (608) 839-1995
Email: james.scharl@stantec.com

Mark Kordus, Associate
Project Manager

Attachments

FIGURES



Stantec

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Mequon, WI 53092
Tel. (262) 241-4466
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www.stantec.com

Project Information

Project Nubmer: 193700746

	Initials	Date
Prepared by	EJM	07/18/13
Peer Review by	JTS	07/18/13
Final Review by	MEK	07/18/13

Data Sources include: ESRI and Stantec
Image: NAIP 2010

Client/Project

GRINDSTONE LAKE ASSOCIATION
SAWYER COUNTY
WISCONSIN

Figure No.

1.0

Title

2013 POST-TREATMENT SURVEY LITTLE GRINDSTONE LAKE

ATTACHMENT A

WDNR CHEMICAL AQUATIC PLANT CONTROL PERMIT

WISCONSIN
DEPT. OF NATURAL RESOURCES

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Scott Walker, Governor
Cathy Stepp, Secretary
John Gozdzialski, Regional Director

Northern Region Headquarters
810 W. Maple Street
Spooner, Wisconsin 54801
Telephone 715-635-2101
FAX 715-635-4105
TTY 715-635-4001

May 17, 2013

Permit # NOR-2013-58-439

Grindstone Lake Association
8518 Hilltop Road
Hayward, WI 54843

Dear Mr. Paulsen:

Enclosed you will find your approved Aquatic Plant Management permit for chemical treatment on Little Grindstone Lake in Sawyer County. Your application has been approved for the area described and may not be expanded. Details of the approved treatment area are as follows:

Township 39N Range 9E Sec. 10

Specific Project Description (as shown on application form).

1. Early season CLP control on 1 sites covering a maximum of 2 acres and performed while water temperatures are averaging less than 60 degrees F. Treatment after May 31 will be allowed only if it can be shown that CLP is still in an early growth form and not forming significant numbers of turions, and if native plants are not yet actively growing.
2. Disturbance of wild rice is prohibited.
3. Treatment is to be scheduled to avoid inclement weather/wind that would hinder efficacy.
4. All requirements for notification according to NR 107.07(3) must be satisfied prior to treatment. All riparian residents within 150 feet of a treated area must be properly notified per NR107.04(4).
5. Posting shall occur as specified in NR107.08(7). Signage must remain in place a minimum of one day and the full period specified on the chemical product label.
6. In 2011 and 2012 this site was treated with Endothol. This site may be treated with Aquathol K and would not require plant or herbicide monitoring due to the history of treatments on this site.
7. For a clearcast application, the Department is treating this as a Field Evaluation Use Permit following NR 107.10.

A. The permit holder shall submit to the department a summary of treatment results at the end of the treatment season. The summary shall include:
(a) Total chemical used and distribution pattern, including chemical trade name, formulation, percent active ingredient, and dosage rate in the treated water in parts per million of active ingredient and the herbicide concentration data collected in post treatment monitoring.
(b) Description of treatment areas including the character and the extent of the nuisance present;
(c) Effectiveness of the application and when applicable, a summary comparison of the results obtained from past experiments using the same chemical formulation;

(d) Other pertinent information required by the department; include impacts on non-target species and residual monitoring results
(e) Conclusions and recommendations for future use.
7. Conduct herbicide concentration monitoring. Prior to treatment, provide to the Department a map indicating the locations of the herbicide concentration sampling points, along with their GPS coordinates.
8. Prior to treatment, provide to the Department a schedule for herbicide concentration monitoring and the names of those that will be collecting the samples.
9. Failure to provide to the Department the field use information will exclude the use of imazamox in the future.
10. Follow the DNR pre and post treatment plant monitoring protocols. Post treatment surveys typically completed during July or August.

Please note these selected permit conditions (refer to Section NR 107.08 for complete details):

1. Four-day advance notification of treatment is required unless exempted in Section VII of the application.
2. Treatment sites must be posted a minimum of one day or as specified in the use restrictions on the chemical label.
3. The Aquatic Plant Treatment Record must be submitted within 30 days after treatment or by October 1 if no treatment occurs.
4. "All equipment used for the project shall be de-contaminated following the most current protocols for invasive and exotic viruses and species prior to use and after use. All equipment that comes in contact with infested waters, including but not limited to tracked vehicles, barges, boats, silt or turbidity curtain, hoses, sheet pile and pumps, shall be thoroughly disinfected. To the extent practicable, equipment and gear used on infested waters should not be used on other non-infested waters". Note: The most current decontamination protocols can be found at the following website http://dnr.wi.gov/ under the topic "Waterway and Wetland Permits".

Thank you for complying with the provisions of Wis. Adm. Code NR 107 concerning the use of aquatic pesticides for plant management. Feel free to contact Mark Sundeen at the Spooner Service Center at 715/635-4074 for further information.

Sincerely,

Mark Sundeen

John Gozdzialski
Northern Region Director

Enc.

Date Mailed May 17 2013

State of Wisconsin
Department of Natural Resources
Water Permit Central Intake - WT/3
PO Box 7185, Madison, WI 53707-7185
dnr.wi.gov

Chemical Aquatic Plant Control Application and Permit
Wisconsin Pollutant Discharge Elimination System (WPDES)
Pesticide Pollutant Permit Application

Form 3200-004 (R 11/11)

Notice: Use of this form is required by the Department for any application filed pursuant to s. 281.17(2), Wis. Stats., and Chapters NR 107, 200 and 205, Wis. Adm. Code. This permit application is required to request coverage for pollutant discharge into waters of the state. Personally identifiable information on this form may be provided to requesters to the extent required by Wisconsin's Open Records Law [ss. 19.31-19.39, Wis. Stats.].

DNR Use Only	
ID Number: NO - 2013 - 58 - 439	Permit Expiration Date: 10.01.2013
Waterbody #: 2391200	Fee Received: $ 70.00

Section I – Applicant Information

Name of Permit Applicant. Also indicate names and addresses of all individuals, associations, communities or town sanitary districts sponsoring treatment. Attach additional sheets if necessary.

Home Address

Name: Grindstone Lake Association
Street Address: 8518 Hilltop Road
City: Hayward | State: WI | ZIP Code: 54843

Lake Address

Name: Grindstone Lake Association
Street Address: 8518 Hilltop Road
City: Hayward | State: WI | ZIP Code: 54843

Phone Number (include area code)
Primary: (715) 634-3618 Secondary:

Email Address: blpaulsen@centurylink.net

Section II – Aquatic Plant Control Location

Waterbody to be Treated (waterbody where treatment area is located): Little Grindstone Lake

Lake Surface Area: 24 acres

Estimated Surface Area that is 10 Feet or Less in Depth: 24 acres

County: Sawyer | Section: 10 | Township: 40 N | Range: ☐ E ☐ W

Latitude: | Longitude:

Is the waterbody a private pond? ☐ Yes ☒ No

Does the waterbody have public access? ☒ Yes ☐ No

Adjacent Riparian Property Owner Names (attach sheets if necessary)

1. see attached sheets
2.
3.
4.
5.
6.
7.

Name of Lake Property Owners' Association Representative or Lake District Representative (if none, please indicate): Bruce Paulsen

Name of Applicator or Firm: Stantec

Street or Route: 1203 Storbeck Dr

City: Stevens Point | State: WI | ZIP Code: 54481

County: Portage | Phone Number (include area code): (920) 344-7951

Email Address: james.scharl@stantec.com

Applicator Certification Number for Category 5 Aquatic Pesticide Application: 077803

Business Location License Number (if applicable): 93-020291-011079

Restricted Use Pesticide License Number (if applicable):

Area(s) Proposed for Control: (Note details in permit cover letter for final permitted sizes of treatment areas.)

	Treatment Length		Treatment Width			Estimated Acreage	Average Depth	Total Estimated Acres
A.	see map	ft. X	see map	ft. ÷ 43,560 ft.² =		2.00	3 ft.	
B.		ft. X		ft. ÷ 43,560 ft.² =			ft.	Total from lines A - E: 2.00
C.		ft. X		ft. ÷ 43,560 ft.² =			ft.	Total from Attached Sheets:
D.		ft. X		ft. ÷ 43,560 ft.² =			ft.	Grand Total: 2.00
E.		ft. X		ft. ÷ 43,560 ft.² =			ft.	

If the estimated acreage is greater than 10 acres, or is greater than 10 percent of the estimated area 10 feet or less in depth in Section II, complete and attach Form 3200-004A, Large-Scale Treatment Worksheet. Private pond treatments are exempted from this requirement.

Is this area within or adjacent to a sensitive area designated by the Department of Natural Resources? ☐ Yes ☒ No

DNR Use: NHI Review? ☒ Yes ☐ No Describe:

Section III – Fees

1. s. NR 107.11(1), Wis. Adm. Code, lists the conditions under which the permit fee is limited to the $20 minimum charge.
2. s. NR 107.11(4), Wis. Adm. Code, lists the uses that are exempt from permit requirements.
3. s. NR 107.04(2), Wis. Adm. Code, provides for a refund of acreage fees if the permit is denied or if no treatment occurs.
4. Fee calculations:

Basic Permit Fee (non-refundable) ..... $ 20.00

If proposed treatment is over 0.25 acre, calculate acreage fee:
(round up to nearest whole acre, to maximum of 50 acres.)

2 acres X $25 per acre = $ 50

If proposed treatment is ≤ 0.25 acre, acreage fee is $0.

Enter Acreage Fee (from above) 20

Total Fee Enclosed ..... $ 70

☒ **Site Map:** Attach a sketch or a printed map of lake indicating area and dimensions of each individual area where plant control is desired and flow of surface water outside treatment area. Also show location of property owners riparian to and adjacent to the treatment area. Attach a separate list of owners and corresponding treatment dimensions coded to the lake map, if necessary.

Section IV – Reasons for Aquatic Plant Control

Is this permit being requested in accordance with an approved Aquatic Plant Management Plan? ☒ Yes ☐ No

Treatment Type: ☒ Lake ☐ Pond ☐ Wetland ☐ Marina ☐ Other

Goal of Aquatic Plant Control:

- ☐ Reduce nuisance algae accumulation
- ☐ Maintain navigational channel for common use
- ☐ Maintain private access for boating
- ☐ Maintain private access for fishing
- ☐ Improve swimming
- ☐ Control of purple loosestrife
- ☒ Control of invasive exotics
- ☐ Other: _____

Nuisance Caused By:

- ☐ Algae
- ☐ Emergent water plants (majority of leaves and stems growing above water surface, e.g. cattails, bulrushes)
- ☐ Floating water plants (majority of leaves floating on water surface, e.g., waterlilies, duckweed)
- ☒ Submerged water plants (leaves and stems below water surface, flowering parts may be exposed, e.g., milfoil, coontail)
- ☐ Other: _____

List Target Plants

Curly-leaf pondweed

Note: Different plants require different chemicals for effective treatment. Do not purchase chemical before identifying plants.

Section V – Chemical Control

Alternatives to Chemical Control:	Feasible?		If No, Why Not?
1. Mechanical harvesting	☐ Yes	☒ No	Spreads plant debris
2. Hand pulling	☐ Yes	☒ No	Too large of an area
3. Hand raking	☐ Yes	☒ No	Too large of an area
4. Hand cutting	☐ Yes	☒ No	Too large of an area
5. Sediment screens/covers	☐ Yes	☒ No	Other potential ecological system damag
6. Dredging	☐ Yes	☒ No	Too costly
7. Lake drawdown	☐ Yes	☒ No	No ability to drawdown
8. Nutrient controls in watershed	☐ Yes	☒ No	Not a control option for immediate concerns
9. Other: _____	☐ Yes	☐ No	

Note: If proposed treatment involves multiple properties, consider feasibility of EACH alternative for EACH property owner.

If you checked yes to any of the alternatives listed above, please explain your decision to use chemical controls:

Chemical Aquatic Plant Control Application and Permit
WPDES Pesticide Pollutant Permit Application

Form 3200-004 (R 11/11)

Section VII – WPDES Permit Request

Is WPDES coverage being requested? Refer to http://dnr.wi.gov/org/water/wm/ww/aquaticpesticides.htm for more information.

☒ Yes ☐ No If no, you do not need to complete this section.

Select which permit you are requesting:
☒ WI-0064556-1 Aquatic Plants, Algae & Bacteria
☐ WI-0064564-1 Aquatic Animals
☐ WI-0064581-1 Mosquitoes & other Flying Insects

Indicate WPDES permittee responsible for the pollutant discharge: ☐ Applicator ☒ Sponsor

Do you expect the pest control activity will result in a detectable pollutant discharge to waters of the state beyond the treatment area boundary or a pollutant residual in waters of the state after the treatment project is completed? ☒ Yes ☐ No

If yes, identify the pollutant(s): endothal

Are you planning to incorporate integrated pest management principles, as specified in the WPDES permit, into your pest control activity to minimize any pollutant residual or pollutant discharge beyond the treatment area? ☒ Yes ☐ No

Type of WPDES coverage being requested: ☒ One Treatment Site ☐ Statewide Coverage

For informational purposes, select areas of WI for most of your aquatic treatments: ☒ NW ☐ NE ☐ SW ☐ SE

Is WPDES coverage being requested for more than 1 year?

☒ Yes ☐ No If yes, the permittee will remain in "active" WPDES status until a Notice of Termination is submitted.

I hereby certify that I am the authorized representative (as specified in Ch. NR 205.07(1)(g), Wis. Adm. Code) of the pest treatment activity which is the subject of this permit application. I certify that the information contained in this form and attachments is, to the best of my knowledge, true, accurate and complete.

Signature of Authorized Representative	Printed Name	Date Signed
	Bruce Paulsen	3/25/13

Section VIII – Permit to Carry Out Chemical Treatment (Leave Blank – DNR Use Only)

The foregoing application is approved. Permission is hereby granted to the applicant to chemically treat the waters described in the application during the season of 2013.

Application fee received? ☒ Yes ☐ No

Advance notification of treatment required? ☒ Yes ☐ No

State of Wisconsin
Department of Natural Resources
For the Secretary

By Mark Sundeen
Regional Director or Designee

May 9-2013
Date Signed

May 9-2013
Date Mailed

Please Note:

If you believe that you have a right to challenge this decision, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed.

For judicial review of a decision pursuant to ss. 227.52 and 227.53, Wis. Stats., you have 30 days after the decision is mailed or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review shall name the Department of Natural Resources as the respondent.

This notice is provided pursuant to s. 227.48(2), Wis. Stats.

To request a contested case hearing pursuant to s. 227.42, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. The filing of a request for a contested case hearing is not a prerequisite for judicial review and does not extend the 30-day period for filing a petition for judicial review.

ATTACHMENT B

AQUATIC PLANT MANAGEMENT HERBICIDE TREATMENT RECORDS

State of Wisconsin
Department of Natural Resources
dnr.wi.gov

Aquatic Plant Management Herbicide Treatment Record

Form 3200-111 (R 11/11)

Notice: Completion of this form is a condition of the permit and provides records required by WDNR (NR 107) and DATCP (ATCP 29.21 and 29.22). The Department may not issue you future permits unless you complete and submit this form. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law [ss. 19.31-19.39, Wis. Stats.].

Submit this form: **(1) immediately if any unusual circumstances occurred during treatment**
(2) as soon after treatment as possible, no later than 30 days
(3) by October 1 if no treatment occurred

Completion of this form along with the permit satisfies the requirements of WDNR (NR 107) and DATCP (ATCP 29.21 and 29.22).

General Permit Information

Permit Number	Waterbody Name (including ponds, e.g., Smith Pond)
NOR-2013-58-439	Little Grindstone Lake
County	**Permit Holder Name (Customer Name)**
Sawyer	Grindstone Lake Association

Permit Holder Address	City	State	ZIP Code
8518 Hilltop Road	Hayward	WI	54843

Treatment Information

Treatment Date (mm/dd/yyyy)	Starting Time (24 hr)	Ending Time (24 hr)	Water Temp (°C)	Ambient Air Temp (°C)
06/04/2013	15:00	15:15	14.44	15.56

Wind Speed (mph)	Wind Direction	Expected Duration of Chemical Residuals
0-5	SE	~3 days

Adverse Conditions Noted (i.e., dead fish, spawning fish, algae bloom, etc.)
No

If adverse conditions noted, indicate corrective actions taken

Onsite Supervision Present? ◯ Yes ◉ No

If Yes, Supervisor Name

Mixing and Loading Site Location (if other than business site or from prepackaged retail container or applied with equipment with a total capacity of not more than 5 gallons liquid or 50 pounds dry)
pre-packaged retail containers

Herbicide Treatment and Water Use Restrictions Signs Posted In Accordance With NR 107? ◉ Yes ◯ No

Applicator shall provide each customer with a free copy of each pesticide label used (if requested)

Applicator Information

Individual or Business Name	Telephone Number
Stantec, Inc.	(715) 781-9976

Street Address		
209 Commerce Parkway		
City	**State**	**ZIP Code**
Cottage Grove	WI	53527

Individuals Making Pesticide Application:	Last Name	First	Certification #
	Scharl	James	77803
	Last Name	First	Certification #
	Nied	Joseph (Mike)	89920
	Last Name	First	Certification #

Name of Person Completing Form	Signature	Date Signed	DNR Use Only
James Scharl			Date Received

Aquatic Plant Management Herbicide Treatment Record

Form 3200-111 (R 11/11)

Sheet 2 of 2   Date: 06/10/2013

Treatment Site and Chemical Information (attach additional sheets if necessary)

Site No, Property Name, Address / Fire No	Treated Acreage	Permitted Acreage	Sensitive Area?	Latitude	Longitude	Herbicide Name: Tribune EPA Reg No.: 241-437-67690 Amount Applied	Concentration (mg/l = ppm)	Herbicide Name: EPA Reg No.: Amount Applied	Concentration (mg/l = ppm)	Herbicide Name: EPA Reg No.: Amount Applied	Concentration (mg/l = ppm)
A	2.0	2.0	☐ Y			4 gal	0.30 ppm				
			☐ Y								
			☐ Y								
			☐ Y								
			☐ Y								
			☐ Y								
			☐ Y								
			☐ Y								
			☐ Y								
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			☐ Y								
			☐ Y								
			☐ Y								
			☐ Y								
			☐ Y								
			☐ Y								
			☐ Y								
			☐ Y								
					Totals	120 gal		2.0 gal		200 lbs	

Aquatics at Treatment Site: TS = Target Species SP = Species Present

TS	SP		Site(s)	TS	SP		Site(s)	TS	SP		Site(s)	TS	SP	Other Aquatics	Site(s)
☐	☐	Cattail		☐	☐	Filamentous Algae		☐	☐	Planktonic Algae		☐	☐	White-Stem Pondweed	
☐	☐	Chara		☐	☐	Flat-Stem Pondweed		☐	☐	Purple Loosestrife		☐	☐	Wild Celery	
☐	☐	Coontail		☐	☐	Floating-Leaf Pondweed		☐	☐	Richardson Pondweed		☐	☐		
☒	☐	Curly-Leaf Pondweed	all CLP areas	☐	☐	Illinois Pondweed		☐	☐	Robbins Pondweed		☐	☐		
☐	☐	Duckweed		☐	☐	Large-Leaf Pondweed		☐	☐	Sago Pondweed		☐	☐		
☐	☐	Elodea		☐	☐	Northern Milfoil		☐	☐	Watershield		☐	☐		
☐	☐	Eurasian/hybrid Milfoil		☐	☐	Phragmites		☐	☐	White Water Lily		☐	☐		