

Date: December 21, 2017

To: Mike Geier - White River Flowage Lake Management District

Re: 2017 Flowering Rush Herbicide Management, White River Flowage, Waushara County,
Wisconsin

Dear Mr. Geier and other Board members;

Currently three aquatic invasive species (AIS) are present in White River Flowage: Eurasian water-milfoil (EWM), curly-leaf pondweed (CLP), and flowering rush (FR). In 2017 only flowering rush was actively managed with hand pulling efforts led by Golden Sands Resource Conservation & Development Council, Inc. (Golden Sands RC&D) and herbicide application. Wisconsin Lake & Pond Resource, LLC (WLPR) was contacted by the District to provide herbicide management of flowering rush and reporting. WLPR furnished all labor, materials, tools and equipment necessary to perform their share of management operations in connection with the treatment and reporting for White River Flowage. This report provides a summary of observations and conclusions on the management of flowering rush from 2017.

2016 FLOWERING RUSH MANAGEMENT

Flowering rush is a newly introduced AIS into the White River Flowage and was first noted in 2015 in the upstream portion. From 2015 to 2016 populations of flowering rush spread rapidly, aided by water flow downstream and prompted active control methods. This plant typically grows in shallow, near shore areas as an emergent species but can also grow submersed or as free-floating plants and all three types were found.

Much of the flowering rush present was in scattered clumps of emergent plants with control focused on hand harvesting by Golden Sands RC&D. A larger bed was present along the western shore that was too large to hand pull and required herbicide management as shown in Attachment A. Herbicide management occurred twice in 2016 using the active ingredient (AI) diquat at the WDNR's recommendation. Though diquat did provide temporary control in 2016, its use going forward was noted as cautionary after the 2016 application with the full understanding that this is going to require multiple annual treatments each growing season over the period of possibly many years.

In 2016 after the final diquat application new flowering rush growth an inch or two above the bottom was observed below the surface in 1' – 2' of water. New growth was noted growing from the massive system of rhizomes present in sediment within the highest density areas. As a very fast acting contact herbicide diquat appeared to simply burn off the biomass of the plants above the roots without penetrating the rhizomes, which is ultimately required for effective long lasting control. This is strong indication that the herbicide was not translocated to the roots and, in order to see positive results, multiple applications are necessary over consecutive years.

2017 FLOWERING RUSH MANAGEMENT

The initial application in 2017 again used the active ingredient diquat following WDNR's recommendation. Diquat was mixed with a surfactant and foliar applied to 3.0 acres of flowering rush growth at 0.37 PPM on May 25, 2017. After application Golden Sands RC&D continued hand harvesting and mapping efforts and found no change in the flowering rush area treated with diquat, specifically noting that “plants were green, robust, and thriving.”

At WLPR's recommendation a change in active ingredient was chosen for the second herbicide application. On September 9, 2017 a mixture of surfactant and Habitat (active ingredient imazapyr) was foliar applied to the same 3.0 acre area of flowering rush with a 1.5% active solution. A copy of each treatment record is included in Attachment A. Imazapyr is a systemic herbicide that is taken into the roots as a plant prepares to overwinter. Results of the September, 2017 application will not be known until spring, 2018 as plants begin to regrow.

NEXT STEPS

Diquat is a fast acting contact herbicide and has been foliar applied to a 3.0 acre area of flowering rush on the White River Flowage with no reduction in the target population after three applications. Additionally, diquat also is active on submersed plants and can have significant non-target impacts to native vegetation. Continued use of diquat on populations of flowering rush is not recommended.

To achieve long lasting success, a systemic herbicide that is translocated into the roots and therefore kills the plant in this way is recommended. Additionally, imazapyr does not affect submersed vegetation, which limits its non-target impact to native vegetation. It appears that longer term control is possible and, more importantly, this active looks to have strong impact on the root stock of the plant.

Plants like flowering rush that spread through asexual rhizomes begin to store nutrients within the roots in early fall to prepare for overwintering. This is an ideal time to treat flowering rush and this same technique has shown great success on controlling the highly invasive common reed (Phragmites), which also spreads primarily through rhizomes. For flowering rush plants that are both emergent and submersed, a combination approach may be best suited using a product such as Habitat® foliar sprayed to the portion of the plant above water in combination with a subsurface systemic herbicide such as granular Renovate MaxG (AI 2,4-D & triclopyr) or Clearcast (AI imazamox) applied to the lake bed.

We trust this information meets your needs and appreciate the opportunity to continue to work with the District. If you have any questions, or require any additional information, please contact us directly as follows:

Jim Scharl: (920) 872-2032 or jim@wisconsinlpr.com

Attachment A – 2017 Flowering Rush Treatment Map and Treatment Records

Aquatic Plant Management Herbicide Treatment Record

Form 3200-111 (R 11/16)

Page 1 of 2

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 NE-2017-70-464	Waterbody Name (including ponds, e.g., Smith Pond) White River Flowage		
County Waushara	Permit Holder Name (Customer Name) White River Flowage Lake Management District		
Permit Holder Address W7529 White River Trail	City Wautoma	State WI	ZIP Code 54982

Treatment Information

Treatment Date (mm/dd/yyyy) 05/25/2017	Starting Time (24 hr) 13:00	Ending Time (24 hr) 14:00	Water Temp 63	<input type="radio"/> C <input checked="" type="radio"/> F	Ambient Air Temp 70	<input type="radio"/> C <input checked="" type="radio"/> F
Wind Speed (mph) 0-5	Wind Direction E	Expected Duration of Chemical Residuals 3 days				

Adverse Conditions Noted (i.e., dead fish, spawning fish, algae bloom, etc.)

If adverse conditions noted, indicate corrective actions taken

Comments

Onsite Supervision Present?	<input type="radio"/> Yes <input checked="" type="radio"/> No	If Yes, Supervisor Name
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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)

White River Flowage boat landing

☒ Herbicide Treatment and Water Use Restrictions Signs Posted In Accordance With NR 107?

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

Applicator Information

Individual or Business Name Wisconsin Lake & Pond Resource, LLC		Telephone (xxx) 123-1234 (920) 872-2032	
Street Address N7828 Town Hall Road	City Eldorado	State WI	ZIP Code 54932
Individuals Making Pesticide Application:	Last Name Scharl	First James	Certification # 77803
	Last Name Brzozowski	First Brittany	Certification # 102354
	Last Name	First	Certification #
	Last Name	First	Certification #
Name of Person Completing Form James Scharl	Signature	Date Signed 06/05/2017	DNR Use Only Date Received

Aquatic Plant Management Herbicide Treatment Record

Form 3200-111 (R 11/16)

Page 2 of 2

Treatment Site and Chemical Information - 1

Site No.	Property Name	Address / Fire No.	Treated Acreage	Permitted Acreage	Sensitive Area?	Latitude	Longitude
A	n/a	n/a	3	3.00	<input type="checkbox"/> Y		
Herbicide Name	EPA Reg. No.	Amount Applied	Units	Application Concentration Rate (mg/l = ppm)			
Tribune	100-1390	3	gal	0.37 ppm			
Total Amount Applied		3					

Treatment Site and Chemical Information - 2

Site No.	Property Name	Address / Fire No.	Treated Acreage	Permitted Acreage	Sensitive Area?	Latitude	Longitude
			1.97		<input type="checkbox"/> Y		
Herbicide Name	EPA Reg. No.	Amount Applied	Units	Application Concentration Rate (mg/l = ppm)			
Total Amount Applied							

Treatment Site and Chemical Information - 3

Site No.	Property Name	Address / Fire No.	Treated Acreage	Permitted Acreage	Sensitive Area?	Latitude	Longitude
					<input type="checkbox"/> Y		
Herbicide Name	EPA Reg. No.	Amount Applied	Units	Application Concentration Rate (mg/l = ppm)			
Total Amount Applied							

[Add a Treatment Site >>](#)

If treating >5% of the lake surface area, what is the whole lake concentration (mg/l = ppm) per herbicide applied?

Herbicide Name	Herbicide Name	EPA Reg. No.	Total Amount	Units	Whole Lake Concentration Rate (mg/l = ppm)
Total Amount Applied For All Sites			3		

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

TS	SP	Site(s)	TS	SP	Site(s)	TS	SP	Site(s)
<input type="radio"/>	<input type="radio"/>	Cattail	<input type="radio"/>	<input type="radio"/>	Flat-Stem Pondweed	<input type="radio"/>	<input type="radio"/>	Richardson Pondweed
<input type="radio"/>	<input type="radio"/>	Chara	<input type="radio"/>	<input type="radio"/>	Floating-Leaf Pondweed	<input type="radio"/>	<input type="radio"/>	Robbins Pondweed
<input type="radio"/>	<input checked="" type="radio"/>	Coontail	<input type="radio"/>	<input type="radio"/>	Illinois Pondweed	<input type="radio"/>	<input type="radio"/>	Sago Pondweed
<input type="radio"/>	<input type="radio"/>	Curly-Leaf Pondweed	<input type="radio"/>	<input type="radio"/>	Large-Leaf Pondweed	<input type="radio"/>	<input type="radio"/>	Starry Stonewort
<input type="radio"/>	<input checked="" type="radio"/>	Duckweed	<input type="radio"/>	<input type="radio"/>	Northern Milfoil	<input type="radio"/>	<input type="radio"/>	Watershield
<input type="radio"/>	<input checked="" type="radio"/>	Elodea	<input type="radio"/>	<input type="radio"/>	Phragmites	<input type="radio"/>	<input checked="" type="radio"/>	White Water Lily
<input type="radio"/>	<input type="radio"/>	Eurasian/hybrid Milfoil	<input type="radio"/>	<input type="radio"/>	Planktonic Algae	<input type="radio"/>	<input type="radio"/>	White-Stem Pondweed
<input type="radio"/>	<input type="radio"/>	Filamentous Algae	<input type="radio"/>	<input type="radio"/>	Purple Loosestrife	<input type="radio"/>	<input type="radio"/>	Wild Celery
<input type="radio"/>	<input type="radio"/>	[Enter species name]	<input checked="" type="radio"/>	<input type="radio"/>	[Enter species name]	<input type="radio"/>	<input type="radio"/>	[Enter species name]
					Flowering Rush			

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County Waushara	Permit Holder Name (Customer Name) White River Flowage Lake Management District		
Permit Holder Address W7529 White River Trail	City Wautoma	State WI	ZIP Code 54982

Treatment Information

Treatment Date (mm/dd/yyyy) 09/08/2017	Starting Time (24 hr) 9:00	Ending Time (24 hr) 10:45	Water Temp 55	<input type="radio"/> C <input checked="" type="radio"/> F	Ambient Air Temp 60	<input type="radio"/> C <input checked="" type="radio"/> F
Wind Speed (mph) 0-5	Wind Direction ENE	Expected Duration of Chemical Residuals 120 days				

Adverse Conditions Noted (i.e., dead fish, spawning fish, algae bloom, etc.)

If adverse conditions noted, indicate corrective actions taken

Comments

Onsite Supervision Present?	<input type="radio"/> Yes <input checked="" type="radio"/> No	If Yes, Supervisor Name
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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)

White River Flowage public boat landing

☒ Herbicide Treatment and Water Use Restrictions Signs Posted In Accordance With NR 107?

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

Applicator Information

Individual or Business Name Wisconsin Lake & Pond Resource, LLC		Telephone (xxx) 123-1234 (920) 872-2032	
Street Address N7828 Town Hall Road	City Eldorado	State WI	ZIP Code 54932
Individuals Making Pesticide Application:	Last Name Scharl	First James	Certification # 77803
	Last Name Keifer	First Ben	Certification # 101063
	Last Name	First	Certification #
	Last Name	First	Certification #
Name of Person Completing Form James Scharl	Signature	Date Signed 09/19/2017	DNR Use Only Date Received

Aquatic Plant Management Herbicide Treatment Record

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Site No.	Property Name	Address / Fire No.	Treated Acreage	Permitted Acreage	Sensitive Area?	Latitude	Longitude
A	N/A	N/A	3	3.00	<input type="checkbox"/> Y		
Herbicide Name		EPA Reg. No.	Amount Applied	Units	Application Concentration Rate (mg/l = ppm)		
Habitat		241-426	67	oz	1.5 %		
Total Amount Applied			67				

Treatment Site and Chemical Information - 2

Site No.	Property Name	Address / Fire No.	Treated Acreage	Permitted Acreage	Sensitive Area?	Latitude	Longitude
					<input type="checkbox"/> Y		
Herbicide Name		EPA Reg. No.	Amount Applied	Units	Application Concentration Rate (mg/l = ppm)		
Total Amount Applied							

Treatment Site and Chemical Information - 3

Site No.	Property Name	Address / Fire No.	Treated Acreage	Permitted Acreage	Sensitive Area?	Latitude	Longitude
					<input type="checkbox"/> Y		
Herbicide Name		EPA Reg. No.	Amount Applied	Units	Application Concentration Rate (mg/l = ppm)		
Total Amount Applied							

[Add a Treatment Site >>](#)

If treating >5% of the lake surface area, what is the whole lake concentration (mg/l = ppm) per herbicide applied?

Herbicide Name	Herbicide Name	EPA Reg. No.	Total Amount	Units	Whole Lake Concentration Rate (mg/l = ppm)
Total Amount Applied For All Sites			48		

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

TS	SP	Site(s)	TS	SP	Site(s)	TS	SP	Site(s)
<input type="radio"/>	<input checked="" type="radio"/>	Cattail	<input type="radio"/>	<input type="radio"/>	Flat-Stem Pondweed	<input type="radio"/>	<input type="radio"/>	Richardson Pondweed
<input type="radio"/>	<input type="radio"/>	Chara	<input type="radio"/>	<input type="radio"/>	Floating-Leaf Pondweed	<input type="radio"/>	<input type="radio"/>	Robbins Pondweed
<input type="radio"/>	<input checked="" type="radio"/>	Coontail	<input type="radio"/>	<input type="radio"/>	Illinois Pondweed	<input type="radio"/>	<input checked="" type="radio"/>	Sago Pondweed
<input type="radio"/>	<input type="radio"/>	Curly-Leaf Pondweed	<input type="radio"/>	<input type="radio"/>	Large-Leaf Pondweed	<input type="radio"/>	<input type="radio"/>	Starry Stonewort
<input type="radio"/>	<input checked="" type="radio"/>	Duckweed	<input type="radio"/>	<input type="radio"/>	Northern Milfoil	<input type="radio"/>	<input type="radio"/>	Watershield
<input type="radio"/>	<input checked="" type="radio"/>	Elodea	<input type="radio"/>	<input type="radio"/>	Phragmites	<input type="radio"/>	<input checked="" type="radio"/>	White Water Lily
<input type="radio"/>	<input type="radio"/>	Eurasian/hybrid Milfoil	<input type="radio"/>	<input type="radio"/>	Planktonic Algae	<input type="radio"/>	<input type="radio"/>	White-Stem Pondweed
<input type="radio"/>	<input checked="" type="radio"/>	Filamentous Algae	<input type="radio"/>	<input type="radio"/>	Purple Loosestrife	<input type="radio"/>	<input type="radio"/>	Wild Celery
<input checked="" type="radio"/>	<input type="radio"/>	Flowering Rush	<input type="radio"/>	<input type="radio"/>	[Enter species name]	<input type="radio"/>	<input type="radio"/>	[Enter species name]





White River Flowage Flowering Rush

Mapped June 16-17, 2016




Only hand pulling
from here to south

Legend

Area to Chemically Treat

-  30' Buffer, Total 2.92 acres
-  Dense, 0.60 acres
-  Moderately Dense, 0.68 acres
-  Sparse, 0.79 acres

Hand Pulling Areas

-  Scattered Populations (Removed, needs re-check), 5.59 acres
-  Scattered Floaters (Removed, needs re-check), 1.79 acres
-  Individual Plants (Removed, needs re-check), <1 acre total

Golden Sands Resource Conservation and Development Council, Inc.

