

P.O. Box 128 Cottage Grove, WI 53527 O 28 AC 608 839-1998 + Fax 608 839-1998

www.nrc-inc.net

October 5, 2004

P-11162-036

Mr. Larry Thompson U.S. Fish and Wildlife Service 2661 Scott Tower Drive New Franken, WI 54229-9565 Mr. Andy Morton Wisconsin Department of Natural Resources 3911 Fish Hatchery Road Fitchburg, WI 53711

SUBJECT: Prairie du Sac Hydroelectric Project 2004 Purple Loosestrife/Eurasian Milfoil Monitoring

Dear Sir

In accordance with License Article 410 (Nuisance Plant Control Plan) as approved by the Federal Energy Regulatory Commission, we are pleased to provide you with the results of the 2004 Purple Loosestrife and Eurasian Milfoil monitoring effort. This is the second of the three annual monitoring surveys being conducted to document the status of these species within the project boundary. Please review the enclosed report and provide us with comments within 30 days. If we do not receive a response from you we will assume you have no comments.

Please contact me if you have questions or require additional information regarding this submittal.

Regards, Natural Resources Consulting, Inc.

William B. Port

William R. Poole Principal Scientist

Enclosure

Cc. Mike Prindle - Alliant Energy

PURPLE LOOSESTRIFE and EURASIAN MILFOIL SURVEY REPORT

PRAIRIE DU SAC HYDROELECTRIC PROJECT

FERC Project No. 11162

PRAIRIE DU SAC, WISCONSIN

SEPTEMBER 2, 2003



NRC Project # 02-131B

NATURAL RESOURCES CONSULTING, INCORPORATED P.O. BOX 128 COTTAGE GROVE, WISCONSIN 53527-0128 (608) 839-1998

PURPLE LOOSESTRIFE and EURASIAN MILFOIL SURVEY REPORT

PRAIRIE DU SAC HYDROELECTRIC PROJECT FERC Project No. 11162

PRAIRIE DU SAC, WISCONSIN

September 2, 2003

Prepared For:

Mr. Doug Hau Wisconsin Power & Light Company S9270A Dam Road Prairie du Sac, WI 53578-9712

Prepared By:

Natural Resources Consulting, Incorporated P.O. Box 128 119 South Main Street, Suite D Cottage Grove, Wisconsin 53527-0128 phone: 608-839-1998 fax: 608-839-1995 www.nrc-inc.net

NRC Project # 02-131B

Jeff Kraemer Environmental Scientist/Botanist Chris Pekar Environmental/GIS Technician

Purple Loosestrife/Milfoil Survey Columbia & Sauk Counties, Wisconsin NRC Project # 02-131B

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Purple Loosestrife/Milfoil Survey Columbia & Sauk Counties, Wisconsin NRC Project # 02-131B

INTRODUCTION AND OBJECTIVES

In accordance with Article 410 of the Federal Energy Regulatory Commission (FERC) Order Issuing Original License (June 27, 2002) for the Prairie du Sac Hydroelectric Project, FERC Project No. 11162-002, Wisconsin Power and Light Company (WP&L) was required to develop and implement a purple loosestrife (Lythrum salicaria) and Eurasian water milfoil (Myriophullum spicatum) monitoring plan. The purpose of the monitoring plan is to assist the Wisconsin Department of Natural Resources (WDNR) and the U.S. Fish and Wildlife Service (FWS) in controlling the spread of these nuisance plant species.

On August 7 and 8, 2003, Natural Resources Consulting, Inc. (NRC) performed a purple loosestrife and Eurasian water milfoil survey within the project boundaries of the Prairie du Sac Hydroelectric Project. The survey extended from the Prairie du Sac dam east to the I-94 bridge crossing and included all shorelines, wetlands, and islands within the ordinary high water elevation of Lake Wisconsin.

SURVEY METHODS

The survey was conducted by boat and involved slow monitoring along the impoundment shorelines, shorelines of islands, and wetlands. The survey team included a qualified botanist familiar with the ecology and identification of the target species. Locations and density of purple loosestrife occurrences were marked in the field on 1995 aerial photographs and were recorded using a Geographic Information System (GPS) unit capable of sub-meter accuracy. The density of each stand was estimated based on the number of plants and were categorized according to the following scale:

>	5	=	1 to 5 plants
>	10	=	6 to 10 plants
>	20	=	11 to 20 plants
>	30	=	21 to 30 plants
>	50	=	31 to 50 plants
>	100	=	51 to 100 plants
>	500	=	101 to 500 plants
>	1000	=	501 to 1000's of plants

Purple loosestrife locations recorded by GPS were overlaid on digitized 1995 aerial photographs. Each purple loosestrife stand was coded based on their density category (Appendix A). The GPS coordinates are provided on the Table in Appendix B.

While surveying for purple loosestrife an effort was made to detect the presence of Eurasian milfoil within floating leaved and submersed aquatic plant beds. This preliminary survey was conducted by examining hand pulled samples of submersed aquatic plants for the presence of Eurasian milfoil.

RESULTS

The survey was conducted on August 7 & 8, 2003 while purple loosestrife was in full bloom. This species was observed to be relatively wide spread within the project boundary occurring sporadically in low densities along the steep shorelines of both residential and undeveloped areas and at high densities in many of the wetland areas within the bays and especially in the upper reaches of the project boundary along the islands. Eurasian milfoil was only observed within one bay of the project boundaries (Stoners Bay).

Purple Loosestrife/Milfoil Survey Columbia & Sauk Counties, Wisconsin NRC Project # 02-131B

The sporadic occurrences of purple loosestrife tend to be found along developed shorelines where recent disturbance had taken place such as tree removal or construction activities. It also appeared that many private riparian landowners had intentionally promoted the plants for aesthetic purposes. Most of these areas contained only 1 to 5 plants. The plants growing in these areas are restricted only to the shorelines because of the presence of steep banks, manicured lawns, and/or dense tree cover.

Purple loosestrife was found to be prevalent within several of the bays and wetlands. The western extent of the southern most bay of Wiegans Bay contained a wetland complex that was infested with 50 – 100 plants. Sunset Bay, located north of E. Hammond Road, contained large wetland areas in the southwest and southeast corner both of which are dominated by 1000's of purple loosestrife plants. These wetland areas continue south of STH 188 where they are also dominated by purple loosestrife. A small portion in the southern most part of Okee Bay seemed to be recently infested with the species and contained 100 to 500 plants. A small bay extending adjacent to the south-southeast side of Pine Bluff contained a wetland complex that was co-dominated by 1000's of purple loosestrife plants. Harmony Grove Bay contained scattered stands along the southern shoreline, however these wetland areas were dominated by shrub-carr vegetation and purple loosestrife was limited only to the edges. Stoners Bay contained a dense stand comprised of 1000's of plants within the wetland area in the northwest portion of the bay. The surveyors were unable to enter into Whalen's Bay in the eastern part of the lake due to low clearance under the CTH V Bridge. This bay was surveyed from the western edge with binoculars. No purple loosestrife plants were observed.

The occurrence and abundance of purple loosestrife increased significantly approximately 2 miles upstream of Tipperary Point. This increase in purple loosestrife was due to more ideal habitat conditions for the species such as shallow water, low lying islands, wetlands, and subtle shoreline slopes. Almost all of the shorelines of the sandbar islands were infested with dense stands (1000's) of purple loosestrife plants. The interior of many of these islands were also dominated by purple loosestrife however, this was dependent on the density of woody vegetation. Islands dominated by shrub-carrs and/or forested communities contained less purple loosestrife in their interiors. Several narrow channels between islands were not surveyed since water levels were too low to provide access. These areas are shown in Appendix A. However, because of the prevalence of purple loosestrife on almost all of the islands in this vicinity, it can be assumed that at least the shorelines of these areas are most likely dominated by purple loosestrife plants.

Most of the wetland areas dominated by herbaceous wetland vegetation that are within the project boundary are dominated or co-dominated by purple loosestrife. However, there were some of these wetland types that did not contain any or only a few purple loosestrife plants. These areas include Gallus Slough, Whalen Bay, and portions of Okee Bay.

Although the base of most all bays within the project boundaries contained submerged and floating leaved aquatic vegetation and ideal habitat for Eurasian milfoil, it was observed only in Stoners Bay. In this area it was growing with coon's tail, water weed, and pond lily but was not the dominant species (Figure 1.6).

Purple Loosestrife/Milfoil Survey Columbia & Sauk Counties, Wisconsin NRC Project # 02-131B

CONCLUSIONS

The lower ¼ of the Lake Wisconsin from the Prairie du Sac dam east to approximately 2 miles upstream of Tipperary Point contains limited available habitat for extensive purple loosestrife stands with the exception of the wetland areas located at the base of several bays. These areas limit the density and extent of purple loosestrife infestation because they contain steep slopes, dense tree cover, and/or manicured lawns. We found that most wetland areas adjacent to the impoundment that were dominated by herbaceous vegetation were infested with purple loosestrife. Those wetland areas dominated by shrub-carr or forested communities limited the extent of infestation to the shorelines. Emergent wetlands not dominated with purple loosestrife should be considered high priority for monitoring and eradication to prevent these areas from becoming infested. The northeastern portion of the impoundment approximately 2 miles north of Tipperary Point contains the most extensive purple loosestrife infestations due to the shallow water conditions, low lying islands, and extensive wetlands.

Eurasian milfoil infestation within the project boundaries did not appear to be extensive and was found to be limited to Stoner's Bay during the survey period. The base of most of the bays on the lake contains habitat where Eurasian milfoil may exist and with more extensive monitoring efforts targeted specifically toward this species its distribution may be broader than what was recorded during this survey.

Purple Loosestrife/Milfoil Survey Columbia & Sauk Counties, Wisconsin NRC Project # 02-131B

APPENDIX A

PURPLE LOOSESTRIFE LOCATION & DENSITY MAPS

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Suparloa f Hill			
Prairie du Sac 60 Sauk City 188 Mazomanie State Wildlife Area			
NRC	Figure 1.0, 1	Index Sheet	N N
119 South Main Street, Suite D	Lake Wisconsin Purpl	le Loosestrife Survey	
P.O. Box 128 Cottage Grove, WI 53527-0128 phone: 608-839-1998	Lake Wisconsin, Columb	via & Sauk Counties, WI	
fax: 608-839-1995 www.nrc-inc.net	NRC Project #: 02-131B	August 29, 2003	



NRC	Figure 1.1	Purple Loosestrife Stand Size (# of Plants)	N
119 South Main Street, Suite D	Lake Wisconsin Purple Loosestrife Survey		
Cottage Grove, WI 53527-0128 phone: 608-839-1998	August 29, 2003	- U 5 O 31 - 50 6 - 10 O 51 - 100	
fax: 608-839-1995 www.nrc-inc.net	NRC Project Number #: 02-131B	 11 - 20 101 - 500 501 - 1000 + 	



NRC	Figure 1.2	Purple Loosestrife Stand Size (# of Plants)	N
119 South Main Street, Suite D	Lake Wisconsin Purple Loosestrife Survey		
Cottage Grove, WI 53527-0128 phone: 608-839-1998	August 29, 2003	0 5 0 31 - 50 0 6 - 10 0 51 - 100	
fax: 608-839-1995 www.nrc-inc.net	NRC Project Number #: 02-131B	 11 - 20 101 - 500 501 - 1000+ 	



NRC	Figure 1.3	Purple Loosestrife Stand Size (# of Planta)	N
119 South Main Street, Suite D P.O. Box 128	Lake Wisconsin Purple Loosestrife Survey	Stand Size (# OF Flants) 5.25 21 - 30	
Cottage Grove, WI 53527-0128 phone: 608-839-1998	August 29, 2003	- S S - 5 S S S S S S S S S S S S S S S	
fax: 608-839-1995 www.nrc-inc.net	NRC Project Number #: 02-131B	 ● 11 - 20 ● 101 - 500 ⇒ 6 - 100 ● 501 - 1000 + 	
0504150176	H		



NRC	Figure 1.4	Purple Loosestrife Stand Size (# of Planta)	N
119 South Main Street, Suite D P.O. Box 128	Lake Wisconsin Purple Loosestrife Survey		
Cottage Grove, WI 53527-0128 phone: 608-839-1998	August 29, 2003	0 5 0 31 - 50 0 6 - 10 0 51 - 100	
tax: 608-839-1995 www.nrc-inc.net	NRC Project Number #: 02-131B	 11 - 20 101 - 500 501 - 1000+ 	



NRC	Figure 1.5	Purple Loosestrife Stand Size (# of Plants)	N
119 South Main Street, Suite D	Lake Wisconsin Purple Loosestrife Survey	21 - 30 5 31 - 50	
Cottage Grove, WI 53527-0128 phone: 608-839-1998	August 29, 2003		
fax: 608-839-1995 www.nrc-inc.net	NRC Project Number #: 02-131B	• 11 - 20 • 101 - 500 • 501 - 1000+	



	Ence 16		
	Figure 1.6	Purple Loosestrife	N
119 South Main Street, Suite D P.O. Box 128	Lake Wisconsin Purple Loosestrife Survey	Stand Size (# of Plants) 21 - 30	
Cottage Grove, WI 53527-0128 phone: 608-839-1998	August 29, 2003	$ \bigcirc$ 5 \bigcirc 31 - 50 \bigcirc 6 - 10 \bigcirc 51 - 100	
fax: 608-839-1995 www.nrc-inc.net	NRC Project Number #: 02-131B	 11 - 20 101 - 500 501 - 1000+ 	



NPC	Figure 1.7	Purple Loosestrife Stand Size (# of Plants)	N
119 South Main Street, Suite D	Lake Wisconsin Purple Loosestrife Survey		
P.O. Box 128 Cottage Grove, WI 53527-0128 phone: 608-839-1998	August 29, 2003	6 - 10 51 - 100	
fax: 608-839-1995 www.nrc-inc.net	NRC Project Number #: 02-131B	↓ 11 - 20 ↓ 101 - 500 ↓ 501 - 1000+ ↓	

Purple Loosestrife/Milfoil Survey Columbia & Sauk Counties, Wisconsin NRC Project # 02-131B

APPENDIX B

GPS COORDINATES

Point ID	Size of Loosestrife Stand	X	
1	10	2081879	492414
2		2081617	491922
		2081248	491406
		2080943	490784
5	<u></u>	2080627	490427
6	5	2079775	488949
7		2079243	487850
		2075563	484002
	5	2075279	484018
10	10	2073739	484498
11	5	2072632	479006
12		2081124	488530
12		2081412	489037
14	· · · · · · · · · · · · · · · · · · ·	2082397	490541
14	<u></u>	2002037	403000
10	<u></u>	2004000	403561
10	<u>_</u>	2004408	493001
		2000038	405082
10	1000	2030710	493012
20	1000	2030123	492780
20		2097310	492705
21	1000	2090001	493143
22	1000	2099007	403363
23	5	2099040	493303
24	5	2090040	495056
20		2000272	495050
20		2030303	495513
20		2097400	4955642
20		2101305	498182
29	<u></u>	2101000	498354
30	 	2110227	495940
32		2110421	495594
32	<u>_</u>	2110676	495340
33		2110787	495228
35	500	2115038	491415
36		2116642	494272
37	1000	2114251	499331
38		2098732	500091
39	5	2098423	500287
40	5	2098198	500514
41	5	2098015	500517
42	5	2097266	498949
43	5	2096568	499180
44	5	2094852	498894
45	5	2094554	498745
46	5	2094105	498511
47	5	2092028	496772
48	10	2091412	496662
49	10	2091236	496680
50	10	2090852	496614
51	10	2090651	496612

Point ID	Size of Loosestrife Stand	X	Y
52	10	2090434	496658
53	5	2090134	496826
54	5	2088855	497126
55		2088557	497508
56	5	2088466	497976
57	5	2087449	499565
58	20	2086357	498173
59	5	2113317	501236
00	5	2115280	498519
61	5	2115706	498541
62		2118952	497820
63	20	2119534	498486
<u>60</u>	20	2119607	498698
65	10	2119760	498895
80	10	2120509	499580
67		2120669	499570
10		2121802	400561
60	5	2121002	500173
- 09		2110220	500173
70	<u></u>	2119200	500405
		2119137	501072
/2	10	2110002	501072
73	<u> </u>	2110/03	502034
/4	<u>_</u>	2110990	503121
75	10	2116461	504749
/6	<u>5</u> 5	2118459	505791
	<u>_</u>	2120858	505803
78	5	2121224	506166
79	5	2123295	506772
80	5	2124678	507265
81	5	2125086	507403
82	10	2125610	507454
83	10	2126155	507534
84		2127089	507750
85		2127121	507943
86	30	2120030	510837
87	10	2120212	510020
88		2125567	510636
89		2123948	510467
90	5	2121970	509542
91	10	2121591	510415
92	5	2121484	510937
93	5	2121447	511998
94	5	2121626	512515
95	10	2121718	512876
96	10	2122374	513659
97	5	2122521	513796
98		2124700	516029
99	1000	2124731	516875
100	1000	2125038	517241
101	1000	2125371	516714
102	1000	2125462	516779

103 1000 2125532 516816 104 100 2125625 516874 105 1000 2125705 517276 106 1000 2125835 517457 107 1000 2125949 517704 108 5 2126188 517299 109 1000 2126843 517752 111 500 2126848 518005 112 500 2128843 52246 113 10 2132481 525628 114 30 212885 522146 115 30 2128654 522146 116 30 212768 521318 118 50 212768 521406 120 1000 2126508 520217 122 1000 2126508 520217 122 1000 2126508 520217 122 1000 2126508 520217 123 20 2124	Point ID	Size of Loosestrife Stand	X	Y
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105 1000 2125705 517276 106 1000 2125853 517457 107 1000 2125853 517457 108 5 2126188 517299 109 1000 2126251 517459 110 500 2126848 517752 111 500 2126802 518228 113 10 2132481 526288 113 10 2132481 526288 114 30 2128654 522348 116 30 2127683 521153 118 50 2127683 521153 119 30 2127653 521216 120 1000 2126508 520217 121 500 2126508 520217 122 1000 2126508 520217 122 1000 2126508 520217 122 1000 2126505 514897 123 20 21	104	100	2125625	516874
106 1000 2125853 517457 107 1000 2125949 517704 108 5 2126188 517299 109 1000 2126251 517457 110 500 2126808 518005 112 500 2126862 518228 113 10 2132481 525628 114 30 2128654 522146 115 30 2128654 522146 116 30 2128147 521624 117 10 2127768 521318 118 50 2127633 521315 119 30 2127450 521406 120 1000 2126793 520121 121 500 2126508 520217 122 1000 2126209 520189 123 20 212651 514291 124 52121681 514728 125 5 2121807 5148	105	1000	2125705	517276
107 1000 2125949 517704 108 5 2126188 517299 109 1000 2126251 517459 110 500 2126848 517752 111 500 2126862 518025 112 500 2126862 518228 113 10 2132481 525628 114 30 2128985 522398 115 30 2128654 52146 116 30 2128147 521624 117 10 2127768 521318 118 50 212763 521153 119 30 2127450 52406 120 1000 2126793 520217 121 500 212650 518227 122 1000 2126209 520189 123 20 212651 518227 124 5 2121805 514891 125 5 2121691	106	1000	2125853	517457
108 5 2126188 517299 109 1000 2126251 517459 110 500 2126808 518005 111 500 2126802 518228 113 10 2132481 525628 113 10 2132481 525628 114 30 2128654 522146 116 30 2128654 522146 116 30 212768 521318 118 50 2127563 521406 120 1000 2126508 520217 122 1000 2126508 520217 122 1000 2126508 520217 122 1000 2126508 520217 123 20 212651 518227 124 5 2121805 514891 125 5 2121805 514891 125 5 2121805 514844 127 5 2121297	107	1000	2125949	517704
109 1000 2126251 517459 110 500 2126648 517752 111 500 2126808 518005 112 500 2126802 518228 113 10 2132481 525628 114 30 2128654 522398 115 30 2128654 522398 116 30 2128147 521624 117 10 2127763 521318 118 50 2127633 520121 120 1000 2126793 520121 121 500 2126508 520217 122 1000 2126508 520217 122 1000 212650 518297 123 20 212865 514891 125 5 2121805 514494 127 5 2121805 514891 126 5 2121805 514845 130 5 2120805	108	- 5	2126188	517299
110 500 2126648 517752 111 500 2126808 518005 112 500 2126862 518228 113 10 2132481 525628 114 30 2128855 52238 115 30 2128654 522146 116 30 212873 521318 118 50 2127768 521318 118 50 2127450 521406 120 1000 2126508 520217 121 500 2126508 520217 122 1000 2126508 520217 122 1000 2126508 520217 122 1000 2126508 520217 123 20 212651 518227 124 5 2121805 514891 125 5 2121631 514728 126 5 212084 513977 130 5 2120035	109	1000	2126251	517459
111 500 2126808 518005 112 500 2126862 518228 113 10 2132481 525628 114 30 2128985 522398 115 30 2128654 522146 116 30 2128747 521624 117 10 2127768 521318 118 50 212763 521153 119 30 2127450 521406 120 1000 2126508 520217 121 500 212650 520217 122 1000 212650 520217 123 20 212805 518227 124 5 2121805 514891 125 5 2121805 514891 126 2121297 514285 128 5 212084 513977 130 5 212087 514285 131 5 2120179 513511 <td>110</td> <td>500</td> <td>2126648</td> <td>517752</td>	110	500	2126648	517752
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113 10 2132481 525628 114 30 2128985 522398 115 30 2128654 522146 116 30 2128147 521624 117 10 2127768 521318 118 50 212763 521153 119 30 21277450 521406 120 1000 2126793 520121 121 500 2126508 520217 122 1000 2126209 520189 123 20 212651 514827 124 5 2121805 514827 125 5 2121681 514728 126 5 2121453 514444 127 5 2121093 514113 129 5 212084 513977 130 5 212007 514285 133 5 2110967 512425 133 5 210605 50	112	500	2126862	518228
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11850212756352115311930212745052140612010002126793520121121500212650852021712210002126209520189123202122651518227124521216055148911255212168151472812652121453514444127521210935141131285212005513846130521206055138461315212007951351113220211906751242513352118671511998134521129155089271351000211083450860713630211172750843013752108216506064139521020550495214452102061503041144521020615030411445210206150304114452102061503041144520822184955281455208227249527814650208227249527815010208406749657915210208402049684	117	10	2127768	521318
119 30 2127450 521406 120 1000 2126793 520121 121 500 2126508 520217 122 1000 2126209 520189 123 20 2122651 518227 124 5 2121805 514891 125 5 2121631 514728 126 5 2121453 514444 127 5 2121093 514113 128 5 2121093 514113 129 5 2120884 513977 130 6 2120005 513846 131 5 2120179 513511 132 20 2119067 512425 133 5 2118671 511998 134 5 2112915 508927 135 1000 2110854 508607 136 30 2111727 508430 137 5 2108216 506064 139 5 2107252 505829 140 5 2102081 503010 144 5 2102081 503041 144 5 2102081 503010 145 5 2102081 503010 144 5 2083257 495278 148 5 2083257 495278 149 5 2083267 495679 153 10 2084020 49684	118	50	2127583	521153
130 1000 2126793 520121 120 1000 2126508 520217 121 500 2126508 520217 122 1000 2126209 520189 123 20 2122651 518227 124 5 2121805 514891 125 5 2121681 514728 126 5 2121453 514444 127 5 2121093 514113 128 5 2121093 514113 129 5 2120884 513977 130 6 2120605 513846 131 5 2120179 513511 132 20 2119067 512425 133 5 2118671 511998 134 5 2112915 508927 135 1000 2110854 508607 136 30 2111727 508430 137 5 2108216 506064 139 5 2107252 505829 140 5 2106367 505520 141 5 2102081 503010 144 5 2102081 503010 145 5 2102081 503010 144 5 2083257 495278 148 5 2083257 495278 149 5 2083257 495278 149 5 2083267 495679 153 10 2084020 496984	119	30	2127450	521406
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	120	1000	2126793	520121
$\begin{array}{c ccccc} 12200 & 2126209 & 520189 \\ 123 & 20 & 2122651 & 518227 \\ 124 & 5 & 2121805 & 514891 \\ 125 & 5 & 2121681 & 514728 \\ 126 & 5 & 2121453 & 514444 \\ 127 & 5 & 2121297 & 514285 \\ 128 & 5 & 2121093 & 514113 \\ 129 & 5 & 2120804 & 513977 \\ 130 & 5 & 2120605 & 513846 \\ 131 & 5 & 2120605 & 513846 \\ 131 & 5 & 2120179 & 513511 \\ 132 & 20 & 2119067 & 512425 \\ 133 & 5 & 2118671 & 511998 \\ 134 & 5 & 2112915 & 508927 \\ 135 & 1000 & 2110854 & 508607 \\ 136 & 30 & 2111727 & 508430 \\ 137 & 5 & 2110837 & 507209 \\ 138 & 5 & 2106387 & 505520 \\ 140 & 5 & 2106387 & 505520 \\ 141 & 5 & 2106387 & 505520 \\ 141 & 5 & 2106387 & 505520 \\ 144 & 5 & 2106387 & 505520 \\ 144 & 5 & 2106387 & 505520 \\ 144 & 5 & 2106387 & 505520 \\ 144 & 5 & 2106387 & 505520 \\ 144 & 5 & 2102416 & 503041 \\ 144 & 5 & 2102061 & 503041 \\ 144 & 5 & 2102416 & 503041 \\ 144 & 5 & 2102416 & 503041 \\ 144 & 5 & 2102416 & 503041 \\ 144 & 5 & 2102416 & 503041 \\ 144 & 5 & 2102416 & 503041 \\ 144 & 5 & 2102416 & 503041 \\ 144 & 5 & 2102416 & 503041 \\ 144 & 5 & 2102416 & 503041 \\ 144 & 5 & 2102416 & 503041 \\ 144 & 5 & 2102416 & 503041 \\ 144 & 5 & 2102416 & 503041 \\ 145 & 5 & 2082218 & 495685 \\ 149 & 5 & 2082272 & 495278 \\ 150 & 10 & 208308 & 493860 \\ 151 & 5 & 2082272 & 492922 \\ 152 & 10 & 2084267 & 496579 \\ 153 & 10 & 2084020 & 496984 \\ \end{array}$	121	500	2126508	520217
122 1000 2122651 518227 123 20 2122651 518227 124 5 2121805 514891 125 5 2121681 514728 126 5 2121453 514444 127 5 2121297 514285 128 5 2121093 514113 129 5 2120884 513977 130 6 2120605 513846 131 5 2120605 513846 131 5 212079 513511 132 200 2119067 512425 133 5 2112915 508927 135 1000 2110854 508607 136 300 2111727 508430 137 5 2106387 505520 140 5 2106387 505520 141 5 2102081 503041 144 5 2102081 503041 144 5 2102081 503010 145 5 2101422 501653 146 50 2080458 495759 147 5 2082218 495885 148 5 2082272 492922 152 10 2084020 49684	122	1000	2126209	520189
1231012451255126512751265127512851295120055138461305212083451397713052120834513977130521208345139771305212083451397713052120834513977130521208345139771305212083451397713152120179513511132202119067512425133521129155089271351000211083750720913630211172750843013752108216506064139521072525058291405210836750552014152102061503041144521020615030411445210206150304114452082218495685149520822184956851495208227249292215210208426749657915310208402049684	123	20	2122651	518227
125 5 2121681 514728 125 5 2121681 514728 126 5 2121453 514444 127 5 2121297 514285 128 5 2121093 514113 129 5 2120884 513977 130 6 2120605 513846 131 5 2120605 513846 131 5 2120605 513846 131 5 2120679 512425 133 5 2118671 511998 134 5 2112915 508927 135 1000 2110854 508607 136 30 2111727 508430 137 5 2108216 506064 139 5 2107252 505829 140 5 2106367 505520 141 5 2102061 503041 142 50 2104540 505135 143 5 2102061 503041 144 5 2102061 503010 145 5 208458 495759 147 5 208458 495528 148 5 2082272 495278 150 10 2084020 496579 153 10 2084020 496579	120	5	2121805	514891
1250212145351444412752121297514285128521210935141131295212088451397713052120605513846131521201795135111322021190675124251335211291550892713510002110854508607136302111727508430137521082165060641395210827650552014152105005504952142502104540505135143521020615030411445210206150304114452102061503041144520804564957591475208221849568514852082272492922150102083008493860151520827749292215210208402049684	125	5	2121681	514728
120 212103 514285 1275 2121297 514285 1285 2121093 514113 1295 2120884 513977 1305 2120605 513846 1315 2120079 513511 13220 2119067 512425 1335 2112915 508927 1351000 2110854 508607 13630 2111727 508430 1375 2108216 506064 1395 2107252 505829 1405 2106387 505520 1415 2102061 503010 1435 2102061 503010 1445 2102061 503010 1455 2101422 501653 14650 2080456 495759 1475 2082218 495685 1495 2082272 492922 15010 2083008 493860 1515 2082272 492922 15210 2084020 49684	126	5	2121453	514444
127 0 2121093 514113 128 5 2121093 514113 129 5 2120884 513977 130 5 2120605 513846 131 5 2120179 513511 132 20 2119067 512425 133 5 2112915 508927 134 5 2112915 508927 135 1000 2110854 508607 136 30 2111727 508430 137 5 2108216 506064 139 5 2107252 505829 140 5 2106367 505520 141 5 2102051 504952 142 50 2104540 505135 143 5 2102061 503010 144 5 2102061 503010 145 5 2101422 501653 146 50 2080456 495759 147 5 2082218 495685 149 5 2082277 495278 150 10 2083008 493860 151 5 2082772 492922 152 10 2084020 49684	120	5	2121297	514285
129 5 2120884 513977 130 5 2120805 513846 131 5 2120179 513511 132 20 2119067 512425 133 5 2118671 511998 134 5 2112915 508927 135 1000 2110854 508607 136 30 2111727 508430 137 5 2108216 506064 139 5 2108216 506064 139 5 2107252 505829 140 5 2106367 505520 141 5 2106367 505520 144 5 2102416 503041 144 5 2102416 503010 145 5 2101422 501653 146 50 2080456 495759 147 5 2081943 495528 148 5 2082218 495685 149 5 2083257 495278 150 10 2083008 493860 151 5 208272 492922 152 10 2084267 496579 153 10 2084020 496984	128		2121093	514113
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	120	5	2120884	513977
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	130		2120605	513846
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	131	5	2120179	513511
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	132	20	2119067	512425
134 5 2112915 508927 134 5 2112915 508927 135 1000 2110854 508607 136 30 2111727 508430 137 5 2110837 507209 138 5 2108216 506064 139 5 2107252 505829 140 5 2106367 505520 141 5 2105005 504952 142 50 2104540 505135 143 5 2102061 503041 144 5 2102061 503010 145 5 2101422 501653 146 50 2080458 495759 147 5 2082218 495685 148 5 2082272 495278 149 5 2082272 492922 150 10 2084008 493860 151 5 208272 492922 152 10 2084020 496984	133	5	2118671	511998
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	134	5	2112915	508927
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	135	1000	2110854	508607
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	136	30	2111727	508430
138 5 2108216 506064 139 5 2107252 505829 140 5 2106367 505520 141 5 2105005 504952 142 50 2104540 505135 143 5 2102416 503041 144 5 210261 503010 145 5 2101422 501653 146 50 2080456 495759 147 5 2081943 495528 148 5 2082218 495685 149 5 2083257 495278 150 10 2083008 493860 151 5 2082272 492922 152 10 2084267 496579 153 10 2084020 496984	137	5	2110837	507209
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140 5 2106367 505520 141 5 2105005 504952 142 50 2104540 505135 143 5 2102416 503041 144 5 2102061 503041 144 5 2102061 503010 145 5 2101422 501653 146 50 2080456 495759 147 5 2081943 495528 148 5 2082218 495685 149 5 2083257 495278 150 10 2083008 493860 151 5 2082272 492922 152 10 2084267 496579 153 10 2084020 496984	139	5	2107252	505829
141 5 2105005 504952 142 50 2104540 505135 143 5 2102416 503041 144 5 2102061 503041 144 5 2102061 503010 145 5 2101422 501653 146 50 2080456 495759 147 5 2081943 495528 148 5 2082218 495685 149 5 2083257 495278 150 10 2083008 493860 151 5 2082272 492922 152 10 2084267 496579 153 10 2084020 496984	140	5	2106367	505520
142 50 2104540 505135 143 5 2102416 503041 144 5 2102061 503010 145 5 2101422 501653 146 50 2080456 495759 147 5 2081943 495528 148 5 2082218 495685 149 5 2083257 495278 150 10 2083008 493860 151 5 2082272 492922 152 10 2084267 496579 153 10 2084020 496984	141	5	2105005	504952
143 5 2102416 503041 144 5 2102061 503010 145 5 2101422 501653 146 50 2080456 495759 147 5 2081943 495528 148 5 2083257 495278 149 5 2083008 493860 150 10 2083008 493860 151 5 2082272 492922 152 10 2084267 496579 153 10 2084020 496984	142	50	2104540	505135
144 5 2102061 503010 145 5 2101422 501653 146 50 2080456 495759 147 5 2081943 495528 148 5 2082218 495685 149 5 2083257 495278 150 10 2083008 493860 151 5 2082272 492922 152 10 2084267 496579 153 10 2084020 496984	143	5	2102416	503041
145 5 2101422 501653 146 50 2080456 495759 147 5 2081943 495528 148 5 2082218 495685 149 5 2083257 495278 150 10 2083008 493860 151 5 2082272 492922 152 10 2084267 496579 153 10 2084020 496984	144	5	2102061	503010
14650208045649575914752081943495528148520822184956851495208325749527815010208300849386015152082272492922152102084267496579153102084020496984	145	5	2101422	501653
14752081943495528148520822184956851495208325749527815010208300849386015152082272492922152102084267496579153102084020496984	146	50	2080456	495759
148 5 2082218 495685 149 5 2083257 495278 150 10 2083008 493860 151 5 2082272 492922 152 10 2084267 496579 153 10 2084020 496984	147	5	2081943	495528
149 5 2083257 495278 150 10 2083008 493860 151 5 2082272 492922 152 10 2084267 496579 153 10 2084020 496984	148	5	2082218	495685
150 10 2083008 493860 151 5 2082272 492922 152 10 2084267 496579 153 10 2084020 496984	149	5	2083257	495278
151 5 2082272 492922 152 10 2084267 496579 153 10 2084020 496984	150	10	2083008	493860
152 10 2084267 496579 153 10 2084020 496984	151	5	2082272	492922
153 10 2084020 496984	152	10	2084267	496579
	153	10	2084020	496984

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	Size of Leopostrife Stand		
	Size of Loosesulie Stand	2091540	407266
154	10	2001349	497200
155	10	2001219	497020
150		2002310	510762
157	1000	2124037	510703
158	1000	2124724	510020
159	1000	2120017	510/14
160	1000	2124052	519039
161	1000	2124220	519220
162	1000	2124288	519347
163	1000	2124460	519487
164		21248/6	519213
165	1000	2125047	519318
166		2125237	519389
167	<u> </u>	2125067	519008
168	1000	2125343	519061
169	1000	2125532	519166
170	1000	2125478	519494
171	1000	<u>2125806</u>	519410
172	100	<u>2125997</u>	519290
173	100	2126256	519223
174	1000	2126289	519396
175	1000	2126446	519224
176	1000	<u>2126619</u>	519139
177	1000	2126843	519124
178	1000	<u>2127117</u>	519522
179	1000	2126719	519658
180	1000	2126787	519727
181	1000	2126510	519950
182	1000	2126130	520033
183	1000	2127340	519731
184	1000	2127131	519937
185	1000	2127182	520075
186	1000	2124626	517900
187	1000	2124918	518075
188	1000	2125210	518198
189	1000	2125487	518062
190	1000	2125385	517854
191	1000	2125093	517783
192	1000	2124903	517799
193	1000	2124713	517728
194	1000	2124541	517641
195	1000	2126699	517518
196	1000	2126904	517847
197	1000	2127160	518228
198	1000	2127227	518488
199	1000	2130668	523340
200	1000	2129971	521201
201	1000	2129747	520908
202	1000	2129138	520112
203	1000	2128895	520223
204	1000	2128750	520093

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Point ID	Size of Loosestrife Stand	X	Y
205	1000	2128524	520124
206	1000	2131251	520902
207	1000	2131263	521420
208	1000	2131525	520953
209	1000	2131815	521117
210	1000	2132220	520974
211	1000	2132494	521202
212	1000	2132670	521397
213	. 1000	2132881	521334
214	1000	2133073	521529
215	1000	2133005	<u>522111</u>
216	1000	2133132	522370
217	1000	2133130	522694
218	1000	2133356	522695
219	1000	2133534	522697
220	1000	2133439	522453
221	1000	2133221	523616
222	1000	2133397	523843
223	1000	2133675	523296
224	1000	2133753	523700
225	1000	2133994	523961
226	1000	2133719	523959
227	1000	<u>2134171</u>	524156
228	1000	2134313	524626
229	1000	2134425	524772
230	1000	2134135	524608
231	1000	2134005	524769
232	1000	2133908	524655
233	1000	2133240	525410
234	1000	2133096	525232
235	1000	2132240	525193
236	1000	2132271	525323
237	1000	2132415	525486
238	1000	2132639	525891
239	1000	2132776	527056
240	1000	2132862	526410
241	1000	2133116	527091
242	1000	2133194	527447