

Lake Mason National Wildlife Refuge – North Unit

Benton Lake ISST

Accomplishments

Weed Species	Total Survey Acres ¹	Surveyed Acres Infested ²	Acres Treated ³
Leafy spurge	213.08	73.83	8.14
Project Site Totals	213.08	73.83	8.14
¹ Area covered during the course of weed management activities regardless of presence or absence of target weed species as measured by perimeter in GIS. ² Area occupied by weed species within the survey area that does not contain the space between individuals or populations (i.e. net infestation size) as measured by GPS feature for monitoring and treatment combined, but areas in common not additive. ³ The area or subset of infested area that has received some form of treatment as measured by GPS feature.			

Highlights

Schedule

Dates	Project Type	Target Species	Size of Crew	Project Notes
8-June-2014	EDRR-Refuge Management Project	Leafy spurge	4	Initial ISST Transect surveys and chemical treatments of leafy spurge within the NWR
9-June-2014	EDRR-Refuge Management Project	Leafy spurge	4	Inventory and monitoring for leafy spurge; set up study plots to determine the effect of Plateau on Sage.
10-June-2014	EDRR-Refuge Management Project	Leafy spurge	4	Due to weather, ISST assisted refuge staff with refuge maintenance.

Coordination and Cooperation

- Coordination occurred prior to fieldwork between Bridget Nielsen, Bill Sparklin, Doug Powell, Lindy Garner, Levi Morgan, and Shane Weigand to discuss project protocols and activities.

Prevention and Education

- Providing support through funding, partnerships and agreements helps to facilitate treatment, education and control the spread of weeds across the landscape.

Early Detection and Rapid Response

- Early detection and rapid response treatment of weeds is critical to keep large tracts of land free of invasive and noxious species that degrade wildlife habitat.

Inventory and Monitoring

- GPS data were collected by ISST to provide information on patch size and locations of application. The GPS track logs, provided by ISST showing these locations, were used to digitize the survey area and calculates the estimated survey area acres.
 - ISST surveyed 213.08 acres during three days in 2014.

- 73.83 acres were mapped as infested with leafy spurge.
- This is not an accurate representation of the actual amount of acres infested on the North unit because the area is too large for a crew of four to systematically cover in the time allotted.
- ISST noted the amount of leafy spurge present on the refuge is vast and expands throughout much more area than was able to be inventoried. Inventorying and treating this area will require intensive labor, an extended period of time, and an increased number of personnel.

Management

- Leafy spurge was the target species of this project
- The entire North Unit is approximately 5,300 acres, ISST surveyed 213.08 acres.
- In 2014, ISST treated 8.14 acres of leafy spurge.
- Due to the condition of the site and low amounts of organic matter, treatments were made at a rate of 9oz/ac of Plateau with MSO (32 oz/ac.).
- Field notes from management on June 8th & 9th are included below as Appendix A & B.

Herbicide Applied

- Treating 8.14 acres of leafy spurge, ISST applied 5.82 ounces of Plateau.

Recommendations

- Agreements and partnerships should continue to play a significant role in weed management on the refuge.
- Conducting an inventory of the entire site could be accomplished using both ISST crews during an 8-day work assignment. Having accurate baseline information on the current extent of the leafy spurge infestation would allow for effective management decisions. If treatment is not a consideration, then conducting the inventory in earlier summer while the leafy spurge is still actively growing and readily located is recommended.

Appendix A

Field Notes 06/08/2014

ISST met Shane Weigand at the parking area of the North unit of LMNWR to go over maps and discuss mapping and treatment protocol. Before beginning any treatments the crew visited the first two sites that are located by the irrigation dam, just below the hill near the parking area, to assess the amount of leafy spurge in the area. From the base of the hill, below the parking area, to approximately 50 meters uphill to the East, leafy spurge was present; the further uphill the crew surveyed, leafy spurge became less dense (1-10%). Going down the hill into the valley, the percent cover was mostly 10-25%, some was as dense as <60% - abundant.

Once the crew surveyed the area enough to get an idea of the area and infestation size, treatments began. Two crew members began handgun spot spraying at the base of the hill and sprayed uphill as far as their handguns would safely reach; working west. The remaining two crew members began on the West side of the second population from the hill and worked east. Levi and Shane spent an hour and a half going over spot spray and ISST mapping protocol so that all treatments and mapping data are synchronized.

Initial surveys suggested the leafy spurge infestations would be mainly in the bottoms of the drainages and slowly creeping uphill toward the tops, but not extending out into sage brush flats. Treatments and detailed surveys revealed that the leafy spurge has spread beyond the bottoms and the high water mark into the flats. Some Infestations were small and mapped as single points and some were large polygons. The polygons were mostly mapped as 10-25% cover; however, some were mapped as <60. On June 8, the crew covered approximately 22 acres.

Some questions that arose were: Can the area could be boom sprayed? From reading the label, Big sage, Silver Sage, and Fringed Sage are all tolerant to Plateau herbicide at 12 oz. per Acre. The area is being treated with Plateau at 9 oz. per Acre; is it ok to boom spray the area when the wind conditions will permit?

Appendix B

Field Notes 06/09/2014

The morning of June 9 at the North Unit, the wind did not permit any spraying. The temperature was 40 degrees with an 8-12mph North wind all day.

To begin the morning, the crew re-mapped the area that was chemically managed on June 8. This allows us to have a complete monitoring data set for the area that didn't completely get mapped on June 8 before the days end. The area the crew re-mapped on the morning of June 9 is approximately 50 acres and took until lunch to complete. Again, this area extends from the top of the hill at the parking area, West beyond the irrigation dam, and South to the first creek drainage.

After lunch, the crew set up two study plots near the parking area just South of the "No Vehicles" sign to determine the impact of Plateau on sage for next year's planning. Both plots were measured out at 18.5 by 18.5 feet squares and sprayed just as one would for handgun calibration. This results in an even and consistent coverage of the entire area. The first plot was set up just outside of the densest area of big sage. The sage cover was approximately 25%, leafy spurge was 1-10%, and the remaining area was native prairie grass. The second plot was set up in the densest, mature patch of big sage around. This plot was composed of 95% sage, 1-10% leafy spurge, and sparse prairie grasses. Both plots were sprayed with Plateau at a rate of 9oz./ac. And MSO at 32oz./ac. Also, this will mimic boom spray treatments to help determine whether boom spraying is possible next year.

Once the test plots were completed the crew continued surveying the North unit for leafy spurge. Monitoring began on the Northern boundary beyond the irrigation dam and transect surveyed west, 20 meters apart from each other, until reaching the western most boundary of the refuge. The crew surveyed south into the refuge until the end of the day and made it approximately 200 meters south of the northern fence line across the refuge from the parking area to the west boundary.

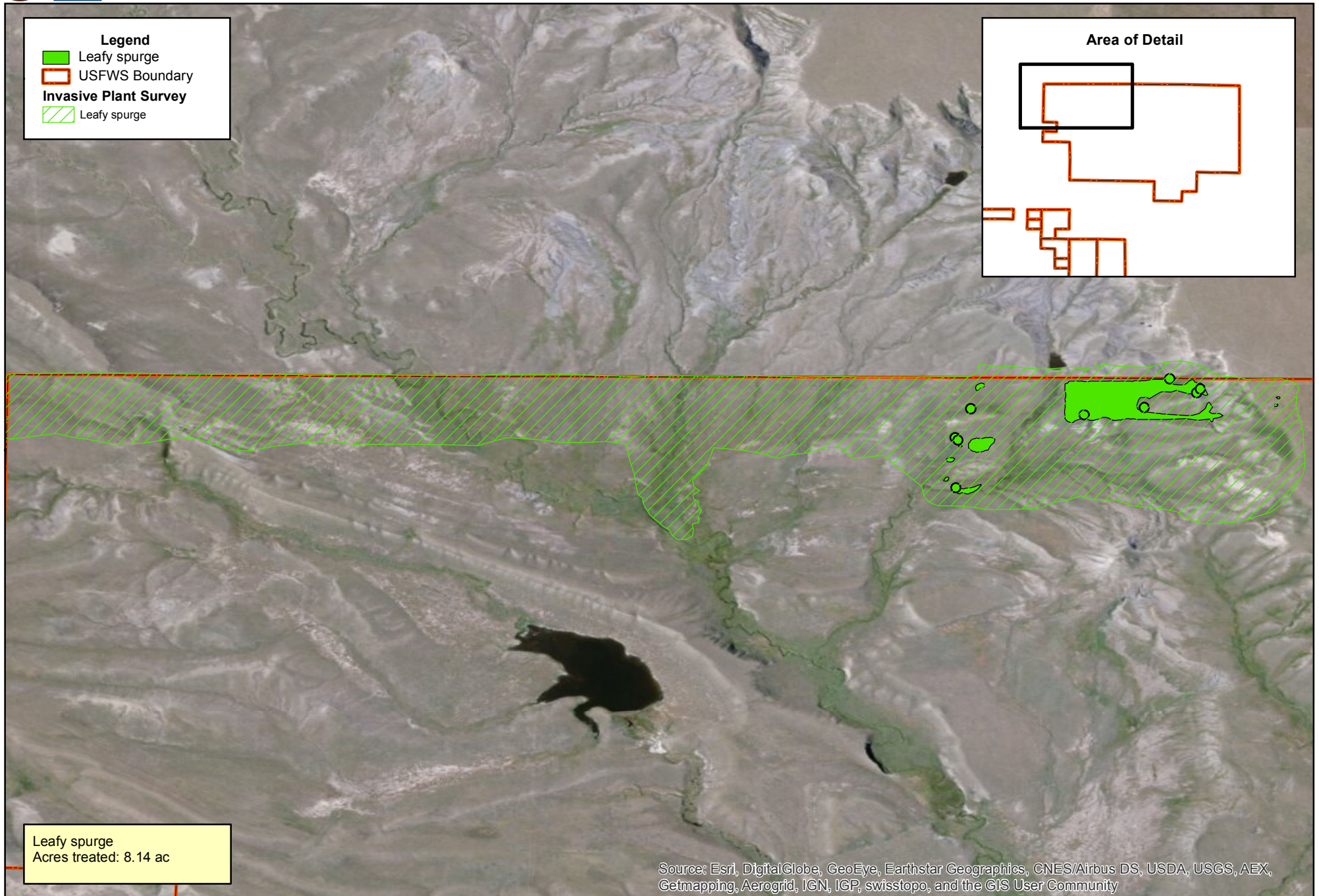
After getting deeper into the refuge ISST was able to determine there is a much greater amount of leafy spurge infestation in the area than expected.



U.S. Fish & Wildlife Service

MOYOCO Invasive Species Strike Team

Lake Mason NWR - North Unit - 2014 Infested Acres Treated



0 0.15 0.3 0.6 Miles

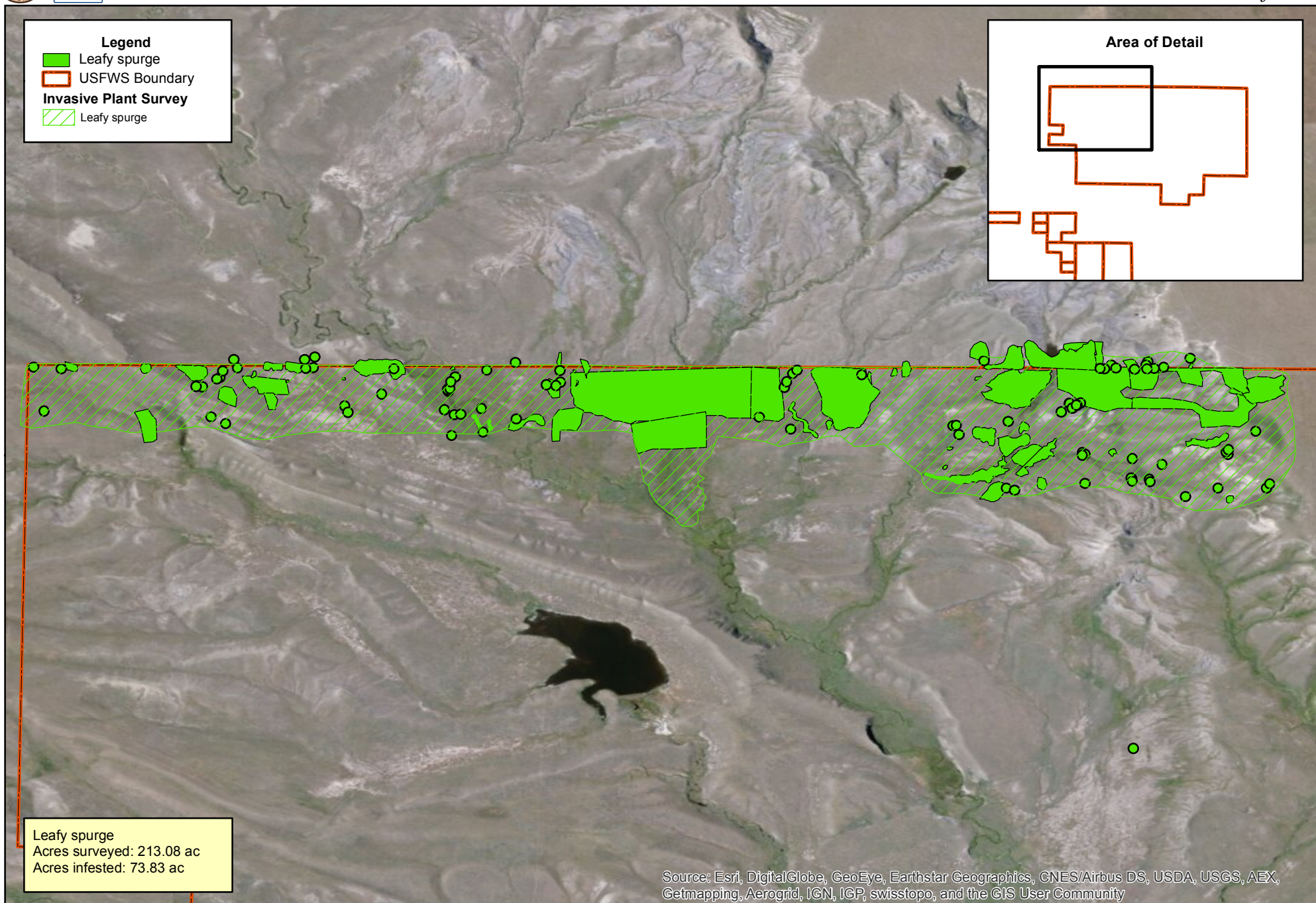
Leafy spurge management - 1 of 2 maps



U.S. Fish & Wildlife Service

MOYOCO Invasive Species Strike Team

Lake Mason NWR - North Unit - 2014 Acres Infested



0 0.175 0.35 0.7 Miles

Leafy spurge inventory - 2 of 2 maps

BUSINESS U.S. Fish and Wildlife Service	LICENSE# 104765-15
NAME Benton Lake NWR Invasive Species Strike Team	ADDRESS (Refuge or WPA) Lake Mason NWR
CITY, STATE, ZIP Great Falls, MT 59404	PHONE 406-727-7400 Ext. 213

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Compliments of the
MONTANA DEPARTMENT OF AGRICULTURE **DAILY PESTICIDE APPLICATION RECORD**
AGRICULTURAL SCIENCES DIVISION
PO BOX 200201
HELENA, MT 59620-0201
Phone 406-444-3730

BUSINESS U.S. Fish and Wildlife Service	LICENSE# 104765-15
NAME Benton Lake NWR Invasive Species Strike Team	ADDRESS (Refuge or WPA) Lake Mason NWR
CITY, STATE, ZIP Great Falls, MT 59404	PHONE 406-727-7400 Ext. 213

	APPLICATION #1	APPLICATION #2
Applicator/Operator Name (s)	Levi Morgan	Shane Weigand
Date	09-08-14	09-08-14
County	Musselshell	Musselshell
Time Start/Stop	1200-1600	1200-1600
Temperature	77°F	77°F
Relative Humidity	37%	37%
Wind Speed/Direction (from)	8 kt E	8 kt E
Pesticide Manufacturer	BASF	BASF
Trade Name	Plateau	Plateau
EPA Reg # or Formulation	241-365	241-365
Rate: Product/Diluent Per Acre	9 oz/ac	9 oz/ac
Amount of Chemical Applied	0.75 oz	1.15 oz
Equipment Used (atv,backpack,truck,saw)	Atv handgun	Atv handgun
Bio-Control (genus species)	-	-
# released / acre	-	-
Mechanical (mow,hand-pull)	-	-
Plant Phenology & Stage	flowering	flowering
Dominant Pest(s)	Leafy Spurge	Leafy Spurge
Equipment Used	Atv handgun	Atv handgun
Acres/Area Treated or # of plants	Spot treatment, gps mapped	Spot treatment, gps mapped
GPS Filename		

Location #1 (Site specific description)	COMMENTS/MAP: (any surfactant or dye used, PUP number, concerns with weather prior or post treatment, DETAILS, etc....)																																				
Location #2 (Site specific description)	Shield IVM @ 2 oz / 10 gal Syl-tac @ 1.28 oz / 10 gal																																				
From the parking area, LM, SW, KN, and OG went down the first hill to the first location of spurge and began transecting North-South. LM and SW began on the west side of the first infestation and worked east. KN and OG began on the east at the bottom of the hill and worked west.	<table><tr><td></td><td>Start</td><td>End</td><td>Total</td></tr><tr><td>Levi</td><td>10</td><td>0</td><td>10</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td>Shane</td><td>10</td><td>0</td><td>10</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>		Start	End	Total	Levi	10	0	10													Shane	10	0	10												
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CITY, STATE, ZIP Great Falls, MT 59404	PHONE 406-727-7400 Ext. 213

	APPLICATION #1	APPLICATION #2
Applicator/Operator Name (s)	Kyle Neuman	Obie Gutierrez
Date	09-08-14	09-08-14
County	Musselshell	Musselshell
Time Start/Stop	1200-1600	1200-1600
Temperature	77°F	77°F
Relative Humidity	37%	37%
Wind Speed/Direction (from)	8 kt E	8 kt E
Pesticide Manufacturer	BASF	BASF
Trade Name	Plateau	Plateau
EPA Reg # or Formulation	241-365	241-365
Rate: Product/Diluent Per Acre	9 oz/ac	9 oz/ac
Amount of Chemical Applied	2.46 oz	1.41 oz
Equipment Used (atv,backpack,truck,saw)	Atv handgun	Atv handgun
Bio-Control (genus species)	-	-
# released / acre	-	-
Mechanical (mow,hand-pull)	-	-
Plant Phenology & Stage	flowering	flowering
Dominant Pest(s)	Leafy Spurge	Leafy Spurge
Equipment Used	Atv handgun	Atv handgun
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Steep hillsides and hill tops did not harbor Leafy Spurge. The cuts of the hills and bottoms/anywhere water appears to flow or stand harbored Leafy Spurge. In the area treated, spurge did not leave northern fence line, but did not extend more than 200 meters south of the fence. Spurge was no more than 60% covered in some areas, and mostly 10% coverage throughout but evenly spread.	<table><tr><td></td><td>Start</td><td>End</td><td>Total</td></tr><tr><td>Kyle</td><td>10</td><td>0</td><td></td></tr><tr><td></td><td>10</td><td>0</td><td>20</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td>Obie</td><td>10</td><td>0</td><td></td></tr><tr><td></td><td>10</td><td>5</td><td>15</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>		Start	End	Total	Kyle	10	0			10	0	20									Obie	10	0			10	5	15								
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