

# Bonneville CWMA EDRR Weed Control In Summit and Salt Lake Counties

## 2014 ISM Year End Report



### **Prepared By:**

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### **Prepared For our Partners:**

Utah Department of Agriculture, ISM Grant Committee  
Salt Lake County Weed Control Program  
Summit County Weed Control Program  
Summit Cooperative Weed Management Area  
Park City Municipal Corporation, Park Department  
Salt Lake City Public Utilities, Watershed Protection



## Summary of Project

The EDRR Weed Control project in Summit and Salt Lake Counties is a grant funded project through the Utah Department of Agriculture, Invasive Species Mitigation Fund. The project is focused on the Class 1B state noxious weed Garlic mustard, *Alliaria petiolata*. In August of 2014 the Bonneville CWMA was awarded \$60,000 for treatments of garlic mustard within Summit and Salt Lake Counties. In June of 2014, we were awarded an additional \$15,750 for supplemental control in fall of 2015.

The project proposal was aimed at containing the spread of garlic mustard within Summit County, thus reducing the threat to Salt Lake County which has limited infestations on the eastern county perimeter. In addition, we focused on decreasing the cover and/or density of garlic mustard within known areas, after having multiple years of treatment, thus reducing the populations to a manageable level for landowners, both public and private. In the fall of 2014, spring of 2015, and fall of 2015, Providia Management Group (PMG) was contracted to control garlic mustard in three focus areas within Summit County: Summit Park, Park City, and Synderville. They were also contracted to help supplement control by Salt Lake City Public Utilities in two EDRR focus areas within Salt Lake County: City Creek Canyon and Little Dell Reservoir.



*Salt Lake City Watershed Lands at Summit Park. These lands are a priority for garlic mustard control and the focus of this EDRR project.*

## Treatment Results by PMG



*McCloud Creek Trail in Park City near the Park City Skate Park.*

Treatment by PMG occurred on 22 days in 2014 and 25 days in 2015 on both private and public land, primarily in the months of May and September in 2014, and June and October in 2015. A complete breakdown of the dates, herbicide rates, and locations is provided in excel worksheets "GM Breakdown 2014 (2015)". PMG used Venteron 720 and Escort in 2014, and primarily 2,4-D (Amine) and MSM 60 in 2015. Additional information on rates and herbicide usage can be found in the "GM Breakdown" Summaries for 2014 and 2015. Herbicide rates and combinations were tailored for the location, watershed restrictions, and relationship to sensitive

individuals and properties.

In addition to chemically treating garlic mustard, PMG provided us with GIS shp files of both the treated areas as well as areas that were surveyed for garlic mustard and are considered "weed free" of garlic mustard. This was a high priority for the partners to establish a ratio of treated vs. monitored (garlic mustard weed free), in

order to highlight the success we are finding with multiple years of treatment and the decrease in cover and infestation sizes overall. In the fall of 2014, the ratio of treated to monitored was 32.89%. Therefore PMG treated approximately 33% of those lands inventoried, and 67% was “weed free”. In the spring of 2015 the ratio of treated to monitored was 23.03%, with approximately 23% treated and 77% weed free. In the fall of 2015, PMG treated 13.8% and approximately 86% was weed free.

All of the mapped points, treatment, and weed free areas from 2012 to 2015 can be found at <http://slco.maps.arcgis.com/apps/Viewer/index.html?appid=e5be68f0ebfe44c5aa57756acb508518>

**2014 - 2015 Garlic Mustard Chemical Control and “Weed Free” acreage by PMG:**

Season & Year	Treated	Monitored (Garlic mustard weed free)
Fall 2014	63.54 acres	193.20 acres
Spring 2015	37.39 acres	162.31 acres
Fall 2015	12.94 acres	93.40 acres
<b>Total(s)</b>	<b>113.87 acres</b>	<b>448.91 acres</b>

This year marks the third year of ISM funding to treat garlic mustard, and the second year of contiguous treatment in both the spring and fall of the same year. PMG noted that they are seeing significant decrease in the density of infestations that have been treating for multiple years, both in the spring and fall, as well as a decrease in the overall size of the infestations. However, more and more landowners with garlic mustard continue to contact PMG in the field as well as the Summit CWMA with requests for help with new infestations. PMG also spent considerable time following riparian corridors both in Synderville and Park City where infestations continue to be spreading along small stream banks bordered by both public and private property.



*Example of garlic mustard rosettes with beginning signs of herbicide damage. Some of the rosettes do not appear to have been damaged, and will need additional chemical treatments in order not to bolt and produce seed. This picture illustrates how constant monitoring for new germination is so important, followed by repeat chemical applications and often manual control as well.*

In addition to treatment by PMG, several public agencies and private partners participated in this grant by controlling garlic mustard on lands they manage and by coordinating the project. The main partners include,



*A typical response of a garlic mustard rosette to chemical treatment. Note drooping stems, yellowing of leaves, and dry crispy leaf margins.*

Mindy Wheeler, Park City Parks Department, Salt Lake City Department of Public Utilities, Salt Lake County, Summit County, and UDAF (Jan Reinhart). Utah Fire, Forestry and State Lands is no longer a partner, as the land they managed in Summit County that was infested with Garlic mustard has now been transferred in ownership to Basin



*A typical response of a bolted garlic mustard plant to chemical treatment. Note drooping stem and yellowing of leaves.*



Recreation and Open Space. We have made contact with Basin Rec and hope that we can find ways to partner on this grant project with them in future years.

Mindy Wheeler, Chair of the Summit County CWMA played an instrumental role in project coordination, GIS analysis, organization and mailing of the consent letters, site visits, monitoring, landowner coordination, and grant writing.

Maria Brandt, Park City Parks oversaw both chemical and manual treatments throughout Park City Proper, and coordinated with PMG on treatment within Park City Open Space and parks land. Park City also helped with the mailing of the hundreds of consent letters.

Patrick Nelson, Salt Lake City Public Utilities (SLCPU) Watershed Supervisor has been treating the EDRR populations in City Creek Canyon, East canyon near Little Dell Reservoir, and SLC watershed property at Summit Park since the grant inception in 2012. He also found the original infestation of garlic mustard in City Creek Canyon (and Salt Lake County) in 2008. Through multiple chemical and manual treatments by both SLCPU staff and PMG in 2014 and 2015, SLCPU has finally begun to see a decrease in the density and size of garlic mustard populations. However, they have had to be extremely vigilant throughout the entire season, and have had to put a lot of man hours into detection and control.

Sage Fitch, Salt Lake County Noxious Weed Supervisor played the role of grant writer, coordinator, and GIS collection and analysis. As the project manager, Sage was responsible for handling all of the grant proposal writing, submittal, and reporting. She kept everyone on track by organizing the meetings, site visits, and monitoring. In addition, Salt Lake County handled all of the GIS and map making, and created maps both prior to treatment (consent maps) to help prioritize and focus on specific areas and identified property owners, as well as post treatment maps. To help analyze all of the multiple years of treatment and weed free areas, Salt Lake County created an online, ESRI based, interactive map of the garlic mustard treatment. It can be found at <http://slco.maps.arcgis.com/apps/Viewer/index.html?appid=e5be68f0ebfe44c5aa57756acb508518>

Summit County sprayed and mapped garlic mustard points in the ROW in both June and August of 2015, in multiple areas throughout Summit County. Dave Bingham, Summit County Weed Supervisor noted that he does think we are making progress and the infestations seem less abundant.

### **Monitoring results by Jan Reinhart of UDAF**

Quantitative monitoring data was collected by UDAF's Jan Reinhart in June 2014, May 2015, and August 2015 prior to chemical treatment at three separate locations using sample point cover and line intercept cover. Transect #1 is on Salt Lake City Watershed property at Summit Park. According to UDAF data, from June 2014 to August 2015 transect #1 saw a 99% reduction in garlic mustard cover class in response to multiple chemical treatments by SLCPU and PMG, as well as manual treatments by SLCPU.

Transect #2 is near the Park City Skate Park adjacent to a paved trail. This site has been controlled by both chemical and manual treatments, followed by some reseeding by Park City Staff. According to UDAF data, from June 2014 to August 2015 transect #2 saw a 93% reduction in cover class in response to chemical treatments by PMG and Park City Staff, as well as manual treatments by Park City staff.

Transect #3 is in Park City adjacent to McCloud Creek. This transect was added in 2015 in response to the need to show an additional representation in the Park City area. Because of this no data was collected in June 2014. Regardless, according to UDAF data from May 2015 to August 2015, transect #3 saw a 75% reduction in garlic mustard cover class as a result of chemical treatment by PMG and Park City Staff, as well as manual treatment by Park City staff.



*Monitoring pictures of transect #3 taken by Jan Reinhart of UDAF. In the left picture you can see garlic mustard germinating in early spring 2015 before treatment and before many natives have leafed out, and then in the right picture in the fall of 2015 you see very little to no garlic mustard and an abundance of natives in the herbaceous layer thanks to both a spring and fall treatment in 2015.*

A separate document titled “UDAF Monitoring Pics” and “SummitCoGarlicMustard” describe in greater detail the monitoring statistics and show visually the changes in cover class from May 2014 to October 2015.

### Challenges and Goals for the future

The biggest challenge in 2014 and 2015 was finding big enough windows of time in order to treat all of the known locations. Rain was a significant challenge in the spring of 2015 and delayed many of PMG’s spray days. In addition, the high number of private properties, along with herbicide sensitivities, and lack of clear property boundaries in the Summit Park area continues to be an issue that requires a large amount of coordination with PMG and the residents. We are hopeful that improvements to PMG’s technology will help

to resolve future issues. And lastly, after multiple years of treatment and unavoidable overspray we are now challenged with how we can begin to restore areas while still treating the existing garlic mustard seed source. We hope to find some native grass seed mixes that might be incorporated into the project plans in 2016, but were unable to tackle this effort in 2014 and 2015.



*Typical example of a garlic mustard infestation growing in and amongst a native shrub layer next to a creek system. Overspray is typical and unavoidable. McCloud Creek, Park City, Utah.*

The combination of spring and fall treatment for two consecutive years was really the tipping point for this project in 2014 and 2015, and we were really able to see a decrease in both cover and infestation size. Without the continuation of both spring and fall treatment annually, we are certain that existing



seed sources of garlic mustard would quickly recover to pre-2012 treatment population. Other challenges include dealing with close to 600 private landowners and obtaining consent forms and notifying them of treatment time frames. This project requires an ever increasing amount of coordination and monitoring with project partners and private landowners that will only increase if this project continues to be funded in the future.

### **Follow up and future control**

Overall, this project was successful in that after 3 years of treatment we are now seeing a significant decrease in cover of garlic mustard in treated locations, and an increase in the weed free acreage. It is also a success because we have been able to consistently work with the same private and public partners since the inception of this project in 2012, and continue that coordination and partnership through staff changes and turnover. It is the only large scale EDRR treatment of garlic mustard within these watersheds, and would not have taken place without the ISM grant funding. We are excited to continue this project, having now had a third year of treatment under our belts, and with two consecutive years of spring and fall treatments. We strongly feel that although cover has decreased, without consistent funding and annual treatment, garlic mustard populations could easily recover and spread at an unprecedented rate.



*A typical example of a garlic mustard infestation on private property in Park City. Note the dense stand of garlic mustard which is now the dominant herbaceous layer amongst these aspen.*

Annual treatment will be imperative in order to keep populations within a manageable level, and eradication unlikely. We also feel we will continue to see a greater number of participants that seek out help in controlling their infestations, as we venture into new areas. We anticipate if this project is funded again to see a continued decrease in both cover and size of the infestations, as well as an increase of treatment in sites that are upstream or at the source locations. Future control plans include:

- Continue the successful strategy of both spring and fall herbicide treatment.
- Post treatment pulling of surviving/missed flowering plants to decrease potential re-seeding of treated areas.
- Focus on new infestations in riparian corridors that may be the source of downstream populations.
- Continue to Involve and educate the whole community.
- Continued coordination between partners on ROW and public land (Basin Rec and Open Space).

### **Garlic Mustard Control Partners**

Thank you so much to our partners and sponsors for their contribution to this program. In particular, thanks to the Utah Department of Agriculture and Food for funding this project, and to Jan Reinhart for her help in monitoring. We appreciate her technical expertise in being able to quantitatively show the progress of treatments in 2014 and 2015.

- Bonneville CWMA and Castleland RC&D
- Park City Municipal Corporation/ Park Department
- Salt Lake City Public Utilities: Watershed Protection

- Salt Lake County Weed Control Program
- Summit County Weed Control Program
- Summit Cooperative Weed Management Area and Mindy Wheeler
- Utah Department of Agriculture and Food