

2011 Cherry Creek State Park & Basin Authority Weed Management Plan/Report

REPORT/RECOMMENDATIONS
April 2012



Vegetation Management, Inc.
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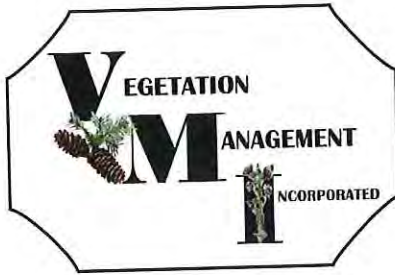
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**2011 Scope of Work &
Proposal**





Vegetation Management, Inc.

Basin Authority
Attn: Bill Ruzzo
8390 E. Crescent Pkwy., #500
Greenwood Village, CO 80111

May 31, 2012

Dear Bill;

Just as in past years we have prepared an annual report for the Basin Authority regarding work we conducted for you at Cherry Creek State Park in 2011 on the Cottonwood Creek Re-Alignment areas of Phases I & II, etc.


This report includes the following items:

1. A detailed Weed Management Plan with recommendations for future treatments,
2. Photos of various treatment efforts,
3. Copy of the 2011 Scope of Work provided to park personnel.

VMI takes great pride in conducting weed control for the Basin at Cherry Creek State Park and hope that by continuing to provide you with reports such as these you will be better able to visualize the benefits of these efforts and aid you in determining future efforts.

We trust you find this information useful and look forward to a continued mutually beneficial working relationship with Cherry Creek State Park and the Basin Authority. Thank you for giving us the opportunity to assist the Basin Authority with weed control efforts in disturbed areas of the Park.

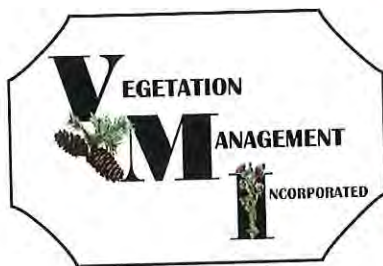
Smiles,


Christine Alexander
Vice President

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2011 Weed Management Plan for the Basin Authority as administered by Cherry Creek State Park, Colorado

Prepared by: Vegetation Management, Inc.

Purpose

Vegetation Management Inc. (hereafter referred to as VMI) has been contracted through Cherry Creek State Park (hereafter referred to as CCSP) to perform weed control for the Basin Authority (hereafter referred to as BA) on designated areas within the park. Areas consist primarily of disturbed areas, creek, native grasses and plants large portions of which have been infested by a variety of noxious weeds and undesirable plants, including but not limited to a variety of Thistles (Canada, Musk & Scotch), Knapweed, Teasel, Toadflaxes, Leafy Spurge, Common Mullein, Redstem Filaree, Hoary Cress, Common Mallow, Kochia, Field Bindweed, Poison Hemlock, Russian Olive, Prickly Lettuce, Curly Dock, and Redroot Pigweed. This Plan provides for critical areas of noxious weed management, assessment, monitoring and reporting of designated areas.

Background

The authority and responsibility to formulate and implement a Noxious Weed Management Plan comes from Colorado Revised Statutes 35-5.5-101 et.seq., the Colorado Noxious Weed Act (Act). The Act states that the justification for this statute resides in the fact that certain undesirable plants represent a threat to the economic and environmental value of lands throughout the State; therefore, they must be managed where they occur. Furthermore, it is the responsibility of local governing bodies to assure that these plants are in fact managed.

Organization and Responsibilities

I. Cherry Creek State Park (CCSP)

A. Contracting Agency Responsibilities

1. Agency Staff contracts and communicates with the contractor as to what areas are to be treated for the Basin Authority (BA).
2. Agency Staff receives a copy of Invoices and BA processes payment.

II. Vegetation Management Incorporated (VMI)

A. Contractor Responsibilities

1. Contractor performs Assessment, Management/Control, Monitoring, makes recommendations and prepares reports of areas that have been treated.

GOAL AND OBJECTIVE

- **Goal:** Weeds left unchecked infest both private and public lands. It is the primary goal of this management plan to ensure that as many noxious weeds as possible are either not allowed to establish a foothold or that sizeable infestations be controlled.

- **Objective:** To provide herbicide treatment to designated areas as necessary to manage noxious weeds, report and make recommendations as to success and ongoing treatment.
- **Action:** Contractor will provide the tools necessary to perform herbicide application to the designated areas.

ASSESSMENT

- **Objective:** To evaluate weed populations within the designated areas by utilization of visual inspection by VMI staff, field trips with CCSP representative/s, and review of various maps provided by the CCSP.
- **Action:** Visually survey designated areas to locate infestations and treat them with appropriate herbicide application.

MANAGEMENT/CONTROL

- **Objective:** Control infestations by herbicide application.
- **Action:** Evaluate and treat noxious weed populations within each designated area.

MONITORING

- **Objective:** Assess treatment areas in order to establish trends in success ratios.
- **Action:** Visit the treated areas several times annually and note the populations of noxious weeds.

REPORTING

- **Objective:** To provide CCSP and the BA with information detailing effectiveness of treatment.
- **Action:** Produce a report, which will provide assessment and recommendations on the populations of noxious weeds within the designated areas. Identify appropriate management techniques for weed species on a case-by-case basis.

ADDITIONAL NOTES

VMI will utilize the following to establish priorities:

1. Priority will be given to specific areas as requested by CCSP personnel and approved by CCBWQA if the priority area is within the disturbance area of a PRF.
2. Priority will be to treat newly introduced species and/or species that have yet to establish a foothold within designated areas.
3. Priority will be given to high traffic areas such as trails (paved first, non-paved second), roads, parking lots, drainage/irrigation areas, and fence lines of abutting properties. Controlling weeds in these areas is important in reducing spread.
4. Small infestations (especially of highly invasive species) are concentrated on repeatedly to confine and allow native species to thrive.
5. Strategies for sizeable infestations are to begin along the outer edges combined with overall broadcast applications (when possible) to reduce the area of infestation.

SPECIFIC TREATMENT DETAILS

On April 27, 2011 a meeting was held to present the prior year report and discuss what would be accomplished with 2012 treatments. At this time the 2011 Basin Budget document was reviewed for herbicide applications and mowing efforts to be conducted for the Basin Authority.

Treatments/Mowing was conducted on the following dates:

June 13th, July 18th, July 26th, July 27th, July 28th, July 29th, July 30th, August 4th, August 5th, August 6th, August 8th, August 24th, and October 5th

BASIN AUTHORITY PARCELS

- **Basin Authority Cottonwood Creek Re-Alignment Phase I**

Treatment: Heavy to moderate infestations of Dalmation Toadflax and Thistles with moderate infestations of Common Mullein, Leafy Spurge, Field Bindweed, Poison Hemlock, Kochia and Curly Dock; and Light amounts of Diffuse Knapweed and Russian Olive were found and treated. Due to the creek as well as native plantings along the shoreline, this area requires a lot of detail work. In 2010 there was again a cost share agreement between the Basin Authority and CCSP allowing for \$1500 each for a total of \$3000 to be used on weed control of approximately 35.29 acres along both sides of the creek as well as outlying areas. This methodology was utilized throughout the Re-alignment area in an effort to reduce migration of weeds from adjacent areas.

RECOMMENDATION: It is VMI's recommendation that herbicide applications continue in this area which should result in further reductions of weeds. Ongoing infestations continue to prove beneficial; however there still exist sizeable populations of noxious weeds which could re-infest the treatment area as well as construction which occurred in 2012 that disturbed a sizeable area which might have caused for prime infestation potential. The Prairie Dog infestation continues to wreck havoc with the good grasses which had been established leaving behind very little other than noxious weeds. We advise the most effective methodology is to conduct three treatments annually especially in light of the summer annual Kochia which is present in this area.

2011 - Xcel utility construction

- **Basin Authority Cottonwood Creek Re-Alignment Phase II**

Treatment: Heavy to moderate infestations of Thistles (Canada, Musk and Scotch), Leafy Spurge, Common Mullein and Poison Hemlock are present in this area; as well as light amounts of Dalmation Toadflax, Diffuse Knapweed, Russian Olive, Kochia, and Field Bindweed treated in this disturbed area on both sides of the creek and outlying adjacent areas. Due to the creek as well as native plantings along the shoreline, this area continues to require a lot of detail work. Since 2009 VMI conducted herbicide treatments coupled with mowing which aided in the decrease of noxious weeds and increase of grasses. The Prairie Dog infestation in this area continues to increase which is impacting both the weed population as well as decreasing the grasses. The methodology of mowing coupled with herbicide application has been extremely effective particularly when adding a summer annual herbicide application which continues to keep Kochia, Pigweed and other summer annuals from infesting and competing with the grasses. The methodology of treating outlying adjacent areas continues to reduce the migration of weeds.

RECOMMENDATION: We recommend that spring, summer and fall treatments of herbicide be conducted in this area with mowing in mid-summer. Prior infestations continue to show improvement, however there must have been a sizeable seed bank as there still exist populations of noxious weeds that could likely re-infest the treatment area. It continues to be VMI's recommendation that **Prairie Dog populations be reduced in the Phase II** area particularly the small population which has established on the East side of the creek as well as other areas which have shown growth of these creatures especially in light of the fact that the Basin plans to conduct re-seeding efforts.

- **Compressor Building**

Treatment: Moderate infestations of Leafy Spurge; Light infestations of Thistles, Diffuse Knapweed, Kochia, Common Mullein and a few Dalmation Toadflax plants were treated in this and outlying areas of the Compressor Building. Mowing was also done this season in this area.

RECOMMENDATION: VMI recommends that continued herbicide applications and mowing be done in this area in an effort to reduce competition for the good grasses which exist here.

- **Shoreline PRF's (aka Traditional Areas)**

Treatment: Moderate infestations of Leafy Spurge, Thistles and Common Mullein; with Light amounts of Kochia, Redstem Filaree and Curly Dock were found and treated in the East Shade shelter area. Mowing was also allocated but not conducted.

RECOMMENDATION: VMI recommends, if budgets allow, treatments continue in these areas especially along the lakeshore area of East Ramps where it is anticipated that seed banks are likely sizeable due to the infestations found and treated in this area in the past couple of years.

BASIN AUTHORITY GENERAL COMMENTS

It continues to be our pleasure to assist with weed control efforts on portions of the park for the Basin Authority. We take great pride in the progress we've made on Basin designated/disturbed and outlying areas coupled with regularly coming in substantially under budget.

It is recommended that efforts be similar in 2011 to the above for this is the most effective methodology in realizing an on-going reduction of noxious species within the Basin Authorities designated areas of the park.

CCSP & BASIN AUTHORITY TREATMENT DETAILS

With the combination of CCSP budgets and the Basin Authority budgets, we were able to treat the below acreages within the park in 2011:

Herbicide Treatments

Area/s Treated - Responsibility	Total Acres
Shoreline PRF's aka Traditional areas – cost share CCSP & Basin Authority	10 (5 Acres each)
Phase I – cost share CCSP & Basin	35.294 (17.647 Acres each)
Compressor Building – Basin Authority	5
Phase II – Basin Authority	166.25
Herbicide Grand Total	193.897

Mowing Efforts

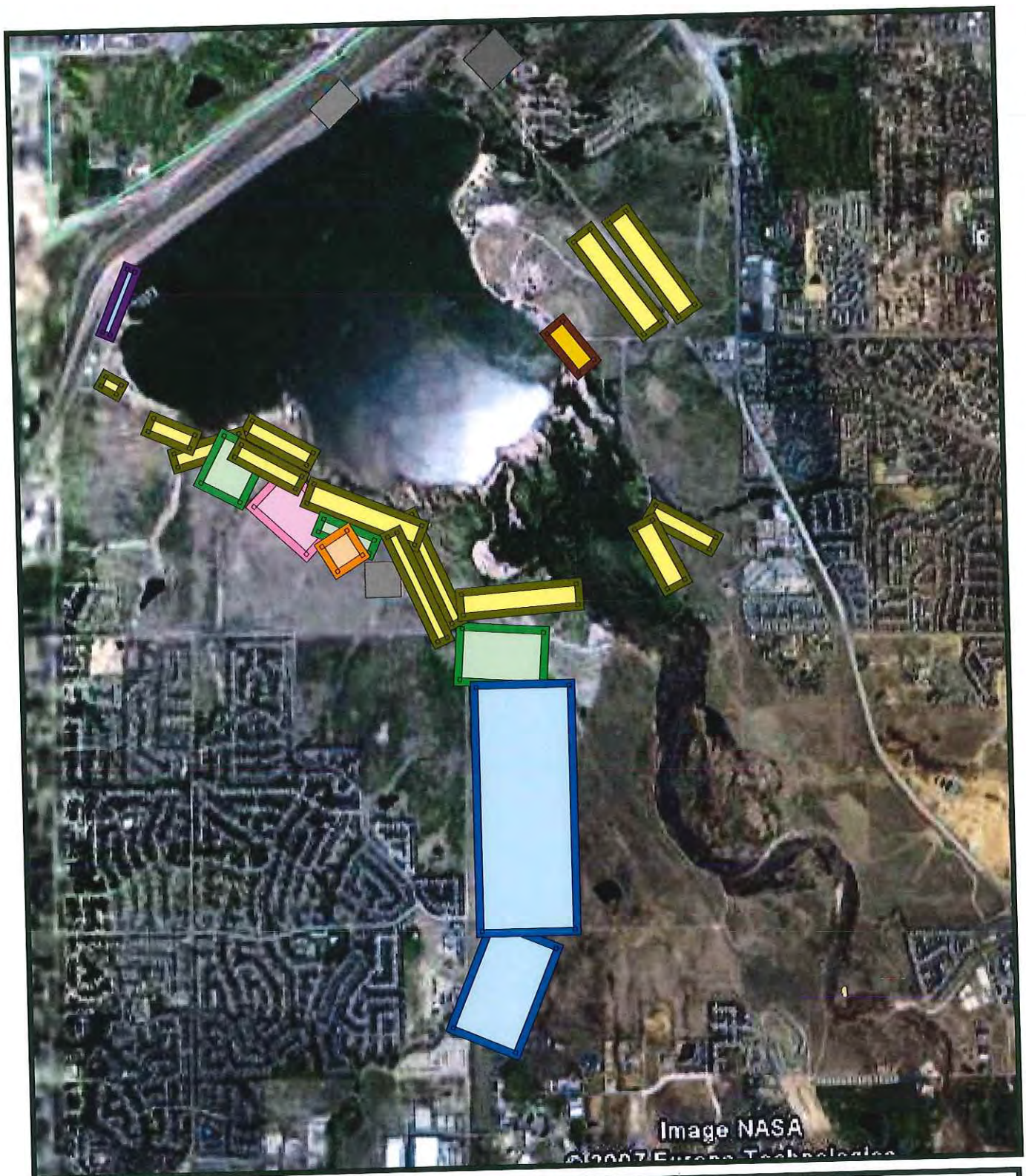
Area/s Mowed	Total Hours spent
Phase II – Basin Authority	44.75 Total hours spent mowing

A 2011 budget was established for and by the Basin Authority (see Spreadsheet in Section 3 of this report). For all Basin responsible areas there was allocated \$21,150 for Herbicide treatment at \$90 per Acre. Since VMI held prices from 2010 of \$85 per acre it was determined that a total of 248 acres could be treated to keep within the budgeted amount. With spring, summer and fall treatments VMI treated a total of 193.897 acres for a total amount spent of \$16481.24 resulting in a \$4668.75 under budget for herbicide treatments conducted in 2011. A mowing budget had been allocated based on \$185 per hour. VMI did conduct mowing in the Compressor Building area in 2011 but not at Phase I or the Shoreline PRF's;

Basin Authority
Weed Management Plan
Page 6

therefore mowing hours came to 44.75 bringing the mowing budget in at \$1048.75 under budget for Phase II and Compressor mowing areas and a grand total of \$3638.75 under budget for all mowing allocated. It is recommended that efforts be similar in 2012 (although additional mowing would be advised as well as Prairie Dog control) to the above for this is the most effective methodology in realizing an on-going reduction of noxious species within the park.

NOTE: In general multiple treatments for weeds should certainly result in a reduction of noxious weeds, however treatment is not a guarantee that additional plants will not continue to germinate and grow either before or after applications.



2011 Cherry Creek Treatment Areas

Basin Authority Creek Re-Alignment Phases I & II and Outlying Areas

Roadside Areas

Cottonwood Creek & D. Toadflax Areas

Butterfly Hill

Traditional/PRF Areas

Modeler Airpark

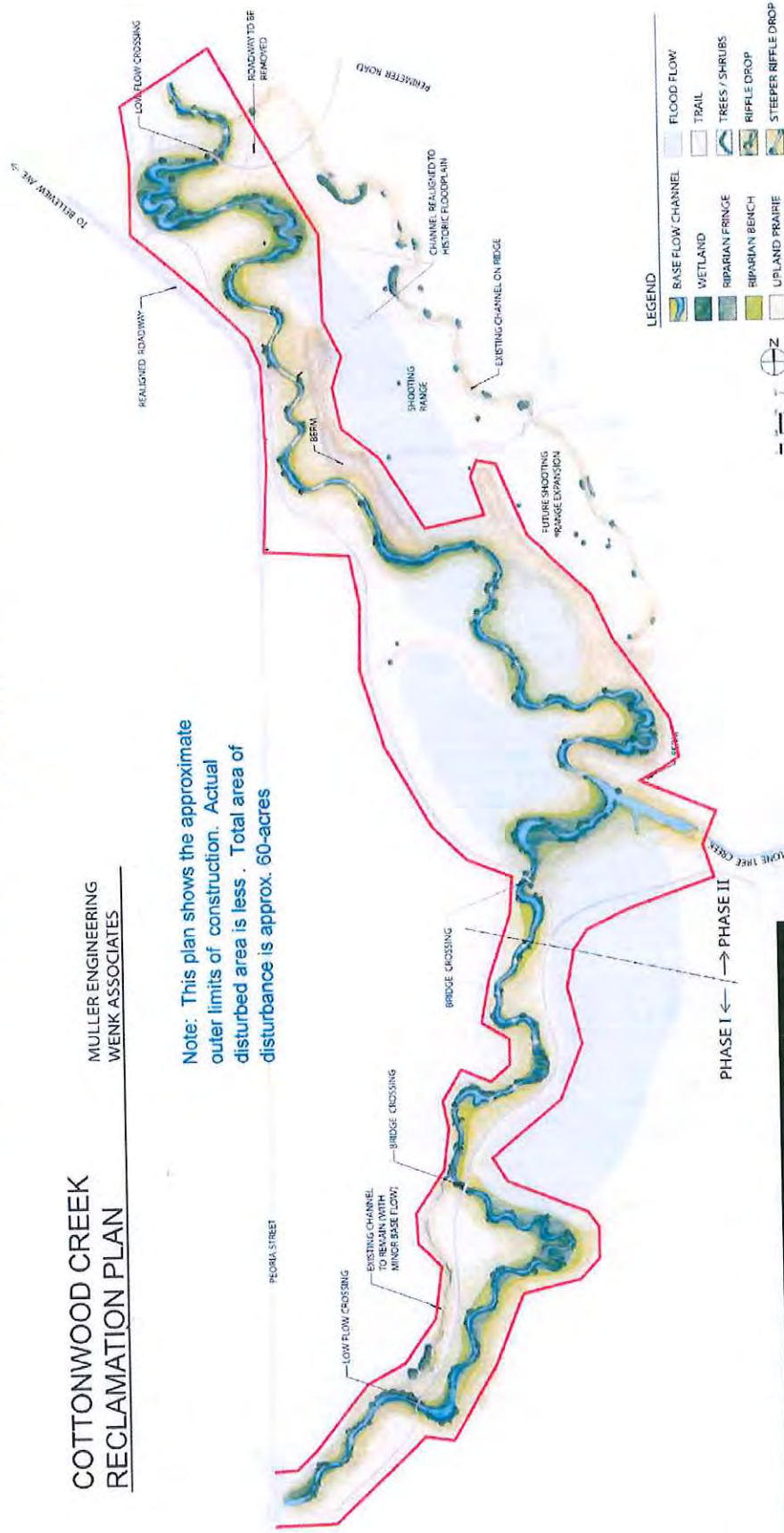
Compressor Building Area

CHERRY CREEK BASIN WATER QUALITY AUTHORITY WEED CONTROL AREA FOR COTTONWOOD CREEK PHASE I AND II JUNE 2009

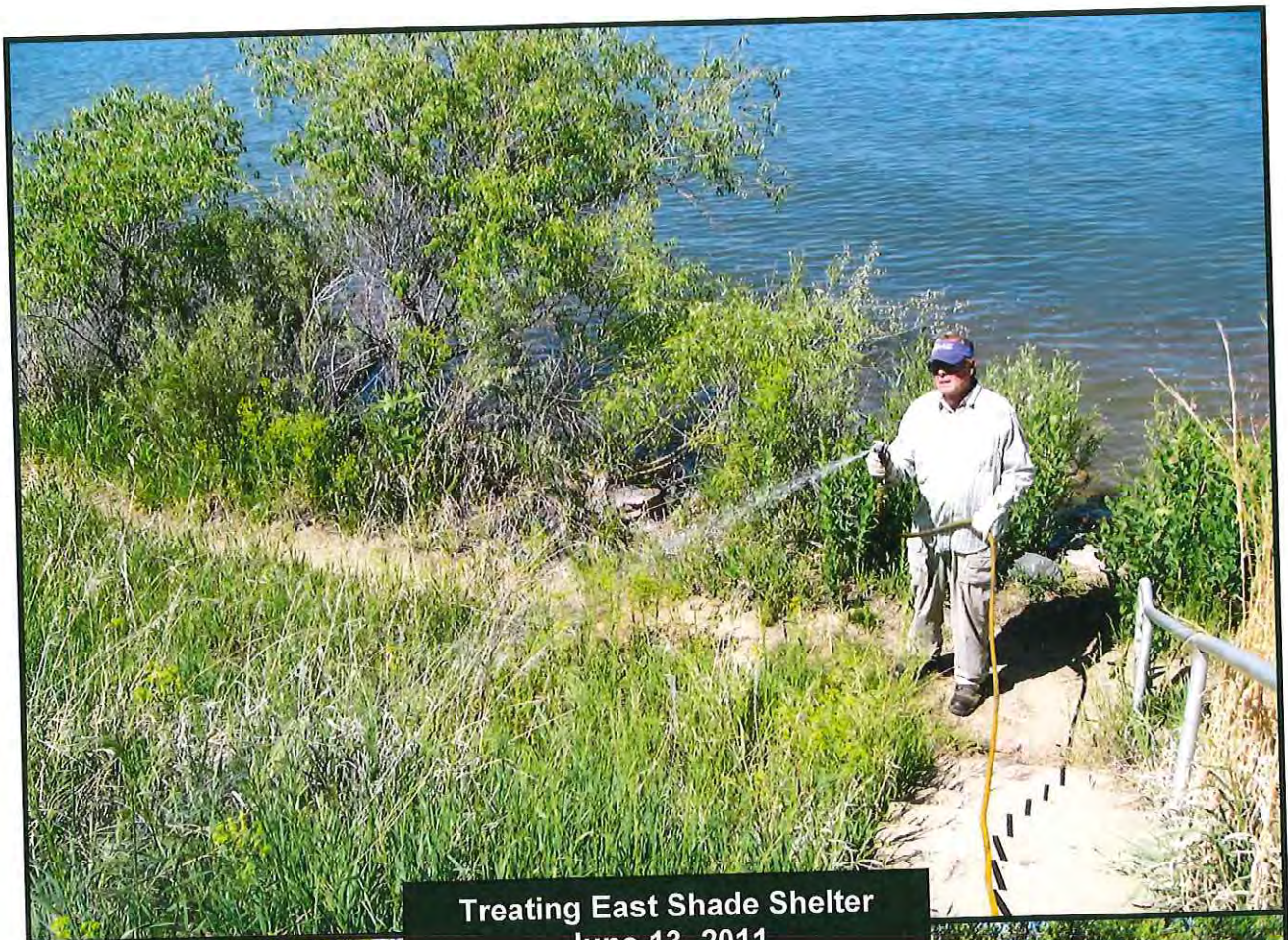
COTTONWOOD CREEK RECLAMATION PLAN

MULLER ENGINEERING
WENK ASSOCIATES

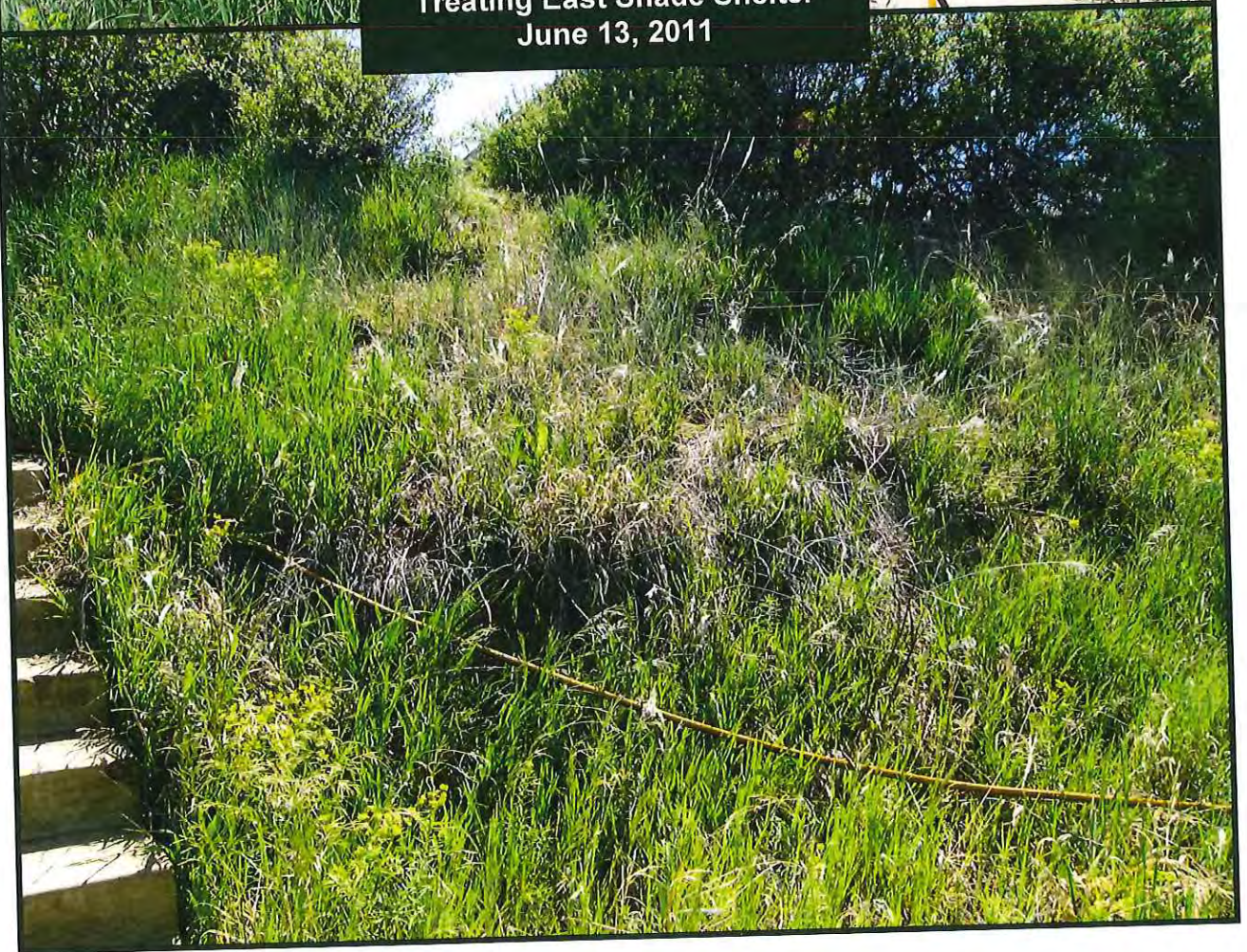
Note: This plan shows the approximate
outer limits of construction. Actual
disturbed area is less. Total area of
disturbance is approx. 60-acres



Note: It is VMI's understanding that Phase I area comprised a total of 11 acres and Phase II area a total of 60 acres. For purposes of mowing & chemical treatment of noxious weeds it was recommended the most effective methodology was to treat these acreages as well as outlying adjacent areas.

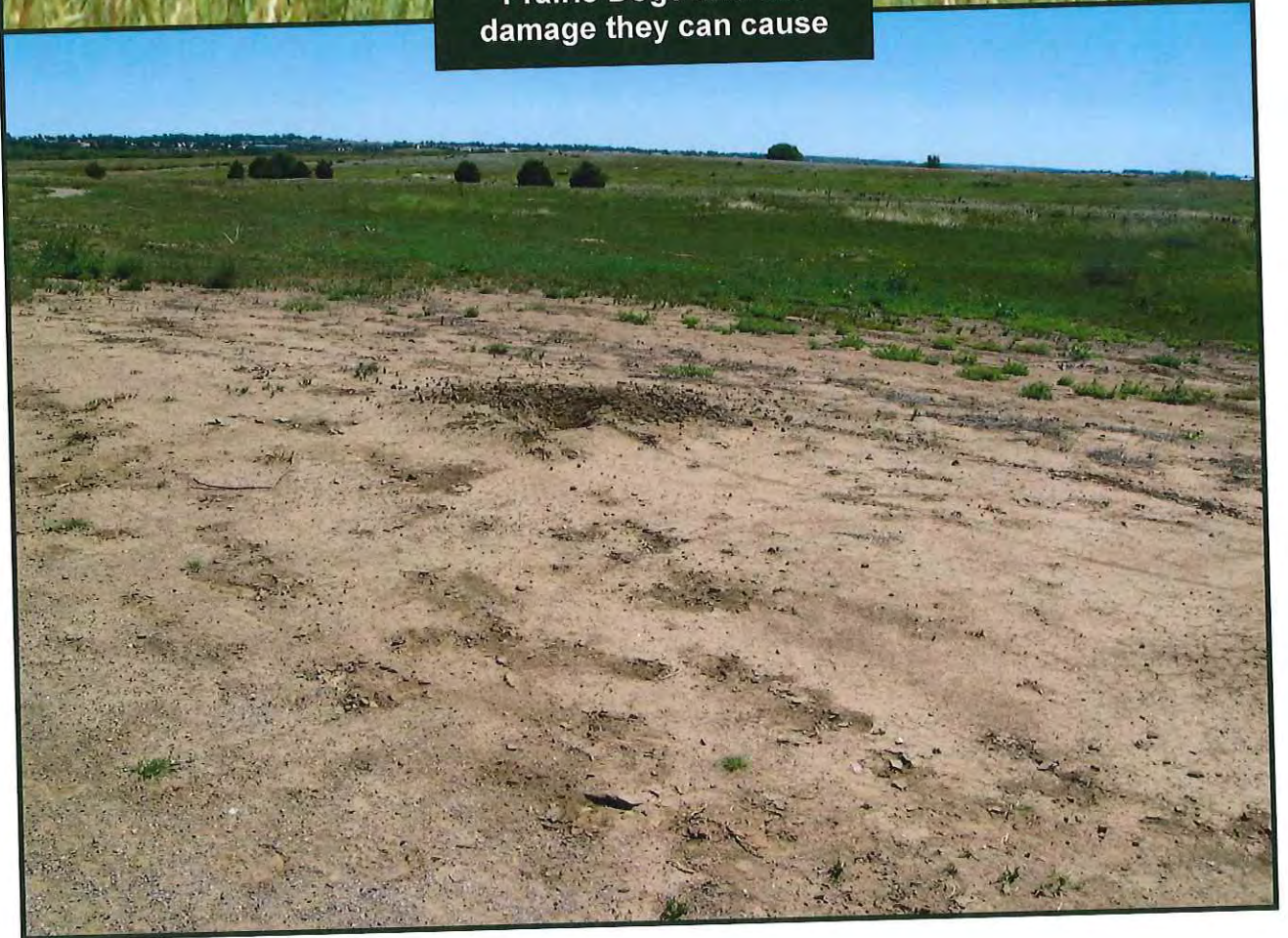


Treating East Shade Shelter
June 13, 2011





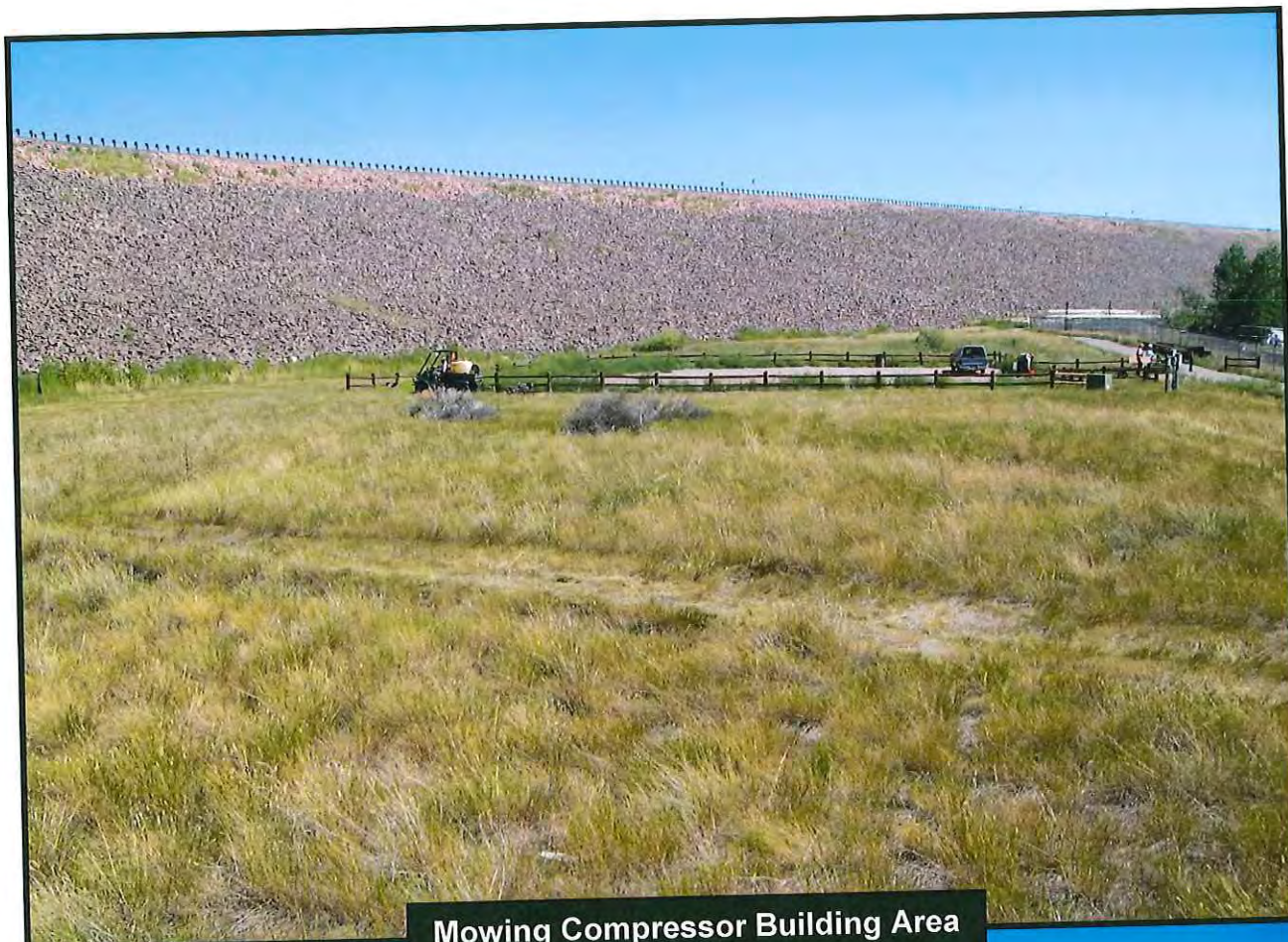
Prairie Dogs and the
damage they can cause



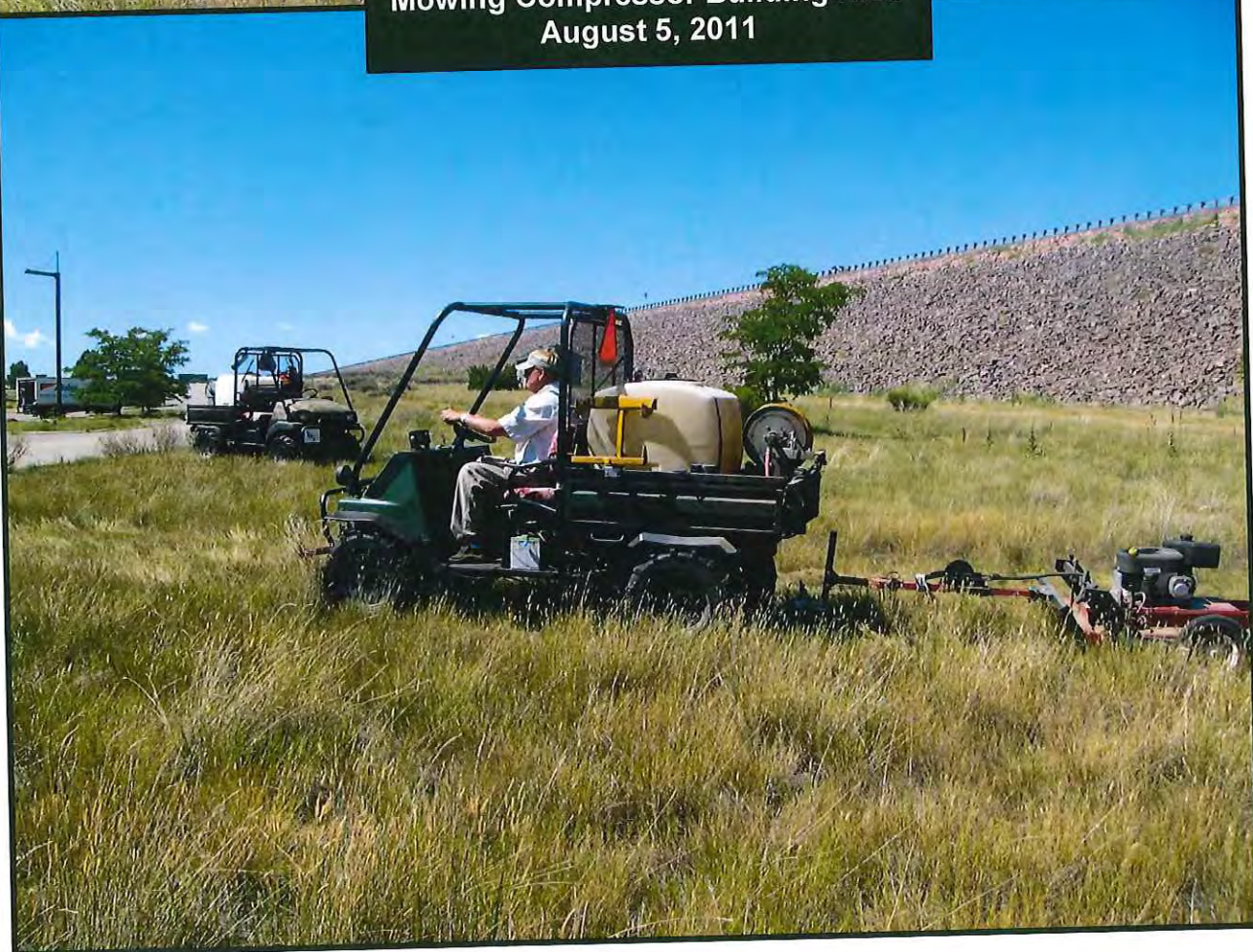


Mowing Cottonwood
Creek Phase II
July 27, 2011



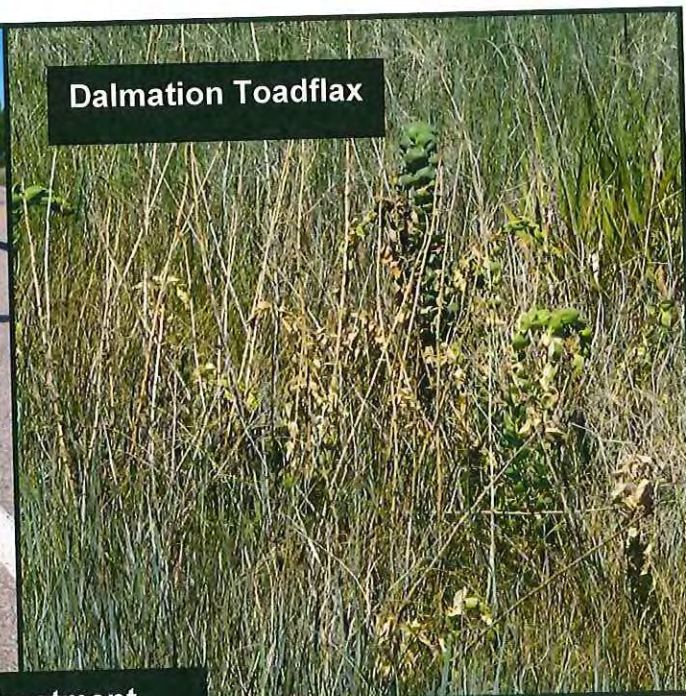


**Mowing Compressor Building Area
August 5, 2011**





Diffuse Knapweed



Dalmatian Toadflax

After treatment



Canada Thistle



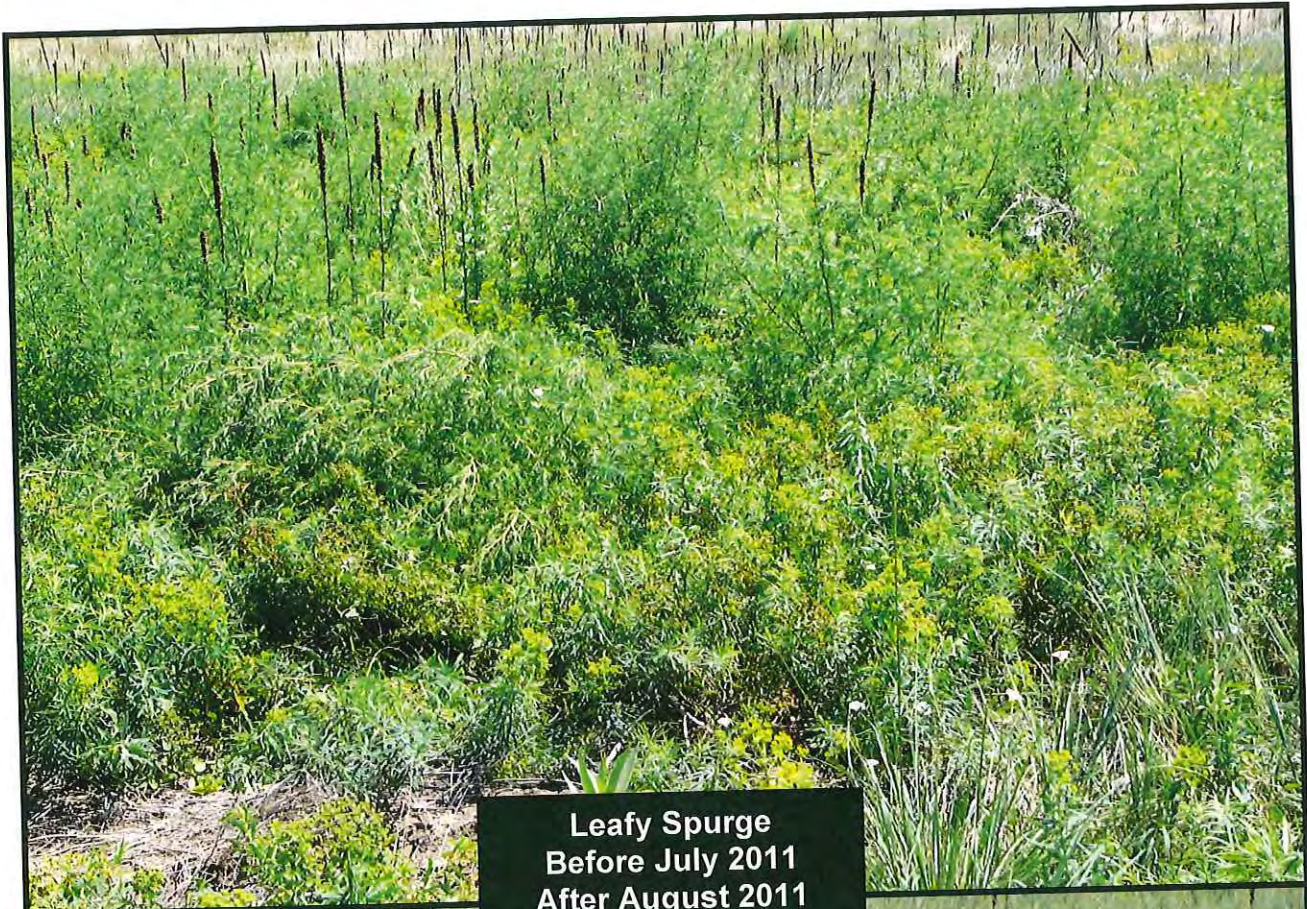
Musk Thistle



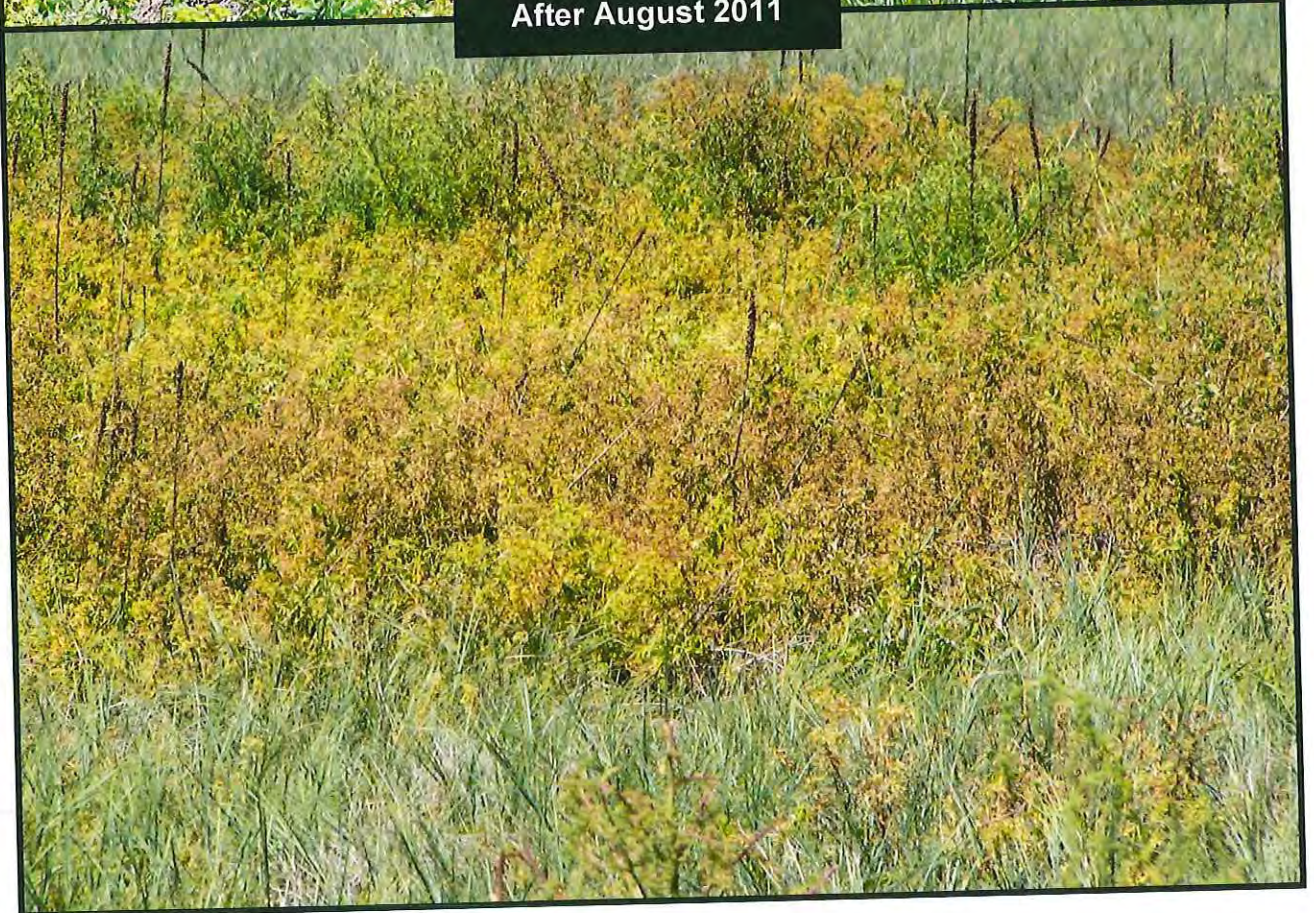
Canada Thistle



Common Mullein

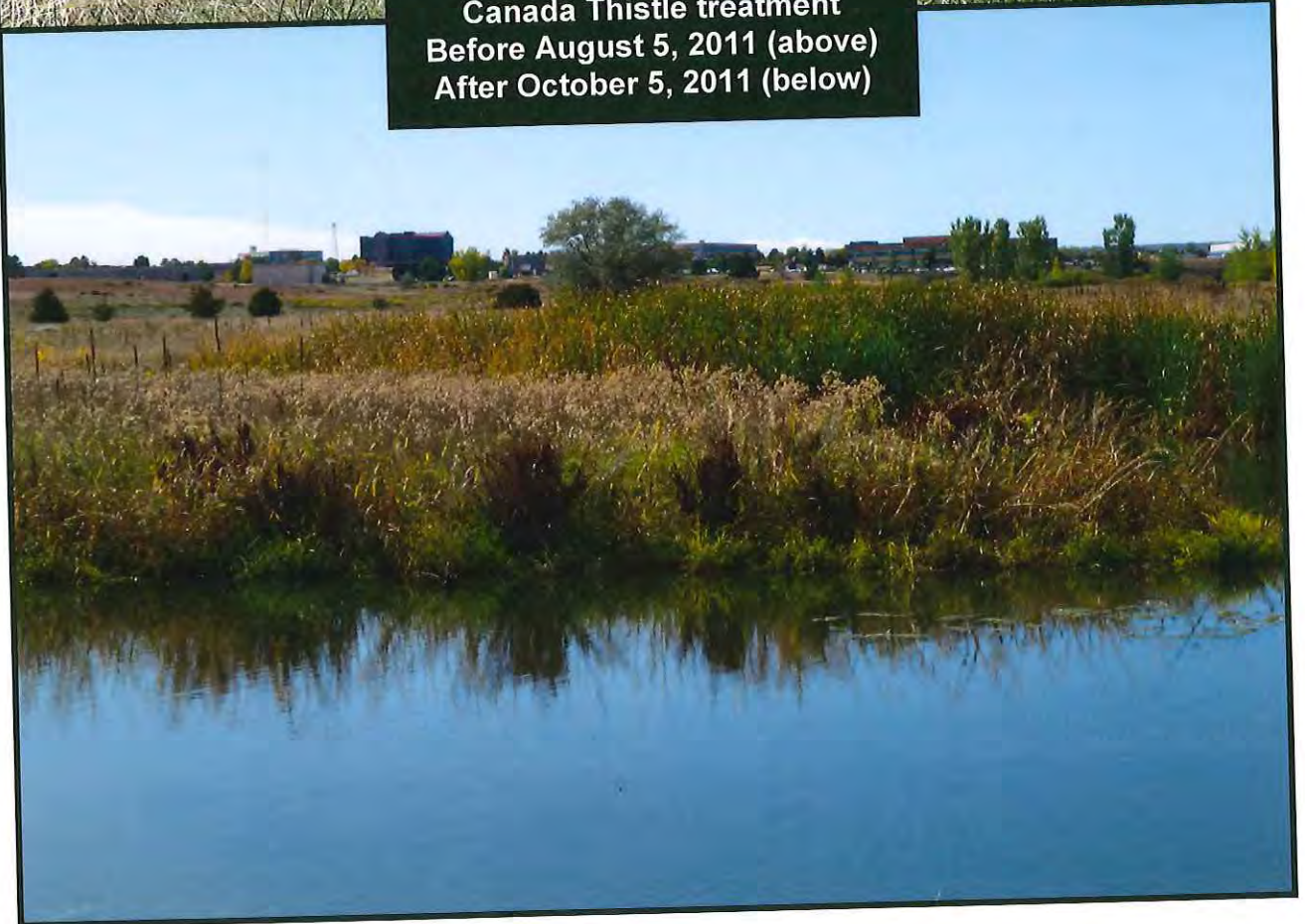


Leafy Spurge
Before July 2011
After August 2011





**Canada Thistle treatment
Before August 5, 2011 (above)
After October 5, 2011 (below)**





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Scope of Work for Fall 2011 & Spring 2012

Cherry Creek State Park and Basin Authority Creek Realignment areas

Purpose

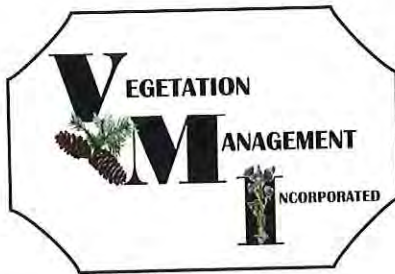
Vegetation Management Inc. (hereafter referred to as VMI) plans to conduct weed management efforts for various places within Cherry Creek State Park (hereafter referred to as CCSP) during Fall 2011 and Spring 2012. This scope of work consists of two components:

1. Cherry Creek Designated Areas
 - a. Chemical applications to control various Noxious Weeds and Undesirable plants for areas designated by Park personnel, and
 - b. perhaps a bit of Rough-cut Weed mowing to control various Noxious Weeds and Undesirable plants for areas designated by Park personnel
2. Basin Authority Areas

Areas affected by Phases I & II of the Creek re-alignment project conducted by the Basin Authority as well as adjacent areas to these construction sites to avoid migration of noxious weeds from disturbed areas

 - a. Chemical applications to control various Noxious Weeds and Undesirable plants, and
 - b. Rough-cut Weed mowing to control various Noxious Weeds and Undesirable plants

Since 2007, VMI has been contracted to provide weed control efforts for Cherry Creek State Park. The purpose of this Scope of Work is to provide park officials with some strategies/methodology to assist park staff in realizing a reduction of noxious weeds within the park.



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Methodology

VMI currently provides weed control services for a variety of agencies and municipalities. There are many benefits derived from developing an ongoing weed management program 1) reduce infestations and seed populations; 2) decrease competition to benefit native plants and forbs; and 3) lower the possibility for noxious species to spread.

VMI's methodology has been a two-fold approach:

1. Chemical application: The most effective method of control is to conduct chemical treatments at multiple times during the growing season. Noxious weeds can germinate and grow often times more prolifically than native grasses and forbs and generally for a longer growing season, however optimal times for treatment are in spring, early summer and fall. These treatment times are effective due to the fact that a majority of plants are actively growing in the spring and early summer and a large variety of weeds set rosettes in the fall for next year's bloom. Certain weeds are winter or summer annuals such as Kochia, Scentless Chamomile, Prickly Lettuce, Downy Brome, Ragweed, Pigweed, Mallow, etc. some of which are best treated in mid-summer and others in late fall. VMI conducts applications via broadcast and handgun spray, dragging hose and backpack treatments all of which are very effective as evidenced by before and after photos provided in annual reports.
2. Weed Mowing: Since 2009, VMI has conducted extensive mowing on weeds located in the Phase II area of the Cottonwood Creek Re-Alignment. This coupled with follow-up chemical treatments proved to be very successful as part of an integrated management approach in dealing with noxious weeds.

VMI takes great pride and attention to detail in the pursuit of weed control, providing comprehensive reports aiding organizations with budget justification.



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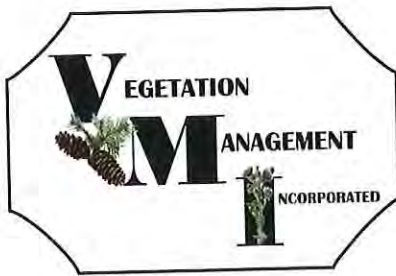
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Specific Recommendations

Based on site visits and treatments that have been conducted since 2007 VMI has become increasingly familiar with the numerous noxious weed infestations at the Park. Per the allocated budget/s for weed control VMI has conducted extensive efforts and continues to suggest chemical treatments occur in spring then again in fall. It should be noted that a fair amount of summer and winter annuals have been observed in the park. Summer annuals such as Kochia and Pigweeds generally flourish in the hot summer months subsequently a mid-summer treatment for these particular weeds is advised in order to reduce the potential spread from seed production of these undesirables. There are also other noxious weeds such as Yellow Toadflax (which typically flowers in late summer making it easier to locate and treat during August as well as Downy Brome (aka Cheat Grass) which grows in fall and winter months and is best treated with a pre-emergent in late summer and a post emergent in late fall many of these plants have been observed in the park. Any and all treatments conducted should result in weed infestation reductions. We recommend that Weed Mowing activities occur in the summer months at optimum times in order to cut weeds prior to seed setting along with the benefits mowing has on enhancing native grass health.

Cherry Creek Designated Areas

Due to continued treatments in similar areas in the past few years infestations in these areas have been reduced allowing us to move into new areas. The explosive noxious weed in 2010 was Common Mullein which appeared to be everywhere. VMI's concern with this particular weed is that each plant can produce up to 220,000 seeds which can remain viable in the soil for up to 100 years. It is recommended that efforts from volunteers and/or community correction workers be to reduce the amount of standing dead Mullein stalks that would allow for better access and treatment of the burgeoning infestation of Common Mullein.



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Several areas have been cleared of this unsightly weed which has not only made treatment in those areas easier, but has greatly enhanced the visual aspect of Park meadows and other areas where these dead stalks stand as reminders of this particular infestation.

Bareground and pre-emergent applications have been added to the weed control plan for spring of 2011. Several areas have been designated for this type of application. It is anticipated that the Park will be pleased with the results subsequently these applications may likely be added to the treatments conducted by VMI annually. Therefore it is recommended that additional budgets be acquired in order that other weed control efforts are not diminished by having added the bareground treatments.

The most tenacious and difficult to control weed in the park is Dalmation Toadflax which will require constant vigilance in control efforts. In fall 2010 several areas heavily infested with this weed were treated with a 2 Oz. per Acre mixture of Telar which was found to be on average 80% effective.

It is VMI's overall recommendation that ongoing efforts continue and in fact that budgets continue to be increased allowing us to enhance and enlarge treatment areas within the park. VMI will conduct treatment on additional areas as designated by park personnel which may or may not include similar areas as treated in the past and/or others designated by Cherry Creek staff. Chemical treatments are best conducted in spring and again in fall, save for summer annuals which are best controlled during early growth stages during summer. We would like to recommend a bit of Weed Mowing activity coupled with follow-up chemical applications be conducted somewhere in the Park to show the effectiveness of integrated weed management.



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Basin Authority Areas

Treatments on Basin Authority areas have been enormously successful. The combination of mowing and chemical treatments have made the treated areas of Phase II in particular a model for future treatment efforts.

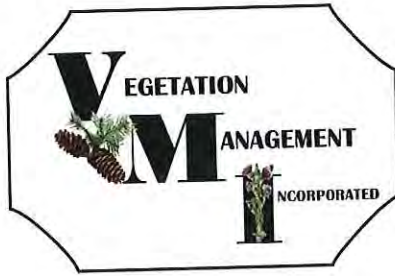
The majority of work done was in the Phase II area of the Cottonwood Creek Re-Alignment project, however treatments were also done in Traditional Areas, Phase I, and around the Compressor building.

VMI was pleased to be able to once again come in under budget for the Basin treated areas during the 2010 growing season.

Due to the fact that the Basin operates on an annual budget which spans a calendar year and CCSP operates on an annual budget whose fiscal year is from July to July, there may be a bit of confusion. When VMI discusses the Basin budget it is referring to a calendar year in this case 2011, however for CCSP purposes the Scope of Work is reflective of their annual budget which spans Fall of one year and Spring of the subsequent following year. Each Spring VMI meets with CCSP personnel to discuss a seasonal budget for the current year along with prioritizing treatment areas for the Basin.

VMI is quite pleased that park personnel have understood the need for Prairie Dog control as the extent of the damage being done by these creatures is approaching the point of negating both seeding and weed control efforts. It is strongly recommended that these population control efforts be ongoing.

It is recommended that similar efforts and funding be continued on Phase II of the creek Realignment in order to maintain the seeded grasses in this area. The most effective management for the Re-alignment areas is to continue managing weeds in not only these areas but also in adjacent outlying areas.



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Mowing activities as well as Chemical treatments in Basin Authority disturbed areas are recommended for spring, summer as necessary to control summer annuals and again in fall to control rosettes.

While weed reduction will likely be realized throughout the years, it does not take long for weeds to regain control quickly re-infesting lands. Thus a long term strategy is the most effective method for continued control.



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PROPOSAL FOR CHERRY CREEK STATE PARK

Proposed services: Noxious Weed Control by Herbicide Application and
Rough Cut Weed Mowing

Application Site: Cherry Creek State Park
(as specified by Park representative)

Chemical to be used: Milestone, Hi-Dep, Telar, Vista, & others as needed

When: Fall 2011 & Spring 2012 (Spring work done by 6/30/12)

Price: \$ 90.00 per acre (Boom/Handgun spray)
\$ 155.00 per acre (Backpack spray)
\$ 180.00 per Hour (Rough Cut Weed Mowing)

Payment terms: Net 30

.....

Proposal Acceptance: _____

Print Name: _____

Date: _____

Service to commence: _____ TBD _____

VMI Representative: _____ C. Alexander V.P. _____

Submitted on: _____ May 1, 2011 _____

Once Proposal Accepted and Executed, please
fax to VMI 1.877.467.1215 to be placed on application schedule