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# COMMERCE CITY NOXIOUS WEED MANAGEMENT PLAN

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Adopted: May 2015

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# TABLE OF CONTENTS

<b>Introduction.....</b>	<b>3</b>
<i>Purpose .....</i>	3
<i>Enactment Authority .....</i>	3
<i>Jurisdiction and Scope of Plan .....</i>	3
<i>Amendments .....</i>	4
<i>Definitions.....</i>	4
<b>Commerce City Noxious Weeds Overview .....</b>	<b>6</b>
<i>State Noxious Weeds .....</i>	6
<i>Noxious Weeds Present in Commerce City.....</i>	6
<b>Objectives and Goals .....</b>	<b>7</b>
<i>Objectives.....</i>	7
<i>Short-Term Goals (1 to 5 Years).....</i>	7
<i>Long-Term Goals (5 to 10 Years) .....</i>	7
<b>Plan of Work/Implementation .....</b>	<b>8</b>
<i>Prevention Measures .....</i>	8
<i>Educational Programs .....</i>	8
<i>Mapping .....</i>	9
<i>Intergovernmental Agreements and Contracts .....</i>	9
<b>Enforcement .....</b>	<b>9</b>
<i>Noxious Weed Management on Private and City Properties.....</i>	9
<b>Appendix A: Colorado Noxious Weeds .....</b>	<b>11</b>
<b>Appendix B: Commerce City Priority Noxious Weed Descriptions. ....</b>	<b>14</b>
<b>Appendix C: Open Space Maintenance Plan .....</b>	<b>17</b>

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# COMMERCE CITY NOXIOUS WEED MANAGEMENT PLAN

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## **Introduction**

### ***Purpose***

The purpose of this City of Commerce City Noxious Weed Management Plan (“Plan”) or (“NWMP”) is to provide guidelines for effectively managing priority noxious weeds, which constitute a present threat to the natural resources of lands in the City of Commerce City. This plan implements the mandates of the Colorado Noxious Weed Act by setting forth management objectives and plans, methods, or practices which utilize a variety of techniques for the integrated management of certain noxious weeds. In establishing a coordinated program for the integrated management of noxious weeds, it is the City’s intent to encourage and require all appropriate and available management options, including education, preventive measures, good stewardship, and control techniques, while promoting those options that are the most environmentally benign, yet practical, timely, and economically feasible.

### ***Enactment Authority***

The Colorado Noxious Weed Act, §§ 35-5.5-101, *et seq.* (“Act”) states that certain noxious weeds pose a threat to the natural resources of Colorado. It also states that it is the duty of all persons to use integrated methods to manage noxious weeds if the same are likely to be materially damaging to the land of neighboring landowners. It further directs that cities shall adopt an NWMP for all incorporated land within each city’s territorial limits.

The adoption and implementation of a city-wide noxious weed management plan is another step in accomplishing the goals and objectives of the Commerce City Comprehensive Plan related to preserving and improving the quality of life and the aesthetic and functional fitness of land uses within the city.

The City shall:

- Develop and recommended management criteria and integrated weed management plans for managing priority noxious weeds;
- Declare noxious weeds and any Colorado and/or Adams County noxious weeds designated by rule to be subject to integrated management; and
- Recommend to the City Council of Commerce City (“Council”) an integrated weed management plan for managing priority noxious weeds within the City.

### ***Jurisdiction and Scope of Plan***

This plan shall apply to all public and private lands within the City’s territorial limits, now or in the future.

The City is authorized to enter into intergovernmental agreements with Adams County, other incorporated municipalities, and state and federal boards, departments, entities, political subdivisions, districts, and agencies, in order to cooperatively control and manage noxious weeds under Colorado Noxious Weed Act. The City may also enter into nonbinding memoranda of understanding or undertake other appropriate cooperative efforts with these governmental entities or agencies.

### ***Amendments***

The items contained herein will need to provide both flexibility as well as continuity over time. As such, amendments made to this Noxious Weed Management Plan that do not directly change the overall intent or create a conflict with State Law may be considered as an administrative amendment. This determination will be made by the City.

### ***Definitions***

The following definitions shall apply to terms used in this plan:

"Alien Plant" - a plant species that is not indigenous to the state of Colorado.

"Biological Management" - the use of an organism to disrupt the growth of noxious weeds, as defined in the Act, §103(9)(a).

"Chemical Management" or "Herbicide management" - the use of herbicides or plant growth regulators to disrupt the growth of noxious weeds, as defined in the Act, §103(9)(b).

"Cultural Management" - methodologies or management practices that favor the growth of desirable plants over noxious weeds, as defined in the Act, §103(9)(c), including maintaining an optimum fertility and plant moisture status in an area, planting at optimum density and spatial arrangement in an area, and planting species most suited to an area.

"Forb" - a broad-leafed plant; not a grass, shrub, or tree.

"Individual Management Plan" or "IMP" - a management plan for a specific property or group of properties as submitted by a landowner(s) and approved by the City, the Council, or their designee.

"Infestation" - to have overrun or inhabit so as to be harmful or bothersome.

"Integrated Management" - the planning and implementation of a coordinated program utilizing a variety of methods for managing noxious weeds, the purpose of which is to achieve specific management objectives and desirable plant communities, as defined in the Act, §103(9). Such methods may include but are not limited to education, preventive measures, good stewardship, and biological, chemical, cultural, herbicide, and mechanical management.

"Landowner" - any owner of record of federal, state, municipal, or private land and includes an owner of any easement, right-of-way, or estate in the land, as defined in the Act, § 103(10).

"Local Noxious Weed" - any plant of local importance, that has been declared a "Commerce City Noxious Weed" by the Council, as defined in the Act, §103(11.4).

"Management" - any activity that prevents a plant from establishing, reproducing, or dispersing itself, as defined in the Act, §103(11.6).

"Management Plan" - a noxious weed management plan, as defined in the Act, §103(12), developed by any person, City or its designee using integrated management. This plan, or NWMP, is the City's management plan. "Management objective" - means the specific, desired result of integrated management efforts, as defined in the Act, §103(11.7), and includes:

- "Eradication" which means reducing the reproductive success of a noxious weed species or specified noxious weed population in largely uninfested regions to zero and permanently eliminating the species or population within a specified period of time. Once all specified weed populations are eliminated or prevented from reproducing, intensive efforts continue until the existing seed bank is exhausted.
- "Containment" which means maintaining an intensively managed buffer zone that separates infested regions, where suppression activities prevail, from largely uninfested regions, where eradication activities prevail.
- "Suppression" which means reducing the vigor of noxious weed populations within an infested region, decreasing the propensity of noxious weed species to spread to surrounding lands, and mitigating the negative effects of noxious weed populations on infested lands. Suppression efforts may employ a wide variety of integrated management techniques.
- "Restoration" which means the removal of noxious weed species and reestablishment of desirable plant communities on lands of significant environmental or agricultural value in order to help restore or maintain said value.

"Mechanical Management" - methodologies or management practices that physically disrupt plant growth, as defined in the Act, §103(9)(d), including tilling, mowing, burning, flooding, mulching, hand-pulling, shoveling, hoeing, chopping, and grazing.

"Native Plant" - a plant species that is indigenous to the state of Colorado, as defined in the Act, §103(15).

"Noxious Weed" - as defined in the Act, §103(16), an alien plant, or parts of an alien plant, that has been designated by rule as being noxious or has been declared a noxious weed by the Council, and meets one or more of the following additional criteria:

- Aggressively invades or is detrimental to economic crops or native plant communities;
- Is poisonous to livestock;
- Is a carrier of detrimental insects, diseases, or parasites;
- The direct or indirect effect of the presence of this plant is detrimental to the environmentally sound management of natural or agricultural ecosystems.

"Noxious Weed Management" - the planning and implementation of an integrated program to manage noxious weeds, as defined in the Act, §103(16.2).

"Person" or "Occupant" - as defined in the Act, §103(17), an individual, partnership, corporation, association, or federal, state, or local government or agency owning, occupying, or controlling any land, easement, or right-of-way, including but not limited to any city, county, state, or federally owned and controlled highway, drainage, or irrigation ditch, spoil bank, borrow pit, gas and oil pipeline, high voltage electrical transmission line, or right-of-way for a canal or lateral.

"Plant Growth Regulator" - a substance used for controlling or modifying plant growth processes without appreciable phytotoxic effect at the dosage applied, as defined in the Act, §103(18).

Any term not defined in this plan shall have its common meaning or the meaning assigned to it in the Act.

## **Commerce City Noxious Weeds Overview**

### ***State Noxious Weeds***

A state noxious weed list and rules and regulations under the Act are developed by the Commissioner of the Colorado Department of Agriculture. The state requirements and the complete state noxious weed list are found in Appendix A and are incorporated into this NWMP by reference. The City will monitor and comply with any amendments to the regulations and state noxious weed list.

### ***Noxious Weeds Present in Commerce City***

The following plants are local noxious weeds that must be managed where found in the City. Their biology is detailed in Appendix B and the recommended management objective of each plant is described in Appendix C. Additional noxious weeds discovered to exist or probably exist in Commerce City shall be automatically incorporated into this NWMP without the need for the NWMP to be amended.

<b>Plant Name</b>	<b>Management Objective</b>
Diffuse Knapweed	Containment
Yellow Toadflax	Containment
Perennial Pepperweed	Containment
Dalmatian Toadflax	Containment
Leafy Spurge	Containment
Hoary Cress	Suppression
Common Teasel	Suppression
Cutleaf Teasel	Suppression
Dame's Rocket	Containment

## **Objectives and Goals**

### ***Objectives***

The objectives NWMP are to:

- Develop and implement integrated management for noxious weeds within the City.
- Continue and improve educational programs that effectively will communicate noxious weed impacts and management.
- Offer to provide landowners/occupants with technical support in establishing their IMPs.
- Work with state, county and federal landowners towards establishing effective integrated management on their properties.
- Outline processes for obtaining control of noxious weeds on private and public properties.
- Wherever possible, identify and select the least environmentally-damaging management methods that will provide desired control of infestations.
- Select management methods that are practical and economically reasonable.
- Seed native or adapted species on areas of bare soil or areas occupied by weeds.

### ***Short-Term Goals (1 to 5 Years)***

Short-term (1 to 5 years) goals for the NWMP are to:

- Educate landowners/occupants and City employees on awareness, identification, prevention, containment, and eradication strategies.
- Concentrate on early detection and control of new noxious weed infestations. These are the easiest and most affordable to control and prevent larger infestations from developing.
- In partnership with Adams County, maintain a current noxious weed infestation map.
- Establish contact with landowners/occupants who have noxious weed infestations.
- Develop and coordinate management plans for all City-owned properties and facilities, including parks, open space, and easements, and evaluate results annually.
- Reduce the noxious weed acreage within the City.
- Increase the areas occupied by native grasses or other suitable plant materials.

### ***Long-Term Goals (5 to 10 Years)***

Long-term (5 to 10 years) goals for the NWMP are to:

- Increase the use of biological control methods, including the release of appropriate insects for control of select noxious weeds.
- Reduce noxious weed acreage within the City.
- Continue educational efforts focused on awareness, prevention control, and eradication of noxious weeds.
- Develop governmental agreements to coordinate weed inventory, priorities, and control.
- Work pro-actively with federal, state and local agencies to manage noxious weeds on a regional scale.

- Encourage planting of native grasses or other suitable plant materials to protect the soil and reduce weeds.
- Monitor City right-of-ways for new invaders and to evaluate right of way maintenance needs.

## **Plan of Work/Implementation**

### ***Prevention Measures***

Preventive control involves use of management measures that will prevent the introduction or establishment of noxious weeds into areas not currently infested with noxious weeds. Prevention also includes the eradication of small new infestations. These measures usually are the most practical and cost-effective means of integrated management.

Preventive measures include:

1. Using weed-free seed and mulch;
2. Promoting the Colorado Weed Free Hay and Forage program;
3. Prioritizing weed management areas along routes of entry and dispersal, and
4. Monitoring noxious weed infestations in bordering cities and unincorporated areas of Adams County.

With regard to measure number 3, the City will manage noxious weeds on City-properties and rights-of-way from March through October. Public education programs will emphasize weed infestation prevention. Sites found to have small, eradicable infestations of new, uncommon noxious weeds will be given high priority for management purposes. A coordinated control effort with private landowners will be organized, where applicable. The Colorado Department of Transportation, Adams County, railroads, Sand Creek Regional Gateway, ditch companies, and the Rocky Mountain Arsenal National Wildlife Refuge will be contacted. They will be encouraged to prevent noxious weed infestations, and to manage and prevent the spread of existing infestations.

### ***Educational Programs***

Education of the public is a key component of integrated management. In conjunction with the Adams County Weed Office, efforts will be made to continue and expand educational noxious weed programs, such as the following:

- Timely media articles concerned with noxious weed identification and management.
- Education concerning the alien origin of noxious weeds and the consequences of not managing them.
- Media releases and seminars offering the assistance of the County Weed and Cooperative Extension offices in management and IMP matters.
- Noxious weed identification, management, and awareness seminars with City Parks and Public Works personnel.

- Extension Fact Sheets when possible. Prepare informational brochures on integrated management for the public. Distribute educational brochures, field visitors' questions, and make herbicide labels available at public and educational events.

### ***Mapping***

Mapping is a valuable tool in integrated management. The City will investigate a partnership with Adams County to establish and maintain visual maps of past and current infestations of noxious weeds. These graphic representations will reveal weed management progress and needs.

The primary goal of mapping is to record the noxious weed species present, the area infested, the density of the infestation, soil types, groundwater depth, and other site factors pertinent to managing the infestation successfully.

### ***Intergovernmental Agreements and Contracts:***

Intergovernmental agreements and contracts are useful tools towards more effective noxious weed management among agencies and governments. Through cooperation, more is understood and more is done. Towards this end, the City may contact certain entities concerning compliance with the Act. Contracts and intergovernmental agreements will be encouraged towards cooperative efforts in managing the City's noxious weeds. Assistance will be offered towards helping each agency developing IMPs for their lands. The following organizations will be contacted initially:

- Colorado Department of Parks and Recreation
- Colorado Department of Agriculture, Division of Plant Industry
- Colorado Department of Transportation
- Colorado Division of Wildlife
- State Land Board
- CSU Cooperative Extension
- Adams County Weed Department
- United States Fish and Wildlife

## **Enforcement**

### ***Noxious Weed Management on Private and City Properties***

Cooperation from all landowners/occupants regarding timely noxious weed management will be encouraged via positive communication and education efforts. The City will continue to apply herbicides to a limited acreage of noxious weeds on private lands by landowner or tenant request, consistent with City policies. Where noxious weeds are still found, an enforcement process will be initiated to ensure control of the weeds.

It is desirable that the City have work priorities with regard to enforcement activities. This is due to the size of the subject area and to the number of landowners with existing noxious weed infestations. The following list prioritizes enforcement and maintenance:

- Complaint properties
- Enforcement regions as identified by cooperative mapping between the City and Adams County.
- Lands bordering waterways (e.g., ditches, canals, rivers, creeks)
- Any List A species or populations of List B species designated for eradication
- Parks and Trails
- Open Spaces and Right-of-Ways
- Lands bordering and including railroad Right-of-Ways

## Appendices

### Appendix A: Colorado Noxious Weeds

(Includes Watch List - effective December 30, 2014)

#### List A Species (23)

<i>Common</i>	<i>Scientific</i>
African rue	( <i>Peganum harmala</i> )
Camelthorn	( <i>Alhagi maurorum</i> )
Common crupina	( <i>Crupina vulgaris</i> )
Cypress spurge	( <i>Euphorbia cyparissias</i> )
Dyer's woad	( <i>Isatis tinctoria</i> )
Elongated mustard	( <i>Brassica elongata</i> )
Giant reed	( <i>Arundo donax</i> )
Giant salvinia	( <i>Salvinia molesta</i> )
Hairy willow-herb	( <i>Epilobium hirsutum</i> )
Hydrilla	( <i>Hydrilla verticillata</i> )
Japanese knotweed	( <i>Polygonum cuspidatum</i> )
Giant knotweed	( <i>Polygonum sachalinense</i> )
Bohemian knotweed	( <i>Polygonum x bohemicum</i> )
Meadow knapweed	( <i>Centaurea nigrescens</i> )
Mediterranean sage	( <i>Salvia aethiopsis</i> )
Medusahead	( <i>Taeniatherum caput-medusae</i> )
Myrtle spurge	( <i>Euphorbia myrsinites</i> )
Orange hawkweed	( <i>Hieracium aurantiacum</i> )
Purple loosestrife	( <i>Lythrum salicaria</i> )
Rush skeletonweed	( <i>Chondrilla juncea</i> )
Squarrose knapweed	( <i>Centaurea virgata</i> )
Tansy ragwort	( <i>Senecio jacobaea</i> )
Yellow starthistle	( <i>Centaurea solstitialis</i> )

#### List B Species (35)

<i>Common</i>	<i>Scientific</i>
Absinth wormwood	( <i>Artemisia absinthium</i> )
Black henbane	( <i>Hyoscyamus niger</i> )
Bouncingbet	( <i>Saponaria officinalis</i> )
Bull thistle	( <i>Cirsium vulgare</i> )
Canada thistle	( <i>Cirsium arvense</i> )
Chinese clematis	( <i>Clematis orientalis</i> )
Common tansy	( <i>Tanacetum vulgare</i> )
Common teasel	( <i>Dipsacus fullonum</i> )
Corn chamomile	( <i>Anthemis arvensis</i> )
Cutleaf teasel	( <i>Dipsacus laciniatus</i> )
Dalmatian toadflax, broad-leaved	( <i>Linaria dalmatica</i> )
Dalmatian toadflax, narrow-leaved	( <i>Linaria genistifolia</i> )
Dame's rocket	( <i>Hesperis matronalis</i> )
Diffuse knapweed	( <i>Centaurea diffusa</i> )
Eurasian watermilfoil	( <i>Myriophyllum spicatum</i> )
Hoary cress	( <i>Cardaria draba</i> )

**List B Species (35)**

<i>Common</i>	<i>Scientific</i>
Houndstongue	(Cynoglossum officinale)
Jointed goatgrass	(Aegilops cylindrica)
Leafy spurge	(Euphorbia esula)
Mayweed chamomile	(Anthemis cotula)
Moth mullein	(Verbascum blattaria)
Musk thistle	(Carduus nutans)
Oxeye daisy	(Leucanthemum vulgare)
Perennial pepperweed	(Lepidium latifolium)
Plumeless thistle	(Carduus acanthoides)
Russian knapweed	(Acroptilon repens)
Russian-olive	(Elaeagnus angustifolia)
Salt cedar	(Tamarix chinensis, T. parviflora, and T. ramosissima)
Scentless chamomile	(Tripleurospermum perforata)
Scotch thistle	(Onopordum acanthium, O. tauricum)
Spotted knapweed	(Centaurea stoebe)
Sulfur cinquefoil	(Potentilla recta)
Wild caraway	(Carum carvi)
Yellow nutsedge	(Cyperus esculentus)
Yellow toadflax	(Linaria vulgaris)

**List C Species (16)**

<i>Common</i>	<i>Scientific</i>
Bulbous bluegrass	(Poa bulbosa)
Chicory	(Cichorium intybus)
Common burdock	(Arctium minus)
Common mullein	(Verbascum thapsus)
Common St. Johnswort	(Hypericum perforatum)
Downy brome	(Bromus tectorum)
Field bindweed	(Convolvulus arvensis)
Halogeton	(Halogeton glomeratus)
Johnsongrass	(Sorghum halepense)
Perennial sowthistle	(Sonchus arvensis)
Poison hemlock	(Conium maculatum)
Puncturevine	(Tribulus terrestris)
Quackgrass	(Elymus repens)
Redstem filaree	(Erodium cicutarium)
Velvetleaf	(Abutilon theophrasti)
Wild proso millet	(Panicum miliaceum)

**Watch List Species (26)**

<i>Common</i>	<i>Scientific</i>
Asian mustard	(Brassica tournefortii)
Baby's breath	(Gypsophila paniculata)
Bathurst burr, Spiney cocklebur	(Xanthium spinosum)
Brazilian egeria, Brazilian elodea	(Egeria densa)
Common bugloss	(Anchusa officinalis)
Common reed	(Phragmites australis)

**Watch List Species (26)**

<i>Common</i>	<i>Scientific</i>
Flowering rush	( <i>Butomus umbellatus</i> )
Garden loosestrife	( <i>Lysimachia vulgaris</i> )
Garlic mustard	( <i>Alliaria petiolata</i> )
Himalayan blackberry	( <i>Rubus armeniacus</i> )
Japanese blood grass/cogongrass	( <i>Imperata cylindrica</i> )
Meadow hawkweed	( <i>Hieracium caespitosum</i> )
Onionweed	( <i>Asphodelus fistulosus</i> )
Parrotfeather	( <i>Myriophyllum aquaticum</i> )
Purple pampas grass	( <i>Cortaderia jubata</i> )
Scotch broom	( <i>Cytisus scoparius</i> )
Sericea lespedeza	( <i>Lespedeza cuneata</i> )
Swainsonpea	( <i>Sphaerophysa salsula</i> )
Syrian beancaper	( <i>Zygophyllum fabago</i> )
Water hyacinth	( <i>Eichhornia crassipes</i> )
Water lettuce	( <i>Pistia stratiotes</i> )
White bryony	( <i>Bryonia alba</i> )
Woolly distaff thistle	( <i>Carthamus lanatus</i> )
Yellow flag iris	( <i>Iris pseudacorus</i> )
Yellow floatingheart	( <i>Nymphoides peltata</i> )
Yellowtuft	( <i>Alyssum murale, A. corsicum</i> )

## **Appendix B: Commerce City Priority Noxious Weed Descriptions.**

(NOTE: Subject to change and be modified administratively as new species are identified.)

**Common teasel** (*Dipsacus spp.*) is native to Europe and is a biennial or sometimes monocarpic perennial forb. The flowers are purple or white with spiny, awned bracts at the base. Mature plants can grow up to or over six feet tall. Habitats for Common teasel include open, sunny habitats that range from wet to dry levels. It is generally found along irrigation ditches, rivers, abandoned fields, pastures, waste places, and forests. In Colorado, teasel is usually found in relatively moist, disturbed situations but is moving into drier areas.

**Cutleaf teasel** (*Dipsacus spp.*) is a biennial or sometimes monocarpic perennial forb. Cutleaf teasel is more aggressive than Common teasel, and if left unchecked, can quickly form large monocultures excluding all native vegetation. Mature plants can grow up to or over six feet tall. Cutleaf teasel blooms from July through September. The flowers are almost white (tanish) or white with spiny, awned bracts at the base. Habitats for Cutleaf teasel include open, sunny habitats that range from wet to dry levels. It is generally found along irrigation ditches, rivers, abandoned fields, pastures, waste places, and forests.

**Dalmatian toadflax** (*Linaria dalmatica*) is a non-native, perennial forb introduced from the Mediterranean region as a folk remedy, fabric dye and ornamental. It reproduces both by seed and by extensive, creeping rhizomes. Dalmatian toadflax grows to 3 feet, and has bright yellow snapdragon-like flowers with an orange throat on elongated racemes. Habitats for Dalmatian toadflax include disturbed open sites, fields, pastures, rangeland, roadsides, cropland and forest clearings. Dalmatian toadflax is a highly aggressive plant that can genetically adapt to varied environmental conditions and herbicide controls. Infestations can begin in small disturbed sites, then spread even to rangeland and wildlife habitats in excellent condition.

**Dame's rocket** (*Hesperis matronalis*) is native to Eurasia and is a biennial or short lived perennial forb belonging to the mustard family. The flowers are white to purple with four petals and are clustered in loose terminal stalks. Flowers appear from May to August and the plant can produce seeds and flowers on any flower cluster at the same time. A mature plant ranges from 4 inches to 3 feet in height. Habitats for Dame's rocket include: gardens, partly shaded woodlands, ditches, roadsides, pastures, rangelands, thickets, open woods, disturbed sites, and other areas that have moist well drained soils and full sun to light shade. Many people think that it is a native wildflower and is planted as a garden ornamental, however; the plant quickly escapes cultivation due to its prolific seed production. It is often sold in "native wildflower" mixes, so the contents of such seed mixes should be checked to prevent accidental planting.

**Diffuse knapweed** (*Centaurea diffusa*) is a non-native biennial forb that reproduces solely by seed. A biennial is a plant that completes its lifecycle within two years. During the first year of growth, diffuse knapweed appears as a rosette in spring or fall. During the second year in mid to late spring – the stem bolts, flowers, sets seed, and the plant dies. Once the plant dries up, it

breaks off at ground level and becomes a tumbleweed which disperses the still viable seeds over long distances. Diffuse knapweed can grow 1 to 3 feet tall, and is diffusely branched above ground, which gives the plant a ball-shaped appearance. Flowers are mostly white, sometimes purple, urn-shaped, and are located on each branch tip. Flowers bloom July through August. Seed set usually occurs by mid-August. Diffuse knapweed tends to invade disturbed, overgrazed areas. Other habitats may also include rangeland, roadsides, riparian areas, and trails. Once established, diffuse knapweed outcompetes and reduces the quantity of desirable native species such as perennial grasses.

**Hoary cress** (*Cardaria draba*), commonly known as whitetop, is a creeping perennial that is a member of the mustard family and native to Europe. The plants emerge in early spring with stems emerging from the center of each rosette in late April. Hoary cress flowers from May to June and plants set seed by mid-summer. Habitats for Hoary Cress include: fields, waste places, meadows, pastures, croplands and along roadsides. It is typically found on unshaded, generally open areas of disturbed ground.

**Leafy spurge** (*Euphorbia esula*) is a non-native deep-rooted perennial that spreads by seed and extensive, creeping roots. The roots can extend as deep as 30 feet into the soil and are extremely wide-spreading. Leafy spurge is one of the earliest plants to emerge in the spring. Flower clusters develop 1 to 2 weeks after stem emergence which is from mid-April to late May. The flowers are very small and yellowish-green. They are enclosed by very visible yellowish-green, heart-shaped bracts. Leafy spurge can grow from 1 to 3 feet in height. Leafy spurge has adapted to a wide variety of habitats in the state and is very competitive with other plant species. Where it becomes established in rangeland, pasture, and riparian sites, it crowds out practically all other vegetation.

**Perennial pepperweed** (*Lepidium latifolium*) is an extremely invasive perennial forb introduced from Europe and Asia in 1900 as a containment in sugar beet seed. Pepperweed reproduces both by seed and vegetatively by roots and shoots. Pepperweed alters ecosystems by acting as a “salt pump” absorbing salts from deep in the soil. The plant then excretes the salt through the leaves and deposits it on the surface soil. Since most desirable plants do not tolerate high saline concentrated soils, the entire plant composition and diversity of the area changes. Growing 1 to 5 feet high, pepperweed has tiny white flowers. The flowers have four spoon-shaped petals in dense, rounded clusters on branch tips of erect stems. Perennial pepperweed invades a wide variety of habitats, from intermountain, mountainous areas and marshes. It is frequently found in riparian areas, wetlands, marshes, irrigation ditches, canals, and floodplains. If introduced, it can also invade roadsides, hay and alfalfa fields and rangeland. It readily invades disturbed and bareground areas.

**Yellow toadflax** (*Linaria vulgaris*) is a perennial escaped ornamental plant that is native to the Mediterranean region. Sparingly branched and 1 to 3 feet tall. The showy snapdragon-like flowers are bright yellow with a deep orange center and have a spur as long as the entire flower. Habitats for Yellow toadflax include roadsides, vacant lots, gravel pits, fields, waste areas, other disturbed sites and rangeland. It has adapted to a variety of site conditions, from moist to dry and does well in all types of soil.

**Appendix C: Open Space Maintenance Plan**