

Office of Environmental Management – Grand Junction



Vegetation Survey of the Crescent Junction Disposal Site

January 2007



U.S. Department
of Energy

Office of Environmental Management

**Vegetation Survey of Crescent Junction Disposal Site,
Spring 2006**

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1.0 Executive Summary

A vegetation survey of the DOE withdrawal area, including the disposal site, was conducted in the spring of 2006. The survey will provide a baseline for vegetation types and percent cover prior to construction activities. The results of the survey indicate most of the site is covered with annual cheat grass and weeds. Smaller populations of more desirable plants were found on the boundary of the planned disposal site. The survey will be utilized as a management tool to evaluate future development plans and to gauge revegetation success.

2.0 Introduction

On April 25–26, 2006, a vegetation survey was performed at the Crescent Junction Disposal Site to record vegetation types and cover percentages prior to commencement of construction activities. These pre-existing vegetation data can be used for several purposes:

- A baseline plant cover measurement is needed for storm water permitting; a site is considered stabilized when 70 percent of the pre-existing cover is reached (a target value of 34 percent can be calculated for the site based on these surveys).
- A clear measure of pre-existing conditions can be compared to post-construction conditions to document changes and/or improvements.
- Any potentially valuable plant species or populations can be avoided when possible (e.g., stockpile placement).
- Information on pre-existing vegetation is useful for revegetation plans by identifying species adapted to the site, target cover percentages, and other relevant information.

Results of the vegetation survey reveal three distinct areas that differ in cover and species composition: the Annual Grass Area, the Greasewood Area, and the Lower Book Cliffs Area (see Figure 1). The Lower Book Cliffs Area is further divided into four sections: the unsurveyed section, the Shadscale Section, the Desert Trumpet Section, and the Winterfat Section. Most of the disturbance related to construction of the disposal cell is expected to occur in the Annual Grass Area, with minor disturbances (from modifications to the access road) in the Greasewood Area. The Lower Book Cliffs Area contains a higher diversity of desirable and native species, and most of this area will remain undisturbed. Table 1 lists the plant species identified at the site during the survey, including type and description.

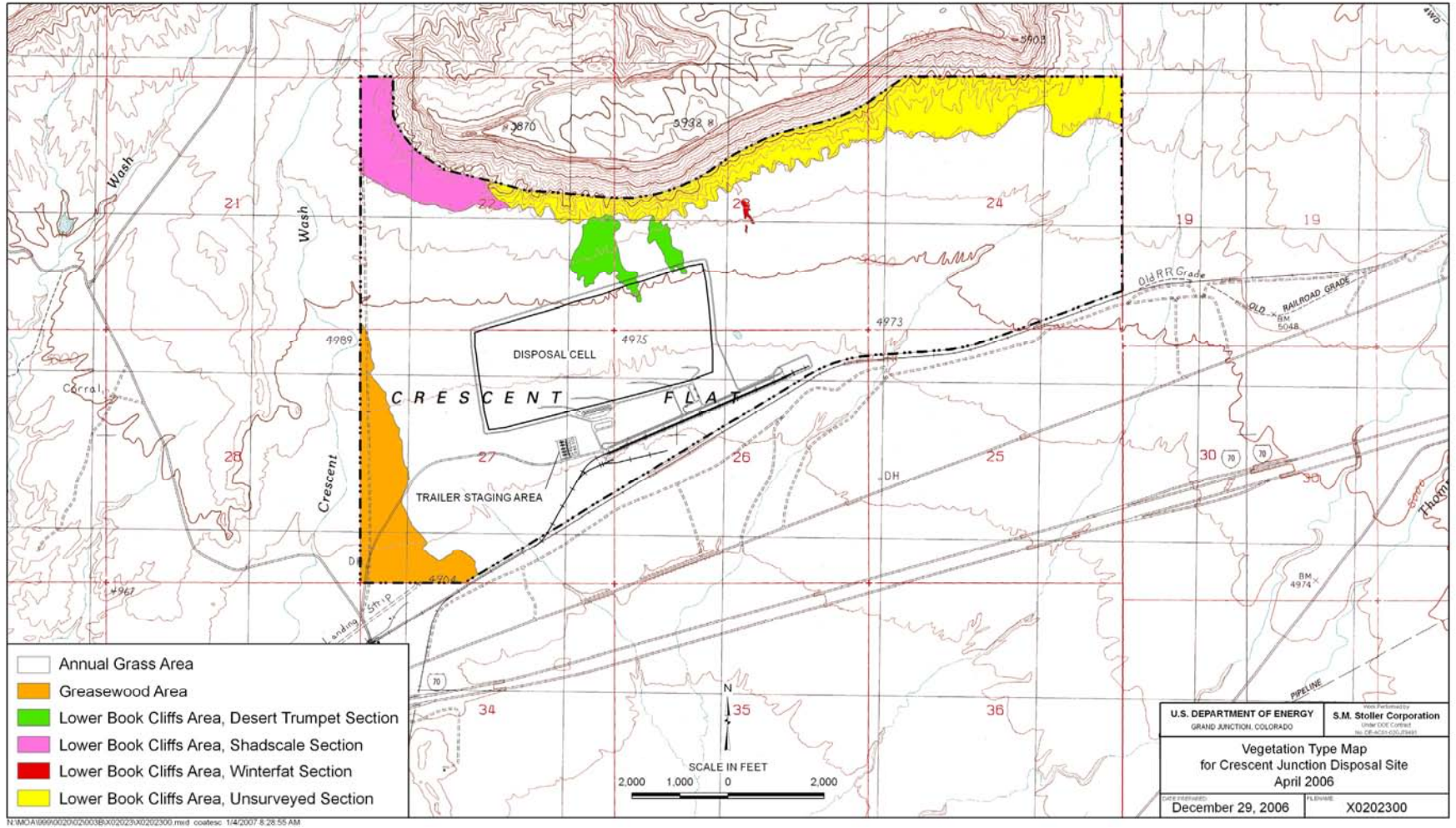


Figure 1. Vegetation Type Map for Crescent Junction Disposal Site

3.0 Annual Grass Area

The Annual Grass Area comprises most of the flat portions of the Disposal Site, and the majority of the planned disturbance is located in this area. During the survey, thirty 50-ft-long transects were randomly placed in the Annual Grass Area, and the point intercept method was used to estimate cover. Results indicate a total plant cover of approximately 48 percent (weedy cover estimated at 42 percent and desirable cover at 6 percent), comprised of:

- Cheatgrass, 37 percent
- Annual wheatgrass, 5 percent
- Cryptobiotic crusts, 3 percent
- Mat saltbush, 1 percent ; and
- Several trace species, each comprising less than 1 percent (broom snakeweed, galleta grass, globemallow, Indian rice grass, Mariposa lily, prickly pear cactus, and shadscale).

Non-vegetative cover includes organic litter (23 percent), and bare ground (29 percent). Other observed species not occurring within the sampled transects include five weedy plants (bur buttercup, halogeton, herb sophia, purple mustard, and Russian thistle) and four native plants (budsage, four wing saltbush, rabbitbrush, and shortspine horsebrush).

Table 1. Plant Species at the Crescent Junction Disposal Site, April 2006

| Scientific Name | Common Name | Type | Description |
|---|-----------------------|---------------------|-------------------|
| <i>Achnatherum hymenoides</i> | Indian rice grass | Perennial grass | Native; desirable |
| <i>Allium</i> sp. | Wild onion | Perennial forb | Native; desirable |
| <i>Alyssum desertorum</i> | Desert alyssum | Annual forb | Exotic |
| <i>Arabis glabra</i> | Tower mustard | Biennial forb | Exotic |
| <i>Artemisia spinescens</i> | Budsage | Shrub | Native; desirable |
| <i>Astragalus flavus</i> var. <i>argillosus</i> | Clay milkvetch | Perennial forb | Native; desirable |
| <i>Astragalus praelongus</i> | Stinking milkvetch | Perennial forb | Native |
| <i>Atriplex canescens</i> | Four wing saltbush | Shrub | Native; desirable |
| <i>Atriplex confertifolia</i> | Shadscale | Subshrub | Native; desirable |
| <i>Atriplex corrugata</i> | Mat saltbush | Subshrub | Native; desirable |
| <i>Atriplex gardneri</i> | Gardner saltbush | Subshrub | Native; desirable |
| <i>Atriplex gardneri</i> var. <i>welshii</i> | Welsh's saltbush | Subshrub | Native; desirable |
| <i>Bromus tectorum</i> | Cheatgrass | Annual grass | Exotic; weedy |
| <i>Calochortus flexuosus</i> | Mariposa lily | Perennial forb | Native; desirable |
| <i>Chenopodium glaucum</i> | Oakleaf goosefoot | Annual forb | Exotic; weedy |
| <i>Chorispora tenella</i> | Purple mustard | Annual forb | Exotic; weedy |
| <i>Chrysothamnus linifolius</i> | Spreading rabbitbrush | Shrub | Native; desirable |
| <i>Cryptantha circumcissa</i> | Opening cryptanth | Annual forb | Native; desirable |
| Cryptobiotic crusts | Cryptobiotic crusts | Fungi/Algae complex | Native; desirable |
| <i>Descurainia pinnata</i> | Herb sophia | Annual forb | Exotic; weedy |
| <i>Ephedra</i> sp. | Ephedra | Shrub | Native; desirable |
| <i>Eremopyrum triticeum</i> | Annual wheatgrass | Annual grass | Exotic; weedy |
| <i>Ericameria nauseosa</i> | Rabbitbrush | Shrub | Native; desirable |
| <i>Erigeron eatonii</i> | Eaton's daisy | Perennial forb | Native; desirable |
| <i>Erigeron pumilus</i> | Vernal daisy | Perennial forb | Native; desirable |
| <i>Eriogonum inflatum</i> | Desert trumpet | Annual forb | Native; desirable |

| Scientific Name | Common Name | Type | Description |
|---------------------------------|-------------------------|-----------------|-------------------|
| <i>Erodium cicutarium</i> | Redstem filaree | Perennial forb | Exotic; weedy |
| <i>Gutierrezia sarothrae</i> | Broom snakeweed | Subshrub | Native |
| <i>Halogeton glomeratus</i> | Halogeton | Annual forb | Exotic; weedy |
| <i>Helianthus annuus</i> | Annual sunflower | Annual forb | Exotic; weedy |
| <i>Hesperostipa comata</i> | Needle and thread grass | Perennial grass | Native; desirable |
| <i>Heterotheca</i> sp. | Golden aster | Perennial forb | Native; desirable |
| <i>Krascheninnikovia lanata</i> | Winterfat | Subshrub | Native; desirable |
| <i>Lomatium</i> sp. | Desert parsley | Perennial forb | Native; desirable |
| <i>Machaeranthera canescens</i> | Purple aster | Perennial forb | Native |
| <i>Monoptilon</i> sp. | Desert star | Annual forb | Native; desirable |
| <i>Oenothera caespitosa</i> | Evening primrose | Perennial forb | Native; desirable |
| <i>Opuntia polyacantha</i> | Prickly pear cactus | Subshrub | Native |
| <i>Pleuraphis jamesii</i> | Galleta grass | Perennial grass | Native; desirable |
| <i>Ranunculus testicularis</i> | Bur buttercup | Annual forb | Exotic; weedy |
| <i>Salsola tragus</i> | Russian thistle | Annual forb | Exotic; weedy |
| <i>Sarcobatus vermiculatus</i> | Greasewood | Shrub | Native; desirable |
| <i>Sisymbrium altissimum</i> | Tall tumbled mustard | Annual forb | Exotic; weedy |
| <i>Sphaeralcea parvifolia</i> | Globemallow | Perennial forb | Native; desirable |
| <i>Tetradymia spinosa</i> | Shortspine horsebrush | Subshrub | Native; desirable |
| <i>Townsendia</i> sp. | Easter daisy | Perennial forb | Native; desirable |

Although the vegetation is similar throughout the Annual Grass Area, regions of differing vegetation do occur. Annual wheatgrass and cheatgrass populations do not overlap significantly on the site. Most of the annual wheatgrass and bur buttercup are found in fan-shaped sheetwash areas, with evidence of recent sediment deposition. Deep, channelized washes in the eastern portion of the site contain sparse populations of almost exclusively cheatgrass and rabbitbrush. Prairie dog towns support more mat saltbush than other portions of the flats, and some also support bur buttercup. As the Annual Grass Area transitions into the Lower Book Cliffs Area, other species including annual sunflower, desert trumpet, Eaton's daisy, goldenweed, purple aster, and stinking milkvetch are found in trace amounts.

4.0 Greasewood Area

Transects were not placed in the Greasewood Area because the planned disturbance is limited. Instead, a species list was generated and general abundance of each species was noted. Greasewood, cheatgrass, and spiny hopsage are the most abundant species in this area, along with a diverse understory of tiny, winter annuals including desert alyssum, desert star, opening cryptanth, vernal daisy, and a number of other tiny species. Less abundant species include broom snakeweed, Eaton's daisy, ephedra, evening primrose, four wing saltbush, galleta grass, globemallow, halogeton, Indian rice grass, mat saltbush, needle and thread grass, prickly pear cactus, Russian thistle, shadscale, shortspine horsebrush, spreading rabbitbrush, and winterfat. The majority of species are native, desirable plants. Cryptobiotic crusts are also more abundant in the Greasewood Area than in the Annual Grass Area.

5.0 Lower Book Cliffs Area

The steep slopes and rocky toes of the lower Book Cliffs were not surveyed. However, three sections were identified adjacent to these steep slopes that support a greater diversity of native, desirable vegetation and substantially less weed cover than the Annual Grass Area. These sections are described in more detail below.

5.1 Shadscale Section

This area was not thoroughly characterized, but it differs in species composition from other areas of the site. Shadscale and Gardner saltbush are the dominant shrubs in this section; Welsh's saltbush, a species on Utah's watch list, is likely to occur in this area also. Other species include annual wheatgrass, broom snakeweed, cheatgrass, desert parsley, desert trumpet, globemallow, halogeton, herb sophia, mat saltbush, oakleaf goosefoot, opening cryptanth, prickly pear cactus, purple mustard, redstem filaree, shadscale, shortspine horsebrush, tall tumbledustard, and tower mustard.

5.2 Winterfat Section

Two small outcrops near the toe of the Book Cliffs comprise the "Winterfat Section", which differs in plant composition from other areas of the site. The most common shrub in this section is winterfat. It also contains broom snakeweed, desert parsley, desert trumpet, Easter daisy, Eaton's daisy, galleta grass, Indian rice grass, mat saltbush, opening cryptanth, prickly pear cactus, purple mustard, shadscale, shortspine horsebrush, and wild onion.

5.3 Desert Trumpet Section

Two larger outcrops at the toe of the Book Cliffs comprise the "Desert Trumpet Section", and differ in plant composition from other areas of the site. This section is dominated by desert trumpet. It also contains annual wheatgrass, cheatgrass, clay milkvetch, desert parsley, Eaton's daisy, globemallow, halogeton, Indian rice grass, Mariposa lily, mat saltbush, opening cryptanth, prickly pear cactus, purple mustard, purple aster, rabbitbrush, shadscale, and shortspine horsebrush.

6.0 Conclusions

In general, the Crescent Junction Disposal Site has been historically overgrazed; as a result, the weed cover is high, and the species diversity is low, particularly in areas with eroded gullies and sheet wash deposition. However, some portions of the site (the Lower Book Cliff and Greasewood Areas) display higher species diversity and contain more desirable native species and lower weed cover than the remainder of the site. Construction activities in the Annual Grass Area will result in much less environmental disturbance than activities in the Lower Book Cliff and Greasewood Areas. In order to maintain higher quality habitat at the site and lessen environmental disturbance, it is recommended that construction, including materials stockpiles, be contained in the Annual Grass Area as much as possible. In addition, if left undisturbed, the Lower Book Cliff and Greasewood Areas may provide a potential source for future revegetation materials (seeds, seedlings, and cuttings) at the Disposal Site.