

APPENDIX 6.4-C

**Noxious Weed Control
Plan**

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NOXIOUS WEED CONTROL PLAN

Powertech (USA) will maintain an active weed control program based on a yearly inspection of the property during the active growing season of weeds to identify the locations of weed growth and on the treatment of weed infestations, with an emphasis on noxious weeds. An effective weed control program utilizes a number of management practices. The following plan outlines the various weed management techniques that could be implemented at the Dewey-Burdock Project. Consultation letters indicating that the plan has been reviewed and approved by the Custer and Fall River County Weed and Pest Boards are included with this appendix.

Noxious weeds will be controlled throughout the life of the Dewey-Burdock Project to reduce the seed source available to invade reclaimed areas. A list of the South Dakota state noxious weeds and the Custer and Fall River counties locally noxious weeds is provided in Table 1. It is anticipated that herbicides will be the primary method utilized to control weeds, but all weed control methods listed below will be considered.

Herbicides are important tools for controlling noxious weeds. Selective herbicides kill a specific type of plant and they perform best if conditions are favorable for plant growth (South Dakota State University Extension, 2013). Since some of these herbicide treatments, especially those targeting broadleaf weeds, also remove all or many of the desirable forbs or legumes, Powertech (USA) will selectively use herbicides, thereby reducing the potential impacts to beneficial plant species. Herbicide application will be performed by a South Dakota-certified licensed pesticide applicator. Powertech (USA) will follow all grazing and haying restrictions on the herbicide label. Combined with proper grazing management and other control tactics, proper use of herbicides can encourage the recovery of reseeded areas that have become infested with weeds. Powertech (USA) will use herbicides that are labeled for the target weed and registered for use on pasture and range and will follow recommended application rates to ensure control of undesirable forage while limiting potential desirable vegetative species impacts.

Prescribed grazing is the application of livestock grazing at a specified season, duration, and intensity to accomplish specific vegetation management goals. By itself, grazing will rarely, if ever, completely eradicate invasive plants. However, when grazing treatments are combined with other control techniques, such as herbicides or biological control, severe infestations can be reduced and small infestations may be eliminated (Frost and Launchbaugh, 2003). A successful grazing prescription should cause significant damage to the target plant, limit irreparable damage to the surrounding vegetation, be consistent with livestock production goals, and be integrated with other control methods as part of an overall weed management strategy. Prescribed grazing



for weed control requires grazing when the weed is most palatable to livestock and most susceptible to defoliation (Frost and Launchbaugh, 2003).

Deferred grazing gives the grasses the opportunity to build up root reserves, develop more topgrowth and produce more herbage (South Dakota State University Extension, 2013). In some pastures, desirable native species no longer abundant will become re-established during the rest period. Deferred grazing can be used in conjunction with other improvement practices to speed recovery.

Mowing, chopping, or clipping temporarily removes weed topgrowth (South Dakota State University Extension, 2013). This system stops seed production but has different effects on the weeds. Annual forbs can be controlled by cutting below the lowest leaf early in the growing season. Undesirable annual grasses should be mowed after the seed stalk has elongated but prior to seed formation. Mowing perennial weeds one time usually reduces seed production; repeated mowing reduces vigor and slows spread. Clipping perennials like Canada thistle or leafy spurge in the spring works well as a set up for fall herbicides when moisture encourages new growth. Digging or chopping works well for scattered biennial thistle. Musk thistle rosettes can be stopped when the root is cut several inches below ground level. This technique requires more labor and is limited to small patches or scattered plants (South Dakota State University Extension, 2013).

Biological control is another weed control tool, especially for noxious weeds. Biological control utilizes natural enemies as a means of weakening or killing the host plant. Insects have been the most common approach to biological control in South Dakota (South Dakota State University Extension, 2013). Noxious weeds that have approved biological control agents (insects) in the state include leafy spurge, musk thistle, Canada thistle, toadflax, St. Johnswort, and biennial knapweeds. South Dakota currently has a collection and release program for leafy spurge flea beetles (*Aphthona* species), coordinated by the South Dakota Department of Agriculture (South Dakota State University Extension, 2013). Powertech (USA) will consult with the Custer and Fall River County Weed and Pest Boards if the use of flea beetles on leafy spurge is considered.



Table 1: South Dakota, Custer County and Fall River County Lists of Noxious Weeds

SOUTH DAKOTA NOXIOUS WEEDS

(South Dakota Department of Agriculture, 2012)

- Leafy spurge (*Euphorbia esula*)
- Canada thistle (*Cirsium arvense*)
- Perennial sow thistle (*Sonchus arvensis*)
- Hoary cress (*Cardaria draba*)
- Russian knapweed (*Centaurea repens*)
- Purple loosestrife (*Lythrum salicaria*)
- Saltcedar (*Tamarix aphylla*, *T. chinensis*, *T. gallica*, *T. parviflora* and *T. ramosissima*)

CUSTER COUNTY LOCALLY NOXIOUS WEEDS

(Custer County, 2012; National Park Service, 2011)

- Absinth wormwood (*Artemisia absinthium*)
- Black henbane (*Hyoscyamus niger*)
- Bull thistle (*Cirsium vulgare*)
- Chicory (*Cichorium intybus*)
- Common Burdock (*Arctium minus*)
- Common mullein (*Verbascum thapsus*)
- Common tansy (*Tanacetum vulgare*)
- Dalmatian toadflax (*Linaria dalmatICA*)
- Diffuse knapweed (*Centaurea diffusa*)
- Field bindweed (*Convolvulus arvensis*)
- Giant knotweed (*Polygonum sachalinense*)
- Houndstongue (*Cynoglossum officinale*)
- Musk thistle (*Carduus nutans*)
- Phragmites (*Phragmites australis*)
- Plumeless thistle (*Carduus acanthoides*)
- Poison hemlock (*Conium maculatum*)
- Puncturevine (*Tribulus terrestris*)
- Scotch thistle (*Onopordum acanthium*)
- Spotted knapweed (*Centaurea maculosa*)
- Sulfur cinquefoil (*Potentilla*)
- St. Johnswort (*Hypericum perforatum*)
- White horehound (*Marrubium vulgare*)
- Yellow toadflax (*Linaria vulgaris*)

FALL RIVER COUNTY LOCALLY NOXIOUS WEEDS

(Fall River County, 2012)

- Common mullein (*Verbascum thapsus*)
- Dalmatian toadflax (*Linaria dalmatICA*)
- Scotch thistle (*Onopordum acanthium*)

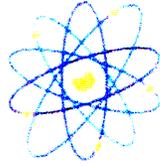


References

- Custer County, 2012, Custer County Weed and Pest Board archive meeting minutes, August 1, 2012, available on the Internet as of March 2013: <http://www.custercountysd.com/wp-content/uploads/2011/01/Bdmtg080112.doc>.
- Fall River County, 2012, Noxious Weeds and Pests, available on the Internet as of June 2012: <http://fallriver.sdcounties.org/weed-pest/noxious-weeds-and-pests/>.
- Frost, R.A. and K.L. Launchbaugh, 2003, Prescription Grazing for Rangeland Weed Management - A New Look at an Old Tool, *Rangelands*, 25 (6), available on the Internet as of June 2012: <http://www.cnrhome.uidaho.edu/documents/Prescription%20grazing%5B1%5D.pdf&pid=74891&doc=1>.
- National Park Service, U.S. Department of the Interior, 2011, Jewel Cave National Monument - Natural Resource Condition Assessment, Natural Resource Report NPS/JECA/NRR—2011/477, available on the Internet as of June 2012: http://www.nature.nps.gov/water/nrca/assets/docs/JECA_NRCA_final.pdf.
- South Dakota Department of Agriculture, 2012, State Noxious Weeds, available on the Internet as of June 2012: http://www.sdda.sd.gov/Ag_Services/Plant-Protection/Weed%20and%20Pest/State-Noxious-Weeds.aspx.
- South Dakota State University Extension, 2013, 2013 Weed Control, Pasture and Range, available on the Internet as of March 2013: <http://igrow.org//up/resources/03-3020-2012.pdf>.

**Custer and Fall River Counties Correspondence for the Review
of the Noxious Weed Control Plan**

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POWERTECH (USA) INC.

Part 1. WEED AND PEST CONTROL BOARD NAME AND ADDRESS

Name:	Fall River County Weed and Pest Board
Address:	1029 N River St, Hot springs, SD 57747

Part 2. CONFIRMATION OF CONCURRENCE WITH THE NOXIOUS WEED CONTROL PLAN

As the representative of the Fall River County Weed and Pest Board, I confirm the Board's concurrence with Powertech (USA), Inc.'s Dewey-Burdock Project noxious weed control plan.

Name:	<i>Nina Steinmetz</i>
Title:	<i>Fall River Co. Weed & Pest Supervisor</i>
Signature:	<input checked="" type="checkbox"/> <i>Nina Steinmetz</i>
Date:	<i>8/7/12</i>



POWERTECH (USA) INC.

Part 1. WEED AND PEST CONTROL DEPARTMENT

Name:	Custer County
Mailing Address:	420 Mt. Rushmore Road, Custer, SD 57730

Part 2. CONFIRMATION OF CONCURRENCE WITH THE NOXIOUS WEED CONTROL PLAN

As the representative of the Custer County Weed and Pest Department, I confirm the Department's concurrence with Powertech (USA) Inc.'s Dewey-Burdock Project noxious weed control plan.

Name:	Mike Carter
Title:	Custer County Director of Emergency Service and Interim Director of Weed and Pest Department
Signature:	X 
Date:	11-02-12