2007 U. S. Fish and Wildlife Service

Biological Opinion Annual Mitigation Monitoring Reports

for the Rocky Flats Site

CD 1

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Located on CD 1:

East Shooting Range Remediation Project Report

Incinerator Project Report

Phytoremediation Project Report

Programmatic Biological Assessment (PBA) Part II Report

Located on CD 2:

Programmatic Biological Assessment (PBA) Part II Report

Photomonitoring Projects:

Pond Remediation A-Series

Pond Remediation B-Series

Walnut Creek Riparian Corridor Monitoring

2007 Incinerator Project Report for the Rocky Flats Site

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Report Text (PDF Version)

Appendix A: Photomonitoring

Appendix B: Qualitative Habitat Assessment Forms

Preble's Meadow Jumping Mouse Mitigation Monitoring Report for the Incinerator Project at the Rocky Flats Site
2007 Annual Report
USFWS Letter: ES/CO: BZ Concrete Flow (April 28, 2003)

Introduction

This report is being submitted to the U. S. Fish and Wildlife Service (USFWS) in order to comply with the requirements outlined in USFWS's letter on the Buffer Zone Concrete Removal Project (hereafter referred to as the Incinerator Project; USFWS letter dated April 28, 2003). The letter addresses impacts to the federally listed Preble's meadow jumping mouse (Preble's mouse, *Zapus hudsonius preblei*) from the Incinerator Project at the Rocky Flats Site (Site). The Biological Evaluation written for the project states that the revegetation monitoring would be conducted according to the guidance provided in Part II of the Programmatic Biological Assessment (PBA), Appendix B. This report is being submitted to satisfy the conditions of the USFWS letter for 2007 and is due by December 1 after each growing season.

Methodology

The methodology used for the monitoring was taken from Appendix B in Part II of the PBA. Both qualitative and quantitative monitoring was conducted at the Incinerator Project Revegetation Area (IPRA) during 2007. Sampling was conducted in mid-August of 2007 during the height of the growing season. Quantitative monitoring was conducted using vegetation transects. Qualitative monitoring was conducted using photographs taken from permanent photopoints and qualitative assessments. Photomonitoring results are shown in Appendix A, and the qualitative habitat assessment form is in Appendix B. A total of three 50-meter (m) transects were randomly located within the revegetated area at the IPRA (called Revegetation transects = incinerator revegetation area). Three additional "reference" transects (called Reference transects = incinerator reference area) were randomly located adjacent to the revegetation area transects in undisturbed grassland. All six transects were located on the hillside because the IPRA in Preble's mouse habitat only encompasses the areas on the hillsides (Figure 1).

Species richness was determined in a 2-m-wide belt centered along the length of each 50-m transect. Every plant species rooted within the 100-square meter (m^2) area was recorded. Foliar cover estimates were made using a point-intercept method along each of the 50-m transects. A 2-m-long rod, with a 6-millimeter diameter, was dropped vertically at 50-centimeter increments along the transect to record a total of 100 intercept points. Foliar vegetation hits (defined as a portion of a plant touching the rod) were recorded by species in three categories defined by height and growth form. The topmost hit of each growth form was recorded. The growth forms measured were herbaceous, woody less than 2 m in height, and woody greater than 2 m in height.

Determinations of which seeded species were growing within the revegetation areas were based on the transect data. Two different seed mixes were applied at the IPRA based on whether the area was on the hillside or on the pediment top. (The pediment top is not located in Preble's mouse habitat.) The hillsides were seeded with a mixed grass prairie seed mix consisting of seven native graminoid species (Table 1). The pediment top was seeded with a tallgrass/mixed grass mixture of 11 native graminoid species (Table 1). The 2007 transect data were collected on the hillsides because these were the areas located in Preble's mouse habitat. The percentages of seeded species present were calculated were made using the hillside species list in Table 1.

Success criteria for the quantitative vegetation monitoring as outlined in Part II of the PBA, Appendix B are as follows:

- At least 50% of the seeded species will be present within the revegetation area.
- The combined foliar cover of grasses, forbs, and shrubs will be at least 80% of the reference area cover.
- The relative native foliar cover will be at least 50% of the reference area.
- Noxious weed will not exceed 5% canopy cover in the revegetation areas.

Results and Discussion

Summaries of the 2007 monitoring are presented in Tables 2 and 3. The revegetation area transects monitored in 2007 were located on the hillsides where a total of seven species of native grasses were seeded in March 2004 (Table 1). In August 2007, six of these species had become established on the hillside (western wheatgrass [*Agropyron smithii*], slender wheatgrass [*Agropyron caninum* (=*A. trachycaulus*)], buffalo grass [*Buchloe dactlyoides*], blue grama [*Bouteloua gracilis*], side-oats grama [*Bouteloua curtipendula*]), and green needle grass [*Stipa viridula*][Table 2]). The success criterion in the PBA for species richness states that at least 50% of the seeded species need to be present within the revegetation area. As of August 2007, 86% of the seeded species were present on the hillside areas at the IPRA. This criterion was also met in 2005 and 2006. Thus this criterion has been met.

Foliar cover results are shown in Table 3. The revegetation area total foliar cover was 71% compared to 88% measured in the reference area in 2007. The success criterion for total foliar cover is that the revegetation area will have at least 80% of the total foliar cover found in the reference area. In 2007, the total cover of the revegetation area was 81% of the reference area. The revegetation area also met this criterion in 2006. Thus the IPRA vegetation has met and exceeded this criterion.

The total relative native cover at the IPRA was 82% compared to only 47% in the reference area. The success criterion in the PBA states that the revegetation area will have native relative cover that is at least 50% of the reference areas. The IPRA native cover has exceeded this criterion not only in 2007 but also in 2005 and 2006.

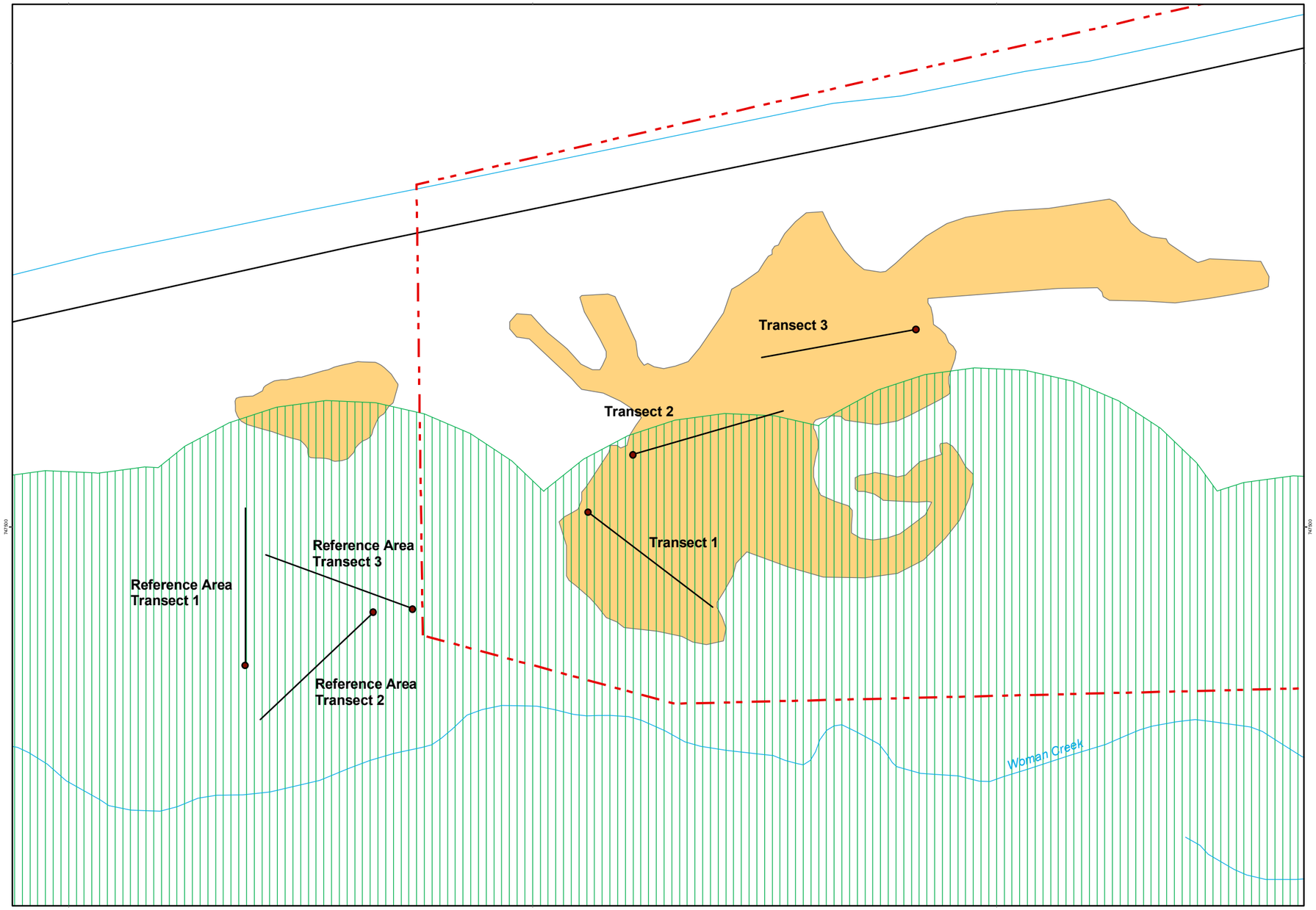
Total noxious weed cover (absolute cover) at the IPRA was 4.7% in 2007 compared to 6.3% in the reference area. The success criterion in the PBA states that no more than 5% noxious weed cover is allowed. The IPRA vegetation meets this criterion and has less noxious weed cover than the reference areas used for comparison. The noxious weed cover in the revegetation area

consists of diffuse knapweed (*Centaurea diffusa*, 3.0%), filaree (*Erodium cicutarium*, 0.7%), and downy brome (*Bromus tectorum*, 1.0%) (Table 3). While these three species are listed under the Colorado Noxious Weed Act (CWNA; May 5, 2006, update), diffuse knapweed is a B-list species and requires only suppression at the Site based on the state management plan for this species. Neither filaree nor downy brome has any state-mandated control requirements because filaree is typically only problematic in agricultural settings, and there are no good, effective control methods for downy brome. The filaree that is present at the IPRA will disappear as the perennial vegetation continues to fill in the few areas where the filaree now occurs given that it cannot compete with the perennial vegetation. Thus if the filaree and downy brome are removed from the total noxious weed cover amounts, the 2007 noxious weed cover at the IPRA drops to 3% (4.3% relative cover, Table 3). In either case, the success criterion for noxious weed cover in the PBA has been met. Additionally the area was treated with Milestone® in mid-June 2006 to help reduce the noxious weed cover in the area. Normal weed control efforts will continue to be conducted at the IPRA as they are done elsewhere at the Site to control noxious weeds.

Based on the 2007 monitoring data, the IPRA vegetation meets and or exceeds the success criteria (as listed in the PBA) for the percent of seeded species present, total foliar cover, total relative native cover, and total noxious weed cover. Therefore, the U.S. Department of Energy (DOE) requests concurrence from USFWS that vegetation at the IPRA has become established and meets the success criteria as listed in the PBA, and that future monitoring and reporting for this project are no longer required. The vegetation at the IPRA has returned to the point where it will continue to establish and sustain itself with the normal Site vegetation management operations.

Conclusions

The vegetation at the IPRA was sampled per the requirements of the USFWS letter dated April 28, 2003, to determine whether success criteria have been met. The sampling conducted in 2007 represents four full growing seasons for the area. To summarize, in 2007 the IPRA vegetation met or exceeded the success criteria for the percent of seeded species present, total foliar cover, total relative native cover, and total noxious weed cover as listed in the PBA. Overall, the vegetation at the IPRA has established very well and with continued management of the area as part of the Site's normal vegetation management operations should be sustainable in the long term. Therefore, DOE requests concurrence from USFWS that vegetation at the IPRA has become established and meets the success criteria as listed in the PBA, and that future monitoring and reporting for this project are no longer required.



2007 Incinerator Project Monitoring Locations

Figure 1

LEGEND

- Preble's Mouse Transect (0m) Endpoint
- Incinerator Project Disturbance
- Preble's Protection Areas

Roads

- Open
- ATV Only
- Truck by Permission

- Streams
- RFS Central OU Boundary

N

SCALE OF FEET

120 60 0 120

STATE PLANE COORDINATE SYSTEM
COLORADO CENTRAL ZONE
NORTH AMERICAN DATUM OF 1927

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by **S.M. Stoller Corporation** Under DOE Contract No. DE-AC01-02GJ79491
DATE PREPARED: November 5, 2007	FILENAME: S0376000

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Table 1. Incinerator Project Seed Mixes

Xeric Tallgrass/Mixed Grass Revegetation Seed Mix

Scientific Name	Common Name	Variety	% of Seed Mix	# Seeds Needed	# Seeds/Lb.	# Seeds/Sq. Ft.	Lbs./Acre (PLS)
Graminoids							
Agropyron smithii	Western Wheatgrass	Arriba	20	435600	120000	10.0	3.63
Agropyron trachycaulum	Slender Wheatgrass	San Luis	10	217800	120000	5.0	1.82
Andropogon gerardii	Big Bluestem	Bonilla	10	217800	130000	5.0	1.68
Andropogon scoparius	Little Bluestem	Aldous	8	174240	225000	4.0	0.77
Bouteloua curtipendula	Side-Oats Grama	Vaughn	15	326700	190000	7.5	1.72
Bouteloua gracilis	Blue Grama	Hachita	15	326700	710000	7.5	0.46
Buchloe dactyloides	Buffalo Grass	Texoka	5	108900	45000	2.5	2.42
Koleria pyrimidata	June Grass		3	65340	2315400	1.5	0.03
Sorghastrum nutans	Indian Grass	Cheyenne	2	43560	120000	1.0	0.36
Sporobolus cryptandra	Sand Dropseed		7	152460	5298000	3.5	0.03
Stipa viridula	Green Needlegrass	Lodorm	5	108900	115000	2.5	0.95
	Total		100	2178000		50.0	13.86

Hillside Slope Areas (Hillside Areas Or Areas With Slopes Greater Than 10%) Revegetation Seed Mix

Species	Common Name	Variety	% of Seed Mix	# Seeds Needed	# Seeds/Lb.	# Seeds/Sq. Ft.	Lbs./Acre (PLS)
Graminoids							
Agropyron dasystachyum	Thickspike Wheatgrass	Critana	5	108900	150000	2.5	0.73
Agropyron smithii	Western Wheatgrass	Arriba	23	500940	120000	11.5	4.17
Agropyron trachycaulum	Slender Wheatgrass	San Luis	15	326700	120000	7.5	2.72
Bouteloua curtipendula	Side-Oats Grama	Vaughn	13	283140	190000	6.5	1.49
Bouteloua gracilis	Blue Grama	Hachita	24	522720	710000	12.0	0.74
Buchloe dactyloides	Buffalo Grass	Texoka	10	217800	45000	5.0	4.84
Stipa viridula	Green Needle Grass	Lodorm	10	217800	180000	5.0	1.21
	Total		100	2178000		50.0	15.90

Table 2. Species Richness Summary - Incinerator

							Revegetation			Reference		
Family	**Scientific Name**	**Speccode**	**Native**	**Growth Form**	**Cool/Warm Season**	**Noxious Weed**	**T1**	**T2**	**T3**	**R1**	**R2**	**R3**
APIACEAE	Lomatium orientale Coult. & Rose	LOOR1	Y	F								X
ASCLEPIADACEAE	Asclepias speciosa Torr.	ASSP1	Y	F						X		
ASTERACEAE	Achillea millefolium L. ssp. lanulosa (Nutt.) Piper	ACMI1	Y	F			X	X	X	X	X	
ASTERACEAE	Ambrosia artemisiifolia L.	AMAR1	Y	F			X			X	X	X
ASTERACEAE	Ambrosia psilostachya DC.	AMPS1	Y	F			X	X	X	X		X
ASTERACEAE	Arnica fulgens Pursh.	ARFU1	Y	F							X	X
ASTERACEAE	Artemisia ludoviciana Nutt. var. ludoviciana	ARLU1	Y	F				X		X	X	X
ASTERACEAE	Aster falcatus Lindl.	ASFA1	Y	F						X	X	X
ASTERACEAE	Aster porteri Gray	ASPO1	Y	F			X	X	X	X	X	X
ASTERACEAE	Centaurea diffusa Lam.	CEDI1	N	F		X	X	X	X	X	X	X
ASTERACEAE	Chrysopsis villosa Pursh.	CHVI1	Y	F			X	X				
ASTERACEAE	Cirsium arvense (L.) Scop.	CIAR1	N	F		X				X	X	X
ASTERACEAE	Conyza canadensis (L.) Cronq.	COCA1	Y	F								X
ASTERACEAE	Erigeron divergens T. & G.	ERDI1	Y	F					X	X	X	
ASTERACEAE	Grindelia squarrosa (Pursh.) Dun.	GRSQ1	Y	F					X	X	X	X
ASTERACEAE	Gutierrezia sarothrae (Pursh.) Britt. & Rusby	GUSA1	Y	F					X			
ASTERACEAE	Helianthus annuus L.	HEAN1	Y	F			X				X	X
ASTERACEAE	Kuhnia eupatorioides L.	KUEU1	Y	F					X			
ASTERACEAE	Lactuca serriola L.	LASE1	N	F			X	X	X	X	X	X
ASTERACEAE	Liatris punctata Hook.	LIPU1	Y	F						X	X	X
ASTERACEAE	Ratibida columnifera (Nutt.) Woot. & Standl.	RACO1	Y	F			X	X	X		X	
ASTERACEAE	Scorzonera laciniata L.	SCLA1	N	F			X			X	X	
ASTERACEAE	Taraxacum officinale Weber	TAOF1	N	F						X		X
ASTERACEAE	Tragopogon dubius Scop.	TRDU1	N	F				X	X	X	X	X
ASTERACEAE	Iva axillaris Pursh.	IVAX1	Y	F								X
BRASSICACEAE	Alyssum minus (L.) Rothmaler var. micranthus (C. A. Mey.) Dudley	ALMI1	N	F			X	X	X	X	X	X
BRASSICACEAE	Camelina microcarpa Andrz. ex DC.	CAMI1	N	F			X			X	X	
BRASSICACEAE	Lepidium campestre (L.) R. Br.	LECA1	N	F								X
BRASSICACEAE	Sisymbrium altissimum L.	SIAL1	N	F			X	X		X	X	
CACTACEAE	Opuntia macrorhiza Engelm.	OPMA1	Y	C					X	X	X	X
CAPRIFOLIACEAE	Symphoricarpos occidentalis Hook.	SYOC1	Y	S								X
CARYOPHYLLACEAE	Silene antirrhina L.	SIAN1	Y	F						X		
CHENOPODIACEAE	Chenopodium album L.	CHAL1	N	F					X			
CHENOPODIACEAE	Kochia scoparia (L.) Schrad.	KOSC1	N	F			X	X	X			
CHENOPODIACEAE	Salsola iberica Senn. & Pau.	SAIB1	N	F				X				
CONVOLVULACEAE	Convolvulus arvensis L.	COAR1	N	F		X			X	X	X	X
CYPERACEAE	Carex eleocharis Bailey	CAEL1	Y	G	C							X
CYPERACEAE	Carex heliophila Mack.	CAHE1	Y	G	C					X		
CYPERACEAE	Carex praegracilis W. Boott.	CAPR1	Y	G							X	X
FABACEAE	Melilotus officinalis (L.) Pall.	MEOF1	N	F			X	X	X			
FABACEAE	Psoralea tenuiflora Pursh.	PSTE1	Y	F						X	X	X
GERANIACEAE	Erodium cicutarium (L.) L'Her.	ERCI1	N	F		X	X	X	X	X		
JUNCACEAE	Juncus balticus Willd.	JUBA1	Y	G	C					X	X	X
JUNCACEAE	Juncus interior Wieg.	JUIN1	Y	G	C					X		
JUNCACEAE	Juncus longistylis Torr.	JULO1	Y	G						X	X	X
LAMIACEAE	Marrubium vulgare L.	MAVU1	N	F			X		X			
LILIACEAE	Allium textile A. Nels. & Macbr.	ALTE1	Y	F							X	
LINACEAE	Linum perenne L. var. lewisii (Pursh.) Eat. & Wright	LIPE1	Y	F				X	X			
OXALIDACEAE	Oxalis dillenii Jacq.	OXDI1	N	F							X	X
PLANTAGINACE	Plantago lanceolata L.	PLLA1	N	F				X		X	X	X
POACEAE	Agropyron caninum (L.) Beauv. ssp. majus (Vasey) C. L. Hitchc.	AGCA1	Y	G	C		X	X	X			
POACEAE	Agropyron intermedium (Host) Beauv.	AGIN1	N	G	C				X	X	X	
POACEAE	Agropyron smithii Rydb.	AGSM1	Y	G	C		X	X	X	X	X	X
POACEAE	Agrostis stolonifera L.	AGST1	N	G	C							X
POACEAE	Andropogon gerardii Vitman	ANGE1	Y	G	W					X	X	X
POACEAE	Aristida purpurea Nutt. var. robusta (Merrill) A. Holmgren & N. Holmgr	ARLO1	Y	G	C					X		
POACEAE	Bouteloua curtipendula (Michx.) Torr.	BOCU1	Y	G	W		X	X	X			
POACEAE	Bouteloua gracilis (H. B. K.) Lag ex Griffiths	BOGR1	Y	G	W		X	X	X	X	X	X
POACEAE	Bromus inermis Leyss. ssp. inermis	BRIN1	N	G	C				X			
POACEAE	Bromus japonicus Thunb. ex Murr.	BRJA1	N	G	C		X	X	X	X	X	X
POACEAE	Bromus tectorum L.	BRTE1	N	G	C	X	X	X	X	X		X
POACEAE	Buchloe dactyloides (Nutt.) Engelm.	BUDA1	Y	G	W		X	X	X	X	X	X
POACEAE	Dactylis glomerata L.	DAGL1	N	G	C				X			
POACEAE	Festuca pratensis Huds.	FEPR1	N	G	C				X			
POACEAE	Koeleria pyramidata (Lam.) Beauv.	KOPY1	Y	G	C		X	X		X	X	X
POACEAE	Panicum virgatum L.	PAVI1	Y	G	W						X	X
POACEAE	Poa compressa L.	POCO1	N	G	C		X	X		X	X	X
POACEAE	Poa pratensis L.	POPR1	N	G	C			X	X	X	X	X
POACEAE	Sporobolus cryptandrus (Torr.) A. Gray	SPCR1	Y	G	W			X	X		X	
POACEAE	Stipa comata Trin. & Rupr.	STCO1	Y	G	C					X		
POACEAE	Stipa viridula Trin.	STVI1	Y	G	C		X	X	X	X	X	X
POACEAE	Eragrostis pilosa (L.) Beauv.	ERPI1	N	G	W							X
POLYGONACEAE	Polygonum ramosissimum Michx.	PORA1	Y	F								X
ROSACEAE	Potentilla gracilis Dougl. ex Hook. var. glabrata (Lehm.) C. L. Hitchc.	POGR1	Y	F						X	X	X
SCROPHULARIACEAE	Linaria dalmatica (L.) Mill.	LIDA1	N	F		X		X		X		X
SCROPHULARIACEAE	Verbascum blattaria L.	VEBL1	N	F		X	X			X	X	
SCROPHULARIACEAE	Verbascum thapsus L.	VETH1	N	F		X	X		X	X		
					Total Species Richness		29	30	35	46	42	45

Table 3. Incinerator Project Foliar Cover Summary 2007

						Revegetation T1		Revegetation T2		Revegetation T3		Revegetation		Reference T1		Reference T2		Reference T3		Reference	
Scientific Name	**Speccode**	**Noxious Weed**	**Growth Form**	**Native**	**Cool/ Warm Season**	**Absolute Cover (%)**	**Relative Cover (%)**	**Absolute Cover (%)**	**Relative Cover (%)**	**Absolute Cover (%)**	**Relative Cover (%)**	**Mean Absolute Cover (%)**	**Mean Relative Cover (%)**	**Absolute Cover (%)**	**Relative Cover (%)**	**Absolute Cover (%)**	**Relative Cover (%)**	**Absolute Cover (%)**	**Relative Cover (%)**	**Mean Absolute Cover (%)**	**Mean Relative Cover (%)**
Alyssum minus (L.) Rothmaler var. micranthus (C. A. Mey.) Dudley	ALMI1		F	N						2.0	3.0	0.7	1.0	3.0	3.5	3.0	3.4	4.0	4.4	3.3	3.8
Camelina microcarpa Andrz. ex DC.	CAMI1		F	N								0.0	0.0			1.0	1.1			0.3	0.4
Centaurea diffusa Lam.	CEDI1	X	F	N		1.0	1.4	2.0	2.6	6.0	9.0	3.0	4.3							0.0	0.0
Cirsium arvense (L.) Scop.	CIAR1	X	F	N								0.0	0.0	2.0	2.3	3.0	3.4			1.7	1.9
Convolvulus arvensis L.	COAR1	X	F	N								0.0	0.0	6.0	7.0	2.0	2.3			2.7	3.1
Erodium cicutarium (L.) L'Her.	ERCI1	X	F	N				2.0	2.6			0.7	0.9							0.0	0.0
Linaria dalmatica (L.) Mill.	LIDA1	X	F	N								0.0	0.0					1.0	1.1	0.3	0.4
Sisymbrium altissimum L.	SIAL1		F	N				1.0	1.3			0.3	0.4	1.0	1.2	2.0	2.3			1.0	1.1
Tragopogon dubius Scop.	TRDU1		F	N						1.0	1.5	0.3	0.5			1.0	1.1			0.3	0.4
Verbascum thapsus L.	VETH1	X	F	N								0.0	0.0	1.0	1.2					0.3	0.4
Achillea millefolium L. ssp. lanulosa (Nutt.) Piper	ACMI1		F	Y						8.0	11.9	2.7	4.0							0.0	0.0
Ambrosia artemisiifolia L.	AMAR1		F	Y								0.0	0.0					1.0	1.1	0.3	0.4
Ambrosia psilostachya DC.	AMPS1		F	Y						1.0	1.5	0.3	0.5	1.0	1.2			1.0	1.1	0.7	0.8
Arnica fulgens Pursh.	ARFU1		F	Y								0.0	0.0					1.0	1.1	0.3	0.4
Artemisia ludoviciana Nutt. var. ludoviciana	ARLU1		F	Y								0.0	0.0	3.0	3.5	1.0	1.1			1.3	1.5
Aster falcatus Lindl.	ASFA1		F	Y								0.0	0.0	4.0	4.7					1.3	1.6
Aster porteri Gray	ASPO1		F	Y						1.0	1.5	0.3	0.5	2.0	2.3	1.0	1.1			1.0	1.2
Asclepias speciosa Torr.	ASSP1		F	Y								0.0	0.0	1.0	1.2					0.3	0.4
Erigeron divergens T. & G.	ERDI1		F	Y						1.0	1.5	0.3	0.5			2.0	2.3			0.7	0.8
Linum perenne L. var. lewisii (Pursh.) Eat. & Wright	LIPE1		F	Y						1.0	1.5	0.3	0.5							0.0	0.0
Potentilla gracilis Dougl. ex Hook. var. glabrata (Lehm.) C. L. Hitchc.	POGR1		F	Y								0.0	0.0	1.0	1.2	4.0	4.5			1.7	1.9
Psoralea tenuiflora Pursh.	PSTE1		F	Y								0.0	0.0					1.0	1.1	0.3	0.4
Ratibida columnifera (Nutt.) Woot. & Standl.	RACO1		F	Y						2.0	3.0	0.7	1.0							0.0	0.0
Silene antirrhina L.	SIAN1		F	Y								0.0	0.0	1.0	1.2					0.3	0.4
Bromus japonicus Thunb. ex Murr.	BRJA1		G	N	C	5.0	7.2	1.0	1.3	3.0	4.5	3.0	4.3	6.0	7.0	6.0	6.8			4.0	4.6
Bromus tectorum L.	BRTE1	X	G	N	C			1.0	1.3	2.0	3.0	1.0	1.4	4.0	4.7					1.3	1.6
Dactylis glomerata L.	DAGL1		G	N	C					2.0	3.0	0.7	1.0							0.0	0.0
Festuca pratensis Huds.	FEPR1		G	N	C					8.0	11.9	2.7	4.0							0.0	0.0
Poa compressa L.	POCO1		G	N	C							0.0	0.0	12.0	14.0	17.0	19.3	18.0	20.0	15.7	17.8
Poa pratensis L.	POPR1		G	N	C					1.0	1.5	0.3	0.5	15.0	17.4	11.0	12.5	20.0	22.2	15.3	17.4
Carex praegracilis W. Boott.	CAPR1		G	Y								0.0	0.0					7.0	7.8	2.3	2.6
Juncus longistylis Torr.	JULO1		G	Y								0.0	0.0	5.0	5.8	2.0	2.3	6.0	6.7	4.3	4.9
Agropyron caninum (L.) Beauv. ssp. majus (Vasey) C. L. Hitchc.	AGCA1		G	Y	C	11.0	15.9	12.0	15.6	9.0	13.4	10.7	15.0							0.0	0.0
Agropyron smithii Rydb.	AGSM1		G	Y	C	40.0	58.0	29.0	37.7	13.0	19.4	27.3	38.3	12.0	14.0	20.0	22.7	22.0	24.4	18.0	20.4
Carex eleocharis Bailey	CAEL1		G	Y	C							0.0	0.0					1.0	1.1	0.3	0.4
Juncus balticus Willd.	JUBA1		G	Y	C							0.0	0.0			4.0	4.5	2.0	2.2	2.0	2.3
Juncus interior Wieg.	JUIN1		G	Y	C							0.0	0.0	2.0	2.3					0.7	0.8
Koeleria pyramidata (Lam.) Beauv.	KOPY1		G	Y	C	1.0	1.4					0.3	0.5			1.0	1.1			0.3	0.4
Stipa viridula Trin.	STVI1		G	Y	C	4.0	5.8	2.0	2.6			2.0	2.8	1.0	1.2	3.0	3.4	3.0	3.3	2.3	2.6
Andropogon gerardii Vitman	ANGE1		G	Y	W							0.0	0.0	2.0	2.3	3.0	3.4	2.0	2.2	2.3	2.7
Bouteloua curtipendula (Michx.) Torr.	BOCU1		G	Y	W	5.0	7.2	6.0	7.8	3.0	4.5	4.7	6.5							0.0	0.0
Bouteloua gracilis (H. B. K.) Lag ex Griffiths	BOGR1		G	Y	W			3.0	3.9			1.0	1.3	1.0	1.2					0.3	0.4
Buchloe dactyloides (Nutt.) Engelm.	BUDA1		G	Y	W	2.0	2.9	18.0	23.4	3.0	4.5	7.7	10.3							0.0	0.0
Panicum virgatum L.	PAVI1		G	Y	W							0.0	0.0			1.0	1.1			0.3	0.4
Total Foliar Cover						69.0	100.0	77.0	100.0	67.0	100.0	71.0	100.0	86.0	100.0	88.0	100.0	90.0	100.0	88.0	100.0
Total Forb Cover						1.0	1.4	5.0	6.5	23.0	34.3	9.7	14.1	26.0	30.2	20.0	22.7	9.0	10.0	18.3	21.0
Total Non-Native Forb Cover						1.0	1.4	5.0	6.5	9.0	13.4	5.0	7.1	13.0	15.1	12.0	13.6	5.0	5.6	10.0	11.4
Total Native Forb Cover						0.0	0.0	0.0	0.0	14.0	20.9	4.7	7.0	13.0	15.1	8.0	9.1	4.0	4.4	8.3	9.6
Total Graminoid Cover						68.0	98.6	72.0	93.5	44.0	65.7	61.3	85.9	60.0	69.8	68.0	77.3	81.0	90.0	69.7	79.0
Total Non-Native Graminoid Cover						5.0	7.2	2.0	2.6	16.0	23.9	7.7	11.2	37.0	43.0	34.0	38.6	38.0	42.2	36.3	41.3
Total Native Graminoid Cover						63.0	91.3	70.0	90.9	28.0	41.8	53.7	74.7	23.0	26.7	34.0	38.6	43.0	47.8	33.3	37.7
Total Native Cover						63.0	91.3	70.0	90.9	42.0	62.7	58.3	81.6	36.0	41.9	42.0	47.7	47.0	52.2	41.7	47.3
Total Non-Native Cover						6.0	8.7	7.0	9.1	25.0	37.3	12.7	18.4	50.0	58.1	46.0	52.3	43.0	47.8	46.3	52.7
Total Warm-Season Graminoid Cover						7.0	10.1	27.0	35.1	6.0	9.0	13.3	18.1	3.0	3.5	4.0	4.5	2.0	2.2	3.0	3.4
Total Cool-Season Graminoid Cover						61.0	88.4	45.0	58.4	38.0	56.7	48.0	67.9	52.0	60.5	62.0	70.5	66.0	73.3	60.0	68.1
Total Noxious Weed Cover						1.0	1.4	5.0	6.5	8.0	11.9	4.7	6.6	13.0	15.1	5.0	5.7	1.0	1.1	6.3	7.3

Absolute Cover = The percentage of the number of hits on a species out of the total number of hits possible.
Relative Cover = The percentage of the number of hits on a species out of the total number of vegetation hits.
Native Categories: Y = Native, N = Non-Native
Growth Form Categories: F = Forb, G = Graminoid
Cool/Warm Season Categories: C = Cool-Season Graminoid, W = Warm-Season Graminoid
Noxious Weed Category: X = Noxious Weed (listed on May 2006 Colorado State Noxious Weed List)

Incinerator Project

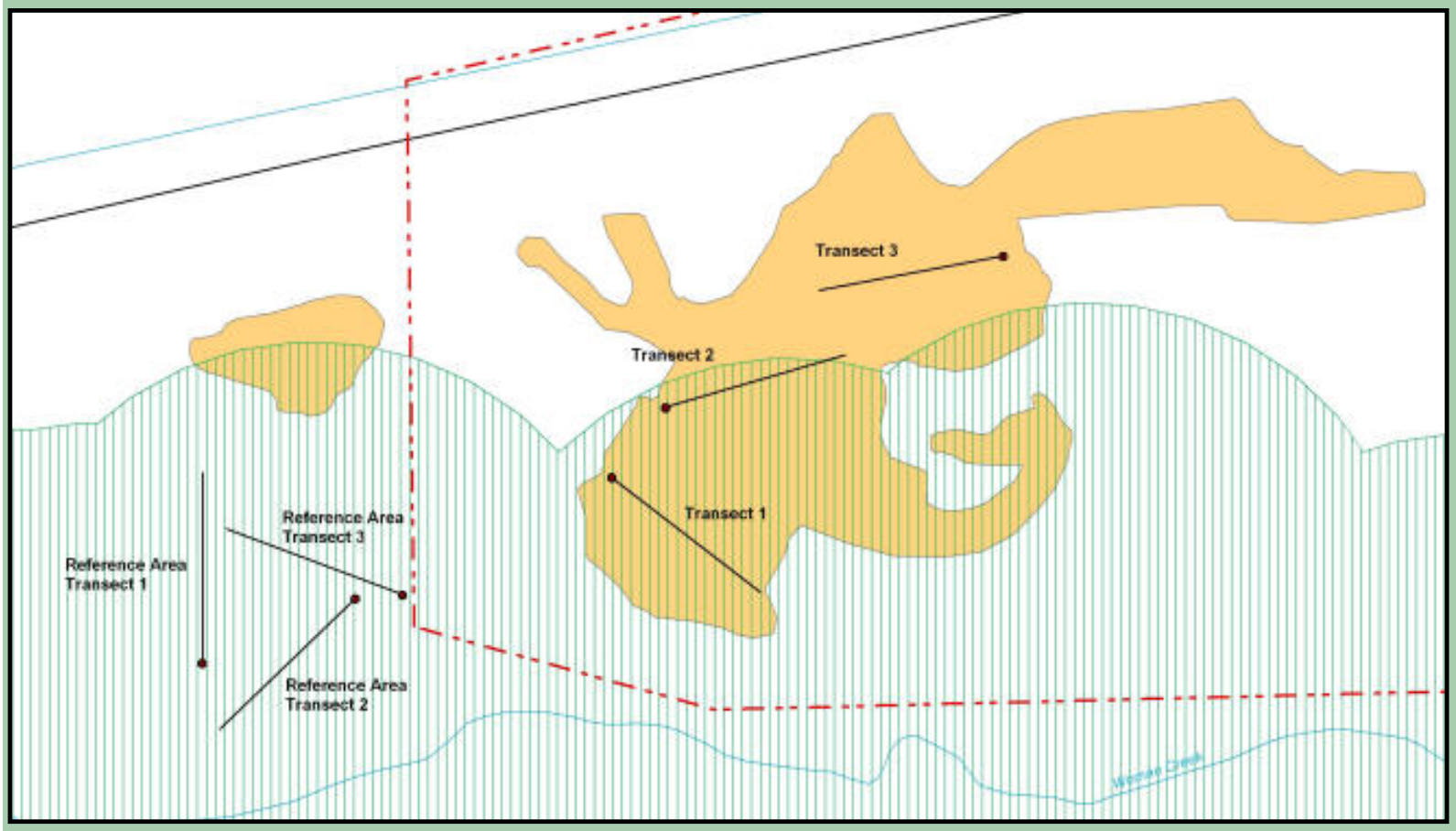
(Clicking on any photopoint on the map will take you to the corresponding monitoring photos, then clicking on any photo will enlarge that photo)

*To view transect locations and photos, click on the text below

2007 Incinerator Transects

2007 Incinerator Project Transect Locations

(Clicking on any transect on the map will take you to the corresponding photos, then clicking on any photo will enlarge that photo)



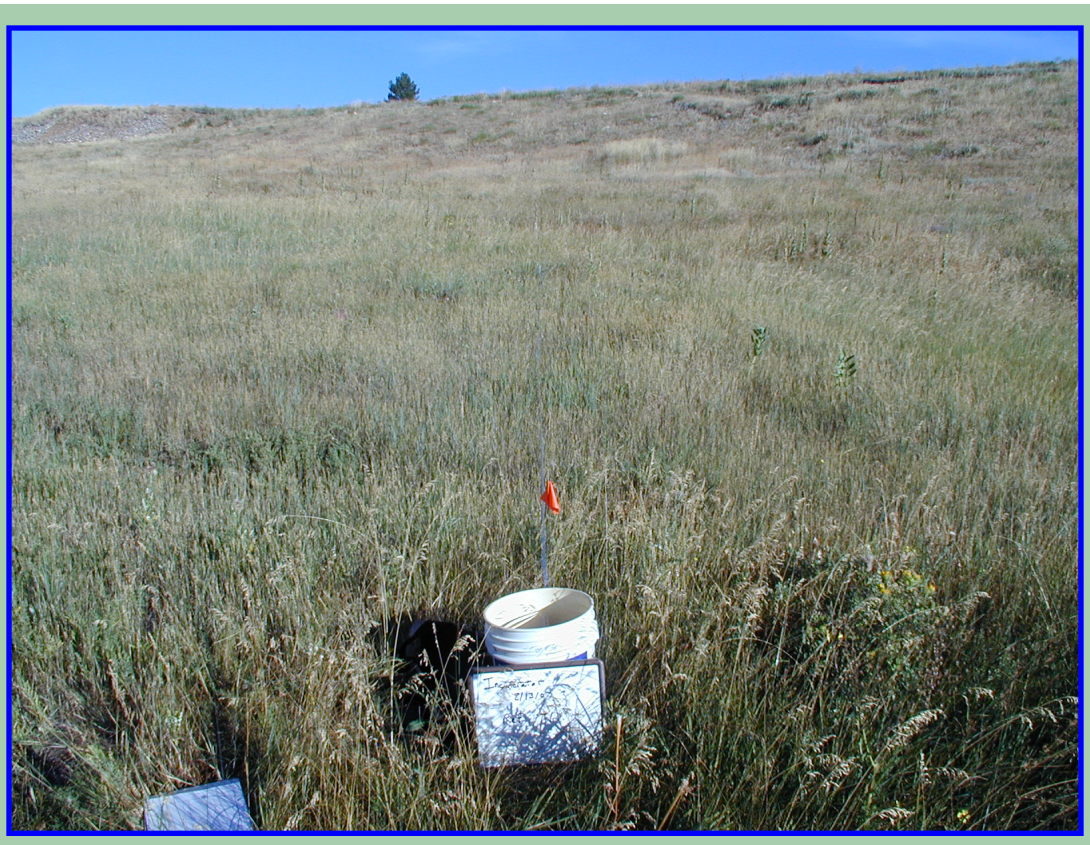
2007 Incinerator Project Transect Photos

Revegetation Transect 1

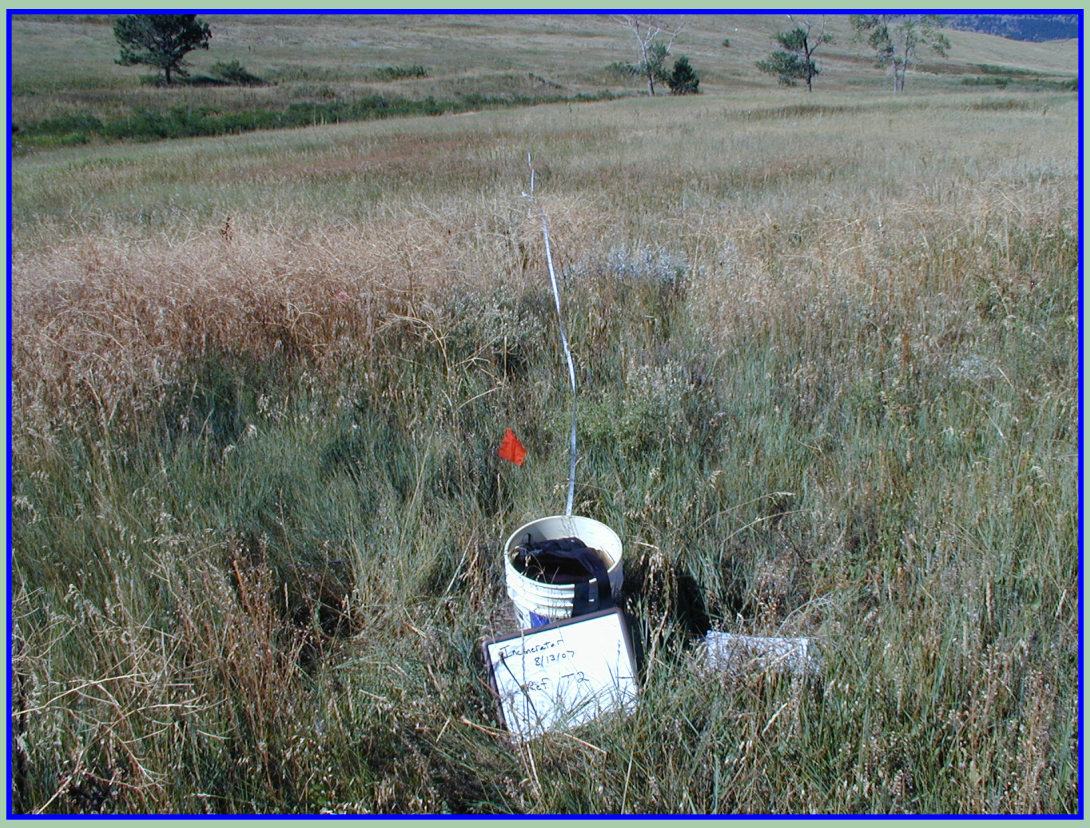
Revegetation Transect 2

Revegetation Transect 3

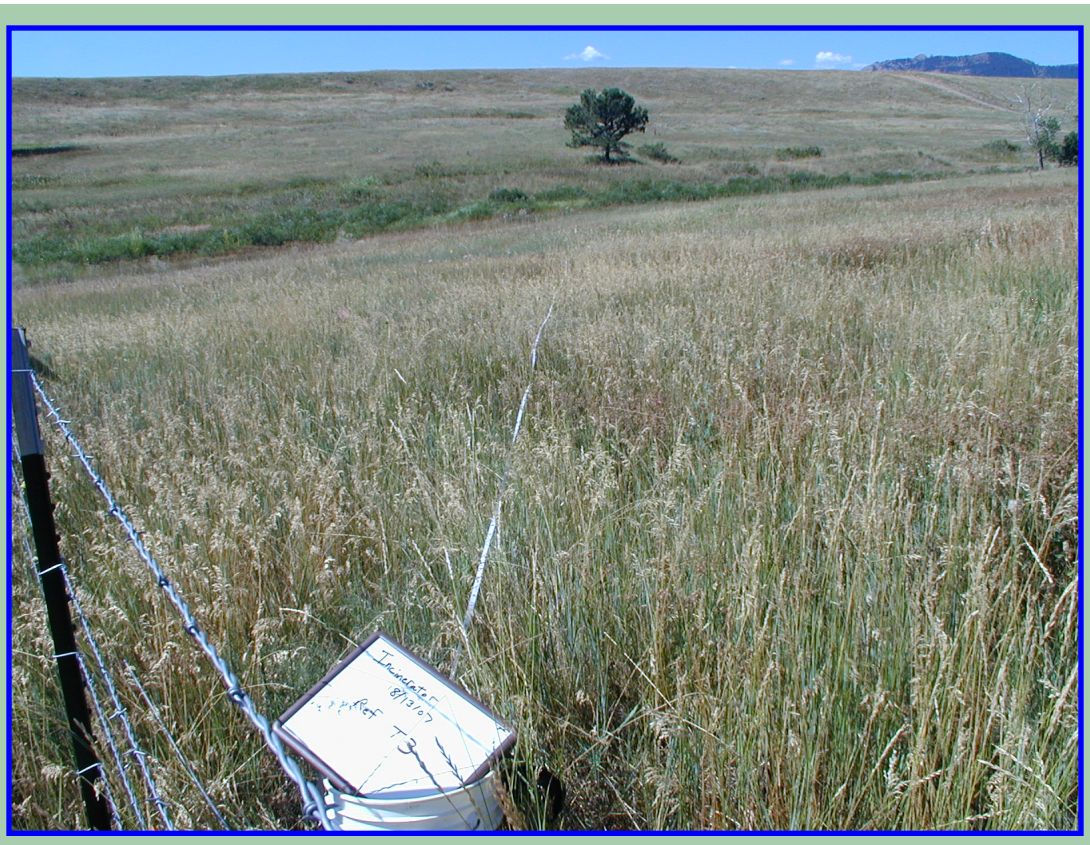
Reference Transect 1



Reference Transect 2



Reference Transect 3


Incinerator
8/13/07
T3

Incinerator Project

Photopoint 316

March 2004

August 2004

August 2005

August 2006

August 2007

Incinerator Project

Photopoint 317

April 2003

(during project work)

March 2004

(after re-seeding)

August 2004

August 2005

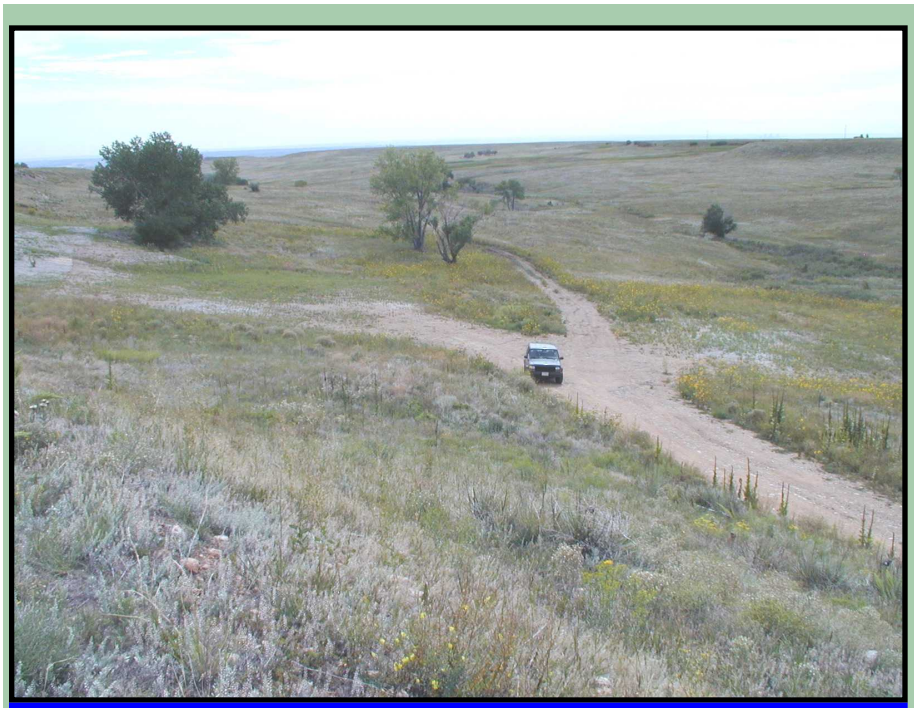
August 2006

August 2007

April 2003 **March 2004**

August 2004

August 2005



August 2006 **August 2007**

Incinerator Project

Photopoint 318

April 2003

March 2004

August 2004

August 2005

August 2006 **August 2007**

Incinerator Project

Photopoint 319

April 2003

March 2004

August 2004

August 2005

August 2006 **August 2007**

Incinerator Project

Photopoint 320

March 2004

August 2004

August 2005

August 2006

August 2007

March 2004

August 2004

August 2005

August 2006

August 2007

00104

Qualitative Revegetation Evaluation Form Form #_____

Date 8/17/07
Observer(s) JKW
Location ID Incinerator

Photographs taken today? Y (N) taken earlier

Are seeded plant species present? (Y) N

Which seeded species are present? How abundant are the seeded species? Estimate overall cover of each seeded species using the following cover class system (1 = <5%; 2 = 6-25%; 3 = 26-50%; 4 = 51-75%; 5 = >75%). Comments on their condition.

See quantitative data results.

Any evidence of nutrient or water deficiencies? If so, describe.

Are noxious weeds present? Y N

If yes, what species of noxious weeds are present? How abundant are the noxious weed species? Estimate overall cover of each noxious species using the following cover class system (1 = <5%; 2 = 6-25%; 3 = 26-50%; 4 = 51-75%; 5 = >75%).

Are other weedy species present? Y N

If so, what species and how abundant are they? Estimate overall cover of each weedy species using the following cover class system (1 = <5%; 2 = 6-25%; 3 = 26-50%; 4 = 51-75%; 5 = >75%).

Total Vegetation Cover (Estimate to nearest percent) _____

Suggestions for management: continue to watch for weeds, spray as needed
reseed small rocky area on hillslope near wattles.

Other comments: Veg looks very good this year. Lots of flowering grasses.

Completed by: Jody K Nash (Print) [signature] (Sign) Date 8/17/07