

Petroglyph Energy, Inc.

Well Pad Final Reclamation Evaluation

Well Name: Lively 10-02

Evaluation Date: July 16, 2015

Evaluated by: Wayne Erickson; Principle Environmental Scientist; Habitat Management, Inc.

Current Condition

Vegetation on the Lively 10-02 pad is establishing well. The site is dominated by native perennial grasses and forbs including western wheatgrass (*Pascopyrum smithii*), blue gramma (*Bouteloua gracilis*) and buffalograss (*B. dactyloides*). Some cheatgrass (*Bromus tectorum*) and redstem filaree (*Erodium cicutarium*) are also present. There are no major areas of poor vegetation establishment or noxious weed infestations. There are no areas with compacted soil problems or erosion within the well pad. However, the northeast half of the access road is compacted and has poor vegetation establishment.

Three vegetation transects were collected on the pad (see Lively 10-02 map) to determine the status of the reclamation as compared to transects collected on the surrounding area (i.e. reference area). Lively 10-02 shows 26% cover of perennial native vegetation, while the reference area shows 53%. These data indicate that while the pad is not currently ready for bond release it is transitioning to a sustainable perennial plant community. Transect locations are shown on the attached map. Photographs of current conditions and vegetation transects are provided on the attached page. Transect data are also provided.

Recommended Actions

The Lively 10-02 well pad needs a few more growing seasons to develop into a sustainable perennial plant community. However, Habitat Management recommends that the entire pad be treated with an appropriate herbicide as a preventative measure against infestation by cheatgrass (*Bromus tectorum*) from nearby areas. Habitat Management recommends a pre-emergent herbicide such as Plateau at 6-8 oz./acre be applied as soon as possible, ideally in early August, to prevent germination of this winter annual.

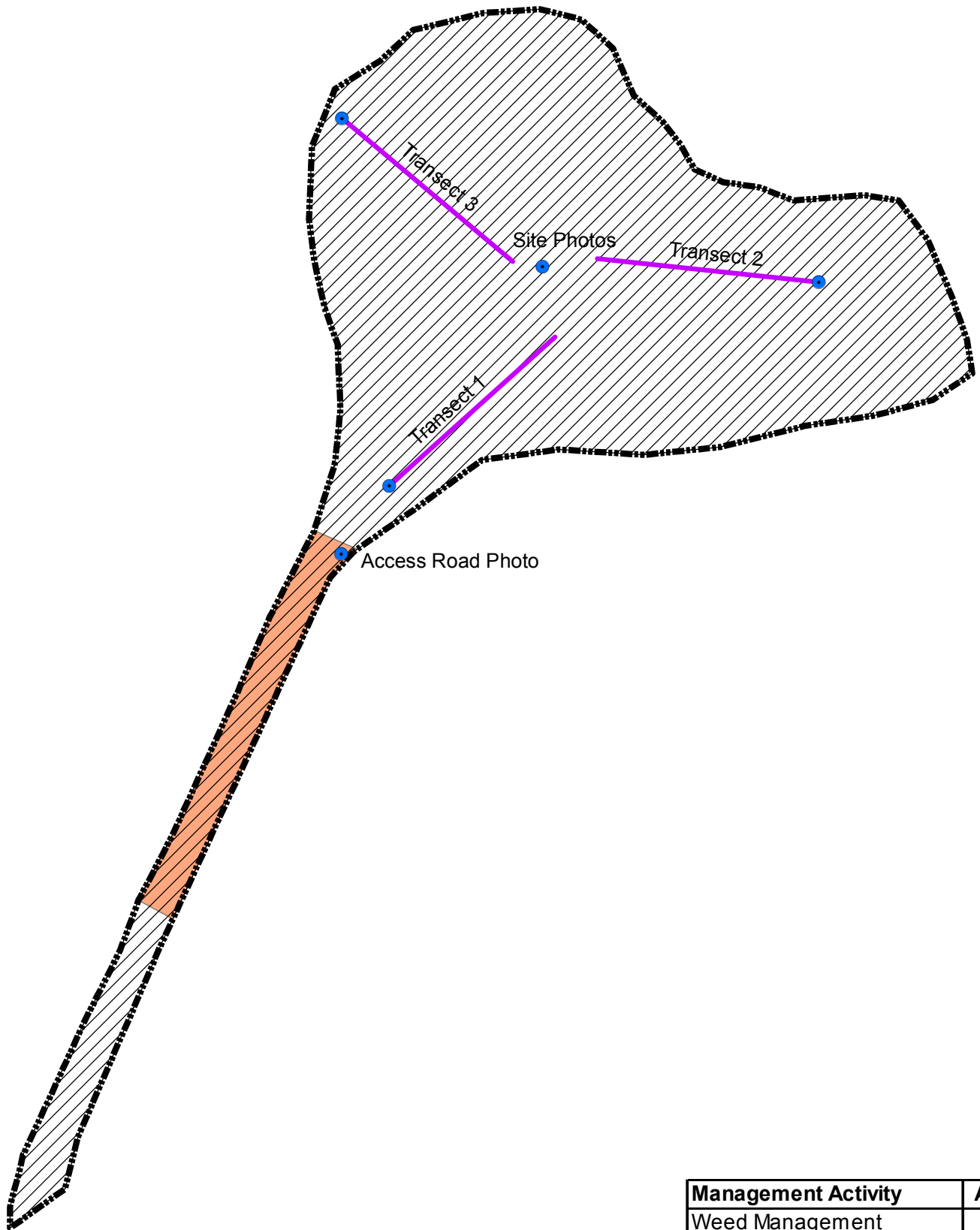
The northeastern half of the access road needs to be cross-ripped to alleviate compaction, seeded with the approved seed mix, and mulched with Woodstraw (wood strand) mulch at a target rate of 40% coverage (80 bales per acre).

Redstem filaree could be treated with spot-application of an appropriate broadleaf selective herbicide to minimize its spread on the pad. However, this C-list species is not targeted by Heurfano County and it is anticipated that continued establishment of desirable vegetation on

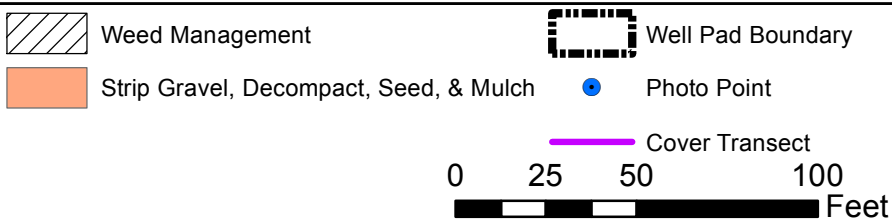
the site will provide competition to minimize the presence of this species. Other management recommendations should be prioritized before management of redstem filaree.

The pad should be inspected periodically to check for infestations of other noxious weeds and other issues that may arise and impact the reclamation process.

			Hits				Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
Genus	Species	Common Name	1	2	3	Total			
Grass & Grass-Like: Annual Undesirable									
Bromus	tectorum	cheatgrass		1		1	0.67	1.35	33.33
Subtotal				1		1	0.67	1.35	
Grass & Grass-Like: Perennial Desirable									
Bouteloua	dactyloides	buffalograss	1	1	1	3	2.00	4.05	100.00
Bouteloua	gracilis	blue grama		4	3	7	4.67	9.46	66.67
Bromus	inermis	smooth brome	3		1	4	2.67	5.41	66.67
Pascopyrum	smithii	western wheatgrass	10	7	2	19	12.67	25.68	100.00
Schedonnardus	paniculatus	tumblegrass	1			1	0.67	1.35	33.33
Subtotal			15	12	7	34	22.67	45.95	
Total Graminoid Cover			15	13	7	35	23.33	47.30	100.00
Total Perennial Graminoid Cover			15	12	7	34	22.67	45.95	100.00
Forbs: Annual Desirable									
Descurainia	pinnata	western tansymustard		2	4	6	4.00	8.11	66.67
Subtotal				2	4	6	4.00	8.11	
Forbs: Annual Undesirable									
Alyssum	desertorum	desert madwort	2	2	1	5	3.33	6.76	100.00
Erodium	cicutarium	redstem filaree common		3	6	9	6.00	12.16	66.67
Lepidium	densiflorum	pepperweed	1		2	3	2.00	4.05	66.67
Melilotus	officinalis	sweetclover		3	4	7	4.67	9.46	66.67
Salsola	tragus	prickly Russian thistle			1	1	0.67	1.35	33.33
Sisymbrium	altissimum	tall tumbled mustard		2		2	1.33	2.70	33.33
Subtotal			3	10	14	27	18.00	36.49	
Forbs: Biennial Desirable									
Grindelia	squarrosa	curlycup gumweed		1		1	0.67	1.35	33.33
Subtotal				1		1	0.67	1.35	
Forbs: Perennial Desirable									
Artemisia	frigida	prairie sage	1		1	1	0.67	1.35	33.33
Dalea	candida	white prairie clover				1	0.67	1.35	33.33
Verbena	bracteata	bigbract verbena		2		2	1.33	2.70	33.33
Subtotal			1	2	1	4	2.67	5.41	
Total Forb Cover			4	15	19	38	25.33	51.35	100.00
Total Perennial Forb Cover			1	2	1	4	2.67	5.41	100.00
Woody Species: Perennial Desirable									
Gutierrezia	sarothrae	broom snakeweed			1	1	0.67	1.35	33.33
Subtotal					1	1	0.67	1.35	
Total Woody Cover			0	0	1	1	0.67	1.35	33.33
Total Vegetation Cover			19	28	27	74	49.33	100.00	100.00
Total Perennial Vegetation Cover			16	14	9	39	26.00	52.70	100.00
Total Ground Cover			31	39	37	107	71.33		100.00
Rock						0	0.00		0.00
Litter			12	11	10	33	22.00		100.00
Bare Ground			19	11	13	43	28.67		100.00
Total Hits			50	50	50	150	100.00		
Total Species			7	11	12				18.00
Total Perennial Species			5	6	7				9.00



Management Activity	Acres
Weed Management	0.76
Strip, Rip, Seed & Mulch	0.05



Petroglyph Energy 2015

Lively 10-02



Evaluated: 7/16/15
Drawn: 7/23/15
Drawn By: RFB

Lively 10-02

North Photo:



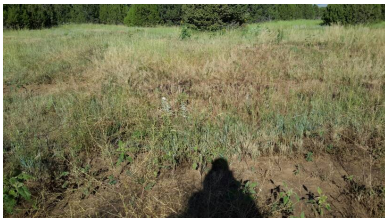
East Photo:



South Photo:



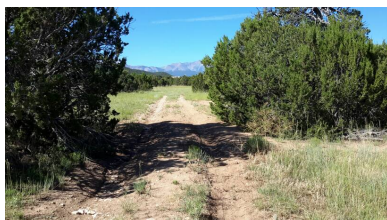
West Photo:



Lat: 37.5437680713

Long: 37.5437680713

Access Road Photo:



Lat: 37.543477755 Long: -104.8748804821

Transect Photos:

Transect 1:



Lat: 37.5435466431 Long: -104.8748193249

Transect 2:



Lat: 37.5437524554 Long: -104.8742729404

Transect 3:



Lat: 37.5439186269 Long: -104.8748784489

Photos Taken: 7/16/2015