

Petroglyph Energy, Inc.
Well Pad Final Reclamation Evaluation

Well Name: Lively 34-09

Evaluation Date: July 15, 2015

Evaluated by: Lindsey Brandt; Senior Environmental Scientist; Habitat Management, Inc.
Tony Matthews; Environmental Scientist; Habitat Management, Inc.

Current Condition

The Lively 34-09 pad has well-established perennial grasses and shrubs throughout the site, including western wheatgrass (*Pascopyrum smithii*), sand dropseed (*Sporobolus cryptandrus*) and tumblegrass (*Schedonnardus paniculata*). It is difficult to determine the extent of this well pad and based on a visual evaluation it is unclear whether a pad was ever constructed in this location.

Three vegetation cover transects were collected on the pad (see Lively 34-09 map) for comparison to undisturbed area reference transects collected from the surrounding soil type area. Transect data are provided in the table below. Lively 34-09 shows 43% cover of perennial native vegetation, while the reference area shows 49%. Eighty percent of the reference cover is therefore 39% (49×0.8) and the well pad meets the standard for final reclamation. These data indicate that the pad is ready for bond release and currently supports a sustainable perennial plant community. Photographs of current conditions and vegetation transects are provided on the attached page.

Recommended Actions

A request for reclamation liability release should be filed with the COGCC. No vegetation management actions are recommended at this time as desirable vegetation is well established and no noxious weeds were observed on the pad. The site should be checked periodically to inspect for infestations of other noxious weeds, and identify other issues that may arise and potentially impact successful reclamation.

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Table 1: Lively 34-09 Vegetation Transect Data

Genus	Species	Common Name	Hits				Average Absolute Cover (%)	Average Relative Cover (%)	Frequency (%)
			1	2	3	Total			
Grass & Grass-Like: Annual Desirable									
Vulpia	octoflora	sixweeks fescue			p	0	0.00	0.00	33.33
Subtotal						0	0.00	0.00	
Grass & Grass-Like: Annual Undesirable									
Bromus	arvensis	field brome				0	0.00	0.00	0.00
Subtotal						0	0.00	0.00	
Grass & Grass-Like: Perennial Desirable									
Aristida	purpurea	purple threeawn	p	1		1	0.67	1.52	66.67
Hespirostipa	comata	needle and thread	1			1	0.67	1.52	33.33
Pascopyrum	smithii	western wheatgrass	10	10	2	22	14.67	33.33	100.00
Schedonnardus	paniculatus	tumblegrass	1	1	6	8	5.33	12.12	100.00
Sporobolus	cryptandrus	sand dropseed		9	5	14	9.33	21.21	66.67
Subtotal			12	21	13	46	30.67	69.70	
Total Graminoid Cover			12	21	13	46	30.67	69.70	100.00
Total Perennial Graminoid Cover			12	21	13	46	30.67	69.70	100.00
Forbs: Annual Desirable									
Chenopodium	album	lambsquarters	p	p	p	0	0.00	0.00	100.00
Chenopodium	sp.	goosefoot	p	p	2	2	1.33	3.03	100.00
Descurainia	pinnata	western tansymustard		p	p	0	0.00	0.00	66.67
Plantago	patagonica	woolly plantain			p	0	0.00	0.00	33.33
Helianthus	annuus	common sunflower		p		0	0.00	0.00	33.33
Subtotal					2	2	1.33	3.03	
Forbs: Annual Undesirable									
Tragopogon	dubius	yellow salsify	p	p		0	0.00	0.00	66.67
Lepidium	densiflorum	common pepperweed	p	p	p	0	0.00	0.00	100.00
Subtotal						0	0.00	0.00	
Forbs: Biennial Desirable									
Erigeron	pumilis	shaggy fleabane		p		0	0.00	0.00	33.33
Grindelia	squarrosa	curlycup gumweed		p		0	0.00	0.00	33.33
Subtotal						0	0.00	0.00	
Forbs: Perennial Desirable									
Argemone	sp.	prickly poppy			p	0	0.00	0.00	33.33
Heterotheca	villosa	false hairy golden aster	p	p		0	0.00	0.00	66.67
Ipomopsis	laxiflora	iron ipomopsis	p	p	p	0	0.00	0.00	100.00
Ratibida	columnifera	prairie coneflower		p		0	0.00	0.00	33.33
Sphaeralcea	cocinea	scarlet globemallow	p	p	1	1	0.67	1.52	100.00
Unknown	Boraginaceae		0		p	0	0.00	0.00	33.33
Subtotal					1	1	0.67	1.52	
Total Forb Cover			0	0	3	3	2.00	4.55	33.33
Total Perennial Forb Cover			0	0	1	1	0.67	1.52	33.33
Woody Species: Perennial Desirable									
Cylindropuntia	imbricata	tree cholla			p	0	0.00	0.00	33.33
Ericameria	nauseosa	rubber rabbitbrush	p	3		3	2.00	4.55	66.67
Gutierrezia	sarothrae	broom snakeweed	3		11	14	9.33	21.21	66.67
Subtotal			3	3	11	17	11.33	25.76	
Total Shrub Cover			3	3	11	17	11.33	25.76	100.00
Total Vegetation Cover			15	24	27	66	44.00	100.00	100.00
Total Perennial Vegetation Cover			15	24	25	64	42.67	96.97	100.00
Total Ground Cover			35	44	31	110	73.33		100.00
Rock						0	0.00		0.00
Litter			20	20	4	44	29.33		100.00
Bare Ground			15	6	19	40	26.67		100.00
Total Hits			50	50	50	150	100.00		
Total Species			13	18	15				25.00
Total Perennial Species			11	15	14				14.00

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Lat: 37.5639203883 Long: 37.5639203883



Transect Photos:



Photos Taken: 7/15/2015

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