

Petroglyph Energy, Inc.
Well Pad Final Reclamation Evaluation

Well Name: Dick Realty & Investment Co. 1 (DRIC 1)

Evaluation Date: July 16, 2015

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

Current Condition

Overall, the Dick Realty & Investment Co. 1 pad (DRIC 1) has well-established vegetation, including perennial grasses and forbs with vegetation cover typical for the region. Dominant species on the pad include western wheatgrass (*Pascopyrum smithii*), needle and thread grass (*Hesperostipa comata*), hairy golden aster (*Heterotheca villosa*), and sand dropseed (*Sporobolus cryptandrus*). A small amount of cheatgrass (*Bromus tectorum*) and redstem stork's bill (*Erodium cicutarium*) are present on the pad, but these species are not currently inhibiting vegetation establishment.

Three vegetation cover transects were collected on the pad (see map below) for comparison to reference transects collected from the surrounding undisturbed area with a similar soil type. Transect data are provided in the tables below. DRIC 1 shows 29% cover of perennial desirable vegetation (Table 1), while the reference area shows 53% (Table 2). Eighty percent of the reference cover is 42% (53×0.8), which represents the level of cover required for successful revegetation of this site. These data indicate that the pad is progressing towards meeting revegetation bond release standards. Photographs of current conditions and vegetation transects are provided below.

Overall the pad is in great condition and looks very similar to the surrounding area. A 2014 inspection by the COGCC indicated that the well pad had passed the requirements for final reclamation.

Recommended Actions

Areas infested with cheatgrass should be treated to prevent the infestation from becoming a problem on the site. Prior to herbicide application the site should be mowed to remove the standing dead annual vegetation and allow for effective soil contact of herbicides. A pre-emergent herbicide should be applied in the fall of 2015 to prevent germination of this winter annual.

The site should be checked periodically to inspect for infestations of other noxious weeds and identify other issues that may arise and potentially impact the vegetation community.

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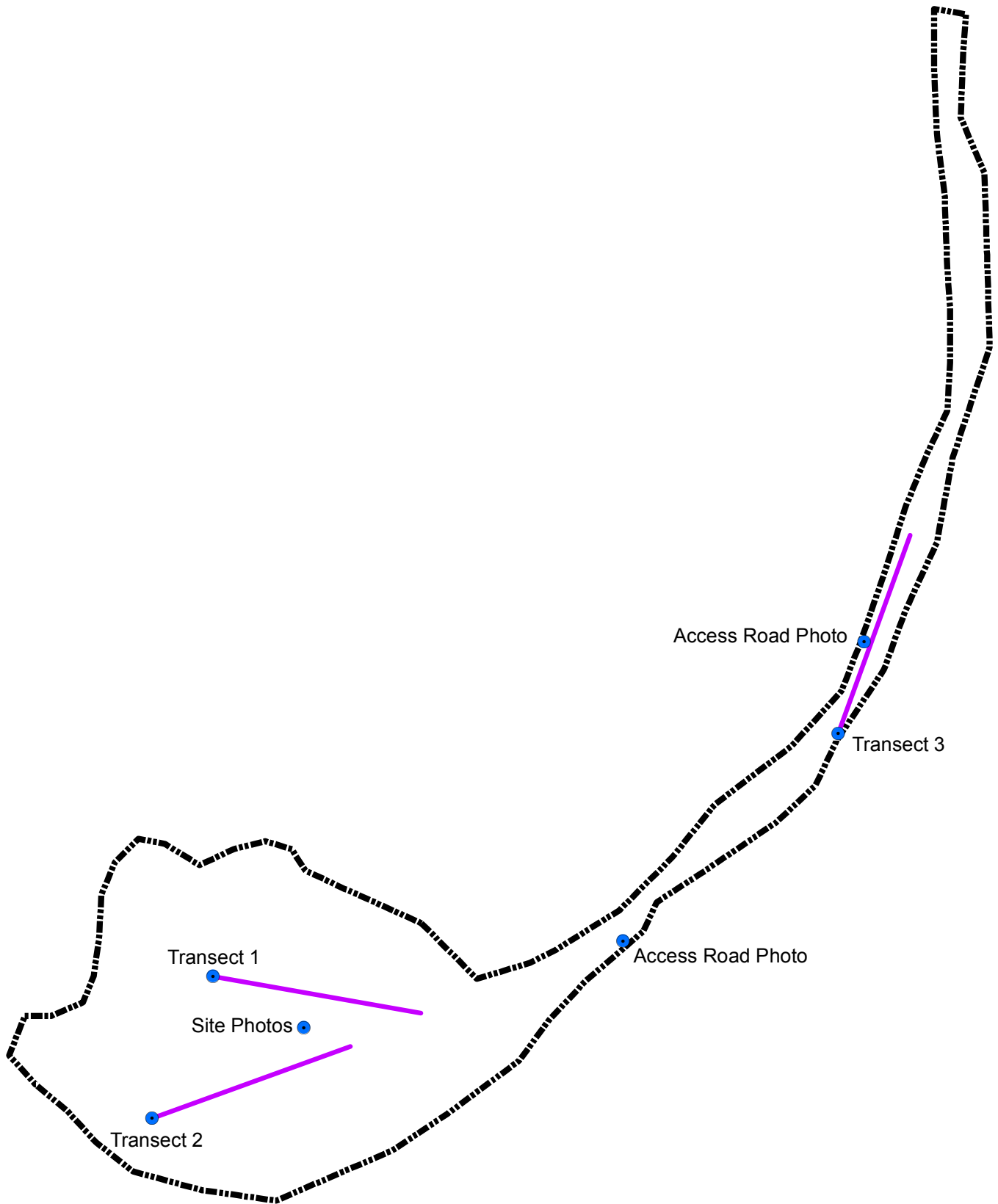
Table 1: DRIC 1 Vegetation Transect Data

			Hits				Average Absolute	Average Relative	Frequency
Genus	Species	Common Name	1	2	3	Total	Cover (%)	Cover (%)	(%)
Grass & Grass-Like: Annual Undesirable									
Bromus	tectorum	cheatgrass	p			0	0.00	0.00	33.33
Subtotal						0	0.00	0.00	
Grass & Grass-Like: Perennial Desirable									
Aristida	purpurea	purple threeawn	p			0	0.00	0.00	33.33
Bouteloua	gracilis	blue grama			p	0	0.00	0.00	33.33
Elymus	elymoides	squirreltail	p		p	0	0.00	0.00	66.67
Hespirostipa	comata	needle and thread	6	8	p	14	9.33	25.93	100.00
Muhlenbergia	wrightii	spike muhly			1	1	0.67	1.85	33.33
Nassella	viridula	green needlegrass			p	0	0.00	0.00	33.33
Pascopyrum	smithii	western wheatgrass	2	2	4	8	5.33	14.81	100.00
Schedonnardus	paniculatus	tumblegrass	p		p	0	0.00	0.00	66.67
Sporobolus	cryptandrus	sand dropseed	9	1	3	13	8.67	24.07	100.00
Subtotal			17	11	8	36	24.00	66.67	
Total Graminoid Cover			17	11	8	36	24.00	66.67	100.00
Total Perennial Graminoid Cover			17	11	8	36	24.00	66.67	100.00
Forbs: Annual Desirable									
Plantago	patagonica	woolly plantain	p			0	0.00	0.00	33.33
Subtotal						0	0.00	0.00	
Forbs: Annual Undesirable									
Alyssum	desertorum	desert madwort	1		p	1	0.67	1.85	66.67
Erodium	cicutarium	redstem filaree	p	p		0	0.00	0.00	66.67
Melilotus	officinalis	sweetclover	p	p		0	0.00	0.00	66.67
Sisymbrium	altissimum	tall tumbled mustard	1			1	0.67	1.85	33.33
Tragopogon	dubius	yellow salsify			p	0	0.00	0.00	33.33
Subtotal			2			2	1.33	3.70	
Forbs: Biennial Desirable									
Erigeron	pumilis	shaggy fleabane			p	0	0.00	0.00	33.33
Grindelia	squarrosa	curlycup gumweed	1	8	p	9	6.00	16.67	100.00
Subtotal			1	8		9	6.00	16.67	
Forbs: Perennial Desirable									
Argemone	sp.	prickly poppy	p			0	0.00	0.00	33.33
Astragalus	sp.	locoweed			p	0	0.00	0.00	33.33
Heterotheca	villosa	false hairy golden aster		1	3	4	2.67	7.41	66.67
Mirabilis	linearis	narrowleaf four o'clock	p	p		0	0.00	0.00	66.67
Hymenopappus	filifolius	fineleaf hymenopappus	p		p	0	0.00	0.00	66.67
Oenothera	albicaulis	whitest evening primrose		1		1	0.67	1.85	33.33
Ipomopsis	laxiflora	iron ipomopsis	p	p	p	0	0.00	0.00	100.00
Sphaeralcea	coccinea	scarlet globemallow	p	p	p	0	0.00	0.00	100.00
Thelesperma	filifolium	stiff green thread	p	1	p	1	0.67	1.85	100.00
Unknown	Fabaceae	unknown pea	p			0	0.00	0.00	33.33
Subtotal				3	3	6	4.00	11.11	
Total Forb Cover			3	11	3	17	11.33	31.48	100.00
Total Perennial Forb Cover			0	3	3	6	4.00	11.11	66.67
Woody Species: Perennial Desirable									
Chrysothamnus	greenei	Greene's rabbitbrush		p	1	1	0.67	1.85	66.67
Gutierrezia	sarothrae	broom snakeweed			p	0	0.00	0.00	33.33
Opuntia	phaeacantha	tulip pricklypear	p	p	p	0	0.00	0.00	100.00
Yucca	glauca	soapweed yucca		p		0	0.00	0.00	33.33
Subtotal					1	1	0.67	1.85	
Total Shrub Cover			0	0	1	1	0.67	1.85	33.33
Total Vegetation Cover			20	22	12	54	36.00	100.00	100.00
Total Perennial Vegetation Cover			17	14	12	43	28.67	79.63	100.00
Total Ground Cover			46	38	23	107	71.33		100.00
Rock						0	0.00		0.00
Litter						26	35.33		100.00
Bare Ground						4	28.67		100.00
Total Hits			50	50	50	150	100.00		
Total Species			21	15	21				32.00
Total Perennial Species			16	13	19				23.00

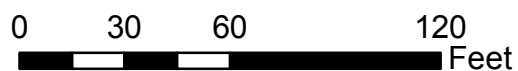
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Table 2: Reference Area B Vegetation Transect Data

Genus	Species	Common Name	Hits						Average Absolute	Average Relative	Frequency (%)
			1	2	3	4	5	Total			
Grass & Grass-Like: Annual Desirable											
Vulpia	octoflora	sixweeks fescue	1	p	p	p	p	1	0.40	0.76	100.00
Subtotal			1					1	0.40	0.76	
Grass & Grass-Like: Annual Undesirable											
Bromus	arvensis	field brome			2			2	0.80	1.52	20.00
Bromus	tectorum	cheatgrass		p	1	p		1	0.40	0.76	60.00
Subtotal					3			3	1.20	2.27	
Grass & Grass-Like: Perennial Desirable											
Aristida	purpurea	purple threeawn	p		1	p	5	6	2.40	4.55	80.00
Bouteloua	gracilis	blue grama	17	22	19	15	17	90	36.00	68.18	100.00
Elymus	canadensis	Canada wildrye	p	p			p	0	0.00	0.00	60.00
Elymus	elymoides	squirreltail	p	p	p		p	0	0.00	0.00	80.00
Hespirostipa	comata	needle and thread	p	p			p	0	0.00	0.00	60.00
Muhlenbergia	torreyi	ring muhly		1		p		1	0.40	0.76	40.00
Pascopyrum	smithii	western wheatgrass				p	1	1	0.40	0.76	40.00
Schedonnardus	paniculatus	tumblegrass		p	1		p	1	0.40	0.76	60.00
Sporobolus	cryptandrus	sand dropseed	1	1	p	p	2	4	1.60	3.03	100.00
Subtotal			18	24	21	15	25	103	41.20	78.03	
Total Graminoid Cover			19	24	24	15	25	107	42.80	81.06	100.00
Total Perennial Graminoid Cover			18	24	21	15	25	103	41.20	78.03	100.00
Forbs: Annual Desirable											
Coryza	canedensis	Canadian horsetweed				1		1	0.40	0.76	20.00
Cryptantha	minima	little cryptantha		p				0	0.00	0.00	20.00
Descurainia	pinnata	western tansymustard		p		p		0	0.00	0.00	40.00
Dysphania	graveolens	fetid goosefoot			p			0	0.00	0.00	20.00
Helianthus	annuus	common sunflower		p		p	p	0	0.00	0.00	60.00
Oenothera	albicaulis	whitest evening primrose					p	0	0.00	0.00	20.00
Plantago	patagonica	woolly plantain	p	1	p	p	p	1	0.40	0.76	100.00
Subtotal				1		1		2	0.80	1.52	
Forbs: Annual Undesirable											
Alyssum	desertorum	desert madwort			5			5	2.00	3.79	20.00
Chenopodium	sp.	goosefoot		p		p	p	0	0.00	0.00	60.00
Lactuca	seriola	prickly lettuce			p			0	0.00	0.00	20.00
Sisymbrium	altissimum	tall tumblemustard				1	p	1	0.40	0.76	40.00
Tragopogon	dubius	yellow salsify		p	p			0	0.00	0.00	40.00
Subtotal					5	1		6	2.40	4.55	
Forbs: Biennial Desirable											
Grindelia	squarrosa	curlycup gumweed				p		0	0.00	0.00	20.00
Subtotal								0	0.00	0.00	
Forbs: Perennial Desirable											
Allium	textile	onion	p					0	0.00	0.00	20.00
Artemisia	campestris	field sage				p		0	0.00	0.00	20.00
Artemisia	carruthii	Carruth's sagewort			p	1		1	0.40	0.76	40.00
Dalea	candida	white prairie clover	p					0	0.00	0.00	20.00
Eriogonum	effusum	spreading buckwheat	p					0	0.00	0.00	20.00
Erigeron	pumilis	shaggy fleabane	p	2	p	1	p	3	1.20	2.27	100.00
Heterotheca	villosa	false hairy golden aster	p		3	p		3	1.20	2.27	60.00
Lupinus	sp.	lupine	p					0	0.00	0.00	20.00
Lygodesmia	juncea	rush skeletonplant					p	0	0.00	0.00	20.00
Sphaeralcea	coccinea	scarlet globemallow	p	p		p	p	0	0.00	0.00	80.00
Thelesperma	filifolium	stiff greenthread	p	p			p	0	0.00	0.00	60.00
Tragopogon	dubius		p					0	0.00	0.00	20.00
Subtotal				2	3	2		7	2.80	5.30	
Total Forb Cover			0	3	8	4	0	15	6.00	11.36	60.00
Total Perennial Forb Cover			0	2	3	2	0	7	2.80	5.30	60.00
Woody Species: Perennial Desirable											
Chrysothamnus	greenei	Greene's rabbitbrush	1	1			p	2	0.80	1.52	60.00
Echinocereus	coccineus	scarlet hedgehog cactus		p			p	0	0.00	0.00	40.00
Gutierrezia	sarothrae	broom snakeweed	2	5		p	1	8	3.20	6.06	80.00
Krascheninnikovia	lanata	winterfat					p	0	0.00	0.00	20.00
Opuntia	phaeacantha	tulip pricklypear	p	p	p		p	0	0.00	0.00	80.00
Opuntia	polyacantha	plains pricklypear	p					0	0.00	0.00	20.00
Psoralidium	tenuiflorum	slimstem scurfpea			p			0	0.00	0.00	20.00
Subtotal			3	6			1	10	4.00	7.58	
Total Woody Cover			3	6	0	0	1	10	4.00	7.58	60.00
Total Vegetation Cover			22	33	32	19	26	132	52.80	100.00	100.00
Total Perennial Vegetation Cover			21	32	24	17	26	120	48.00	90.91	100.00
Total Ground Cover			37	39	43	44	40	203	81.20		100.00
Rock					1			1	0.40		20.00
Litter			15	6	10	25	14	70	28.00		100.00
Bare Ground			13	11	7	6	10	47	18.80		100.00
Total Hits			50	50	50	50	50	250	100.00		
Total Species			21	22	17	21	23				44.00
Total Perennial Species			21	19	12	18	21				28.00



-  Well Pad Boundary
-  Photo Point
-  Cover Transect



Petroglyph Energy 2015

Dick Realty & Investment Co. 1



Evaluated: 7/16/15
Drawn: 7/31/15
Drawn By: RFB

Dick Realty & Inv Co 1



Access road

Photo Date 7/16/2015

Lat: 37.554991135 Long: -104.8694353031



Access road

Photo Date 7/16/2015

Lat: 37.5553107386 Long: -104.8691112835



Looking East

Photo Date 7/16/2015

Lat: 37.5548996005 Long: -104.8698633013



Looking North

Photo Date 7/16/2015

Lat: 37.5548996005 Long: -104.8698633013



Looking South

Photo Date 7/16/2015

Lat: 37.5548996005 Long: -104.8698633013



Looking West

Photo Date 7/16/2015

Lat: 37.5548996005 Long: -104.8698633013



Transect 1

Photo Date 7/16/2015

Lat: 37.5549541436 Long: -104.8699853217



Transect 2

Photo Date 7/16/2015

Lat: 37.5548026329 Long: -104.8700672417

Dick Realty & Inv Co 1



Transect 3

Photo Date 7/16/2015

Lat: 37.5552043503

Long: -104.8691320937