



SRC Energy Inc.
Ogilvie 24-3 Wellhead
Facility ID 327071
Vegetation Survey

Prepared By:
Duraroot Environmental Consulting, LLC
And
SolSpec Solutions, LLC



VEGETATION SURVEY

PREPARED FOR: SRC ENERGY INC.



Well Pad: Ogilvie 24-3

Facility ID #: 327071

Legal Description: NENW SEC24 T5N R64W

County: Weld

Date of Assessment: October 27, 2017

Date Prepared: November 2, 2017

Purpose:

Per Rule 1004.c.(4), SRC Energy Inc. (SRC) is required by the Colorado Oil and Gas Conservation Commission (COGCC) to provide documentation of final reclamation status to accompany the Form 4, Sundry Notice requesting final asset inspection and release from financial assurance. The former Ogilvie 24-3 Wellhead (Facility ID 327071) was inspected by scientists from Duraroot Environmental Consulting, LLC (Duraroot) and SolSpec Solutions, LLC (SolSpec) to assess reclamation status and to provide supporting documentation for Form 4, Sundry Notice submission for request of final release (Figure 1).

In preparation for final reclamation, the former Ogilvie 24-3 Well (Facility ID 327071) has been plugged and abandoned (P&A - 8/10/2008). All facility equipment and debris have been removed from the location. The location soils, including the access road, have been re-graded to approximate original contours, de-compaction has been implemented, stockpiled topsoil has been re-applied across the location, and seeding has occurred using a native rangeland seed mix. Reclamation efforts have been performed to the same standards established for interim reclamation under Rule 1003. Annual weed control has been implemented in an effort to control undesirable plant species on location. Most recently, the location was mowed three times (April 5, May 24, and September 15, 2017) to assist in weedy species control.

The adjacent landscape of the former Ogilvie 24-3 Wellhead (Facility ID 327071) is currently used for pasture and agronomic practices. Acreage requiring re-vegetation was approximately 0.77 acres, including the associated access road. The objective of this vegetation survey was to determine if successful final reclamation has been achieved at the former Ogilvie 24-3 Wellhead (Facility ID 327071) with vegetative cover of the reclaimed area reaching approximately 80 percent of off-site, reference levels.

Methodology:

Scientists from Duraroot and SolSpec surveyed the former Ogilvie 24-3 Wellhead (Facility ID 327071) on October 27, 2017, to assess the current reclamation status of the location including native vegetative cover (percent), weedy species presence and cover (noxious and non-noxious), and percent bare ground (Figure 2). Percent vegetative cover of the ground surface was measured using an unmanned aerial vehicle (UAV) capturing near-infrared imagery from a nadir perspective. The near-infrared imagery was then used for spectrally classifying vegetative cover on the pad and two adjacent, randomly determined plots. At the time of the flight, ground truthed validation data were collected using a virtual reference station (VRS) enabled GPS to verify and calibrate the spectral imagery. Finally, species were grouped based on the required reporting characteristics: Bare Ground, Native, and Undesirable. On-site results were evaluated against two randomized plots in the adjacent native landscape to determine reference area percent cover (Table 1). In addition, five (5) photos were taken covering each cardinal direction (N, S, E, and W) and the ground surface to document reclamation status and current vegetative cover. Representative photos for on-site and off-site conditions, facing each cardinal direction and the ground surface, are located at the end of the report.

VEGETATION SURVEY DATA

Results and Interpretation:

According to vegetation survey data collected using the UAV method, vegetative cover by native species on the reclaimed portion of the well pad is greater than adjacent, reference area levels (Table 1). Native vegetative cover on the location was 574 percent of off-site, reference area levels. Vegetative cover by undesirable weedy species (i.e. lambsquarters and Canada thistle) was observed at elevated levels in the adjacent, reference area when compared to on-site levels. Undesirable, weedy species made up 85 percent of the off-site vegetative cover, while only 15 percent of the on-site vegetative cover consisted of undesirable species. Bare ground cover on-site was only slightly higher than reference area levels at 1.0 percent. In addition, Canada thistle (*Cirsium arvense*) is listed as a List B Species on the Colorado State Noxious Weed List.

Table 1. Percent ground cover for the former Ogilvie 24-3 Wellhead and Reference Area.

Cover Type	Reference Area	Wellhead	Percent of Reference Area Cover
Native Vegetation	15%	84%	574%
Bare Ground	0%	1%	---
Undesirable Vegetation	85%	15%	18%

Conclusions and Recommendations:

Based on collected UAV data, vegetative cover by native species on the reclaimed portion of the former Ogilvie 24-3 Wellhead (Facility ID 327071) is in excess of adjacent, reference area levels and re-vegetation efforts have been successful (Table 1). Given the density of undesirable weedy species adjacent to this location, it is recommended that SRC continue the appropriate steps in controlling these species along the perimeter of the location and on-site to prevent inhabitation on-site. Off-site cover of undesirable weedy species, which will provide a source of weed seed and undoubtedly hinder any weed management and reclamation efforts put forth by SRC, should be considered when assessing this location. It will be extremely difficult for SRC to provide proper weed control without the cooperation of adjacent surface owners.

Excluding the well pad surface, there are areas of the access road that remain compacted and unvegetated. It may be advantageous for SRC to de-compact and interseed portions of the access road. To maintain a healthy stand of native grasses, a site-specific Integrated Weed Management Plan (IWMP) should be developed for the location. A site-specific IWMP will address various options for weedy species control including chemical, mechanical, and biological methods. Canada thistle is a difficult species to control and requires several methods, including herbicide use and mowing. The site should be periodically sprayed and mowed during the 2018 growing season, prior to flowering and seed head production. Mowing will reduce competition with desirable species and allow greater opportunity for reclamation success. In addition to mowing, herbicides appropriate for the identified weedy species could be applied to eradicate any problematic species. Application timing and rates for herbicides should follow the manufacturer's recommendations and care should be taken to avoid desirable broadleaf vegetation. All herbicide applications should be approved by property owners prior to application.

VEGETATION SURVEY PHOTOS – ONSITE



Photo 1. The Ogilvie 24-3 Wellhead facing north, October 27, 2017. Location: N 40.39028 W 104.50107



Photo 2. The Ogilvie 24-3 Wellhead facing south, October 27, 2017. Location: N 40.39028 W 104.50107



Photo 3. The Ogilvie 24-3 Wellhead facing east, October 27, 2017. Location: N 40.39028 W 104.50107



Photo 4. The Ogilvie 24-3 Wellhead facing west, October 27, 2017. Location: N 40.39028 W 104.50107



Photo 5. The Ogilvie 24-3 Wellhead ground surface, October 27, 2017. Location: N 40.39028 W 104.50107

VEGETATION SURVEY PHOTOS – OFFSITE



Photo 6. Reference area for the Ogilvie 24-3 Wellhead facing north, September 8, 2017. Location: N 40.39086 W 104.50089



Photo 7. Reference area for the Ogilvie 24-3 Wellhead facing south, September 8, 2017. Location: N 40.39086 W 104.50089



Photo 8. Reference area for the Ogilvie 24-3 Wellhead facing east, September 8, 2017. Location: N 40.39086 W 104.50089



Photo 9. Reference area for the Ogilvie 24-3 Wellhead facing west, September 8, 2017. Location: N 40.39086 W 104.50089





Photo 10. Reference area for the Ogilvie 24-3 Wellhead ground surface, September 8, 2017. Location: N 40.39086 W 104.50089

Figure 1: Ogilvie 24-3



Legend

-  Ogilvie 24-3 Road: 0.56 acres*
-  Ogilvie 24-3 Pad: 0.21 acres*

Total: 0.77 acres*

*Estimated acres

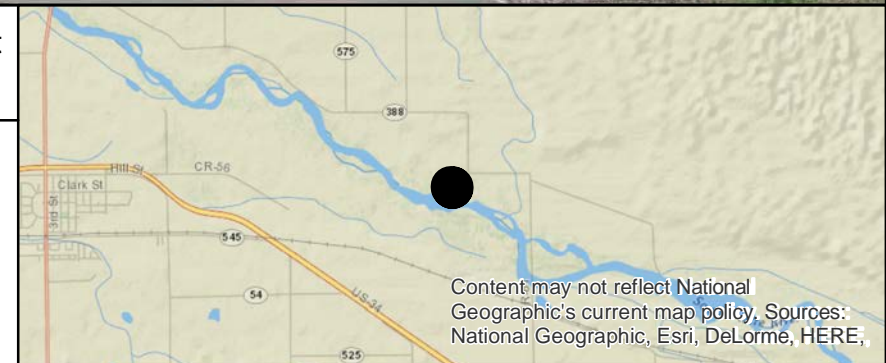
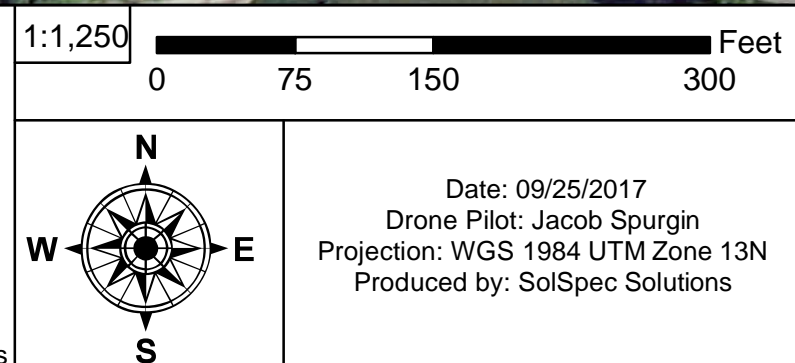
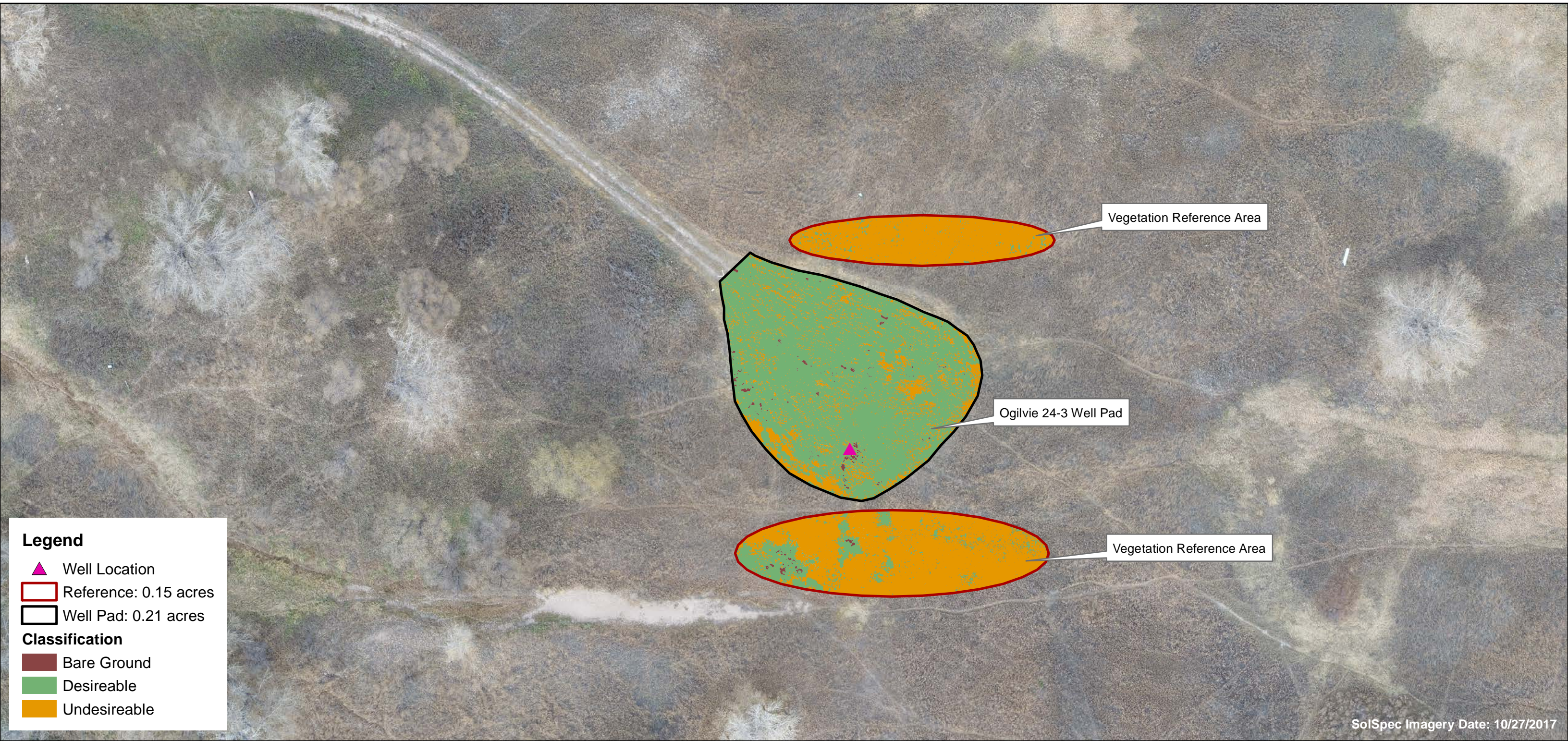





Figure 2: Ogilvie 24-3 Vegetation Survey




Legend


 Well Location


 Reference: 0.15 acres

 Well Pad: 0.21 acres

Classification

 Bare Ground

 Desirable

 Undesirable

SolSpec Imagery Date: 10/27/2017

Ogilvie 24-3 Vegetative Area					Ogilvie 24-3 Vegetative Area			
Evaluation Type	Bare Ground (m²)	Undesirable (m²)	Native Cover (m²)	Total Area (m²)	Bare Ground (% Cover)	Undesirable (% Cover)	Native (% Cover)	Percent of Baseline Native Cover
Baseline Reference	2	508	88	598	0%	85%	15%	574%
Well Pad Interim Cover	8	124	699	830	1%	15%	84%	

1:500

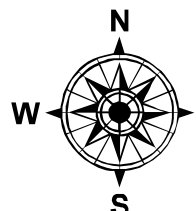
0

25

50

100

Feet



Date: 11/2/2017

Drone Pilot: Adam Dutko

UAV: DJI Phantom 4

Sensor: NIR Red Notch Filter

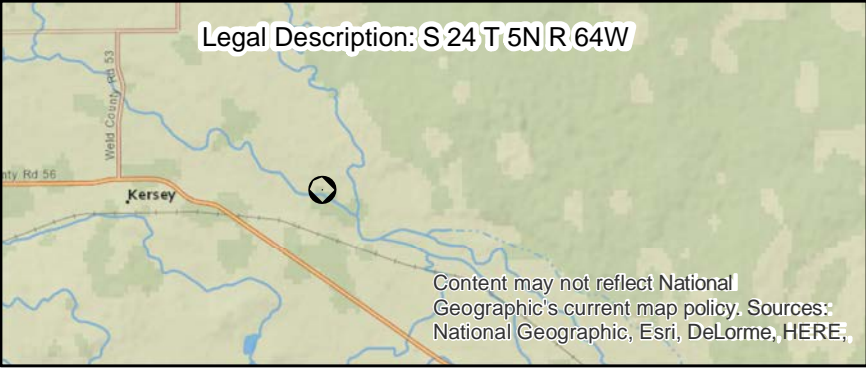
GSD: 2.5 cm

Altitude: 100m

Projection: WGS 1984 UTM Zone 13N

Produced by: SolSpec Solutions

Legal Description: S 24 T 5N R 64W



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