FORM
27
Rev 6/99

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109

#8268

FOR OGCC USE ONLY

OGCC Employee:

☐ Spill ☐ Complaint
☐ Inspection ☐ NOAV

Tracking No:

SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☑ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☐ Other (describe):

OGCC Operator Number: 10128
Name of Operator: Bargath LLC (Williams)
Address: 20219 County Road 5
City: Rifle State: CO Zip: 81650

Contact Name and Telephone:
Annette Garrigues
No: 970-618-3329
Fax: 970-285-5936

API Number: n/a
County: Rio Blanco
Facility Name: Black Sulphur Compressor Station
Facility Number: 428642, SPILL ID#: 2229161
Well Name: n/a
Well Number: n/a
Location: (QtrQtr, Sec, Twp, Rng, Meridian): SWSW, 19, 2S, 97W, 6th
Latitude: 39°51'24.51"N Longitude: -108°19'44.48"W

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): Condensate

Site Conditions: Is location within a sensitive area (according to Rule 901e)? ☑ Y ☐ N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Open Rangeland, industrial

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Barcus Channery Loamy Sand 2-8% Slopes

Potential receptors (water wells within 1/4 mi, surface waters, etc.): Groundwater, Black Sulphur Creek (400'+ South)

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):	Extent of Impact:	How Determined:
☑ Soils	See attached map	Borehole delineation
☐ Vegetation		
☑ Groundwater	See attached map and analytical spreadsheet	Groundwater monitoring wells
☐ Surface Water		

REMEDIATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

On May 30, 2012, a borehole delineation commenced of the suspected contamination area. On June 5, 2012, contact was made with COGCC. On June 15, 2012, a Form 19 was submitted. A full borehole delineation has been completed within the fenced area at our facility, and 7 monitoring wells have been installed. The groundwater in these wells has been sampled July-Sept. 2012, and January 2013-present (the data gap results from the previous consultant stopping work without prior notification to Bargath LLC). Our goal now is to complete another delineation outside of the fenced area to determine the size of the plume, and come up with a plan for remediation.

Describe how source is to be removed:

We do not know yet how we are going to remediate this site until we can fully delineate the plume.

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

In the immediate future, we are looking for COGCC approval to further delineate outside the fenced area. After we fully delineate the plume, then we will come up with a remediation plan.

Submit Page 2 with Page 1

FORM 27 Rev 6/99

Page 2

State of Colorado
Oil and Gas Conservation Commission
1120 Lincoln Street, Suite 801, Denver, Colorado 80203
(303)894-2100 Fax:(303)894-2109

Tracking Number: _____
Name of Operator: _____
OGCC Operator No: _____
Received Date: _____
Well Name & No: _____
Facility Name & No: _____

REMEDIATION WORKPLAN (Cont.)

OGCC Employee:

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

Currently, we are sampling 7 monitoring wells, on a monthly basis. As we interface with groundwater during our proposed delineation, we will install additional monitoring wells to document impacts outside of the fenced area.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

At this time, we do not have a reclamation plan.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? ☑ Y ☐ N If yes, describe:

We would like to delineate the plume outside of the fenced area. The landowner (XTO Energy) is supporting us in this effort, but everyone would like approval from the COGCC to move forward.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

Any contaminated dirt brought up while drilling boreholes will be stored on-site, in a containment, until we can haul it to ECDC Environmental in East Carbon, Utah. A Special Waste Profile is already in place for the disposal of condensate impacted soils from this facility.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 5/30/2012	Date Site Investigation Completed: 6/6/2012	Date Remediation Plan Submitted: To be determined
Remediation Start Date: To be determined	Anticipated Completion Date: To be determined	Actual Completion Date: To be determined

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Annette Garrigues Signed: Annette Garrigues

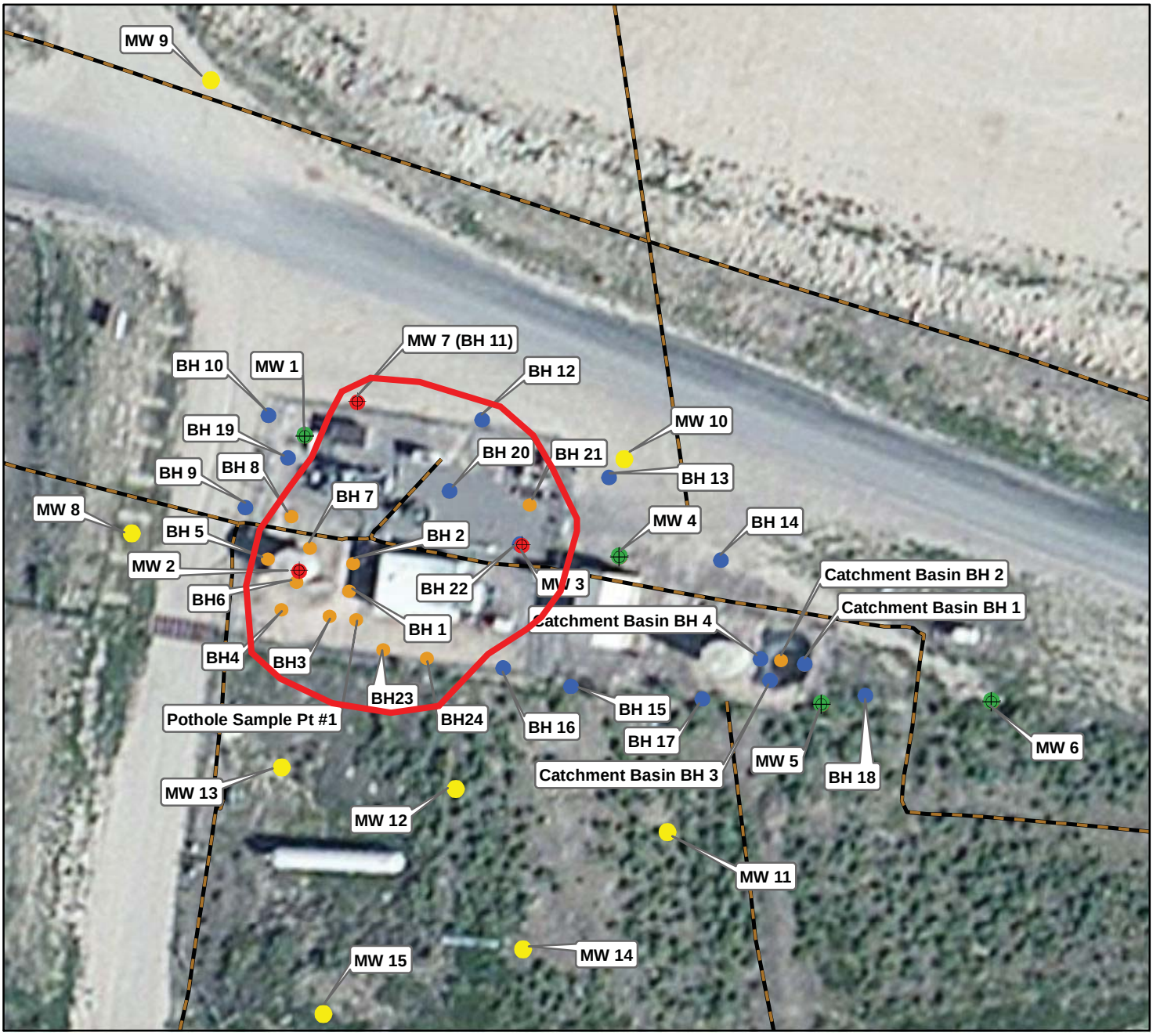
Title: Environmental Specialist Date: 2/26/2013

OGCC Approved: Stanley C. Spencer Title: EPS NW Date: 3/19/2014

Williams-Black Sulfur Compressor Station, Facility ID 428642

Form 27, Spill Tracking # 2229161, Conditions of Approval;

The extent of potential groundwater contamination downgradient of the catch basin may not have been adequately delineated. Soil boring CB BH02 contained 21,600 mg/kg (~ 2%) of TPH at 20 ft bgs. These concentrations demonstrate a potential for undetected free product impact to groundwater. MW-5 appears to have been installed cross gradient to the catch basin. At least one additional monitoring well must be installed directly adjacent/downgradient of the catch basin (north of MW-5) and analyzed for Table 910-1 parameters. If groundwater contamination is detected adjacent to the catch basin, additional investigation must be performed to define the full nature and extent of contamination.



Legend

- New Monitoring Wells
- Monitoring Wells Clean
- Monitoring Wells Contaminated
- Soil Boring Clean
- BSCCS Borehole Locations
- Pipelines

N

0 17.5 35 70 Feet

F:/Projects/013-0231/GIS/.mxd

PROJECT: 013-0231	Soil Boring and Monitoring Well Locations Black Sulfur Compressor Station Williams Midstream	FIGURE
DRAWN BY: JM		1
DATE: August 5, 2013		

OLSSON ASSOCIATES
1111 Lincoln Mall, Suite 111
P.O. Box 84608
Lincoln, NE 68501-4608
TEL 402.474.6311
FAX 402.474.5160
www.oaconsulting.com

March 15, 2013

Annette Garrigues
Environmental Specialist
Williams
20219 County Road 5
Rifle, Colorado 81650

RE: Additional Site Characterization Work Plan, Black Sulphur Compressor Station, Garfield County, Colorado, Olsson Project Number 013-0231

Dear Ms. Garrigues:

Olsson Associates, Inc. (Olsson) is pleased to provide Williams with a Site Characterization Work Plan for the Black Sulphur Compressor Station (COGCC Facility # 428642, Spill ID # 2229161) located on County Road 26 (Black Sulphur Creek Road) north of Black Sulphur Creek at latitude 39.856808 and longitude -108.329129 in Rio Blanco County, Colorado. The purpose of this additional site characterization work is to define the nature and extent of natural gas condensate (condensate) impacts, and to develop a remediation strategy at the site.

Introduction

During the removal of a condensate aboveground storage tank, it was discovered a condensate release had occurred. In June 2012 a site characterization was performed by another consultant that included advancing 24 soil borings and the installation of six 2-inch diameter monitoring wells and one 1-inch diameter monitoring well. Figure 1 presents a Site Map depicting the locations of the soil borings and monitoring wells currently at the site. Table 1 summarizes the analytical results obtained for the soil samples collected during the initial site investigation. Groundwater samples were collected from the seven monitoring wells in June 2012, July 2012, August 2012, and September 2012, by the previous consultant. The project transitioned to Olsson in late January 2013. Olsson collected groundwater samples in January 2013 and February 2013. Table 2 summarizes the groundwater sample analyses completed to date. As can be seen on Table 2, laboratory analyses historically have reported gas condensate constituents in the groundwater samples collected from monitoring wells MW-2, MW-3, and MW-7 with results reported above Colorado Oil and Gas Conservation Commission (COGCC), Series 900, Exploration and Production (E&P) Waste Management, Table 910-1 Concentration Levels.

Groundwater Occurrence

Depth to groundwater in the vicinity of the site generally ranges between 18 feet and 25 feet below ground surface (ft-bgs). Potentiometric surface maps were prepared using the monitoring well survey data provided by Williams and the depth to groundwater measurements from the July 2012 and January 2013 sampling events are provided as Figure 2 and Figure 3. Based on the July 2012 and January 2013 depth to groundwater measurements, the estimated groundwater flow beneath the site is to the east – southeast with a gradient of 0.014 ft/ft in July 2012 and 0.0034 feet per foot (ft/ft) in January 2013 (as calculated between monitoring wells MW1 and MW6).

Additional Site Characterization

Olsson proposes to advance up to six borings with a drill rig at selected locations with completion of groundwater monitoring wells in each boring to assess soil and groundwater for potential condensate impact. Soil drill cuttings will be stored and covered with plastic sheeting, within containment onsite, prior to disposal with management by Williams. The approximate locations of the proposed borings are shown on Figure 4. Olsson will submit a Notice of Intent (NOI) to construct monitoring wells with the Colorado Division of Water Resources. Olsson will work with Williams' operations personnel to select the actual soil boring/monitoring well locations and avoid buried utilities and plant piping. Prior to work initiation, Olsson will contact and arrange for the appropriate utility company representatives to mark all underground utilities or obstructions at the sites. Additionally, Olsson will rely on Williams to mark any privately-owned utilities at the sites, if present. In addition, Olsson will utilize a hydrovac subcontractor to pothole proposed drilling locations to a depth of six feet below ground surface prior to drilling, so as not to damage buried utilities or piping. Olsson will coordinate with the designated site contact(s) provided by Williams to arrange a drilling schedule.

A site-specific Health and Safety Plan (HASP) will be developed for the project. We expect the field activities can safely be performed using Level D personal protection consisting of flame resistant clothing (shirt and pants), hard hat, steel-toed boots, safety glasses, hearing protection, leather and/or chemical resistant gloves.

Soil and Groundwater Sampling

Based on discussions with Williams' personnel, the proposed site investigation includes advancing six borings at selected locations using a drill rig equipped with 8-inch (outside diameter) hollow stem augers to an estimated maximum depth of 30 feet bgs.

An Olsson geologist will document the site lithology, examine the soils for suspected environmental impact (i.e. chemical staining and/or odors), and the soils will be field screened using a photo-ionization detector (PID) for the presence of volatile organic vapors as the borings are advanced. Soil samples will be collected at five-foot intervals using a split-spoon sampler as the borings are advanced. The PID measurements will be recorded on the field boring logs. One soil sample from each boring exhibiting either indications of suspected environmental

impact (staining or odor) or elevated PID readings will be submitted for laboratory analysis. In the event suspected environmental impact or elevated PID readings are not observed, a soil sample will be collected from the capillary fringe above the groundwater table, expected within 17 feet to 24 feet bgs.

Monitoring wells will be constructed in each boring using 2-inch diameter Schedule 40 polyvinyl chloride (PVC) well materials. Well casing and screen connections will be flush threaded. The well screens will be 10 feet to 15 feet long with 0.01-inch factory-cut slots. The annular space around the well screens will be backfilled with clean, well-sorted, 10-20 mesh silica sand as a filter pack between the formation material and the well screen. The filter pack will extend approximately two feet above the top of the well screen intervals. The top of the filter pack will be measured with a weighted measuring tape for depth confirmation. A hydrated bentonite seal, approximately two feet thick, will be placed in the annular space above the filter pack. The finished bentonite seal surface will be measured with a weighted measuring tape for depth confirmation. The annular space above the bentonite seal will be filled with bentonite chips and hydrated with potable water. A locking expandable well cap plug will be installed at the top of the casing. The well casing will be protected by a flush-mount protective cover. A concrete surface seal flush with ground surface will be constructed around the protective cover.

The monitoring wells will be permitted with the Colorado Division of Water Resources. The well locations and elevations will be surveyed by a Colorado registered professional surveyor. The monitoring wells will be developed by removing groundwater until it appears relatively clear and free of sediment. Development will be performed by pumping, surging, and extracting the groundwater in the well to help remove sediment, to develop the sand filter pack, and to help restore the natural conductivity of the aquifer. Well development can be performed using a bailer, hand pump, or with a down-hole extraction pump. Surging with groundwater extraction is accomplished using a surge block or bailer.

One groundwater sample from each boring will be collected for laboratory analysis with a single-use polyethylene bailer. Sampling equipment and drill augers will be cleaned between borings using a pressure washer and potable water. The wash water will be discharged onsite.

Sample Analysis

One soil sample will be submitted from each boring (six soil samples) for the analyses for benzene, ethylbenzene, toluene, and xylenes (BTEX) using EPA Method 8260B and total petroleum hydrocarbons (TPH) in the gasoline (GRO), diesel fuel (DRO) ranges using EPA Method 8015. Six groundwater samples will be collected and submitted to the laboratory for BTEX, GRO, and DRO, as well as, monitored natural attenuation parameters (MNA) total dissolved solids, sulfate, total nitrogen, nitrate, nitrite, dissolved iron, and dissolved manganese.

Investigational Derived Waste

Soil drill cuttings will be stored on plastic sheeting onsite for management by Williams with the assistance from Olsson to determine disposal options. Purged groundwater will be stored in

labeled 55-gallon drums or a 275-gallon polyethylene tote onsite for disposal by Williams or included for disposal with other water produced onsite.

Summary Report Preparation

A report summarizing the sampling activities, lithologic boring log information, and laboratory analytical results will be presented to Williams. The analytical results will be compared to soil and groundwater concentration levels listed in the COGCC, Series 900, E&P Waste Management, Table 910-1 Concentration Levels.

Schedule

For safety concerns, Olsson would prefer to begin this investigation when there is no snow cover at the site that may obscure buried utility location markings or other potential subsurface features. It is expected the soil sampling and monitoring well completions can be performed in three days onsite. Olsson's summary report will be submitted approximately two weeks following receipt of the laboratory analytical report and surveyor data.

Thank you for allowing Olsson an opportunity to prepare this work plan for Williams. Please call me if you have any questions call at (303) 237-2072.

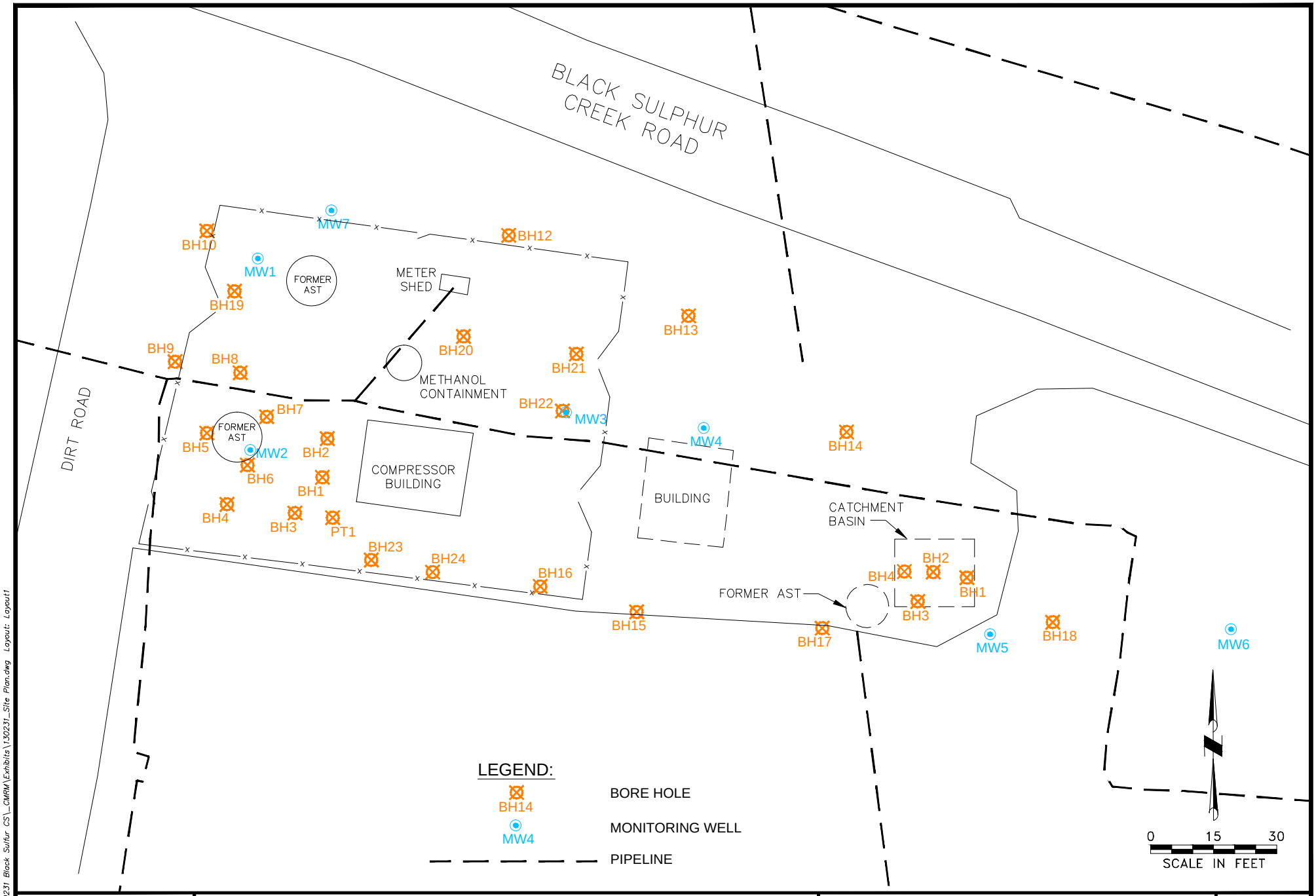
Sincerely,
Olsson Associates, Inc.

Kevin Taylor, P.G.
Senior Project Geologist

James Hix, P.G.
Senior Geologist

Attachment:
Figure 1 – Site Map
Figure 2 – Potentiometric Surface Map – July 2012
Figure 3 - Potentiometric Surface Map – January 2013
Figure 4 - Proposed Boring Location Map
Table 1- Soil Sample Analytical Summary
Table 2 - Groundwater Analytical Summary

FIGURES



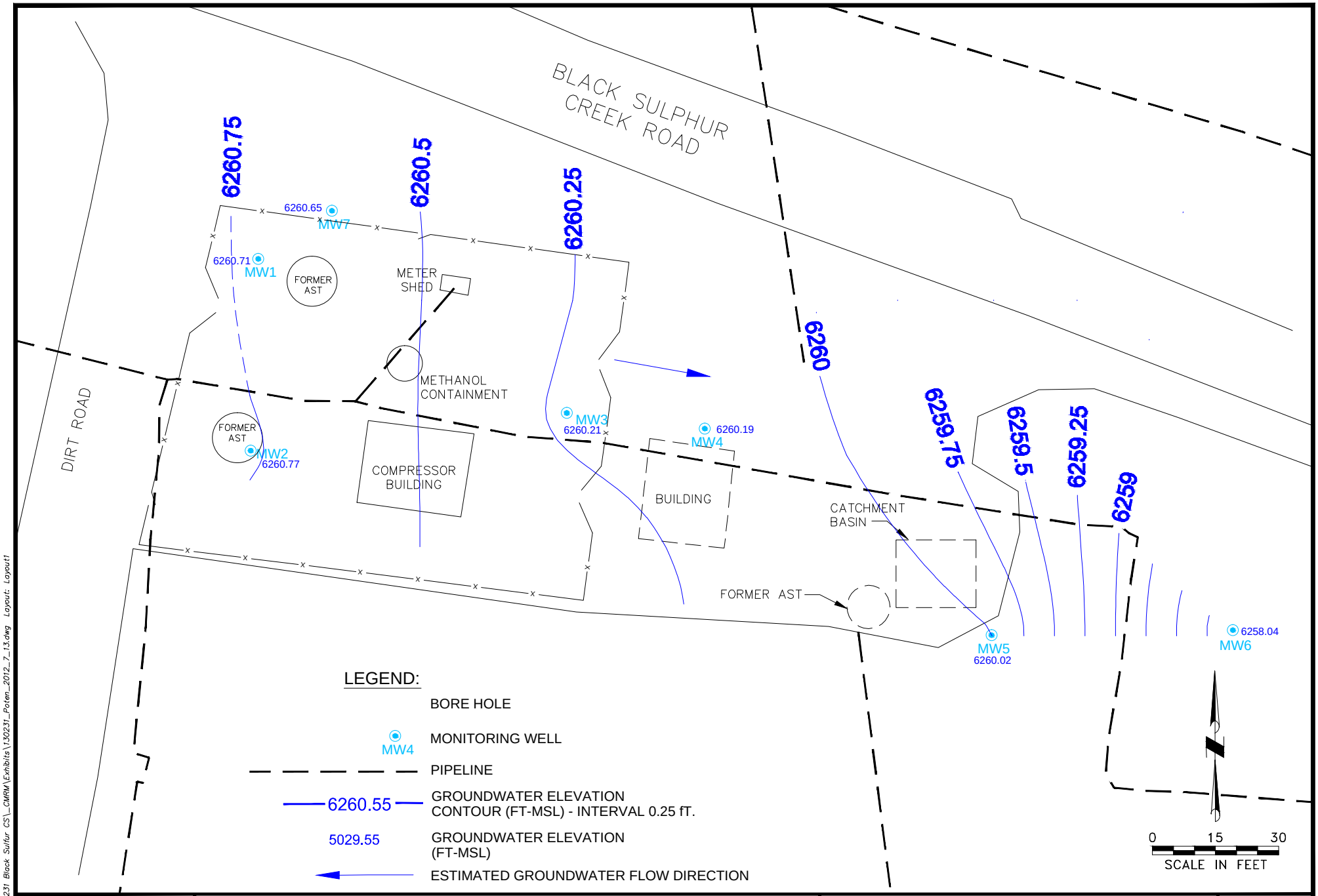
PROJECT NO:	013-0231
DRAWN BY:	sds
DATE:	03.15.13

SITE MAP
BLACK SULPHUR COMPRESSOR STATION
WILLIAMS MIDSTREAM
RIO BLANCO COUNTY, COLORADO

OLSSON ASSOCIATES
4690 Table Mountain Drive
Suite 200
Golden, CO 80403
TEL 303.237.2072
FAX 303.237.2659

FIGURE
1

F:\Projects\013-0231 Black Sulfur CS_CMRA\Exhibits\130231_Site Plan.dwg Layout: Layout1



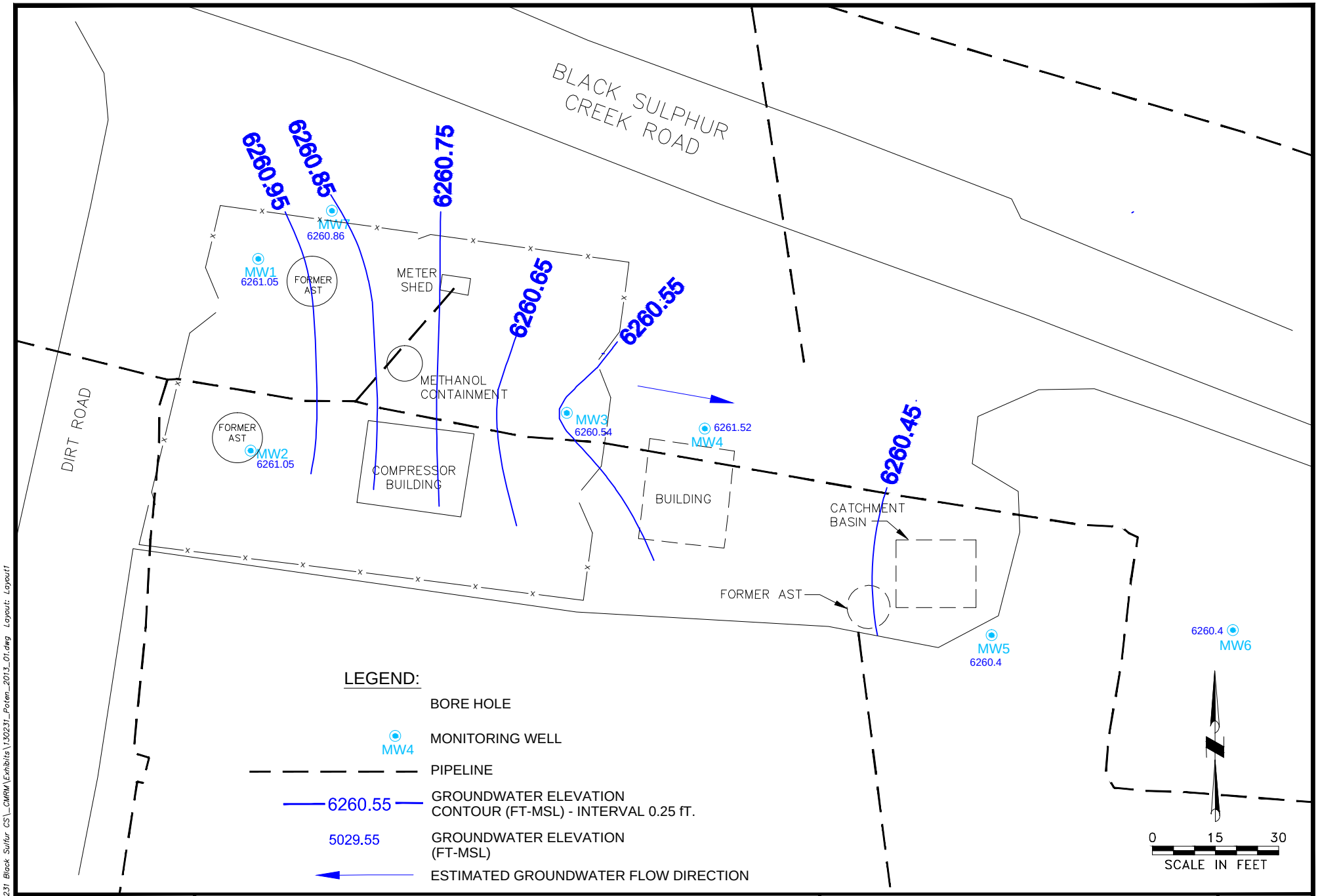
PROJECT NO:	013-0231
DRAWN BY:	sds
DATE:	03.15.13

POTENTIOMETRIC SURFACE MAP - JULY 2012
BLACK SULPHUR COMPRESSOR STATION
WILLIAMS MIDSTREAM
RIO BLANCO COUNTY, COLORADO

OLSSON ASSOCIATES
4690 Table Mountain Drive
Suite 200
Golden, CO 80403
TEL 303.237.2072
FAX 303.237.2659

FIGURE
2

F:\Projects\013-0231 Black Sulfur CS_CMRR\Exhibits\130231_Poten_2012_7_13.dwg Layout: Layout1



PROJECT NO:	013-0231
DRAWN BY:	sds
DATE:	03.15.13

POTENTIOMETRIC SURFACE MAP - JANUARY 2013
BLACK SULPHUR COMPRESSOR STATION
WILLIAMS MIDSTREAM
RIO BLANCO COUNTY, COLORADO

OLSSON ASSOCIATES
4690 Table Mountain Drive
Suite 200
Golden, CO 80403
TEL 303.237.2072
FAX 303.237.2659

FIGURE
3

F:\Projects\013-0231 Black Sulfur CS_CMRR\Exhibits\130231_Poten_2013_01.dwg Layout: Layout1

Existing Monitoring Well

Proposed Soil Boring/Monitoring Well

North

Scale Not Determined

PROJECT NO: 013-0231	Proposed Soil Borings/Monitoring Wells Williams Black Sulphur Compressor Station	OLSSON ASSOCIATES	4690 Table Mountain Drive Suite 200 Golden, CO 80403 TEL 303.237.2072 FAX 303.237.2659	Figure 4
DRAWN BY: KJT				
DATE: 3/14/2013				

TABLES

Table 1 - Soil Sample Analytical Summary

Sample Location			BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH11	BH12	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22	BH23	BH24	CB BH01	CB BH02	CB BH03	CB BH04
Depth			10 Feet	10 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet	19-20 Feet
Date Sampled			5/30/12	5/30/12	5/30/12	5/30/12	5/30/12	5/30/12	5/30/12	5/30/12	6/5/12	6/5/12	6/5/12	6/5/12	6/5/12	6/5/12	6/5/12	6/5/12	6/5/12	6/5/12	6/5/12	6/5/12	6/5/12	6/5/12	6/5/12	6/5/12	6/5/12	5/31/12	5/31/12	5/31/12	5/31/12
Analyte	**Table 910-1 Concentration Levels**																													
Organic Compounds in Soil																														
DRO	N/A	N/A	590.00	370.00	1,100.00	250.00	42.00	250.00	820.00	170.00	17.00	9.70	16.00	29.00	13.00	7.70	13.00	14.00	6.80	13.00	17.00	ND	59.00	ND	210.00	ND	9.70	9,600.00	66.00	280.00
GRO	N/A	N/A	3,300.00	3,300.00	22,000.00	5,400.00	130.00	4,100.00	12,000.00	720.00	160.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,100.00	ND	960.00	120.00	ND	12,000.00	26.00	110.00
Total Petroleum Hydrocarbon (DRO+GRO)	500	mg/kg	3,890.00	3,670.00	23,100.00	5,650.00	172.00	4,350.00	12,820.00	890.00	177.00	9.70	16.00	29.00	13.00	7.70	13.00	14.00	6.80	13.00	17.00	0.00	1,159.00	0.00	1,170.00	120.00	9.70	21,600.00	92.00	390.00
Benzene	0.17	mg/kg	0.05	0.04	10.00	9.10	0.02	1.90	4.80	0.11	0.11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.50	ND	ND	0.31	ND	6.00	0.02	0.04
Ethylbenzene	100	mg/kg	2.30	3.30	38.00	14.00	0.13	4.50	11.00	0.93	0.47	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.90	ND	1.20	0.59	0.03	37.00	ND	0.03
Toluene	85	mg/kg	2.80	4.90	220.00	100.00	0.36	18.00	73.00	3.10	2.40	0.17	ND	ND	ND	ND	0.06	ND	ND	ND	ND	ND	2.30	ND	0.05	0.44	0.09	190.00	0.11	0.31
Xylenes (Total)	175	mg/kg	37.00	74.00	440.00	160.00	1.90	66.00	130.00	12.00	7.60	0.43	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	38.00	ND	19.00	2.70	0.29	620.00	0.14	0.38
Acenaphthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Anthracene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)anthracene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(B)fluoranthene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(K)fluoranthene	2.2	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Benzo(A)pyrene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chrysene	22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Dibenzo(A,H)anthracene	0.022	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluoranthene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fluorene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Indeno(1,2,3-cd)pyrene	0.22	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene	23	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pyrene	1,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Inorganics in Soil																														
EC	<4 mmhos/cm or 2 x background	mmhos/cm	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SAR	<12	Unitless	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
pH	6-9	Unitless	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metals in Soil																														
Arsenic	0.39	mg/kg	2.7	4.4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium LDNR	15,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Barium total	15,000	mg/kg	350	250	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Boron	2	mg/L	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cadmium	70	mg/kg	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (III)	120,000	mg/kg	19	31	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chromium (VI)	23	mg/kg	19	31	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Copper	3,100	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead	400	mg/kg	7.2	13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Mercury	23	mg/kg	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nickel	1,600	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Selenium	390	mg/kg	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Silver	390	mg/kg	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	23,000	mg/kg	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Field Screening Results (ppm)	N/A	N/A	4,873	4,212	5,000	5,000	348	2,290	5,000	NS	890	612	0.3	6.2	8.9	0.6	6.2	0.8	0.6	0.2	0.6	0.2	4,067	3.1	4,788	4,712	22.5	4,620	205.6	NS

ND - Non Detect
NS - Not Sampled
ppm - Parts per million
Exceeds COGCC Table 910-1 Concentration Level

		COGCC Allowable Concentrations in Water →→	5 µg/L	560 to 1000 µg/L	700 µg/L	Total Xylenes 1,400 - 10,000 µg/L	GRO No Standard for Water Reported in µg/L	DRO No Standard for Water Reported in mg/L	<1.25 X Background	<1.25 X Background (mg/l)	<1.25 X Background (mg/l)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	Field Parameters →→	Temperature	Conductivity	Conductivity	Resistivity	TDS	Salinity	Dissolved Oxygen (DO)	Dissolved Oxygen (DO)	pH	pH	ORP	Product Levels	Water Levels
Sample Location	**Media**	**Sampling Date**	**Benzene**	**Toluene**	**Ethyl benzene**	**Total Xylenes**	**GRO**	**DRO**	**TDS**	**Chlorides**	**Sulfates**	**Nitrate**	**Nitrite**	**Total Ntrogen**	**Kjeldal Nitrogen**	**Dissolved Iron**	**Dissolved Magnesium**		**°C**	**mS/cm³**	**mS/cm**	**Ω/cm**	**g/L**		**%**	**mg/L**		**m/V**		**TOC (ft)**	**TOC (ft)**
MW-1	Groundwater	6/15/2012	ND	ND	23	200	NS	NS	1700	30	520	NS	NS	NT	NT	NS	NS		15.33	1.928	1.574	634.50	1.255	0.99	30.40	3.02	6.96	-28.1	77.50	ND	23.80
MW-1	Groundwater	7/13/2012	ND	ND	2.8	63	NS	NS	1300	21	550	NS	NS	NT	NT	NS	NS		13.10	1.839	1.421	703.62	1.196	0.94	18.10	1.89	7.54	-68.0	-24.00	ND	23.19
MW-1	Groundwater	8/14/2012	ND	ND	2.7	43	NS	NS	1200	19	500	NS	NS	NT	NT	NS	NS		12.24	1.942	1.474	675.22	1.269	1.00	22.70	2.39	7.52	-64.6	-81.10	ND	23.21
MW-1	Groundwater	9/13/2012	ND	ND	2.6	29	NS	NS	1400	23	520	NS	NS	NT	NT	NS	NS		12.38	1.824	1.384	722.48	1.185	0.93	39.20	4.16	7.53	-29.9	34.80	ND	23.35
MW-1	Groundwater	1/30/2013	ND	ND	ND	ND	ND	1.7	1100	NS	480	1.6	0.0049 J	1.6	ND	0.032 J	0.13		8.59	NT	1.63	NT	1.000	NT	11.60	1.14	8.19	NT	NT	ND	22.85
MW-1	Groundwater	2/28/2013	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND	NT
MW-2	Groundwater	6/15/2012	5800	14000	860	7500	NS	NS	2800	100	570	NS	NS	NT	NT	NS	NS		19.09	3.927	3.49	284.90	2.550	2.09	39.90	3.61	7.24	-35.9	22.50	ND	23.70
MW-2	Groundwater	7/13/2012	5500	8900	820	5600	NS	NS	2700	97	460	NS	NS	NT	NT	NS	NS		12.08	3.813	2.924	341.96	2.478	2.03	25.60	2.67	7.84	-83.2	-145.80	ND	21.73
MW-2	Groundwater	8/14/2012	5700	9200	880	6300	NS	NS	2900	85	320	NS	NS	NT	NT	NS	NS		14.09	4.217	3.341	299.10	2.741	2.26	31.40	3.16	8.24	-100.7	-224.90	ND	21.80
MW-2	Groundwater	9/13/2012	4700	5800	700	3700	NS	NS	2700	91	280	NS	NS	NT	NT	NS	NS		12.97	3.788	2.853	350.54	2.462	2.01	26.60	2.82	7.73	-41.0	-165.70	ND	21.83
MW-2	Groundwater	1/30/2013	4500	5400	590	3200	39000	ND	2700	NS	290	ND	0.0062 J	2.4	2.4	0.068 J	0.25		9.08	NT	3.72	NT	2.400	NT	7.40	0.72	8.61	NT	NT	ND	21.45
MW-2	Groundwater	2/28/2013	4400	6800	560	3600	44000	1.4	2800	NS	320	0.048	ND	5.2	5.2	ND	0.26		9.90	NT	3.68	NT	2.400	NT	8.80	0.82	7.58	NT	NT	ND	21.35
MW-3	Groundwater	6/15/2012	1300	780	260	1500	NS	NS	1500	47	89	NS	NS	NT	NT	NS	NS		17.73	2.47	2.13	467.00	1.607	1.28	15.80	1.49	7.45	-39.2	-42.30	ND	22.80
MW-3	Groundwater	7/13/2012	1900	1200	390	2700	NS	NS	1700	41	190	NS	NS	NT	NT	NS	NS		12.62	2.868	2.19	456.58	1.864	1.50	10.50	1.11	8.16	-99.6	-166.80	ND	22.18
MW-3	Groundwater	8/14/2012	2300	1500	480	2900	NS	NS	1900	41	220	NS	NS	NT	NT	NS	NS		17.39	3.262	2.792	357.39	2.122	1.72	35.70	3.35	7.92	-85.5	-188.70	ND	21.43
MW-3	Groundwater	9/13/2012	1700	1200	410	2600	NS	NS	1500	44	150	NS	NS	NT	NT	NS	NS		11.79	2.618	1.957	510.87	1.702	1.36	20.60	2.21	7.83	-46.9	-100.60	ND	22.27
MW-3	Groundwater	1/30/2013	2000	1400	410	2200	19000	1.5	1700	NS	120	ND	0.0072 J	1.1	1.1	0.036 J	0.21		8.64	NT	2.77	NT	1.800	NT	7.10	0.65	8.50	NT	NT	ND	21.85
MW-3	Groundwater	2/28/2013	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND	NT
MW-4	Groundwater	6/15/2012	1.5	ND	ND	ND	NS	NS	1500	37	580	NS	NS	NT	NT	NS	NS		23.06	2.42	2.35	424.40	1.577	1.25	46.90	3.92	7.20	-37.4	45.70	ND	21.50
MW-4	Groundwater	7/13/2012	2.4	ND	ND	ND	NS	NS	1500	26	600	NS	NS	NT	NT	NS	NS		12.87	2.293	1.762	567.65	1.491	1.19	29.80	3.12	7.67	-74.3	20.10	ND	21.83
MW-4	Groundwater	8/14/2012	2.2	ND	ND	ND	NS	NS	1600	27	610	NS	NS	NT	NT	NS	NS		18.30	2.603	2.276	438.28	1.692	1.35	24.40	2.26	7.80	-79.6	-37.20	ND	21.87
MW-4	Groundwater	9/13/2012	3.8	ND	ND	ND	NS	NS	1600	25	590	NS	NS	NT	NT	NS	NS		10.34	2.331	1.678	595.89	1.515	1.20	77.70	8.64	7.59	-33.3	234.30	ND	21.94
MW-4	Groundwater	2/1/2013	ND	ND	ND	ND	ND	ND	1400	NS	610	3.2	0.0095 J	6.6	3.4	0.036 J	0.0010 J		9.01	NT	2.06	NT	1.300	NT	10.60	1.03	8.36	NT	NT	ND	21.50
MW-4	Groundwater	2/28/2013	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND	NT
MW-5	Groundwater	6/15/2012	ND	ND	ND	ND	NS	NS	1400	51	570	NS	NS	NT	NT	NS	NS		16.92	2.198	1.87	533.12	1.431	1.13	29.80	2.85	7.05	-36.2	63.50	ND	19.30
MW-5	Groundwater	7/13/2012	ND	ND	ND	ND	NS	NS	1500	52	1600	NS	NS	NT	NT	NS	NS		13.91	2.241	1.766	566.13	1.457	1.16	26.50	2.72	7.49	-65.3	24.50	ND	19.48
MW-5	Groundwater	8/14/2012	ND	ND	ND	ND	NS	NS	1400	26	610	NS	NS	NT	NT	NS	NS		15.39	2.34	1.924	519.87	1.527	1.22	63.60	6.30	7.76	-77.0	-35.30	ND	19.42
MW-5	Groundwater	9/13/2012	ND	ND	ND	ND	NS	NS	1600	35	690	NS	NS	NT	NT	NS	NS		11.56	2.556	1.9	526.30	1.661	1.33	29.00	3.13	7.66	-37.3	150.50	ND	19.56
MW-5	Groundwater	2/1/2013	0.33 J	ND	0.47 J	ND	ND	ND	1700	NS	790	ND	0.0062 J	0.71	0.70	0.024 J	0.03 J		9.46	NT	2.46	NT	1.600	NT	14.60	1.37	8.66	NT	NT	ND	19.10
MW-5	Groundwater	2/28/2013	ND	ND	ND	2.2	ND	ND	1600	NS	740	ND	ND	ND	ND	ND	0.30		10.05	NT	2.19	NT	1.400	NT	33.20	3.07	7.51	NT	NT	ND	19.50
MW-6	Groundwater	6/15/2012	ND	ND	ND	ND	NS	NS	3100	73	1500	NS	NS	NT	NT	NS	NS		17.59	4.78	4.31	241.00	3.100	2.57	42.90	3.94	7.45	-39.0	49.80	ND	19.20
MW-6	Groundwater	7/13/2012	ND	ND	ND	ND	NS	NS	3100	34	720	NS	NS	NT	NT	NS	NS		13.15	4.49	3.474	237.87	2.918	2.41	27.20	2.82	7.70	-76.2	1.50	ND	20.45
MW-6	Groundwater	8/14/2012	ND	ND	ND	ND	NS	NS	3200	52	1400	NS	NS	NT	NT	NS	NS		16.69	4.638	3.91	255.33	3.010	2.49	29.00	2.73	8.11	-95.3	-38.70	ND	18.39
MW-6	Groundwater	9/13/2012	ND	ND	ND	ND	NS	NS	2900	54	1400	NS	NS	NT	NT	NS	NS		11.47	4.313	3.22	310.59	2.803	2.31	44.40	4.74	7.95	-53.5	283.90	ND	18.55
MW-6	Groundwater	2/1/2013	ND	ND	ND	ND	ND	ND	2700	NS	1300	3.0	0.022	5.2	2.200	0.027 J	0.0012 J		9.82	NT	3.83	NT	2.500	NT	11.30	1.06	8.83	NT	NT	ND	18.09
MW-6	Groundwater	2/28/2013	ND	ND	ND	2.0	ND	0.59	2400	NS	1100	3.2	0.18	14	11.00	ND	0.056		7.82	NT	3.09	NT	2.000	NT	14.90	1.46	7.72	NT	NT	ND	18.50
MW-7	Groundwater	6/15/2012	9100	37000	3300	35000	NS	NS	1500	51	300	NS	NS	NT	NT	NS	NS		16.32	2.894	2.418	412.34	1.884	1.52	153.20	14.83	7.18	-40.1	16.70	ND	25.40
MW-7	Groundwater	7/13/2012	13000	36000	1400	15000	NS	NS	2000	59	79	NS	NS	NT	NT	NS	NS		13.04	3.148	2.429	411.72	2.046	1.65	3.10	0.32	7.67	-74.6	-133.30	ND	24.26
MW-7	Groundwater	8/14/2012	10000	28000	1700	16000	NS	NS	2000	54	78	NS	NS	NT	NT	NS	NS		17.68	3.359	2.895	345.03	2.185	1.77	190.60	17.95	7.90	-84.3	-114.90	ND	24.37
MW-7	Groundwater	9/13/2012	9400	25000	1400	14000	NS	NS	2300	59	49	NS	NS	NT	NT	NS	NS		11.98	3.146	2.364	423.05	2.045	1.65	13.50	1.44	7.63	-35.6	-107.20	ND	24.43
MW-7	Groundwater	1/30/2013	4500	11000	840	7200	56000	2.7	1800	NS	340	ND	ND	5.7	5.7	0.57	0.19		4.86	NS	2.62	NS	1.700	NS	2.40	0.26	8.47	NS	NS	ND	24.05
MW-7	Groundwater	2/28/2013	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Black Sulfur Crk. UG	Surfacewater	6/4/2012	ND	ND	ND	ND	NS	NS	770	10	300	NS	NS	NT	NT	NS	NS		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Black Sulfur Crk. UG	Surfacewater	2/28/2013	ND	ND	ND	ND	ND	ND	850	NS	370	0.27	ND	ND	ND	ND	0.022		0.55	NT	1.261	NT	0.800	NT	98.50	11.80	8.06	NT	NT	NT	NT
Black Sulfur Crk. DG	Surfacewater	6/4/2012	ND	2.3	ND	ND	NS	NS	770	10	310	NS	NS	NT	NT	NS	NS		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Black Sulfur Crk. DG	Surfacewater	2/28/2013	ND	ND	ND	ND	ND	ND	870	NS	380	0.26	ND	ND	ND	ND	0.038		1.14	NT	1.266	NT	0.800	NT	98.10	11.55	8.08	NT	NT	NT	NT
Black Sulfur Crk. SP1	Surfacewater	6/4/2012	ND	ND	ND	ND	NS	NS	780	10	300	NS	NS	NT	NT	NS	NS		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Black Sulfur Crk. MIDDLECREEK	Surfacewater	2/28/2013	ND	ND	ND	ND	ND	ND	880	ND	370	0.27	ND	ND	ND	ND	0.024		0.73	NT	1.245	NT	0.800	NT	99.40	11.82	8.08	NT	NT	NT	NT

NS = Not sampled (Lab Analytical) Site Conditions Prevented Collecting Samples

ND = Non Detect

NT = Not Tested (Field Analytical)

J= Analyte detected below quantitaion limit

Above COGCC Table 910-1 Concentration Level

The data gap from October 2012 through December 2012 is a result of the previous consultant discontinuing monitoring well samples without notification to Williams. Sampling proceeded in January 2013, as soon as the data gap was realized.

Sensitive Area Determination Checklist

Client	**Williams Bargath, LLC**		
Field Eval.			
Office Eval.	**Karl Taboga, P.G.**	**Hydrogeologist**	**8/23/2011**
Evaluator Name(s)		*Position*	*Date*
Black Sulphur		**Compressor Station**	
Site Name		*Site Type*	
39.856837 / -108.329057		**T2S R97W Sec19 SWSW**	
Site Lat/Lon (NAD 83)		*Site PLSS*	

Online data available at: http://cogcc.state.co.us/

Is the proposed, new or existing location currently designated as a sensitive area?

■ YES ☐ NO

SURFACE WATER

1. Are there any surface water features or SWSAs adjacent to or within 1/4 mile of the proposed new or existing facility?

■ YES ☐ NO

If yes, list type of surface water feature(s), i.e., rivers, creeks, streams, seeps, springs, wetlands:

- *Black Sulphur Creek*

If yes, describe location relative to facility: *Located ~400' SSW of the south boundary of facility*

2. Could a potential release from the facility reach surface water features?

■ YES ☐ NO

If yes, describe the pathway a release from the facility would likely follow to determine if the potential to impact surface water is high or low:

A potential release could reach the drainage by flowing south across the level facility site for a minimum distance of ~400 feet, progress across a small road and continue across the floodplain to the creek channel.

3. Is the potential to impact surface water from a facility release high or low?

☐ HIGH ■ LOW

GROUNDWATER

1. Will the proposed/new or existing facility have any pits which will contain hydrocarbons and chlorides or other E&P wastes?

☐ YES ■ NO Source: *Williams Bargath, LLC*

If yes, List the pit type(s):

2. Is the site of the proposed facility underlain by an unconfined aquifer or recharge zone?

■ YES ☐ NO

Source: http://www.dwr.state.co.us/WellPermitSearch/default.aspx

3. Is the hydraulic conductivity of the underlying soil or geologic material $\leq$ **1.0 x 10^{-7}** cm/sec?

☐ YES ■ NO

Source for Soils: *SoilDataMart@nrcs.usda.gov*

Source for Geology: USGS Open File Report (OFR) 02-197, Online at: http://pubs.usgs.gov/of/2002/ofr02197/spreadsheets.html

4. Is the proposed facility located within ***1/8*** mile of a domestic water well or 1/4 mile of a public water supply well which would use the same aquifer?

☐ YES ■ NO

Source: http://www.dwr.state.co.us/WellPermitSearch/default.aspx

5. Is the proposed facility located within a 100 year floodplain?

■ YES (Sensitive ***Area)*** ☐ NO (If no, proceed to question ***#6.)***

6. Is the depth to groundwater known?

■ YES ***(If yes,*** follow instructions provided in ***6(a)*** of this section).

☐ NO (if no, follow instructions provided in ***6(b)*** of this section).

(a) If yes, could a potential release **from** the proposed facility reach groundwater?

■ YES ☐ NO

If yes, explain: Groundwater impacting release identified in 2011.

(b) If no:

(i) Evaluate surrounding soils, topography, and vegetation which may suggest the presence of shallow groundwater.
(ii) Gather information from surrounding well data in order to determine a depth to groundwater, i.e. State Engineers Office.

See DGW data from DWR, below.

(http://www.dwr.state.co.us/WellPermitSearch/default.aspx)

7. Is the type of soil underlying the facility known?

■ YES ☐ NO

If yes, list: Barcus channery loamy sand

Source: http://cogcc.state.co.us/infosys/Maps/LoadMap.cfm

8. Is the geologic unit underlying the facility known?

■ YES ☐ NO

If yes, list: Quaternary Alluvial Deposits underlain by Uinta formation

Source: http://cogcc.state.co.us/infosys/Maps/LoadMap.cfm

9. Is the potential to impact ground water from the facility in the event of a release high or low?

■ HIGH ☐ LOW

Narrative

Facility: Black Sulphur Compressor Station
Location: T2S R97W S19 SWSW
Operator: Williams Production RMT Company

Facility Description

The Black Sulphur Compressor Station is a natural gas production facility owned and operated by Williams Bargath, LLC. The facility occupies an area of ~0.25 acres and is located approximately 25 miles southwest of Meeker, in Rio Blanco County, Colorado. The Black Sulphur Compressor Station is not located in a currently COGCC designated Sensitive Area.

On-Site E&P Waste Storage

The facility includes a number of tanks that contain various types of E&P waste and production chemicals. In the event of a spill, the storage tanks are located within secondary containment structures that have net capacities which exceed the storage capacities of the tanks. The lone exception to this is the 300 bbl condensate tank located on the southern edge of the project site. The facility does not have any on-site pits that will be used to store E&P wastes

The types of E&P waste stored on the facility may include:

- Produced water
- Amine Water
- Condensate
- Glycol
- Spill materials / soils etc.
- Paints
- Turbine Oil
- Paint

Project Potential to Adversely Impact Surface Water

An examination of flood plain data from the U.S. Federal Emergency Management Administration (FEMA) indicated that no portion of the facility falls within a 100 year floodplain.

The southern edge of the facility is located approximately 400 feet north of Black Sulphur Creek. A potential release could reach the drainage by flowing south across the level facility site and continue for a minimum distance of ~400 feet, progress across a small road and continue across the floodplain to the creek channel. The potential to impact surface water in the event of a release from this facility is low.

Project Potential to Adversely Impact Groundwater

There are no pits on the facility which contain E&P waste. Currently, wastes are stored on-site in tanks which are located within secondary containment structures that have net capacities that exceed the storage capacities of the tanks. The lone

exception to this is the 300 bbl condensate tank located on the southern edge of the project site. Furthermore, the facility is not located within 1/8 mile of a domestic well or a ¼ mile radius of a municipal water supply well.

NRCS data indicates that Barcus channery loamy sand underlies the facility. Saturated conductivity (Ksat) values for this type of soil range from 4.23×10^{-4} to 1.41×10^{-2} cm/sec (NRCS, 2011). Surface geologic units consist of Quaternary alluvial deposits underlain by Uintah Formation units. Likely hydraulic conductivity values for stream terrace deposits range from 3.53×10^{-4} to 3.53×10^{-2} cm/sec (USGS, 2002).

The depth to groundwater (DGW) for the facility site is unknown and, generally, groundwater data for wells in close proximity to the facility is sparse. However, Colorado Division of Water Resources (DWR, 2011) records indicate that DGW and well log data are available for a USGS well (Permit 283073) sited 1.2 miles west of the facility on the north side of Black Sulphur Creek. The listed well is located on NWSW Section 24 T2S R98W approximately 1200 feet from the channel of Black Sulphur Creek in a topographical setting similar to that of the facility. The Well Construction and Test Report indicate that the well was completed at a depth of 250' bgs and that the first groundwater was encountered at a depth of 64'. The geologic log shows that unconsolidated sands and gravels characteristic of modern alluvium were present to a depth of 64'. The drill crew encountered Uintah formation sandstones and siltstones from 64'–250' bgs. The data suggests the presence of an unconfined alluvial aquifer with a groundwater elevation that is equivalent to the elevation of the stream channel.

Other data do not support the presence of shallower groundwater in the area of the facility. There are no springs in the immediate area. Aerial imagery indicates that the facility is outside that portion of the floodplain that is irrigated.

Based on the available data, it is InterTech Environmental & Engineering, LLC's (InterTech's) opinion that the potential to adversely impact groundwater in the event of a release from this facility is high.

Conclusion

It is InterTech's professional judgment that the facility is located in a sensitive area. Please see the attached checklist for summary and additional data for this facility.

References

COGCC, 2011. Online: http://cogcc.state.co.us/infosys/maps/

DWR, 2011. Online: www.dwr.state.co.us/wellpermitsearch

NRCS, 2011. Online: SoilDataMart@nrcs.usda.gov

Halford, K. J. and E. L. Kuniansky, 2002. Spreadsheets for the Analysis of Aquifer-Test and Slug-Test Data, Version 1.2, Open-File Report 02-197 U. S. Geological Survey, Carson City, NV, 54 p.