

State of Colorado
Oil and Gas Conservation Commission

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FOR OGCC USE ONLY
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REM 8975

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.

OGCC Employee:

☐ Spill ☐ Complaint
☐ Inspection ☐ NOAV

Tracking No:

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

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

OGCC Operator Number: 10528

Name of Operator: ARCH OIL & GAS LLC

Address: 14600 NORTH DALLAS PARKWAY SUITE 400

City: DALLAS State: TX Zip: 75248

Contact Name and Telephone:

JEFF BROWNING

No: 940-391-7210

Fax: 972-934-2310

API Number: 05-081-05291

County: MOFFAT

Facility Name: WIESE

Facility Number: 222315

312774

Well Name: J P WEISE

Well Number: 2

Location: (QtrQtr, Sec, Twp, Rng, Meridian): NWN, 14, 5N, 96W

Latitude: 40 23'17.02 Longitude: 108 08'27.43

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): CRUDE OIL

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.): DRY LAND GRAZING

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Sandy Loam

Potential receptors (water wells within 1/4 mi, surface waters, etc.): NONE

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

Impacted Media (check):



Soils



Vegetation



Groundwater



Surface Water

Extent of Impact:

SURFACE SPILL

How Determined:

SOIL PICKED UP AND STOCKPILED ON SITE

REMEDIALATION WORKPLAN

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

Extent of surface spill was identified and the soil was picked up and stockpiled on top of a liner. Silt fence was installed around the pile to contain the soil and control possible erosion.

Describe how source is to be removed:

Once the soil test confirm any contamination has been remediated the soil is to be used on the well location.

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.:

The soil has been treated with Microbial Bioremediation process over a period of time (multiple years) to digest residual oil contamination.



REMEDIATION WORKPLAN (Cont.)

Tracking Number: _____

Name of Operator: Arch Oil & Gas LLC

OGCC Operator No: _____

Received Date: _____

Well Name & No: Soil Pile

Facility Name & No: JP Weise #2

OGCC Employee: _____

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

No groundwater was impacted

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.

The well location is currently gravel pad site around the wellhead and pumping unit. A tank battery is set on a gravel pad with berms surrounding the tank. All flow lines are installed below grade except at the connection points with the tubing and tanks. Site grades and contours are in place to limit erosion of the pad site.

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:

SOIL SAMPLES WILL BE TAKEN FROM 5 LOCATIONS ON THE STOCKPILE. SAMPLES WILL BE TAKEN AT 2 DIFFERENT DEPTHS FROM EACH LOCATION. THE DEPTHS WILL BE 1' (ONE FOOT) AND 3 FOOT (THREE FOOT) FROM THE SURFACE OF THE PILE.

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

Soil reuse on the pad site to build up berms around tank battery and finish grade around wellhead

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 1/5/15

Date Site Investigation Completed: _____

Date Remediation Plan Submitted: 2/17/15

Remediation Start Date: _____

Anticipated Completion Date: 5/1/15

Actual Completion Date: _____

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

Print Name: JEFFREY N BROWNING

Signed: _____

Title: CEO

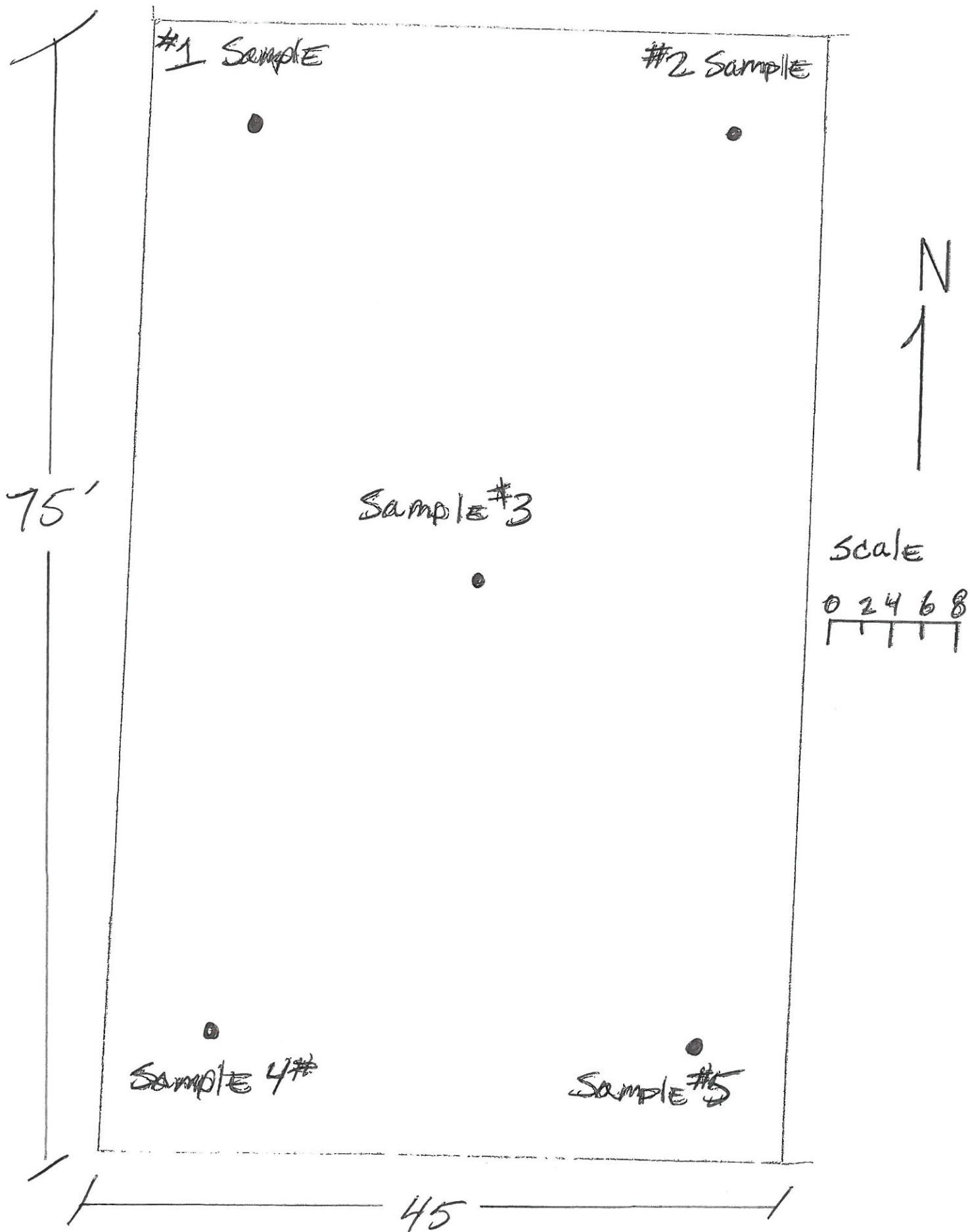
Date: 3/20/2015

OGCC Approved: Karen Heidel

Title: EPS II

Date: 3/23/15

SEE Additional COA's in Project File



Quote Number: 910-1-5-DAY-W-CR6**Matrix:** Soil

5 Day TAT. Soil Samples- COGCC Table 910-1 including Hexavalent Chromium.

Parameter	Method	Detection Limit	Cost/Sample
Gas Chromatography			
BTEX/Gasoline Range Organics (C6-C10)	M8021B/8015D GC/PID/FID		
Benzene		1 ug/Kg	
Ethylbenzene		1 ug/Kg	
m p Xylene		2 ug/Kg	
o Xylene		1 ug/Kg	
Toluene		1 ug/Kg	
TVH C6 to C10		0.05 mg/Kg	
Diesel Range Organics (C10-C28)	M8015D GC/FID	3.333 mg/Kg	
GC/MS			
Polynuclear Aromatic Hydrocarbons GC/MS	M8270C GC/MS	66.66 ug/Kg	
Metals Analysis			
Arsenic, total (3050)	M6020 ICP-MS	0.1 mg/Kg	
Barium, total (3050)	M6010B ICP	0.3 mg/Kg	
Boron, total (3050)	M6010B ICP	1 mg/Kg	
Cadmium, total (3050)	M6010B ICP	0.5 mg/Kg	
Calcium, soluble (Sat. Paste)	M6010B ICP	0.1 meq/L	
Chromium, total (3050)	M6010B ICP	1 mg/Kg	
Chromium, Trivalent	Calculation (Total - Hexavalent)	Calculation	
Copper, total (3050)	M6010B ICP	1 mg/Kg	
Lead, total (3050)	M6010B ICP	3 mg/Kg	
Magnesium, soluble (Sat. Paste)	M6010B ICP	0.2 meq/L	
Mercury by Direct Combustion AA	M7473	2 ng/g	
Nickel, total (3050)	M6010B ICP	0.8 mg/Kg	
Selenium, total (3050)	M6010B ICP	5 mg/Kg	
Silver, total (3050)	M6010B ICP	1 mg/Kg	
Sodium Adsorption Ratio	Calculation	Calculation	
Sodium, soluble (Sat. Paste)	M6010B ICP	0.2 meq/L	
Zinc, total (3050)	M6010B ICP	1 mg/Kg	
Misc.			
Electronic Data Deliverable			
Quality Control Summary			
Setup charge for ICPMS			

Organic Prep

BNA Soxhlet Extraction	M3540
TPH Soxhlet Extraction	M3540

Sample Preparation

Air Dry at 34 Degrees C	USDA No. 1, 1972
Digestion - Alkaline	M3060A
Digestion - Hot Plate	M3050B ICP
Digestion - Hot Plate	M3050B ICP-MS
Saturated Paste Extraction	USDA No. 60 (2)
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2

Soil Analysis

Conductivity @25C	SM2510B	0.001 mmhos/cm
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2	0.1 units
Solids, Percent	D2216-80	0.1 %

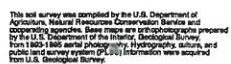
Wet Chemistry

Chromium, Hexavalent (3060)	M7196A	1 mg/Kg
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Cost/Sample:

This quote is based on a Standard Turn Around Time of approximately 14 days for soil and solid matrices (10 working days). This quote is for minimum batch quantity of 3 samples, for 2 samples please multiply price by X 1.5 and for 1 sample please multiply price by X 3. ACZ will add samples to in house work groups to eliminate surcharges when possible. Please contact your PM if RUSH TAT is required to assure that due dates can be met. Pricing includes standard reporting formats and standard ACZ EDD's. Please note that method detection limits are estimates and may be elevated depending on sample matrix that require dilution. Pricing includes coolers, soil jars or bags, labels, COC's and ice-packs if needed for your analysis, shipped to your site or office via UPS ground. Return shipping is the responsibility of the client. Please allow ample time for your bottles to arrive. Please note that soil preparation charges may fluctuate dependant on the condition and volume of samples upon receipt. Wet samples may increase your TAT if air-drying is needed per your analysis.

MOFFAT COUNTY AREA, COLORADO
CEDAR KNOB QUADRANGLE
SHEET NUMBER 76 OF 110



North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter (Scale Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



CEDAR KNOB, COLORADO
7.5 MINUTE SERIES
SHEET NUMBER 76 OF 110

WEISE #2