

State of Colorado Oil and Gas Conservation Commission

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



#5991

FOR OGCC USE ONLY

RECEIVED
 4/11/2012

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): _____

OGCC Operator Number: 16700

Name of Operator: Chevron USA, Inc.

Address: 760 Horizon Drive

City: Grand Junction

State: CO Zip: 81506

Contact Name and Telephone:

Eric Page

No: Cell: 832.439.3832 Office: 713.372.1022

Fax: NA

API Number: 045-11039

County: Garfield

Facility Name: Skinner Ridge

Facility Number: 286032

Well Name: SKINNER RIDGE 698-12-03

Well Number: 324331

Location: (QtrQtr, Sec, Twp, Rng, Meridian): SWNE 12 6S 98W

Latitude: 39.549705 Longitude: -108.276386

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): Produced water, condensate, drilling cuttings

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.): Non-crop land

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Tosca channery loam

Potential receptors (water wells within 1/4 mi, surface waters, etc.): Deer Park Gulch and Clear Creek

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

Impacted Media (check):



Soils



Vegetation



Groundwater



Surface Water

Extent of Impact:

Impacted soils in lined pit, no impacts below liner.

How Determined:

See attached analytical results and sampling plan.

REMEDIALATION WORKPLAN

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

Initial work at this location consisted of the removal of the netting material and fencing in order to access the pit. The exposed liner material that was on top of the pit contents was removed using an excavator. All gross pit material was shaken off the liner while it was being removed. The liner material was then cut into manageable sized pieces and was stored temporarily in a bermed area at the pit location.

Describe how source is to be removed:

Due to the amount of liquid and material management challenges with the pit contents, material was mixed within the pit concurrent with collection of confirmation samples. Mixing was started on the southern side of the pit on 10/4/11 and once the material had been mixed with the borrow material, it was stockpiled within the pit until such time as the lower liner could be removed.

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.:

Pit contents were mixed with approximately 2,232 cy of soil from a nearby borrow area and tested to verify that constituent concentrations in mixed soil did not exceed COGCC regulatory requirements summarized in Table 910-1 as listed on the attached Table 1. The mix ratio was determined by analyzing three bench scale mixes of pit contents to borrow material (1:1, 2:1, 3:1) presented in Table 1 and identified as 12-3 BENCH "mix ratio". Based on these results, the Pit 12-3 material was mixed at a ratio of 3:1 to meet COGCC allowable limits and to provide adequate volume to backfill and stabilize the pit.

Submit Page 2 with Page 1



Page 2
REMEDIATION WORKPLAN (Cont.)

Tracking Number: _____
Name of Operator: _____
OGCC Operator No: _____
Received Date: _____
Well Name & No: _____
Facility Name & No: P.Y. # 286032

OGCC Employee: _____

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

Impacted material was excavated within the pit until clean native soil was observed and tested. Although moist material was encountered from surface runoff, no groundwater was observed, therefore groundwater was not impacted from the pit.

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.

Mixing was started on the southern side of the pit on 10/4/11 and once the material had been mixed with the backfill material, it was stockpiled within the pit until such time as the lower liner could be removed and confirmation samples from the north and south floor area and the western wall could be collected. The confirmation samples were collected between 10/5/11 and 10/7/11. Sample results are presented in Table 1 as 12-3 "sample location" CONF. Mixing continued in a northward direction at a ratio of 4:1 to solidify the material. When all mixing was complete, samples were collected on 10/11/11 at random depths within the pit area using the excavator. The results of these backfill samples are located in Table 1 and are identified as 12-3 BACKFILL "backfill location". The final surface was graded to match the existing elevation of the well pad and will be utilized as a traffic area.

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:

Based on the backfill and pit confirmation sample results, further investigation is not required. Three background soil samples were collected from the edges of the well pad away from the 12-3 pit and analyzed for Sodium Adsorption Ratio (SAR), pH, Arsenic, and Specific Conductivity to justify elevated levels for these constituents in the backfill and confirmation samples. The backfill and confirmation results still have elevated pH and arsenic above COGCC allowable limits. The background samples show comparable concentrations of arsenic and pH levels. The backfill and confirmation samples have elevated sodium adsorption ratio (SAR), pH, and arsenic above COGCC allowable limits. According to COGCC regulations section 910.b.(3).E, "Where EC of the impacted soil exceeds the level in Table 910-1, the sodium adsorption ratio (SAR) shall also be determined." The electrical conductivity (EC) of the backfill and confirmation sample is within COGCC allowable limits.

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

Pit contents were mixed with borrow soil within the closed pits.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 6/6/11	Date Site Investigation Completed: 6/8/11	Date Remediation Plan Submitted: 7/11/11
Remediation Start Date: 8/26/2011	Anticipated Completion Date: 11/30/2011	Actual Completion Date: 10/11/2011

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

Print Name: ERIC PAGE Signed: [Signature]
Title: Chemo Project Manager Date: 11/10/12

OGCC Approved: [Signature] Title: For Chris Camfield Date: 04/13/2012

EPS NW Region

Table 1
Chevron Piceance Pits
Pit 12-3

Sample Summary													
Sample Location	12-3 BENCH 2:1	12-3 BENCH 1:1	12-3 BENCH 3:1	12-3 NORTH FLOOR CONF	12-3 SOUTH FLOOR CONF	12-3 WEST WALL CONF	12-3 BKGD EAST	12-3 BKGD SOUTH	12-3 BKGD WEST	12-3 BACKFILL CENTER	12-3 BACKFILL NORTH	12-3 BACKFILL SOUTH	
Sample Type	Composite	Composite	Composite	Composite	Composite	Composite	Composite	Composite	Composite	Composite	Composite	Composite	
Sample Date	9/14/2011	9/14/2011	9/14/2011	10/7/2011	10/5/2011	10/7/2011	9/12/2011	9/12/2011	9/12/2011	10/11/2011	10/11/2011	10/11/2011	
Laboratory Data Summary													
Analytical Parameters													COGCC Allowable Limits Table 910-1
Units													
Organic Compounds													
TPH-Total	743.1	353.1	272	88.2	103	114	NA	NA	NA	389	416	369	500 (Comb)
Gasoline Range Organics	37.1	17.1	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	+
Diesel Range Organics	706	336	272	88.2	103	114	NA	NA	NA	389	416	369	+
Benzene	ND	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	0.17
Toluene	ND	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	85
Ethylbenzene	ND	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	100
Xylenes, Total	ND	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	175
Aceraphthene	0.0906	0.0447	ND	ND	ND	ND	NA	NA	NA	0.0486	0.0416	ND	1,000
Anthracene	0.0822	0.0473	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	1,000
Benzo(a)anthracene	ND	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	0.22
Benzo(a)pyrene	ND	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	0.022
Benzo(b)fluoranthene	ND	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	0.22
Benzo(k)fluoranthene	ND	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	2.2
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	0.22
Chrysene	ND	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	22
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	0.022
Fluoranthene	ND	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	1,000
Fluorene	0.178	0.0901	0.0595	ND	ND	0.004	NA	NA	NA	0.13	0.113	0.105	1,000
Naphthalene	0.751	0.297	0.212	ND	0.0128	0.0102	NA	NA	NA	0.273	0.214	0.228	23
Pyrene	0.0595	0.0435	ND	ND	ND	0.0098	NA	NA	NA	0.0593	0.057	0.0492	1,000
Physical Properties													
Sodium Adsorption Ratio	19.8	10.4	7.5	27.2	29.2	23.4	ND	ND	2	12.5	10	12.4	<12
Specific Conductivity	0.459	0.353	0.336	3.38	2.26	1.68	0.0707	0.0753	0.08	1.59	1.46	1.5	<4
pH	9.4	9.2	9.3	9	8.4	9.1	8.8	8.5	9.3	9.6	9.5	9.5	6 to 9
Metals													
Arsenic	13.7	15.3	15.6	22.9	26	23.8	29.5	17.2	12.1	16.2	15.9	15.3	0.39
Barium	2240	1290	895	317	321	427	NA	NA	NA	2800	1780	2460	15000
Cadmium	ND	0.56	0.51	ND	ND	ND	NA	NA	NA	ND	ND	ND	70
Chromium, Hexavalent	ND	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	23
Chromium, Trivalent	24.9	21.7	20.8	23.8	23.1	22.9	NA	NA	NA	24.7	23.7	23.1	120000
Copper	39.9	25.1	24.8	27.7	22.6	26.3	NA	NA	NA	33.2	27.3	29.8	3100
Lead	19.3	14.2	14.1	18.2	15.1	15.3	NA	NA	NA	16.7	13.2	15.6	400
Mercury	0.055	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	23
Nickel	18.8	16	16.2	19.2	17.1	17.5	NA	NA	NA	19.3	17.3	19.4	1600
Selenium	ND	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	390
Silver	ND	ND	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	390
Zinc	65	57.6	50.4	63.7	56.1	59.3	NA	NA	NA	ND	64	64.4	23000

NA - Not analyzed

ND - Parameter reported under detection limit

mg/kg - milligrams per kilogram

mmhos/cm - milliohms per centimeter

Result Exceeds COGCC allowable limits