



PDC Energy, Inc. **Fourth Quarter 2024 Remediation Summary**

December 23, 2024

Former Booth 11, 12, 21, 22-31U & 31AU Tank Battery
NWNW Section 31 T4N R63W
Remediation # 4826

This remediation summary has been prepared by Tasman, Inc. (Tasman) on behalf of PDC Energy, Inc. (PDC) to summarize remediation and sampling activities conducted during the fourth quarter 2024 at the former Booth 11, 12, 21-31U & 31AU tank battery (Site).

Site History and Background

On July 28, 2008, petroleum hydrocarbon impacts were discovered below the dump lines during routine maintenance at the Booth 11, 12, 21, 22-31U & 31AU tank battery. Following the discovery, an estimated 3,800 cubic yards of impacted material was removed from the source area and transported to a licensed disposal facility under PDC waste manifests. The approximate dimensions of the excavation were 40 feet wide by 50 feet long with a depth of 35 feet below ground surface (bgs). Excavation oversight and sampling were conducted by LT Environmental (LTE). Soil sample results indicated that organic compound concentrations were in exceedance of ECMC Table 910-1 standards within the final extent of the excavation.

Following initial excavation activities, a site investigation was conducted by LTE to delineate the extent of remaining hydrocarbon impacts and install a passive soil vapor extraction (SVE) well. The 2008 excavation extent and SVE well location are illustrated on Figure 1. A Form 27 Site Investigation and Remediation Work Plan was submitted to the ECMC on March 3, 2009, and Remediation Number 4826 was issued to the project.

A supplemental site investigation was conducted by Tasman between May 6 and June 4, 2019, to determine the extent of potential hydrocarbon impacts and evaluate lithologic conditions adjacent to the 2008 release. Based on the data collected during the assessment, PDC has selected monitored natural attenuation (MNA) as the remedial strategy for this site.

Current Remediation Strategy

Quarterly vapor samples are collected from the existing SVE well to monitor VOC concentrations and evaluate the passive system operation and efficacy. Vapor samples are submitted for laboratory analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX) and total petroleum hydrocarbons (TPH) – Low Fraction by EPA Method TO-15. Analytical results are summarized in Table 1 and the laboratory report is attached to the Supplemental Form 27.

Path Forward

Monitored natural attenuation (MNA) was selected as the remediation strategy during the second quarter 2019 and will continue as the selected remediation strategy through the first quarter 2025.

Per the condition of approval (COA) issued in the approved Supplemental Form 27 (ECMC Document No. 403880715), further site investigation activities are required to reevaluate and delineate the current soil conditions in the area of impact for full Table 915-1 standards. In addition, five monitoring wells will be installed to conduct a full subsurface groundwater investigation to assess if groundwater is impacted. The proposed soil boring and monitoring well locations are illustrated on Figure 2. Following the results of the site assessment, a new remediation strategy will be developed.

First quarter 2025 vapor sampling will be conducted during January 2025.



Legend

- Excavation Extent (LTE – 2008)
- 8-Inch Passive SVE Well (LTE – 2008)

Notes

All locations are approximate unless otherwise noted.

Excavation extent approximated based on March 31, 2009, LT Environmental, Inc. (LTE) report.

SVE – Soil Vapor Extraction

0 ft. 30 ft. 60 ft.

Image Source: Google Earth; 2017 Google
Projection: WGS 84 UTM Zone 13 North

DATE: February 26, 2021

DESIGNED BY: B. Nelson

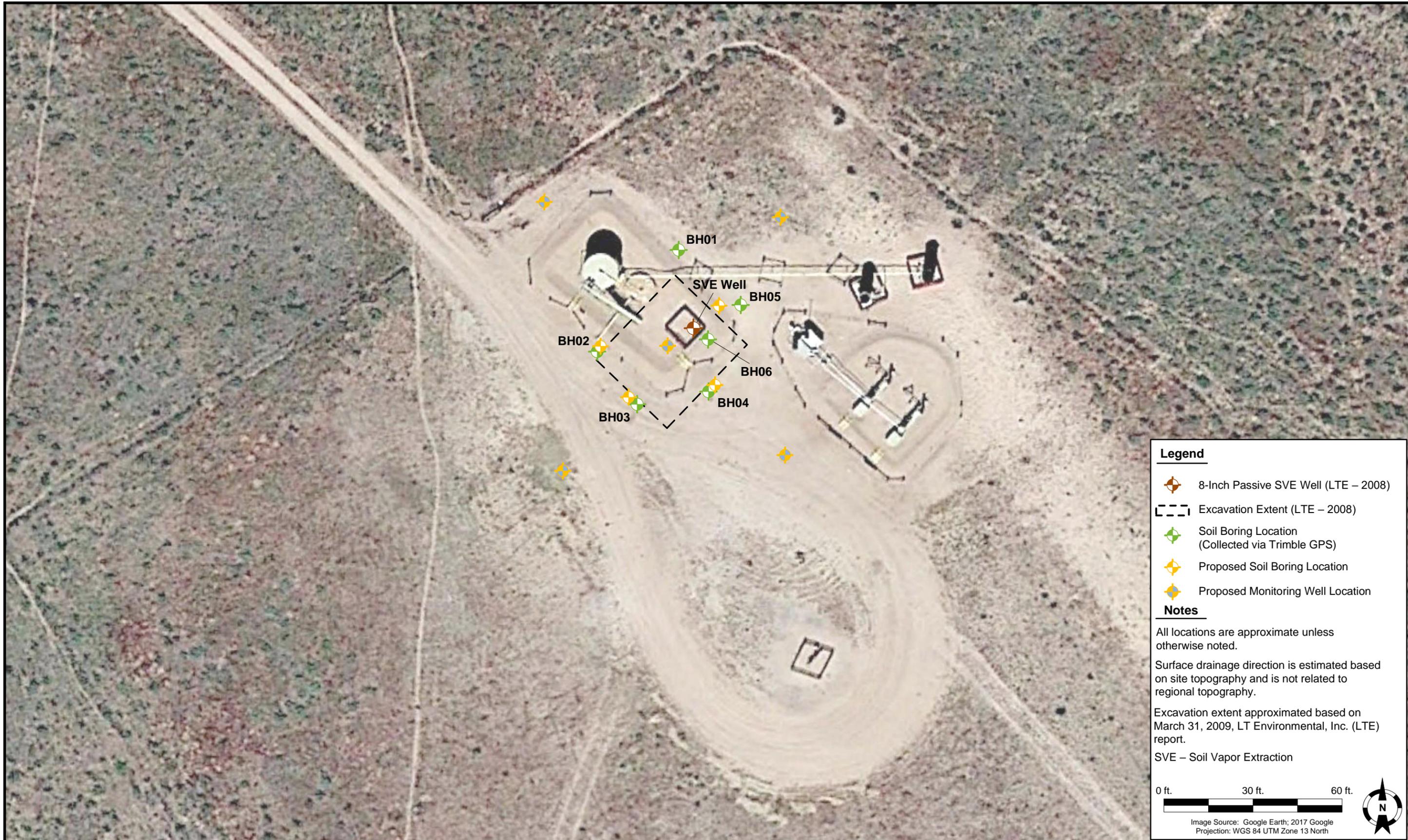
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PDC Energy, Inc. – DJ Basin
Booth 11, 12, 21, 22-31U & 31AU Tank Battery
 NWNW, Section 31, Township 4 North, Range 63 West
 Weld County, Colorado

REMEDICATION WELL
LOCATION MAP

FIGURE
1



Legend

-  8-Inch Passive SVE Well (LTE – 2008)
-  Excavation Extent (LTE – 2008)
-  Soil Boring Location (Collected via Trimble GPS)
-  Proposed Soil Boring Location
-  Proposed Monitoring Well Location

Notes

All locations are approximate unless otherwise noted.

Surface drainage direction is estimated based on site topography and is not related to regional topography.

Excavation extent approximated based on March 31, 2009, LT Environmental, Inc. (LTE) report.

SVE – Soil Vapor Extraction

0 ft. 30 ft. 60 ft.

Image Source: Google Earth; 2017 Google
Projection: WGS 84 UTM Zone 13 North

DATE:	December 23, 2024
DESIGNED BY:	C. Hamlin
DRAWN BY:	J. Marcus



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**PROPOSED SITE
 INVESTIGATION MAP**

**FIGURE
 2**

TABLE 1
BOOTH 11, 12, 21, 22, 31U 31AU
VAPOR ANALYTICAL RESULTS SUMMARY TABLE



Sample ID	Date Sampled	Benzene ($\mu\text{g}/\text{m}^3$)	Toluene ($\mu\text{g}/\text{m}^3$)	Ethylbenzene ($\mu\text{g}/\text{m}^3$)	Total Xylenes ($\mu\text{g}/\text{m}^3$)	TVPH - GRO ($\mu\text{g}/\text{m}^3$)
V001	7/25/2019	<5.66	14.2	<10.1	43.7	3,570
V001	10/17/2019	3,510	2,810	<193	5,040	1,460,000
V001	1/24/2020	163	212	<125	2,195	542,000
V001	4/27/2020	328	1,320	385	4,568	199,000
V001	8/19/2020	57.8	50.9	<10.0	416.3	22,400
V001	11/11/2020	72.7	42.1	10.2	116.0	2,550
V001	2/4/2021	12,800	18,500	<1,250	37,620	3,650,000
V001	4/27/2021	<5.6	<10	<10	<38	4,060
V001	7/19/2021	<5.6	<10	31.6	228.4	14,200
V001	10/21/2021	<12.3	<22	<22	<20.7	881
V001	1/13/2022	<70	<125	<125	<118	465,000
V001	5/23/2022	<70	<125	<125	727	56,900
V001	7/25/2022	986	787	<125	1,382	1,180,000
V001	10/5/2022	<70	<125	<125	<118	13,100
V001	1/12/2023	93.4	<125	<125	489	8,530
V001	4/4/2023	<70	<125	<125	<593	36,800
V001	7/6/2023	163	<125	<125	<593	1,060,000
V001	10/5/2023	865	264	210	1,525	338,000
V001	1/8/2024	23	19.8	1.19	33.9	2,840
V001	4/2/2024	<0.639	<1.88	<0.867	4.29	806
V001	7/17/2024	2.14	1.94	<0.867	3.59	356 ⁽¹⁾
V001	10/10/2024	153	169	20.3	233	65,700

Notes:

TVPH - GRO = Total volatile petroleum hydrocarbons - gasoline range organics (C6 - C10)

1. Analyte found in associated method blank. Please see attached laboratory report for more information.

$\mu\text{g}/\text{m}^3$ = Micrograms per cubic meter

(<) = Analytical result is less than the indicated laboratory reporting limit.