STATE COOPERATIVE FINAL AGENCY DECISION STATEMENT
Kansas Department of Health and Environment
Bureau of Environmental Remediation

SITE NAME: Conoco Pipeline (Abandoned) Site (C2-087-00198)
CITY/COUNTY: Valley Center, Sedgwick County
DATE: August 2021
MEDIA IMPACTED: Soil/Groundwater
LAND USE (Current): Commercial & Industrial, Residential

SITE BACKGROUND:
The Conoco Pipeline (Abandoned) Site encompasses approximately two acres and is in the southwest ¼ of Section 6, Township 26 South, Range 1 East, Sedgwick County, Kansas (Figure 1). It is located in the 7100 block of N. Clarence Avenue within the city limits of Valley Center along the former location of an abandoned Conoco crude oil pipeline. Land use surrounding the Site includes commercial, industrial, and residential purposes. The neighborhood was generally developed in the 1930s and 1940s and consists of single-family dwellings, livestock pastures, and construction businesses. Historically, residents relied on domestic water wells for drinking water, and have no sanitary or stormwater sewer system access. A former Conoco crude oil pipeline crossed through the neighborhood and was abandoned in place by water displacement in 1977.

The Site was identified following the removal of six underground storage tanks (USTs) from Green-Glo Turf Maintenance, a commercial business located at 7100 N. Clarence Avenue, in December 1989. The Kansas Department of Health and Environment (KDHE) Storage Tank Trust Fund conducted a Site Investigation (SI) in 1991 at the Green-Glo property that showed petroleum hydrocarbon vapor concentrations were highest near the adjacent abandoned Conoco pipeline. The investigation included installation of nine monitoring wells (MW-1 through MW-9) to investigate potential releases from USTs; free product was observed in MW-3 and MW-6 near the abandoned pipeline.

In July 1991 KDHE notified Conoco Pipeline Company (Conoco) of subsurface soil and groundwater impacts near the abandoned pipeline based on field analysis indicating an estimated concentration of Total Petroleum Hydrocarbons (TPH) up to 10,000 parts per million (ppm) in soil 10 feet below the pipeline. In response to KDHE’s notification, Conoco excavated two potholes to expose the abandoned line; evidence of crude oil in soil around the pipeline was observed. In March 1992, Conoco installed four monitoring wells (CMW-1 through CMW-4) along the pipeline right-of-way north of the Site to investigate the free product that was identified during the 1991 SI. Analytical results indicated that the free product was limited to the area of MW-3 and MW-6; Conoco installed passive free product skimmers in the impacted wells. In May 1992, approximately 390 feet of the abandoned pipeline north of MW-6 was removed.
In July and October 1992, Conoco conducted soil vapor surveys which identified elevated levels of petroleum constituents were identified in vapor probes in the vicinity of the pipeline. In March 1995, Conoco (now Phillips 66) entered into Consent Order 95-E-0047 with KDHE to complete a Comprehensive Investigation and Corrective Action Study (CI/CAS). In October 1995, Conoco purchased the property at 7032 N. Clarence Avenue.

The CI was conducted in April 1995 to collect additional delineation data. Three soil borings were installed; two of the borings were completed as groundwater monitoring wells (CMW-5 and CMW-6) on the east side of the property at 7032 N. Clarence Avenue. A soil sample collected during drilling of CMW-6 revealed a Total BTEX (benzene, toluene, ethylbenzene, xylenes) level of 6.78 ppm, while soil samples collected from CMW-5 and SB-2 were non-detect. Groundwater samples collected from CMW-5 and SB-2 were non-detect, while the groundwater sample collected from CMW-6 had Total BTEX at a concentration of 15.7 micrograms per liter (µg/L), and TPH at a concentration of 2.3 milligrams per liter (mg/L).

KDHE requested additional data for the CI/CAS, and Conoco performed additional soil and groundwater assessment using direct-push methods near MW-6 in August 1998. The Subsurface Assessment Report concluded that soil and groundwater impacts were present at the saturated zone interface (i.e. smear zone), 10 to 16 feet below ground surface, near MW-3 and MW-6. Benzene concentrations in groundwater ranged from 7.6 to 75 µg/L. TPH-Gasoline Range Organics (TPH-GRO) was identified in all soil borings at concentrations ranging from 0.36 to 4.3 mg/L, while TPH-Diesel Range Organics (TPH-DRO) was identified in all soil borings at concentrations ranging from 0.82 to 390 mg/L. Laboratory gas chromatographs indicated the majority of the TPH-GRO was heavy GRO constituents, which are also reported as TPH-DRO due to overlap between test methods. Two more monitoring wells (MW-10 and MW-11) were installed to further delineate groundwater contamination at the Site.

In July 1999, Conoco submitted the revised CI/CAS to KDHE proposing to provide a public water supply line and hookups to area residents. In December 1999, Conoco, in cooperation with the neighborhood residents and City of Valley Center, constructed a 12-inch water main to the neighborhood and all 13 nearby residences were connected to public water. Eighteen residential wells were plugged and abandoned. In July 2000, Conoco plugged and abandoned MW-1, MW-2, MW-8, CMW-1 through CMW-6, and groundwater monitoring was reduced to semi-annual frequency. In November 2000, free product was observed in MW-10 and MW-11, prompting Conoco to evaluate additional remedial actions.

In October 2001 Conoco performed a vacuum-enhanced fluid recovery event from MW-3, MW-6, MW-10, and MW-11, which ultimately removed 2,465 gallons of liquid, including approximately 72 gallons of petroleum hydrocarbons.
In December 2011, ConocoPhillips (formerly Conoco) delineated the extent of the light non-aqueous phase liquid (LNAPL) using laser-induced fluorescence (LIF) tools. The investigation included 32 LIF probe locations, 5 soil borings, LNAPL baildown testing and recoverability evaluation, and installation of MW-12 through MW-15. The Free Product Delineation Report (CRA 2012) indicated the LNAPL body was predominantly trapped in the silty clay and sand at depths greater than 10 feet bgs, except at 7117 and 7059 N. Clarence Avenue where the LNAPL body was identified at approximately 5 feet and 10 feet bgs. The LNAPL extends to about two to three feet below the water table. The baildown testing showed that the estimated LNAPL transmissivity value is 0.5 ft$^2$/day at MW-6, which indicates the LNAPL is not practicably recoverable, according to KDHE Bureau of Environmental Remediation (BER) Policy # BER-041 Total Petroleum Hydrocarbons (TPH) and Light Non-Aqueous Phase Liquid (LNAPL) Characterization, Remediation, and Management, which defines the Maximum Extent Practicable (MEP) as a transmissivity of 0.8 ft$^2$/day.

In November 2012, Phillips 66 (formerly ConocoPhillips) completed an Indoor Air Evaluation by collecting indoor samples from homes located at 7100 and 7117 N. Clarence Avenue. The owner of 7075 N. Clarence Avenue declined the indoor air evaluation. In response to the results, Phillips 66 completed a Vapor Intrusion Investigation at the 7100 address; results from the two sub-slub vapor collection points in the basement and three soil vapor monitoring points outside the house indicated that the vapor intrusion pathway was incomplete at that residence.

In June 2013, Phillips 66 obtained additional baildown data to further establish product recoverability at the Site. The LNAPL transmissivity values estimated were 0.5-0.7 ft$^2$/day in MW-6, 0.2-0.4 ft$^2$/day in MW-10, and 0.04-0.1 ft$^2$/day in MW-11, all below the BER-041 MEP transmissivity value of 0.8 ft$^2$/day. MW-3 was not able to be evaluated because it contained less than 0.5 feet of LNAPL at that time.

Phillips 66 performed quarterly groundwater monitoring for benzene, toluene, ethylbenzene, xylenes (BTEX) and TPH in MW-1 through MW-9 and CMW-1 through CMW-6 from 1995 to 1998. In 1998 KDHE approved reduced monitoring; MW-3, MW-5, MW-6, and MW-9 would be monitored quarterly. In March 1999, the sampling frequency was reduced to semi-annual, to include MW-3, MW-5, MW-6, MW-7, MW-10, and MW-11. MW-12 through MW-15 were added in 2012, and Phillips 66 began monitoring for polycyclic aromatic hydrocarbons (PAHs) in addition to BTEX and TPH. Groundwater sampling was suspended in 2015 due to a lack of dissolved petroleum constituents above the RSK outside of the four wells that contained product.

In 2018 Phillips 66 purchased the property at 7117 N. Clarence Avenue, and subsequently razed all above-ground structures.

On July 14, 2020 Phillips 66 recorded Environmental Use Control Agreements (EUCs) with the Sedgwick County Register of Deeds for 7112 and 7032 N. Clarence Avenu...
Avenue (19-EUC-0018) and 7059 N. Clarence Avenue (19-EUC-0019). The EUCs provide the following land use restrictions:

- The property shall not be used for residential, public use, or outdoor recreation unless approved in writing by KDHE;
- The Owner shall not allow water wells to be installed or used for human-contact uses;
- Soil shall not be excavated or otherwise disturbed unless conducted with the current KDHE-approved Soil Management Plan;
- Contractors and/or workers performing any excavation activities shall be informed by the Owner the potential hazards associated with the direct contact and/or transport of any potentially contaminated and/or hazardous soil or material.

Groundwater monitoring took place at the Site from 1995 until 2015. Groundwater sample analytical results generally show a lack of dissolved contaminants in the non-product containing wells with sporadic detections. One groundwater RSK exceedance for benzene (5.6 µg/L) was detected in 2001 in MW-5; all other non-product containing wells have had no benzene exceedances in groundwater. TPH-DRO exceeded the RSK in MW-5 in 1998 and 2001 (maximum concentration of 0.9 mg/L), and TPH-GRO exceeded the RSK in MW-5 in 2001 (0.81 mg/L). A groundwater sample in 2014 exceeded the RSK for TPH-DRO in MW-15 (0.62 mg/L).

In the wells containing product, when able to be sampled, MW-6 had two benzene exceedances (7.0 µg/L in 1995, 6.6 µg/L in 1999), while MW-10 exceeded the RSK for benzene in all instances in which free product was not present (maximum benzene concentration of 81 µg/L in 1999 with most recent concentration of 6.5 µg/L in 2011). MW-3 had TPH-DRO exceed the RSK in 2000, 2001, 2003, and 2011 (maximum concentration 5.7 mg/L in 2000). TPH-GRO exceeded the RSK in MW-3 in 2000 and 2011 (maximum concentration 0.61 mg/L in 2000). MW-6 had TPH-DRO and TPH-GRO concentrations exceeding the RSK during several events (maximum concentrations of 343 mg/L in 2011; 4.0 mg/L in 1999, respectively). MW-10 had TPH-DRO and TPH-GRO concentrations exceeding the RSK during several events (maximum concentrations of 31.0 mg/L and 12.0 mg/L in 2003, respectively). MW-11 had TPH-DRO exceeding the RSK in 1999 (48.0 mg/L).

Three domestic wells were regularly sampled from 1994 through 2000. The domestic well located at 7028 N. Clarence Avenue exhibited no detections of any contaminants of concern in groundwater throughout the 16-year monitoring period. The domestic well located at 2201 W. 69th Street exhibited no detections of any contaminants of concern in groundwater except for trace concentrations of xylene in 1995 and 1997
(0.68 and 1.20 mg/L, respectively). The domestic well located at 7075 N. Clarence Avenue exhibited detections of benzene below the RSK when sampled frequently from February 1999 through May 1999 (maximum concentration 3.8 µg/L), however, benzene was not detected in the final two sampling events (August 1999 and May 2000) before plugging. All domestic wells were plugged after the residences were connected to the public water supply in 2000.

In 2013, baildown testing indicated that the LNAPL transmissivity was below MEP limit, therefore it is considered residual and non-migrating.

**REMEDIAL PLAN:** The primary contaminants of concern are benzene, TPH-GRO (now TPH-LRH) and TPH-DRO (now TPH-MRH/HRH), in soil and groundwater. The previous IRM of vacuum-enhanced fluid recovery recovered approximately 72 gallons of petroleum hydrocarbons from MW-3, 6, 10, and 11. Nearby residences were connected to the public water supply and their private wells were plugged in 2000. An EUC was applied to the property in 2020 to address the potential risk posed by residual LNAPL at the Site. Indoor air and VI evaluations determined that VI is not an issue at nearby residences. Routine groundwater monitoring that took place at the Site from 1995-2015 indicated a lack of dissolved-phase contamination in the wells outside of the LNAPL extent, while baildown testing determined that LNAPL present in four wells was residual and non-recoverable. The analytical data show that the Site risks are restricted to the property, and a combination of the IRMs and EUC address the risk remaining from residual contamination.

**RECOMMENDATION:** On the basis of information available in the Administrative Record and summarized above, KDHE recommends that the site be Conditionally Closed.

**COMMUNITY INVOLVEMENT:** Public notice of the availability of the Draft Agency Decision Statement (ADS) was published in *The Ark Valley News* on July 15, 2021 and the Draft ADS was available for review at the Valley Center Public Library from July 15, 2021 through July 30, 2021 during the 15-day comment period held to solicit written comments from the public. No comments were received by the public regarding the Draft ADS during the public comment period.

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### Table 1: Maximum Contaminant Concentrations in Soil

<table>
<thead>
<tr>
<th>Contaminant of Concern</th>
<th>Non-Residential Tier 2 Level Soil Pathway* (mg/kg)</th>
<th>Tier 2 Level Soil to Groundwater Pathway* (mg/kg)</th>
<th>Sample Depth (ft BGS)</th>
<th>Maximum Concentration Detected (mg/kg) [date]</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPH-GRO*</td>
<td>220</td>
<td>79.3</td>
<td>8-10</td>
<td>5,220 [2012]</td>
</tr>
<tr>
<td>TPH-DRO*</td>
<td>2,000</td>
<td>5,400</td>
<td>8-10</td>
<td>10,300 J [2012]</td>
</tr>
<tr>
<td>Benzene</td>
<td>15.9</td>
<td>0.168</td>
<td>14-16</td>
<td>3.4 [1998]</td>
</tr>
<tr>
<td>Toluene</td>
<td>29,800</td>
<td>51.2</td>
<td>14-16</td>
<td>8.1 [1998]</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>145</td>
<td>65.6</td>
<td>14-16</td>
<td>25.0 [1998]</td>
</tr>
<tr>
<td>Total Xylenes</td>
<td>1,410</td>
<td>809</td>
<td>14-16</td>
<td>36.0 [1998]</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>30.5</td>
<td>0.349</td>
<td>5-7</td>
<td>8.1 [2012]</td>
</tr>
</tbody>
</table>

mg/kg = milligrams per kilogram or parts per million (ppm)


**Bold Red** font indicates concentration exceeds specified threshold level.

* TPH-GRO and TPH-DRO were replaced with TPH-LRH, TPH-MRH, and TPH-HRH according to BER Policy #BER-041 Total Petroleum Hydrocarbons (TPH) and Light Non-Aqueous Phase Liquid (LNAPL) Characterization, Remediation, and Management, September 1, 2015, Revised May 24, 2017.

J indicates the value was flagged as qualified by the laboratory.
### Table 2: Maximum Contaminant Concentrations in Groundwater

<table>
<thead>
<tr>
<th>Contaminant of Concern</th>
<th>Non-Residential Tier 2 Level Groundwater Pathway* (mg/L)</th>
<th>Historical Maximum Concentration Detected (mg/L) [well name, year]</th>
<th>Recent Maximum Concentration Detected (mg/L) [well name, year]</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPH-GRO+</td>
<td>0.500</td>
<td><strong>12.0</strong> [MW-10, 2003]</td>
<td>ND (0.500) [MW-4R, 13, 14, 15, 2015]</td>
</tr>
<tr>
<td>TPH-DRO+</td>
<td>0.500</td>
<td><strong>343</strong> [MW-6, 2011]</td>
<td>ND (0.360) [MW-4R, 13, 14, 15, 2015]</td>
</tr>
<tr>
<td>Benzene</td>
<td>0.005</td>
<td><strong>0.081</strong> [MW-10, 1999]</td>
<td>ND (0.001) [MW-4R, 13, 14, 15, 2015]</td>
</tr>
<tr>
<td>Toluene</td>
<td>1.000</td>
<td>0.050 [GP-7, 1998]</td>
<td>ND (0.001) [MW-4R, 13, 14, 15, 2015]</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>0.700</td>
<td><strong>2.200</strong> [MW-2, 1997]</td>
<td>ND (0.001) [MW-4R, 13, 14, 15, 2015]</td>
</tr>
<tr>
<td>Total Xylenes</td>
<td>10.000</td>
<td>2.800 [MW-2, 1997]</td>
<td>ND (0.003) [MW-4R, 13, 14, 15, 2015]</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>0.00211</td>
<td>0.00055 [MW-15, 2014]</td>
<td>ND (0.0005) [MW-4R, 13, 14, 15, 2015]</td>
</tr>
</tbody>
</table>

**mg/L =** milligrams per liter or parts per million (ppm)


**Bold Red** font indicates concentration exceeds specified threshold level.

ND indicates the analyte was not detected above the reporting limit indicated in parentheses.

* indicates the Laboratory Control Sample (LCS) or LCS Duplicate is outside acceptance limits.

* excludes those wells with observed free product in 2015 (MW-3, MW-6, MW-10, MW-11)
FIGURE 1. SITE LOCATION

[Map showing the location of the Conoco Pipeline (Abandoned) Site in Valley Center, KS.]
FIGURE 2. SITE MAP

Legend
- Monitoring Wells
- Conoco Pipeline (Abandoned)
- 19-EUC-0019
- 19-EUC-0018
- Approximate Site Boundary
- Local Roads

Service Layer Credits: 2018 DASC Leaf Off Imagery

SITE: Conoco Pipeline (Abandoned) Site
C2-087-00198
Valley Center, Kansas

DRAWN BY: AR 3/1/2021
CHECKED BY: BL 3/1/2021
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Date
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