



Chevron Rangely Weber Sands

100 Chevron Rd Rangely, CO 81648

December 31, 2016

VIA HAND DELIVERY AND EMAIL

[dnr\\_cogccenforcement@state.co.us](mailto:dnr_cogccenforcement@state.co.us).

Secretary of the Commission  
Colorado Oil and Gas Conservation Commission  
1120 Lincoln Street, Suite 802  
Denver, CO 80203

Re: Doc. No. 401133244,  
NOAV Nov. 23, 2016

Ladies and Gentlemen:

This letter is submitted by Chevron USA Inc. ("Chevron") as an attachment to its December 31, 2016 Form 27 Site Investigation and Remediation Workplan of a release on August 10, 2016, from the Fee 73x fiberglass flow line ("Fee 73x Flowline") caused by a *force majeure* storm event. Chevron previously filed a Form 27 on November 28, 2016 (Doc. No. 401156797). Chevron requested Commission approval for no further remediation. Chevron filed in support of its request a November 28, 2016 Form 4 Sundry Notice (Doc. No. 401156793) attaching the cleanup analysis for the site (Doc. No. 401156811), *i.e.*, the Table 910-1 Data Package. That package was resubmitted to the Commission on December 22, 2016, attached to Chevron's Answer to the November 23, 2016 NOAV.

The November 28, 2016 Form 27 included an additional Form 4 Sundry Notice (Doc. No. 401156795) reporting that cleanup was completed on August 8, 2016, per the August 23, 2016 Field Inspection Form (Doc. No. 685100057). The Commission attached Conditions of Approval ("COAs") to this Form 4, and therefore to the Form 27. Those COAs are:

The Remediation project will remain open until the required information has been received and operator requests closure of project.

Please include pressure testing of flowlines and root cause analysis of spill, including lessons learned to prevent a similar spill from reoccurring.

The Form 27 should be a stand alone document and not merely referencing other submitted documents for additional information. Provide a comprehensive Form 27 detailing:

How the Spill/Release occurred,

Activities taken by Chevron to mitigate the Spill/Release,

Activities taken by Chevron to remediate the Spill/Release (including volume of fluid, removal and where it was disposed, volume of soil removed and disposed, etc.),

Explanation of Arsenic and Conductivity,

All analytical,

Pictures, Figures,

Summary of all information to justify closure.

(Form 4 Sundry Notice (Doc. No. 401156795)).

Chevron respectfully submits the following responsive information to the Commission.

**I. PRESSURE TESTING OF FLOWLINES AND ROOT CAUSE ANALYSIS OF SPILL, INCLUDING LESSONS LEARNED TO PREVENT A SIMILAR SPILL FROM REOCCURRING**

**A. Pressure Testing of Flowlines**

See Pre- and Post-Spill Pressure Test charts, attached as previously labelled Appendix G.

**B. Root Cause Analysis of Release**

A sudden and significant rain and lightning event commenced on August 7, 2016, impacting operations in the Rangely Weber Sand Unit in Rio Blanco County, Colorado. There were multiple and recurring thunderstorms which continued intermittently into the early morning hours of August 8, 2016. This storm event caused significant erosion of an intermittent stream bed, exposing the Fee 73x fiberglass flow line ("Fee 73x Flowline"). The erosion also caused the stream banks to collapse onto the Fee 73x Flowline, breaking it and resulting in the incident described below.

The Fee 73x Flowline is a buried flowline which was installed in late 1986/early 1987. It was installed with approximately 6' of cover. The Fee 73X Flowline transects an intermittent stream located on non-crop land and has been utilized without incident for close to 30 years.

The Fee 73x Flowline transports produced water and hydrocarbons from the Fee 73x Well to a production header. The production header is a pipe arrangement that connects flowlines from several wellheads into a single gathering line. There is also a low pressure detector in the Fee 73x Flowline which shuts the well off in the event low pressure is detected in the Fee 73x Flowline. A check valve is installed in the Fee 73x Flowline near the production header which prevents backflow of fluids from the production header towards the 73x Well.

Chevron has an Asset Integrity Program in place which employs Spill Prevention Control and Countermeasures ("SPCC") including, among other things, the use of 29 "siphon" impoundments designed to capture and contain spills and releases. Chevron's SPCC system is designed so that when the fluid level reaches a certain height, a pipe allows fluid to flow through the pipe and continue downstream. The flow-through pipe has alarms which notify Chevron when the siphon is full.

The incident occurred on remote non-crop land approximately 100' upstream from "Siphon 43", on the upstream side of the production header check valve. There are no water wells or permanent surface waters within a quarter-mile of Siphon 43. Local groundwater depth is greater than 5,000' below ground surface. The location is not within a Rule 901.e. sensitive area.

#### *1. How the release occurred*

As noted above, a sudden and significant rain and lightning event commenced on August 7, 2016 which was comprised of multiple and recurring thunderstorms. Chevron determined that the Fee 73x Flowline unexpectedly failed when this sudden and unpredictably extreme *force majeure* rain event eroded between 3' to 6' of cover overlying the flowline and the supporting soil under the flowline, and then caused the stream banks to collapse onto the Fee 73x Flowline. The Fee 73x Flowline is comprised of a fiberglass material sufficient to prevent internal pipe corrosion and external pipe erosion. A macroscopic visual inspection of the flowline breaks confirmed that an extreme, localized and sudden external force—the collapse of the stream banks—snapped the pipe. Chevron has no record of a similar event occurring during the 84-year history of operating the Rangely Weber Sand Unit.

Chevron also determined that a check valve had partially failed which prevented the check valve from completely isolating the broken section of Fee 73x Flowline from a

production header. A very limited amount of hydrocarbons and produced water was able to flow back towards the well and therefore towards the broken Fee 73x Flowline.

The *force majeure* thunderstorms and system wide siphon alarms led Chevron to reasonably believe there were no active spill or release events specific to Fee 73x Flowline and Siphon 43. Chevron did not immediately discover this particular release because it was systematically inspecting all of the siphons and addressing other field issues such as power outages.

2. *Activities taken by Chevron to mitigate the release, and*
3. *Activities taken by Chevron to remediate the release (including volume of fluid, removal and where it was disposed, volume of soil removed and disposed, etc.),*

Chevron substantially mitigated the release through the installation and management of systems that detected low pressure in the Fee 73x Flowline and shut off the Fee 73x Well. Although a broken hinge on a check valve prevented it from completely sealing, the check valve otherwise worked as designed, and in combination with Chevron's siphon system and the flowline low pressure detector which shut off the Fee 73x Well, Chevron mitigated a potential significant release from the *force majeure* rain event.

The effectiveness of Chevron's mitigation strategies is confirmed by containment of virtually all of the observable hydrocarbons in Siphon 43. In addition, the vast majority of the spill path was free of hydrocarbons, although a limited amount of hydrocarbon residue was observed sporadically in vegetation and on soil at the high-water mark along the spill path. There were no observable impacts to wildlife.

Activities taken by Chevron to remediate the release included arrival on-site to begin remediation within 30 minutes of discovering the release. Approximately 29.25 BBLS of oil, and 229.1 BBLS of produced water mixed with an estimated 3,029 BBLS of rainwater Liquids were vacuumed up and trucked to the main Rangely oil and water separation plant for reinjection. Contaminated vegetation and soil were also removed. 43 cubic yards of contaminated soil was taken to the Rangely land farm for bioremediation. The affected area was also washed down with potable water. The check valve was replaced. The Fee 73x Flowline was repaired and pressure tested. Chevron also encapsulated the repaired section of the Fee 73x Flowline in order to prevent any similar future event.

4. *Explanation of arsenic and conductivity*

Chevron has submitted data demonstrating all Table 910–1 hydrocarbon requirements have been met. (Appendix “A”, Table 910-1 Data Package). The only exceedance is a single electro-conductivity (“EC”) variance. The sampling data show that the arsenic levels are virtually identical to the background samples indicative of the elevated levels of naturally occurring arsenic in the area, with no impact from the release.

5. *All analytical, pictures, and figures*

See Appendix “A”, Table 910-1 Data Package, and the attached photographs.

C. Lessons Learned to Prevent a Similar Incident

Chevron will develop, deploy, and train personnel on a standard operating procedure (“SOP”) for Siphon alarms and review alarm set points for each siphon. The SOP will include verification of siphon content and response to siphon alarms.

Chevron will continue its ongoing reviews of design standards to identify and implement improvements for piping and flowline installations around crossings, under washes, and other potentially vulnerable locations.

Chevron is updating its line replacement prioritization tool to ensure that the age of piping and sensitive receptors (roads, waterways, etc.) are given additional consideration in the decision criteria for piping replacements.

Chevron will develop, deploy, and train personnel regarding an additional step to test the check valve at the production header during the 5-year hydro-testing integrity test.

Chevron will develop, deploy, and train personnel on an SOP regarding low pressure flowline response.

## **II. SUMMARY OF INFORMATION TO JUSTIFY CLOSURE**

The Commission has directed Chevron to submit a Form 27 monthly progress report until the initial incident report can be closed. Chevron submits that the report should be closed at this time because all organics are in compliance with Table 910-1, and all other standards are met except for one EC test, which is only slightly above Table 910-1 limits in an area historically devoid of vegetation. Chevron cannot further investigate or remediate chlorides (if necessary) due to current weather conditions in the area, and no new, meaningful data will be available until the spring. Monthly reporting will not protect the environment or contribute to any compliance objectives.

Chevron respectfully submits the failure of the Fee 73x Flowline and resulting release incident were caused solely by the *force majeure* rain events of August 7-8, 2016. Chevron's installation of the flowline and its monitoring and maintenance program comply with the Colorado Oil and Gas Conservation Act, and its implementing rules, orders and policies. Chevron's monitoring and maintenance program also demonstrated the Fee 73x Flowline was in good working order under normal and reasonably anticipated operating scenarios.

Chevron's SPCC system and continuous monitoring system also mitigated the *force majeure* event and prevented any threatened or actual significant adverse impacts to the environment, wildlife, or the public health, safety and welfare, which is reflected in the Commission's own inspection reports. Chevron's on-site response and self-reporting to the Commission were also immediate. Chevron actively cooperated with Commission staff to immediately implement appropriate remediation, reclamation, and repair operations, all of which were timely completed to higher standards than required.

Very truly yours,

Michael Haub  
HES Specialist  
Colorado Area  
Mid-Continent Business Unit



Encs.

Cc: Greg Germani