

Objective Criteria Review Memo – PDC Energy Inc Stugart State 6-20, Amended Form 2A #402308980

Location ID# 332647

This summary explains how COGCC staff conducted its technical review of the PDC Energy Inc Stugart State 6-20, Amended Form 2A #402308980 within the context of SB 19-181 and for the required Objective Criteria. This proposed Amended Location is for 31 wells, 6 oil tanks, 37 separators, 2 produced water vaults, and meets the following Objective Criteria:

1. (Criteria 1) Oil and Gas Locations within 1,500' of a Building Unit or High Occupancy Building, which include Urban Mitigation Area ("UMA") and Large UMA Facility ("LUMAF") locations.
2. (Criteria 2) Oil and Gas Locations within a municipality.
3. (Criteria 5c) Oil and Gas Locations within: a Sensitive Area for water resources.
4. (Criteria 8) Oil and Gas Locations with storage of hydrocarbon or produced liquid in more than 18 tanks or in excess of 5,200 barrels.

COGCC staff met with the Director to discuss whether the Objective Criteria were sufficiently addressed and whether the Amended Form 2A could be approved with the proposed Best Management Practices (BMPs) and applied Conditions of Approval (COAs). The following sections provide details regarding the evaluation of each criterion.

Criteria 1: Oil and Gas Locations within 1,500' of a Building Unit or High Occupancy Building, which include Urban Mitigation Area ("UMA") and Large UMA Facility ("LUMAF") locations.

Site Specific Description of Applicability of Criteria 1: Based on the technical review and desktop evaluation there are four building units within 1500' of the location (and an additional five building units between 1500' to 2000').

Site Specific Measures to Address Criteria 1: The Operator provided the following information regarding communication to the surrounding building units:

- SRC was the original Operator for this proposed location. SRC conducted an informational neighborhood meeting regarding this location on 12/8/2018. The neighborhood meeting was required as part of the Greeley USR process.
- Meeting information was made public via publication in the local newspaper, as well as mailings to all Building Units within 500'. Attendance was minimal, though exact numbers were not provided by SRC. Topics discussed included: General overview of the location; General questions regarding oil and gas operations; Explanation of existing batteries planning to be P&A'd; Traffic routes and access points for location; Explanations of interim reclamation & landscaping during all phases of operations; BMPs for noise, light, and dust mitigation.

- PDC sent building unit notification letters with Health Study Fact Sheets to all building units within 2000' of the location on 2/26/2020. PDC did not receive any requests for consultations or additional information.

The Operator provided the following BMPs to mitigate having a location within 1500' of multiple building units:

- Access Road Dust Mitigation: PDC will employ practices for control of fugitive dust caused by operations, these include but are not limited to the use of speed restrictions and regular road maintenance.
- Light Mitigation: Lights will be turned downward and away from building units within the 1,000 foot buffer area.
- Fencing BMP: The completed wellsites will be surrounded with landscaping approved by The City of Greeley.
- Noise Mitigation: 32' sound walls will be placed on the north and east sides of the well pad area of the location and hay bales will be placed along the 720' stretch of the southern side of the location. If additional sound mitigation is requested after operations have commenced, the existing hay bales will be replaced with 32' sound walls and additional hay bales will be placed for additional protection. Operator will maintain contact with the Building Unit owners to ensure all concerns are addressed during operations.
- Odor Mitigation: PDC will be using Group II oil based drilling fluid. In an effort to keep odor from oil based cuttings as low as possible, PDC continuously hauls cuttings throughout the drilling process. PDC shall not stockpile cuttings or store any large amount of cuttings on location. Trucks run continuously during daylight hours to keep the volume of cuttings on location at a bare minimum.
- Pipeline BMP: Operator will transport oil, gas, and produced water from this location via pipeline. Oil storage tanks will remain on location for safety concerns related to any unplanned oil gathering pipeline shutdowns and for routine maintenance operations.

Additionally, the existing shut-in well (STUGART 6-20; API# 05-123-22661) will be plugged and abandoned as part of location construction and all facility equipment planned for the location will be new.

Summary: PDC provided BMPs that address possible impacts to nearby building units. The BMPs include light mitigation, 32' sound walls on N&E sides of location, Group 2 OBM, pipeline takeaway for oil, gas, and produced water, and Health Study Fact Sheets provided to all building units within 2000'.

Criteria 2: Oil and Gas Locations within a municipality.

Site Specific Description of Applicability of Criteria 2: Based on the technical review and desktop evaluation the proposed location is within Greeley.

Site Specific Measures to Address Criteria 2: The Operator applied for a USR from the City of Greeley on 10/31/2018 and received approval on 10/8/2019 from the City of Greeley Planning Commission. As part of Greeley's USR review process, the location was vetted through each department within the City of Greeley (planning, traffic, public works, Greeley Fire, etc.).

Summary: PDC applied and was approved for a USR for this location from the City of Greeley.

Criteria 5c: Oil and Gas Locations within: a Sensitive Area for water resources.

Site Specific Description of Applicability of Criteria 5c: Based on the technical review and desktop evaluation the location is 26' from nearby surface water features (ditch) and there is estimated shallow ground water of 16', based on the soil core sampling report attached to the Form 2A (attachment OTHER, doc# 402329508).

Site Specific Measures to Address Criteria 5c: The Operator provided the following BMPs to mitigate being located close to nearby surface water features and having estimated shallow groundwater:

- **Stormwater Controls:** PDC will install a perimeter ditch and compacted berm around the whole project leading to sediment traps with volumes calculated based on the size of the location. All BMPs and perimeter controls will be calculated and designed using sound engineering practices and the slopes and stock top soil piles will be sprayed with Hydro mulch for stabilization. Operator will inspect stormwater controls every two weeks or after every weather event.
- **Water Vaults:** water vaults are set at 3 to 4 feet below grade keeping 3 to 4 feet of vault above grade with a geo-synthetic liner installed under the vault. The fiberglass vaults that we use are double walled and inspected as part of our integrity testing program.
- **Lined Containment:** Containment berms for Permanent and Temporary Tanks shall be constructed of steel rings with a geosynthetic liner, designed and installed to prevent leakage; designed to enclose an area sufficient to contain a minimum of 150% of the largest single tank; line the secondary containment areas for the tanks and separators with an impervious material.
- **Remote Monitoring:** This location will have remote shut-in and remote tank level monitoring capabilities. LACT automation shall be used for wells and production tanks, and all oil shall be transferred offsite via pipeline to minimize emissions from truck traffic. Production tanks shall be sealed and controlled by automation to eliminate the need for manual gauging.
- **Other Containment:** either a 40 mil liner or cement treatment will be placed under the drilling rig. The rig also uses catch pans when draining hoses or mud lines. A 12" dirt berm around the rig or an improved gradient toward the well cellers will be constructed for protection in an event of an unexpected spill. In addition, 6' cellar rings will be placed around the wellheads.
- A Leak Detection Plan is attached to the Form 2A (doc# 402329510).

Summary: PDC provided BMPs that address possible impacts to surface water and groundwater resources. The BMPs include stormwater controls, lined containment, remote monitoring/shut-in capabilities, a leak detection plan, and other containment around the rig and well heads.

Criteria 8: Oil and Gas Locations with storage of hydrocarbon or produced liquid in more than 18 tanks or in excess of 5,200 barrels.

Site Specific Description of Applicability of Criteria 8: Based on the technical review and desktop evaluation the location is planned for six 400 bbl oil tanks, two 210 bbl water vaults, and ten 500 bbl temporary water tanks.

Site Specific Measures to Address Criteria 8: The Operator states on the “Facilities” tab of the Form 2A that the ten 500 bbl tanks are temporary. The Operator estimates that these tanks will only be on location for six to nine months, after which point they will be removed and only the permanent tank count of six oil tanks and two water vaults will remain on location. In addition to the previously mentioned BMPs in the Criteria 5c discussion, the removal of the temporary tanks will mean that going forward this location will not permanently meet Criteria 8. Additionally, there is an Emergency Response Plan in place for this location through Greeley Fire.

Summary: PDC provided BMPs that address possible impacts to having a large volume of produced fluid storage on location. The BMPs include stormwater controls, lined containment, remote monitoring/shut-in capabilities, an Emergency Response Plan, a leak detection plan, and removing temporary tanks within 6-9 months so the location does not permanently meet Criteria 8.

Director Determination: Based on the Objective Criteria review, the Director has determined that this permit application meets the standard for protection of public health, safety, welfare, the environment and wildlife resources set by SB 19-181.