



January 21, 2021

To whom it may concern:

This summary letter is in response to the Adams County Board of County Commissioners (“BoCC”) and citizen questions from the January 5, 2021 monitoring meeting on the Ivey LC Pad, an oil and gas facility operated by Great Western in western unincorporated Adams County. This letter is intended to provide more detailed information regarding specific questions and comments raised pertaining to air emissions monitoring, operational standards in effect at the Ivey site, and drilling mud usage/odor concerns.

Air Quality Monitoring

Adams County has consulted with the Colorado Oil and Gas Conservation Commission (“COGCC”) and the Colorado Department of Public Health and Environment (“CDPHE”) on the required air quality plan for the Ivey site. The County formally requested more robust requirements for this air quality plan including notification for the County and adjacent school for any air quality emergency situations, additional air quality sensors to be placed closer to homes to the southeast, increased speciated air sample collection, and additional reporting and data sharing requirements with the County and the general public. These requests were to ensure the Ivey site is compliant with the air monitoring provisions in the Air Quality Control Commissions’ rules effective May 1, 2021. Based on this consultation the approved plan will now require six (6) air monitors placed around the perimeter of the location, more regular air sample collection during all phases of operations, and report sharing with the public. The monthly air monitoring reports will be available to the public via the Operator’s microsite for the Ivey Pad (link below) and via the COGCC document search portal on a monthly basis.

Additionally, based on public comments submitted to the BoCC and County consultation, Staff has been in communication with CDPHE and are excited to report that the state is prepared to install their mobile air monitoring lab (CAMML) and two (2) remotely operated air quality sensors, in addition to those required by Great Western as part of their plan, around the Ivey site. The CAMML can measure volatile organic compounds (VOCs), greenhouse gases, particulate matter, and other pollutants around oil and gas operations; Exhibit 1 contains more information about the capabilities of the CAMML. The more compact air quality sensors being installed do not require an electrical connection and have a much smaller footprint than the CAMML, reducing many of the logistical challenges. These sensors record meteorological data and total VOC levels in the air and can automatically trigger an air sample collection for exceedances above state defined health guideline values and report all data via cellular connection. This data will be available to the public via the state’s Oil and Gas Health Information Response Program’s dashboard (link below) once it has been analyzed. The CAMML will be installed immediately west of the

Ivey site and the compact sensors will be placed north of the pad in/near Big Dry Creek and to the southeast of the pad in the backyard of a concerned citizen. The map in Exhibit 2 depicts the placement of all air quality monitoring sensors as part of the Operator's third-party air quality plan denoted by pink triangles on the map as well as those being installed and maintained by the CDPHE, depicted as green circles, for added emissions monitoring.

Operational Standards & Drilling mud/odor

Great Western has agreed in writing to meet all operational standards in the new COGCC rules effective January 15, 2021 for noise, odor, light, dust, and visual impacts. Specifically, the Operator has agreed to meet the lower maximum noise levels for the agricultural zone district, install continuous noise monitors to ensure constant compliance, and will meet all total and cumulative light requirements at this facility, as examples. Additionally, Great Western has agreed to utilize a synthetic, non-carcinogenic, Group III drilling mud at the Ivey location (*ABS-40*). The synthetic product is classified as having a low or negligible emissions content as it is not refined from crude as other drilling muds are (such as *Gibson D822*). This Group III mud will lower total emissions and generate lower odors at the site. A copy of the letter from Great Western is included in Exhibit 3.

The County believes these additional requirements and operational best management practices, in addition to those already required as conditions of approval of the County and state permits, will further mitigate and avoid potential adverse impacts from the operations at the Ivey LC Pad. Further updates will be posted as necessary to the Adams County Oil & Gas Information page (link below).

Should you have any additional questions please do not hesitate to reach out.

Referenced Links:

Adams County Oil & Gas Information Page: <https://www.adcogov.org/oil-and-gas-information>

CDPHE Oil & Gas Health Dashboard:

https://cohealthviz.dphe.state.co.us/t/EnvironmentalEpidemiologyPublic/views/Bella_datadash_beta_english/Landing?:showAppBanner=false&:display_count=n&:showVizHome=n&:origin=viz_share_link&:isGuestRedirectFromVizportal=y&:embed=y

Great Western Ivey website: <https://greatwesternpetroleum.com/ivey/>

Respectfully,



Greg Dean

Oil & Gas Liaison, *Community & Economic Development Department*

ADAMS COUNTY, COLORADO

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Meet the

camml

The Colorado Air Monitoring Mobile Lab



The Colorado Air Monitoring Mobile Lab (CAMML) collects information about the air around oil and gas operations.

The CAMML is a part of the Oil and Gas Health Information and Response Program, managed by the state health department.

No humps, but a big brain

The CAMML collects information about the air in real time and can measure many oil- and gas-related chemicals and pollutants.

The CAMML may stay at one location for a couple of days to several weeks and can continuously measure common air pollutants.

The CAMML also collects weather data such as wind speed and direction, so we can tell where substances come from.

The CAMML can measure

- Components of natural gas including methane, ethane, butane and propane.
- Volatile organic compounds (VOCs) such as benzene, toluene, ethylbenzene, xylenes (also known as BTEX) and others.
- Greenhouse gases including ozone, carbon dioxide, carbon monoxide and oxides of nitrogen (NOx).
- Particulate matter, such as dust and smoke.



What the CAMML tells us

Health department scientists and health professionals use information the CAMML collects to help us understand more about possible health risks around oil and gas operations.

The Oil and Gas Health Information and Response Program

The Oil and Gas Health Information and Response Program responds to public health concerns related to oil and gas activities. Part of its role is to conduct community investigations, which may include air sampling using the CAMML.

colorado.gov/oghealth | 303-389-1687



COLORADO
Department of Public
Health & Environment

Exhibit 2: Map depicting the placement of all air quality monitoring sensors around the Ivey Pad



Sensor locations are approximate for reference only

Trailside Park Neighborhood

CDPHE Air Quality Sensor #2 (exact location pending)

City of Thornton

Approved sensor placement for third-party air monitors

Ivey LC Pad

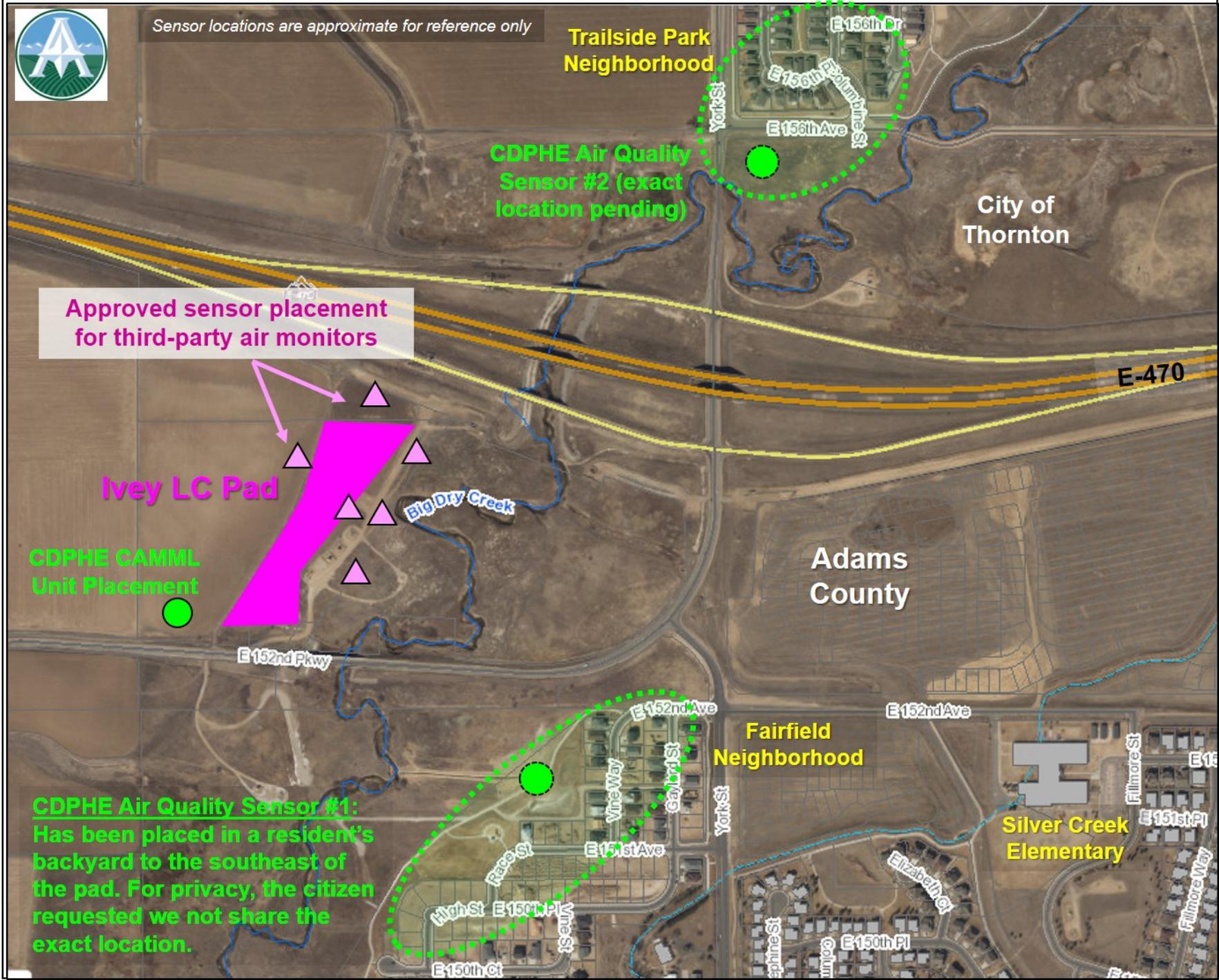
CDPHE CAMML Unit Placement

Adams County

CDPHE Air Quality Sensor #1: Has been placed in a resident's backyard to the southeast of the pad. For privacy, the citizen requested we not share the exact location.

Fairfield Neighborhood

Silver Creek Elementary



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January 13, 2021

Via Email

Adams County Commissioners
4430 South Adams County Parkway
Brighton, CO 80601

Re: Ivey Site Follow Up

Dear Adams County Commissioners and Staff:

In follow up to the Adams County monitoring meeting on Tuesday, January 5, 2020 regarding the Ivey site, Great Western believes it is necessary to confirm the following assurances in response to community concerns regarding the application of the Colorado Oil and Gas Conservation Commission's ("COGCC") modified noise, light, odor, dust and visual operating standards.

Across all our operations, Great Western is committed to minimizing our impact to surrounding residents and utilizing the best practices and operational standards available to ensure the protection of public health, safety and welfare, environment and wildlife. As a Platinum site, the Ivey pad is no different.

As the new COGCC rules are implemented, much remains unknown. Clarity will be offered in the weeks and months ahead by the COGCC, Colorado Department of Public Health and Environment, and Colorado Parks and Wildlife on implementation, application, compliance and the extent to which mitigation measures will be mandated on existing development. To the extent that the COGCC has defined these rules to date, and operators have clarity regarding the COGCC's expectations, Great Western in good faith commits to implementing the below mitigation measures to the extent that is operationally feasible. Additionally, Great Western will provide a detailed, bi-lingual fact sheet of these measures on our website (www.gwp.com/ivey and www.gwp.com/iveyespanol) as a resource to citizens explaining the extent to which this site's operational plans have been modified to demonstrate best management practices and other measures ensuring the public health, safety, welfare, and protection of environment and wildlife.

- **Rule 423—Noise:** Great Western agrees that it is appropriate for the noise to be continuously monitored during active operations (drilling and completions) at the Ivey site, and in accordance with standards as defined in the agricultural zone district. Given naturally high ambient levels in this area, Great Western will deploy continuous noise monitoring and mitigation strategies to best operate within the decibels required.

- **Rule 424—Lighting:** Great Western’s approved permit currently addresses the lighting requirements in rule 424.b and c., with a light mitigation plan that will point all lighting downward, inward, and will have no permanent lighting installed on location during the production phase. Additionally, Great Western will commit to placing all light sources (except for rig lights) below sound wall height and will comply with the lumen/square foot standards as appropriate to the agricultural zone district.
- **Rule 425—Visual Impacts:** Great Western is in full compliance with this rule, and the approved permit includes compliance with all visual mitigation requirements from both Adams County and the COGCC.
- **Rule 426—Odor:** Great Western’s approved permit and best management practices include emission control devices and the utilization of Group III synthetic drilling mud, a low/negligible aromatic content fluid which significantly reduces the odor associated with drilling mud in conjunction with an odor masking agent to mitigate odor and address odor concerns. Additionally, Great Western will notify Adams County and the COGCC within 24 hours of all complaints with explanation of operations at the time of complaint and mitigation measure or corrective action, where appropriate.
- **Rule 427—Dust:** Great Western is in full compliance with this rule, and has implemented actions such as speed restrictions, limited construction on high wind days and additional dust control measures as necessary, including utilization of only fresh water for dust suppression.

Great Western remains committed to our core values of Stewardship, Teamwork, Excellence, People, Growth and Resilience, and intend that the operations and actions on the Ivey site reflect these values back into the community.

Thank you for your support of our ongoing efforts to be a good neighbor and partner with Adams County and its citizens.

Regards,

A handwritten signature in blue ink, appearing to read 'J. Conger', with a long horizontal flourish extending to the right.

Jeremy Conger

Senior Vice President, Operations
Great Western Petroleum, LLC