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2025 ANNUAL OIL & GAS WELL COMPLIANCE ASSESSMENT

Town of Frederick, Colorado

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ABSTRACT

A total of 220 active oil and gas wells were inspected in 2025 under the Town of Frederick Board of Trustees mandated inaugural wellhead inspection program. Inspections evaluated seven standardized criteria: signage, liquid containment, valve integrity, gas venting, site security, combustible material, and housekeeping. Overall compliance was 54.5% (120 wells), with 45.5% (100 wells) exhibiting at least one non-compliant condition. Kerr McGee Oil & Gas Onshore LP, whose parent company Occidental Petroleum (Oxy), operates 17 wells and has 0% non-compliance, the lowest rate among all operators. Crestone Peak Resources Operating LLC and Extraction Oil & Gas, Inc. operating under the parent company Civitas Resources, Inc. (Civitas), operates 108 wells and has a rate of 4.6% non-compliance. The second lowest rate among all operators. K.P. Kauffman (KPK) operates 95 wells and has 100% non-compliance, the highest rate among all operators. At the time of writing this report, the above-mentioned three operators (Oxy, Civitas, & KPK) are the only operators with active oil and gas wells in Frederick. Dominant violations included valve and fitting integrity (n=95) and site housekeeping (n=37). Field forms, photographic, and videographic evidence are archived on the Town's server. This report documents Frederick's first cycle of wellhead inspections after hiring the Oil and Gas Liaison.

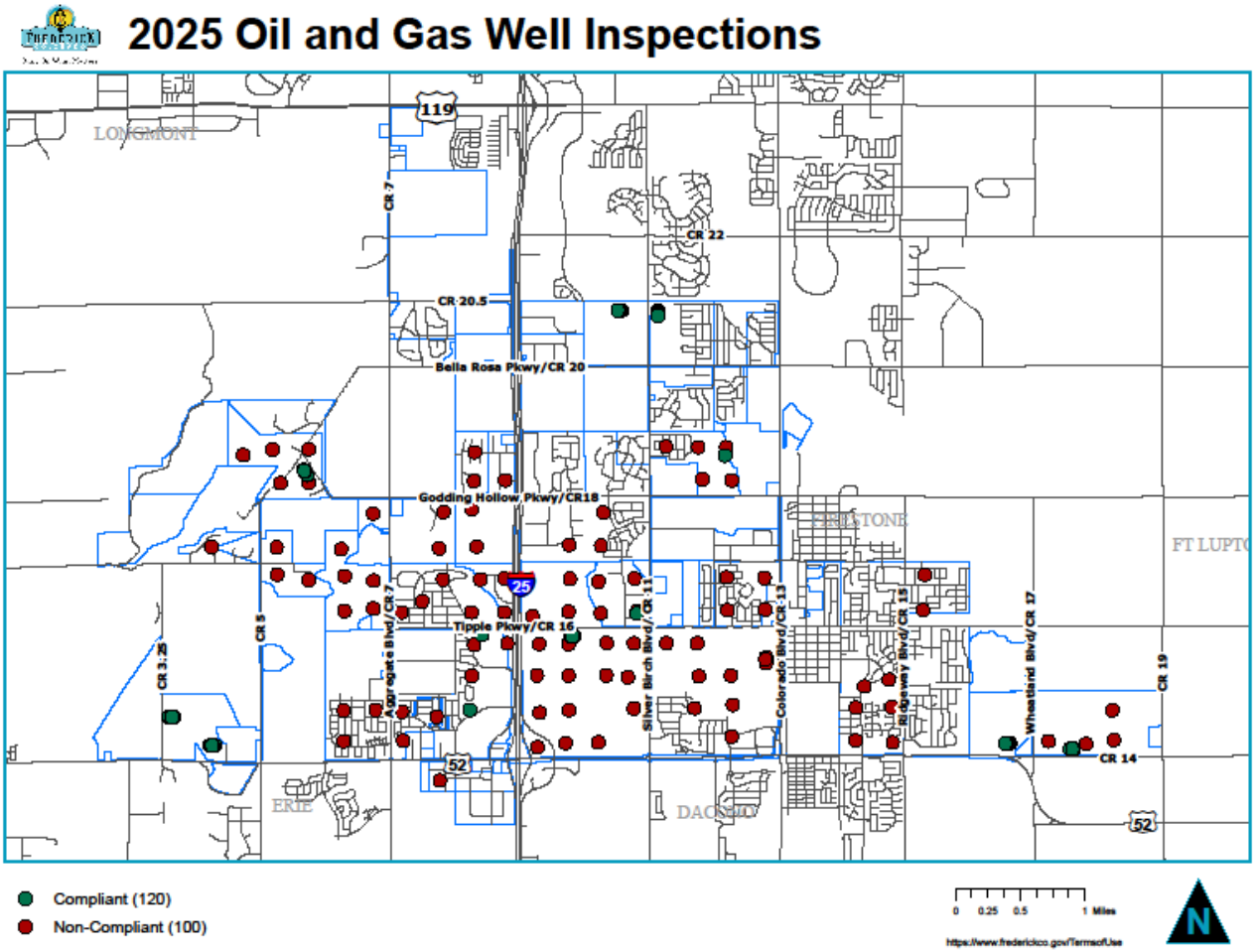


Figure 1. 2025 Oil and Gas Well Inspections Map

1. INTRODUCTION

1.1 Background

The Town of Frederick established an Oil & Gas Inspection Program in 2025 to assess compliance of oil & gas regulations related to federal, state, and local regulations. Section 9.10.2.c. of Frederick's Land Use Code states "Operator shall reimburse the Town for all inspection costs reasonably incurred to inspect the oil and gas location to determine compliance with this agreement and any permits issued by the Town (2025)." Additionally, Section 9.17.7 of Frederick's Land Use Code states "The Town reserves the right to inspect any existing or permitted oil and gas operations for compliance. Town site visits and inspections may occur without operator present. However, unless urgent circumstances exist, the Town will use best efforts to give proper notice to the operator's contact person at the telephone number before inspections (2025)."

This program directly supports the Board of Trustees' Strategic Plan for 2025-2026, particularly that Frederick is "Built on What Matters" It Directly advances multiple strategic pillars:

- **Effective, Efficient & Strategic Government Operations** (Goal 1): through innovative, partnership driven service that meets the requirements of Frederick residents.
- **Community & Economic Vitality** (Goal 2): by supporting sustainable coexistence with existing industry while protecting environmental and recreational assets.
- **Dynamic, Inclusive & Connected Community** (Goal 3): via collaborative development of inspection criteria with regional partners and transparent public reporting.
- **Strategic, Reliable & Sustainable Infrastructure** (Goal 4): by ensuring sustainable growth and development alongside, and pertaining, to existing oil and gas infrastructure.
- **Safe & Secure** (Goal 5): by proactively protecting public health, safety, and welfare through wellhead compliance monitoring inspections.
- **Fiscally Responsible Governance** (Goal 6): via exceptional stewardship of resources for current and future residents.

By prioritizing compliance over punitive measures, the program exemplifies strategic, community focused governance aligned with the Board's vision.

1.2 Objective

This program aims to quantify compliance with seven standardized inspection criteria and identify operators with persistent violations. The intention of Frederick's inspection program is compliance based and seeks to avoid punitive actions by design.

1.3 Author Qualifications

Robert Aronoff, P.G., was hired as the Town of Frederic's Oil and Gas Liaison on December 30, 2024. Inspections were conducted by and under the direction of Robert Aronoff, P.G., a licensed Professional Geologist (License #PG-4208) with over 8 years of experience in oil and gas field operations and environmental compliance. Additional certifications include:

- PEC SafeLand USA certification
- PEC H2S Clear certification
- Qualified Stormwater Manager (QSM) certification
- Optical Gas Imaging (OGI) Thermography certification
- Opacity – Visual Emissions Evaluator certification
- Odor Observation certification

These qualifications exceed minimum state inspector requirements and ensure consistent, defensible application of inspection protocols.

2. METHODS

2.1 Study Area

All 220 active oil and gas wells within municipal boundaries of Frederick were inspected (Figure 1). This includes active oil and gas wells related to the Colorado Energy and Carbon Management Commission (ECMC) well status codes of AC – Active Well, SI – Shut-In Well, TA – Temporarily Abandoned Well, and SO – Suspended Operations.

2.2 Inspection Protocol

Safety is essential for effective Oil & Gas Programs. As such, Frederick's Oil & Gas inspection program relies on industry standard personal protection equipment (PPE), which consists of modified Level D PPE. Each day in the field, the Oil and Gas Liaison dons flame resistant clothing covering the legs, arms, and torso. Additionally, a hard hat, safety glasses, steel toe (or composite) boots, and a 4-gas detector are required to be worn on all inspections. Per request from the Mayor and Board of Trustees, each well is scheduled to be inspected on an annual basis. For the year of 2025, each of the 220 active wells were inspected between September and October 2025. Frederick was divided into 9 sections to make the inspection program more effective and efficient. Within each section, the wells were randomized to ensure that all operators are inspected in an unbiased nature. Results of each inspection are recorded on handwritten field forms that break down inspection criteria to seven categories that result in seven binary outcomes (Complaint or Non-Compliant) per Table 1. Additional sections are present in the field forms for notes and details to document the site characteristics beyond compliant or non-compliant. Photographs are taken to document site characteristics, and if needed, video documentation is collected. Lastly, if a situation is observed that is an immediate concern to life, health, and safety, it is reported to the ECMC via their complaint portal (https://ecmc.state.co.us/cogisdb/ComplaintForm/Intake/NewComplaint) in a timely manner, often the same day. All field forms, photographs, videos, ECMC complaints, ECMC responses to complaints, etc. are stored and managed on the Town server, Microsoft OneDrive Files, and Microsoft Excel. Summarized results for all wellhead inspections showing the compliant or non-compliant status of each category are available in Appendix B.

Table 1. Inspection Criteria

Categories	Criterion
Signage	Appropriately posted and legible signs
Leaks/Spills	Visually apparent active liquid release
Valves & Fittings	Valves and fittings intact, in good condition, corrosion present
Venting/Emissions	Uncontrolled venting or emissions (off-gassing)
Site Secured	Site secured with fencing, condition of fencing
Combustible Materials	Presence of combustible materials adjacent to wellhead, e.g. weeds or trash
Site Housekeeping	Presence of weeds, debris, stained soil, unused equipment, condition of lease road, etc.

2.2.1 Establishment of Inspection Criteria

The seven inspection criteria were developed through a comprehensive review and synthesis of existing programs across Colorado jurisdictions. Inspection protocols from multiple counties and municipalities were obtained and evaluated, noting variability in scope and stringency. State-level guidance was incorporated by referencing ECMC compliance and environmental inspection documentation to align with standard above ground surface wellhead assessments. Criteria were selectively adapted to best suit local conditions while remaining achievable and focused on surface impacts.

Please note that this program operates under authority granted by Senate Bill 19-181 (2019), which empowers local governments to regulate and inspect surface impacts of oil and gas operations to protect public health, safety, welfare, the environment, and wildlife. Subsurface and downhole matters remain under exclusive ECMC jurisdiction. By design, the wellhead inspection program emphasizes compliance assistance over punitive enforcement, prioritizing the seven criteria identified as most protective of community standards while maintaining practicality and proportionality.

2.2.2 AVO Inspections

All sites were assessed for compliance using audio, visual, and olfactory (AVO) senses. The AVO inspection methodology is most effective with individuals who are trained to quickly identify compliance issues.

2.2.3 Gas Leak Detection (Venting/Emissions)
Fugitive gas emissions were evaluated using AVO and soapy water bubble testing at all potential leak points (valves, flanges, fittings, bushings, etc.).
This method is explicitly endorsed by:

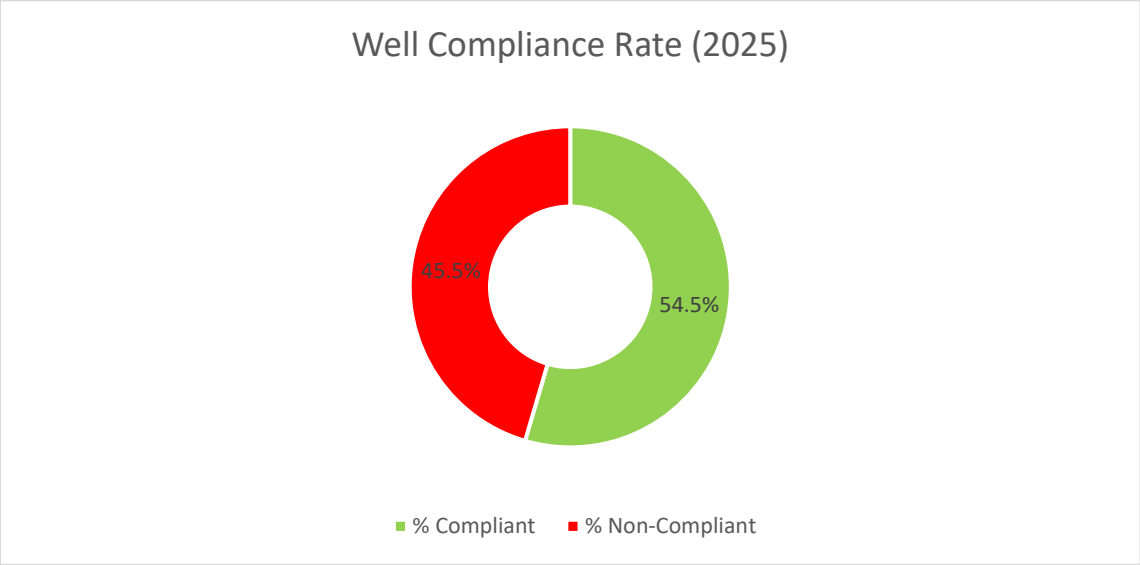
- U.S. EPA (1986) – Method 21 – Determination of Volatile Organic Compound Leaks (40 CFR Part 60, Appendix A), which states:
"A screening procedure based on the formation of bubbles in a soap solution that is sprayed on a potential leak source may be used for those sources that do not have continuously moving parts, that do not have surface temperatures greater than the boiling point or less than the freezing point of the soap solution, that do not have open areas to the atmosphere that the soap solution cannot bridge, or that do not exhibit evidence of liquid leakage." (Section 8.3.3.1)

If positive bubble formation was observed, it was recorded as non-compliant in the venting/emissions category (Appendix B). All observations were photographed and/or videotaped with time stamps and archived in the Town Server. Additionally, all gas leaks were reported to the ECMC and/or CDPHE in a timely manner.

3. RESULTS

3.1 Overall Compliance
54.5% of wells (120/220) were fully compliant across all seven criteria (Figure 2).

Figure 2. Compliance distribution (n=220 wells).



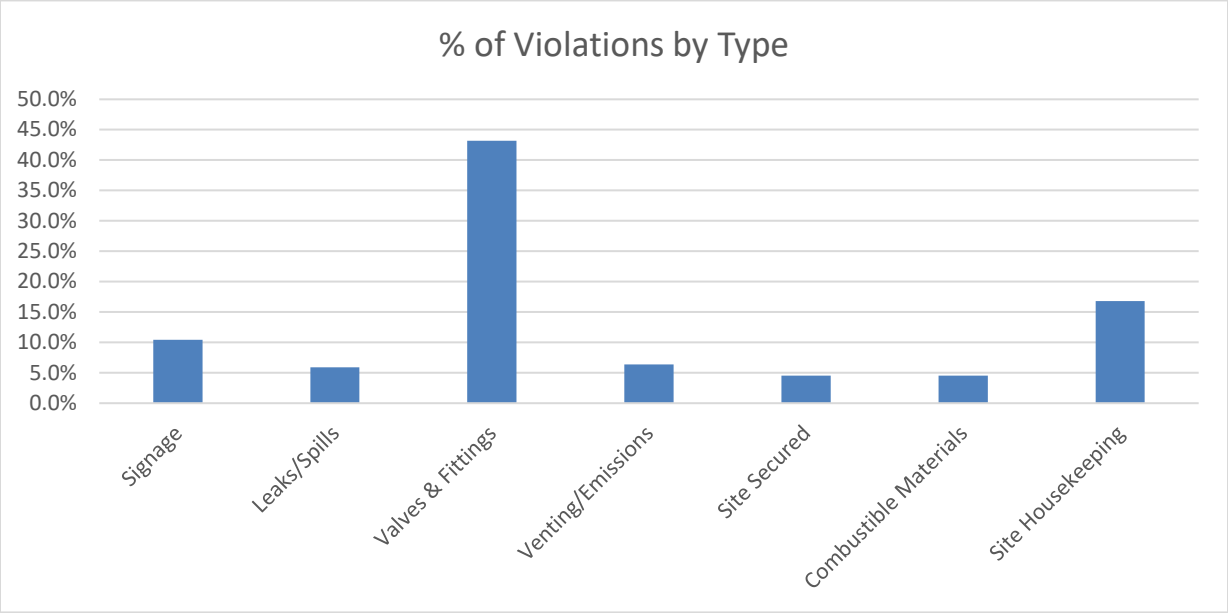
3.2 Compliance by Operator

KPK exhibited the lowest compliance rate at 0%. Civitas exhibited a very high rate of compliance at 95.4%. Oxy exhibited an excellent rate of compliance at 100%.

3.3 Violation Frequency by Type

Site housekeeping along with valve & fitting integrity were the most frequent violations (Figure 3).

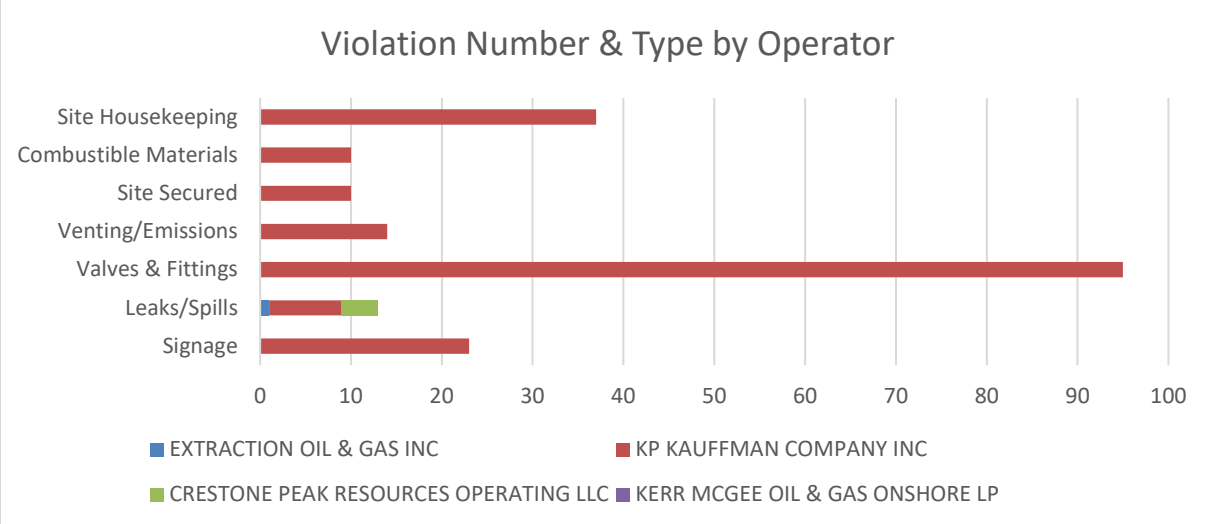
Figure 3. Non-compliant instances by inspection category (n=202 total).



3.4 Operator-Specific Violation Profile

KPK accounted for 100% of all violations with exception to leaks & spills. In regard to leaks & spills, KPK accounted for 61.5% of violations with Civitas being responsible for the remaining 38.5% of violations (Figure 4).

Figure 4. Non-compliant counts by operator and violation type.

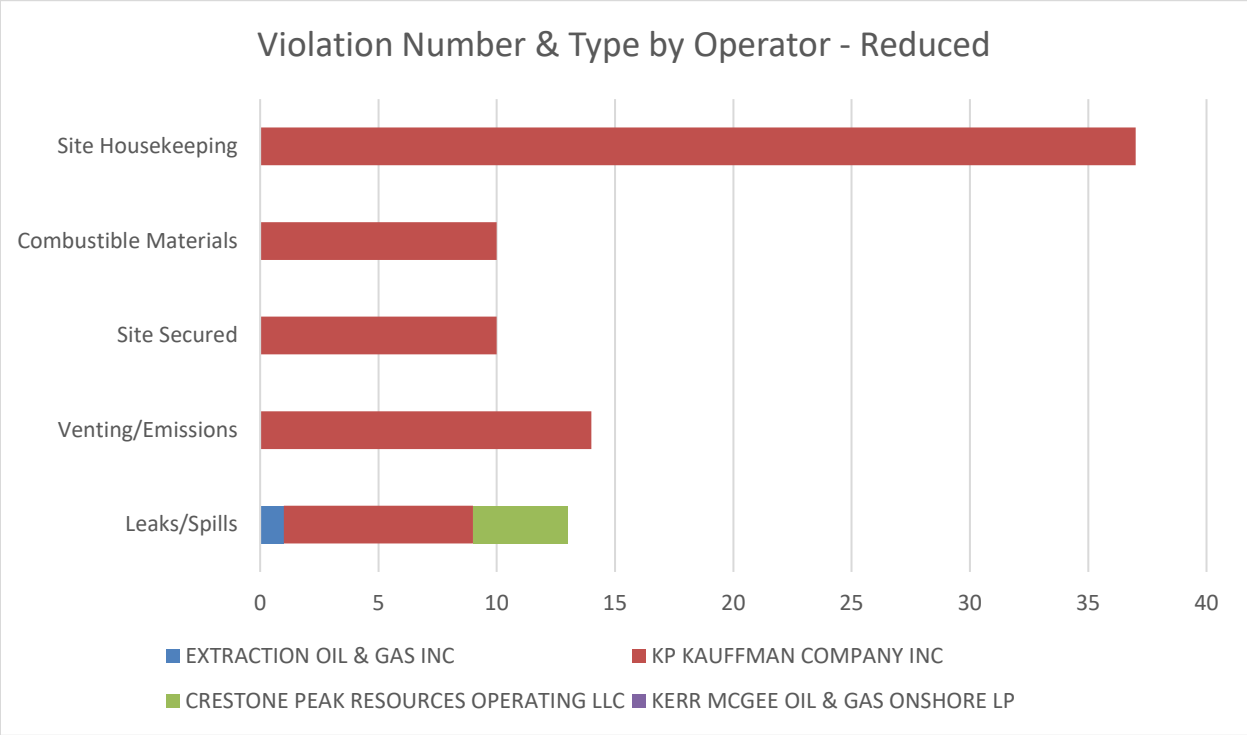


4. DISCUSSION

4.1 Interpretation

These findings have various implications for the Town of Frederick. The 45.5% non-compliance rate indicates systemic deficiencies, particularly in site maintenance and upkeep. KPK's disproportionate violation rate suggests inadequate operational controls. However, a 100% non-compliance rate for their locations somewhat skews the data. Particularly when it comes to valve & fitting integrity, which can be found to be non-compliant if the above ground wellhead infrastructure exhibits corrosion. Valve & fitting integrity was found to be non-compliant on 95 active KPK wells, which accounts for every KPK well in Frederick. When removing valve & fitting integrity from the dataset, 61 non-compliant KPK sites still exist in Frederick, which is a 64.2% rate of non-compliance. In addition, if signage is removed from the dataset, the results show 48 non-compliant KPK sites or a 50.5% rate of non-compliant KPK wells. When signage along with valve & fitting integrity are removed, the remaining categories can be considered the high priority items that affect public heath, safety, and welfare. The remaining categories are leaks & spills, venting & emissions, site security, combustible materials, and site housekeeping (Figure 5).

Figure 5. Non-compliant counts by operator and violation type - reduced.



4.2 Comparison to Prior Years

No data for Frederick oil & gas well compliance for previous years exists to compare. 2025 marks the first year of a well inspection program in the Town of Frederick and sets the baseline for comparisons moving forward.

4.3 Inspection Program Fees

Frederick assesses an annual inspection fee of $400 per active oil and gas well to recover the cost of administering the inspection program. Fees are invoiced to each operator based on the wells they operate within, and have been inspected by, Frederick. As of the completion of this report, the three active operators within Federick have exhibited varying levels of compliance with these fees. Two operators have remitted payment in full (100% invoice payment), while the third operator has not submitted any payment to date and is not expected to do so in the foreseeable future.

5. CONCLUSIONS & RECOMMENDATIONS

5.1 Conclusions

Of the three actively producing oil and gas operators in Frederick, Civitas Resources, Inc. (parent company of Crestone Peak Resources Operating LLC and Extraction Oil & Gas, Inc) and Occidental Petroleum (parent company of Kerr McGee Oil & Gas Onshore LP) have very high compliance rates. The third actively producing oil and gas operator, K.P. Kauffman, has a 100% non-compliance rate. Seeing that 2025 is the first year Frederick oil and gas well inspection data has been collected, it will act as the baseline for comparisons in future reports.

5.2 Recommendations

Currently, KPK has been notified of 39 sites that fall into a category of high priority non-compliance items. Re-inspections of those 39 KPK sites, and the additional 5 non-compliant Civitas sites, will be completed by the end of second quarter 2026. Compliance continues to be the goal of Frederick's Oil & Gas inspection program, which includes re-inspections. It is recommended to continue annual wellhead inspections within Frederick in the second half of 2026. To bolster the inspection program and further enhance public health, safety, and wellbeing it is recommended to include tank battery inspections in 2026. Additionally, the Town should continue to explore ways to obtain an infrared (IR) camera capable of detecting hydrocarbon gas releases. It should be noted that the EPA's Method 21 regarding detecting leaks with soapy water was first released in 1986. Current IR camera technology, specifically, forward looking infrared (FLIR) cameras are the industry standard. Final goals are to continue to provide an annual technical report with the results of Frederick's Oil & Gas inspection program to keep stakeholders and community members informed. This will build trust and accountability within Frederick and beyond by transparently providing oil & gas inspection data in a cohesive report.

REFERENCES

1. Town of Frederick. Land Use Code Article 9. Oil and Gas Drilling and Production (2025). (https://frederick.municipal.codes/LUC/9)
2. Town of Frederick. Oil and Gas Standards Document (2024). (https://www.frederickco.gov/1210/Town-of-Frederick-Oil-Gas-Standards)
3. Colorado Energy and Carbon Management Commission. Complete Rules (100-1300 Series). (https://ecmc.colorado.gov/regulation/rules)
4. Colorado General Assembly (2019). Senate Bill 19-181: Protect Public Welfare Oil and Gas Operations. Chapter 144, Colorado Revised Statutes §25-7-101 et seq. (https://leg.colorado.gov/bills/sb19-181)
5. U.S. Environmental Protection Agency (1986). Method 21 – Determination of Volatile Organic Compound Leaks. 40 CFR Part 60, Appendix A.
6. Inspection Data: TOF Inspection Tracker.xlsx (archived). Annual Wellhead Inspection Report Workbook (2025) (archived). Town of Frederick OneDrive – O&G Inspection Program.

I, Robert Aronoff, P.G., certify under penalty of perjury that the inspections documented herein were conducted in accordance with the methods described, that all data are accurate to the best of my knowledge, and that this report fairly represents the compliance status of all inspected wells as of February 4, 2026.

_____

Robert Aronoff, P.G.
License #PG-4208
Date: February 4, 2026

Appendix A
Photographic Evidence

Selected images document violations:

Photo 1. KPK owned Norbert E Badding #1 Wellhead – Wellbore fluid freely flowing down wellhead due to worn out packing/stuffing box. (GPS latitude, longitude: 40.118783, -104.982002). Inspected 08/11/2025 by Robert Aronoff, P.G.

Photo 2. KPK owned Walsh #3 Wellhead – Multiple site housekeeping issues including combustible material (weeds) on-site and broken fencing. (GPS latitude, longitude: 40.122350, -104.953850). Inspected 08/21/2025 by Robert Aronoff, P.G.

Photo 3. KPK owned Carl A Miller A #4 Wellhead – Example of corrosion (rust) present on valves & fittings. (GPS latitude, longitude: 40.088950, -104.897640). Inspected 10/13/2025 by Robert Aronoff, P.G.

Photo 4. KPK owned State #6 Wellhead – Examples of venting & emissions from a wellhead using soapy water bubble testing. Bubbles indicate uncontrolled off-gassing from the wellhead (bradenhead). (GPS latitude, longitude: 40.100461, -104.954194). Inspected 10/13/2025 by Robert Aronoff, P.G.

Photo 5. KPK owned State #6 Wellhead (2nd photo) – Examples of venting & emissions from a wellhead using soapy water bubble testing. Additional non-compliance items are present, such as, valve and fitting integrity, stained soil, and unused equipment stored on-site. (GPS latitude, longitude: 40.100461, -104.954194). Inspected 10/13/2025 by Robert Aronoff, P.G.

Appendix B
Detailed Results Table