

COLORADO OIL AND GAS CONSERVATION COMMISSION (COGCC)

2022 ANNUAL REPORT

to the

WATER QUALITY CONTROL COMMISSION (WQCC)

and

WATER QUALITY CONTROL DIVISION (WQCD)

of

**THE COLORADO DEPARTMENT OF
PUBLIC HEALTH AND ENVIRONMENT
(CDPHE)**



COLORADO

Oil & Gas Conservation Commission

Department of Natural Resources

**IN ACCORDANCE
with
THE AUGUST 28, 1990 MEMORANDUM OF AGREEMENT
and
THE IMPLEMENTING PROVISIONS OF SENATE BILL 89-181**

February 3, 2023

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1.0 Introduction

The Colorado Oil and Gas Conservation Commission (COGCC) is an implementing agency for water quality standards and classifications adopted by the Water Quality Control Commission (WQCC) for groundwater protection. This authority was provided by Senate Bill (SB) 89-181, and is restated and clarified by a Memorandum of Agreement (MOA) that was adopted by the agencies on August 8, 1990.

Section 5.1 of the MOA specifies that the COGCC must report annually to the WQCC and the Water Quality Control Division (WQCD) about how its programs assure compliance with WQCC water quality standards and classifications for the activities that are subject to the jurisdiction of the COGCC.

This 31th annual report provides an overview of COGCC functions and a summary of calendar year 2022 activities, with a focus on groundwater protection programs. Major issues concerning the implementation of water quality standards and classifications are also reported.

2.0 WQCC/WQCD and COGCC Coordination and Public Outreach

2.1 Inter-agency Coordination

In 2022 the COGCC, WQCC, and WQCD coordinated implementing the provisions of SB 89-181 and the MOA. COGCC and the Colorado Department of Public Health and Environment (CDPHE) Office of Emergency Preparedness and Response staff communicated frequently through email and telephone calls regarding spills at or near oil and gas facilities when there was some question as to whether or not a spill was exploration and production (E&P) waste. COGCC took the lead for all E&P waste spills.

COGCC Director and staff met with WQCD staff (virtual) on August 31 and November 16 to discuss program issues and regulatory changes. Agenda items included follow up on various active investigations, enforcement matters, and E&P waste management practices within the oil and gas industry. These meetings were held virtually, through electronic meeting platforms.

2.2 Public Outreach

The COGCC employed the following strategies for effective communication with the public and the regulated industry.

2.2.1 Commission Hearings

In 2022, the COGCC held weekly or more frequent Commission Hearings depending on Commission business. The 2022 meeting continued to be held virtually and public participation in the virtual meetings remained high throughout the year. In addition to regular business meetings, the Commission held several evening “listening sessions,” at which minimal business besides hearing public comment was conducted. Although previously held monthly, the frequency of these evening listening sessions has been reduced due to lack of public interest and participation.

2.2.2 Scheduled Meetings

COGCC staff participates in regularly scheduled meetings with the regulated community and other interested stakeholders in parts of the state with active oil and gas operations. COGCC has continued hosting monthly and more frequent “Operator Meetings” to help the regulated community navigate regulatory requirements and guidance documents. These virtual meetings typically attracted over 150 participants. In the fourth quarter of 2022, COGCC held these meetings weekly and focused on financial assurance rule updates, financial assurance forms, and financial assurance implementation questions and answers.

2.2.3 Stakeholder Participation

COGCC continues to solicit participation in the regulation of oil and gas exploration and production. Stakeholders, including the oil and gas industry, local governments, citizens, other regulatory agencies, non-governmental organizations, agriculture interests, and the environmental community provide input into permitting, policy development, rulemaking, and other processes. In 2022, COGCC Staff and Commissioners engaged with stakeholders in various working groups. Some working groups were required by the Commission during the Mission Change rulemaking effort in 2020, others came about through the normal course of business of the Commission. For example, the Pit Emissions Working Group has met to address pit emissions calculation methods and discussed the COGCC pit records, as set forth in the Statement of Basis and Purpose document developed during Mission Change. Whereas, the West Slope Task Force has met several times to address issues specific to west slope oil and gas operations following a hearing in which some of the issues were brought before the Commission. Other working groups include a Produced Water Consortium and a team assessing Wildlife Migration Pinch Points.

2.2.4 Local Government Designee Program

OGCC created the Local Governmental Designee (LGD) program via rulemaking in 1992 to provide a conduit of information between local governments and the COGCC. COGCC bolstered the LGD program in 2012 with the addition Local Government

Liaison (LGL) staff to assist and facilitate participation in the LGD program through training, outreach, and providing information, data, and presentations about specific aspects of oil and gas operations, COGCC rules, use of the COGCC website, and the COGCC's changing regulatory program under SB 19-181. COGCC created the Community Relation Unit in 2018, which includes a Community Relations Liaison working under the supervision of the COGCC Communications Officer.

As of November 2022, LGD participation includes 55 counties (including two combined city-county governments, Denver and Broomfield), 103 municipalities (besides Denver and Broomfield), and 10 special districts.

In 2022, staff outreach included the following:

- Adams County LGD/ Compliance Unit Meeting (January 3)
- LGD Meeting (February 28)
- Weld County/ COGCC/ APCD Coordination Meeting (August 8)
- Aurora/ COGCC/ APCD Coordination Meeting (August 11)
- Arapahoe County/ COGCC/ APCD Coordination Meeting (August 18)
- Weld County Local Government Event (September 8)
- Town of Berthoud Board of Trustees Q&A Session (November 8)

The COGCC Staff supported issues of local government concern, including local air monitoring concerns and development of new local oil and gas regulations. In addition, COGCC staff worked to inform community members and LGDs of other events such as commission hearings and SB 19-181 related training opportunities.

2.2.4 COGCC Website

The COGCC continues to use its website to make announcements and distribute information and data. COGCC information and data systems are described further in Section 3.3.

3.0 COGCC Organization

3.1 COGCC Commissioners

The Colorado Oil and Gas Conservation Act (The Act), as amended by SB 19-181, specifies the composition of the full-time, professional Commission.

The Act requires seven Commissioners, five of whom are appointed by the Governor with the consent of the Senate, and two ex officio non-voting members who are the Executive Directors of the Department of Natural Resources (DNR) and the CDPHE, or their appointed designees.

The five professional members are appointed taking into account the need for geographical representation of areas of the state with high levels of current or anticipated oil and gas activity or employment. Of the five, the expertise required is as follows:

1. One appointed member must have substantial experience in the oil and gas industry;
2. One appointed member must have substantial expertise in planning or land use;
3. One appointed member must have formal training or substantial experience in environmental protection, wildlife protection, or reclamation;
4. One appointed member must have professional experience demonstrating an ability to contribute to the commission's body of expertise that will aid the commission in making sound, balanced decisions; and
5. One appointed member must have formal training or substantial experience in public health.

Excluding the executive directors, no more than three members may be from the same political party. Biographies of the Commissioners are posted on the OGCC website <http://cogcc.state.co.us/about.html#/commissioners>.

3.2 COGCC Staff

The COGCC has 134 full time employee (FTE) positions located in the Denver office and throughout the state in field offices. The Staff include engineers, environmental protection specialists (EPS), field compliance specialists, reclamation specialists, permitting specialists, hearings officers, and a variety of other professionals. Table 3-

1 summarizes each group and their primary functions. The current organizational chart is included as Appendix 1.

Table 3-1. COGCC Groups and Primary Functions

Group	Number of FTE	Primary Functions
Executive	5	Director, Deputy Director and Executive Assistant; community relations and communication
Environmental	22	Spills, remediation projects, pit closures, site closure, complaint investigation and response, environmental projects, interim and final reclamation; environmental database, special projects
Engineering	16	Analyzing and Permitting downhole wellbore plans, underground injection control (UIC) permitting, oil/gas facility oversight, flowline integrity
Orphaned Well Program	13	Plugging orphan wells, orphan site investigation, clean-up, and reclamation
Compliance	34	Inspection of oil/gas wells, facilities, and locations; complaint intake and response, management and resolution; enforcement, agency contact for responding to emergency situations and working with emergency response personnel
Planning & Permitting	23	Reviewing and analyzing oil and gas development plan and comprehensive area plan applications, permitting oil and gas wells, evaluating oil and gas Location assessments, cumulative impacts information, & pit permitting
Information & Applied Technology	9	Information systems & records, public room, database management/support, GIS, website and webform development/support, production reporting & levy collection
Hearings & Regulatory Affairs	6	Commission Liaison, Hearings and Regulatory Affairs
Financial	6	Budget management, procurement, purchasing, financial assurance

Staff functions that directly relate to water resource protection and compliance with groundwater and surface water standards include the following:

Permitting and Engineering - Applications for Permit to Drill (APD) are reviewed to ensure compliance with all rules related to aquifer protection. Oil and gas wells must be designed, installed, and maintained to prevent the migration of fluids or gas between formations or into aquifers. Permit specialists and engineering staff review

drilling permit applications for surface casing and cementing requirements, among other requirements designed to protect aquifers. The COGCC issued 1,810 APDs in 2022 through December 3.

Location Assessments - Under the Oil and Gas Development Plan and Form 2A process, Operators are required to provide site-specific environmental information about surface locations. Consultation by the CDPHE and Colorado Division of Parks and Wildlife (CPW) with the COGCC, the surface owner, and the operator is required in some circumstances. Oil and Gas Location Assessment (OGLA) specialists review and evaluate Oil and Gas Development Plan applications and publicly available information to determine whether the proposed oil and gas operations have the potential to negatively impact water resources, public health, safety, welfare, the environment, or wildlife resources. The COGCC issued 78 Form 2As in 2022 through December 31.

Underground Injection Control (UIC) Permitting - The USEPA delegated authority to COGCC to review, approve, and monitor the injection of E&P waste into Class II UIC wells. COGCC staff coordinates with WQCD, DWR, and US EPA staff to ensure that operators of Class II injection wells in Colorado comply with UIC rules and regulations to prevent contamination of Underground Sources of Drinking Water (USDWs). COGCC's staff geologic experts review UIC permits for site-specific matters, such as the occurrence of faults and potential for induced seismic activity. Based on this analysis, UIC permits include Conditions of Approval (COAs) pertaining to injection pressures, daily injection rates and volumes. Commercial and non-commercial injection operations are actively managed by the COGCC in conjunction with the U.S. Geological Survey Earthquake Notification Service, through the installation and continuous monitoring of several local seismometers to evaluate if injection of produced water has some relationship to local seismicity. The COGCC has instituted a "traffic light" monitoring system, which dictates specific mitigation measures, up to requiring injection to be halted if seismic activity reaches specific levels. No Class II UIC well permits were approved in 2022.

Pit Permitting - Operators may construct pits at oil and gas locations for a variety of purposes, most commonly to contain drill fluids and cuttings, produced water and flow back, and for the reuse and recycling of produced water. COGCC is responsible for permitting pits (Form 15), inspecting their operation, and overseeing their closure. The OGLA and EPS staff review pit permits for construction and operational details, and evaluate the environmental setting to ensure that the pit can be used without causing adverse environmental impacts. The Director may apply conditions of approval with additional provisions to protect waters of the state, public health, or the environment. In 2022 the COGCC approved 26 Form 15s.

Applications for new pits are down significantly over previous years reflecting both a decrease in new oil and gas activity in areas that traditionally have used pits for produced water disposal and widespread industry use of “pit-less” drilling and completion activities.

Centralized E&P Waste Management Facility Permitting - COGCC environmental staff permit non-commercial centralized E&P waste management (CE&PWM) facilities under Rule 908. Generally, these facilities are larger than a typical tank battery or pit that might handle wastes from only one or a few wells. These larger facilities handle wastes from many wells and often from more than one field or lease operated by a single oil and gas operator. These facilities may include lined pits, land treatment facilities, land application areas, drill cuttings solidification facilities, or tank batteries. A permit is required for these CE&PWM facilities and, as part of the approval process, staff evaluates the proposed site, operation, financial assurance, potential environmental impacts, and preliminary closure plans. These facilities are currently required to have financial assurance in an amount equal to the estimated cost for proper closure, abandonment, and reclamation. During 2022, there were no new CE&PWM facility submissions, two CE&PWM facilities permitted and no CE&PWM facilities closed. There are 51 active permitted centralized CE&PWM facilities in the state.

Oversight of Produced Water Disposal - Over 300 million barrels of water are co-

produced with oil and gas production annually. Approximately 70 percent of the produced water is disposed or used for enhanced recovery by underground injection. Most produced water that is not injected is disposed in evaporation and percolation pits or discharged under a Colorado Discharge Permit System (CDPS) permit. Disposal facilities may be commercial and subject to oversight by CDPHE or they may be private and subject to oversight by COGCC. To minimize waste and the use of fresh water, many operators are reusing and recycling produced water and other fluids for drilling and well completion activities including hydraulic fracturing ('frac') treatment operations. COGCC staff review UIC permits, pit permits, centralized E&P waste management permits, and other proposals, including water reuse and recycling plans, to ensure that produced water is handled appropriately.

Complaint Response - COGCC responds to complaints from all parties. Once received through the online intake process or by phone, the complaint specialist first determines if the complaint falls under the jurisdiction of COGCC regulatory authority. If the complaint is related to another regulatory agency, COGCC will make a formal referral to the appropriate agency on behalf of the complainant. For complaints under COGCC authority, the complaint specialist will determine the appropriate group within COGCC to assign the complaint. For example the Compliance Unit handles a large percentage of complaints such as odor, noise, dust, trash and other operational issues. As related to protection of groundwater, the Environmental Group responds to complaints alleging oil and gas impacts to domestic water wells. The Environmental unit also responds to complaints where groundwater or surface water may be threatened by spills/releases or the management of E&P waste.

Complaint investigations generally include a site visit where COGCC staff inspect the location of the complaint. For complaints related to domestic water wells, the environmental unit collects representative groundwater samples and has them analyzed at laboratories to determine if oil & gas operations impacted groundwater quality. Regardless the type of complaint, COGCC staff investigate to determine if there were violations of applicable rules. Where violations are discovered, COGCC issues corrective actions to the operators to mitigate the issue. In cases where

complaints result in the discovery of rule violations, enforcement actions are pursued with the operators.

In 2022, COGCC received 210 complaints. The majority (83; 39%) were related to noise with the second largest category (44; 21%) related to air quality/odors. Thirty complaints (14%) were assigned to the environmental unit for investigation of various allegations related to groundwater and surface water contamination, spills/releases, and other threats to the environment. Of the 30, six complaints (2.8% of the total) were specifically related to concerns about water quality from domestic water wells. Each of the water well complaints was investigated and where appropriate was sampled and a report was provided to the complainant with a detailed discussion of the results. Of those six domestic water well investigations, COGCC staff did not identify impacts to any of the wells resulting from oil and gas operations.

Spill/Release Response and Remediation Oversight - Spill response by the environmental staff includes onsite inspections, sample collection, remediation oversight, and review of reports, remediation plans, analytical data, and operating practices, to ensure protection of surface and groundwater, in accordance with COGCC rules and WQCC standards and classifications. Spills are tracked in COGCC's Master Records Database (MRDB) and can be accessed via the COGCC website. COGCC's oversight of spills, releases, remediation projects, and environmental investigations is discussed in more detail in Section 6 of this report.

Orphaned Well Program -The COGCC used appropriated funds and claimed financial assurance to perform plugging and abandonment, remediation, or reclamation work at 139 orphaned oil and gas sites in 20 counties: Adams, Archuleta, Boulder, Broomfield, El Paso, Elbert, Fremont, Jackson, La Plata, Larimer, Lincoln, Logan, Mesa, Moffat, Montezuma, Morgan, Rio Blanco, Routt, Washington, and Weld. As part of this work, COGCC plugged 75 wells, commenced remediation at 5 sites, and commenced reclamation at 11 sites during Fiscal Year 2022. Much of COGCC's remediation and reclamation efforts during the last several fiscal years have focused on sites with large volumes of impacted material or sites with a large surface area of impacted

material, resulting in a low site count for remediation and reclamation. Ongoing reclamation maintenance of stormwater BMPs, weed control, and maintenance seeding was also performed at other locations that were reclaimed in prior fiscal years. For Fiscal Year 2023 and future fiscal years, as a result of expected federal grant funding, the Orphaned Well Program budget will double. The new level of funding will be sufficient to plug up to about 70 wells and remediate or reclaim up to about 150 typical sites each year.

Enforcement - As of December 1, 2022, the Commission has entered 56 enforcement orders, including 43 Administrative Orders by Consent and 13 Orders Finding Violations. These orders resolved 96 Notices of Alleged Violations and imposed \$10,504,273 in gross penalties, of which \$6,645,420 was conditionally suspended.

3.3 COGCC Information/Data Systems

Each year COGCC works to improve its data management systems and GIS as time and resources allow. Primary data systems that were improved or developed in 2022 include:

- Electronic Forms - finished the migration of 25+ forms to Webforms from the now unsupported silverlight 'eForms' application that was retired in 2021. Also began implementation of a more capable, 'new eForms' environment incorporating an electronic payment system. Four new forms (related to Financial Assurance) and one existing form (the conservation levy) were deployed in this new environment.
- Geographic Information Systems (GIS) - updated map layers associated with Mission Changes rules and introduced automations for receiving and processing GIS data attachments with electronic forms
- Environmental Database improvements
- Data Downloads - new data sets made available
- Online Environmental Reports
- Daily Activity Dashboard (oil and gas activity monitoring tool)

Brief descriptions of the changes for each system are provided in the following sections.

3.3.1 Electronic Forms (Webform & 'new eForms')

In 2020-21, COGCC converted its electronic form filing system to utilize an html-based web application called “Webforms” that replaced the established Silverlight “eForm” application. Like the original eForms, the new Webforms application allows operators to submit applications and notices electronically, with the system providing automatic email notices to appropriate parties, including the applicant or operator, COGCC staff, and local governments or other regulatory entities. Rule changes from the implementation of SB 19-181 have required extensive revisions of many existing electronic forms, as well as the creation of several new ones over the past couple of years.

In 2022, COGCC, in concert with the OIT application development team created a new, improved electronic form application - currently referred to as 'new eForms' - that includes electronic payment processing. Several Financial Assurance related forms have already been implemented in this new environment. 'New eForms' is built using a newer web-development framework that allows for more dynamic and responsive forms with user interface enhancements.

Both Webforms and 'new eForms' allow operators to submit forms and attachments electronically. COGCC staff review and approve the forms digitally before data from the forms are uploaded to the Master Record Database (MRDB). A task-centric workflow enables multiple staff members (e.g., permitting, engineering, etc.), to each separately review and approve aspects of a form relevant to their area of expertise.

3.3.2 GIS - Geographic Information Systems

The COGCC GIS Online Interactive Map is an important tool used by staff, industry, and other agencies to submit and process permits, create reports, and view information related to exploration and development. The COGCC GIS Online Interactive Map is also a go-to resource for the general public and interested stakeholders regarding environmental concerns and siting issues related to current

and planned drilling and production activity.

The COGCC GIS Online Interactive Map contains over 170 spatial datasets including oil and gas well locations, permits, spacing orders, field boundaries, and useful reference information such as cities, rivers, roads, sections, land ownership, permitted water wells, etc. Aerial photos, topographic quads, and geologic maps are also included as valuable information resources. The newest version of the online mapping system allows users to zoom to a specific street address or parcel for much of Colorado; has improved printing functionality; and includes a live connection to COGCC's environmental sampling database. To aid operators and other interested parties with their own GIS work, the COGCC website provides GIS shapefiles for download, including files that have daily updated well information, permit and pending permit data, and wellbore traces for directional and horizontal wells across Colorado. Recently added are downloads of KMZ files for well locations that can be used in Google Earth on smartphones and tablets. The COGCC GIS Online Interactive Map is regularly recognized as one of the best state-level oil and gas resources in the nation.

3.3.3 Environmental Database

The Groundwater Protection Council (GWPC) in conjunction with the COGCC has developed a publicly available, searchable database of groundwater, surface water, and soil sample analytical results from throughout the state. Referred to as the COENV database, it has been active since September 2012. The COENV database has sampling data dating back as far as 1941. The environmental database currently contains over 22,685 sample locations and 72,250 individual samples (as of January 03, 2023). In 2022, 9,563 total samples were added to the database. Since the Statewide Rule 609 and the GWA Rule 318A for groundwater sampling went into effect on May 1, 2013, COGCC has received a total of 16,970 water samples from 3,464 separate locations from operators in compliance with the groundwater sampling rules.

The data can be easily accessed through the GIS Online Interactive Map. Sample locations with available water and natural gas data appear as green triangles when

the “Sites with Lab Data” layer is turned on. The user can double click on a sample site and gain access to the analytical data for that site.

All of the data collected by COGCC Staff and under the following COGCC Rules are available:

- Rule 411.a.(2).C.ii - Baseline Surface Water Monitoring related to Surface water Supply Areas;
- Rule 411.b. (4).B - Reporting Groundwater Monitoring Data related to Groundwater Under the Direct Influence of Surface Water and Type III Aquifer Wells;
- Rule 420 - Bradenhead Test Reporting;
- Rule 614.b.(3) - Coalbed Methane Coal Outcrop and Coal Mine Monitoring;
- Rule 615 - Groundwater Baseline Sampling and Monitoring;
- Rule 805 - UIC Analytical Requirements for Injection Fluid Analysis;
- Rule 907.b.(9) - Centralized E&P Waste Management Facility Groundwater Monitoring;
- Rule 909.j - Produced Water Quality Analysis; and
- Previous COGCC Rules 317B, 318A.f, 608 and 609; and older samples from COGCC orders and the Colorado Oil and Gas Association (COGA) Voluntary Baseline Sampling Program.

The Form 43 (Analytical Data Submittal) allows operators to upload water quality data to the COGCC COENV database through the use of an electronic data deliverable (EDD). The Form 43 was released in 2018.

The COGCC has completed amending the Form 43 to allow operators to submit analytical data related to the new rules promulgated under SB19-181 that went into effect on January 15, 2021. Analytical data will continue to be submitted via Form 43 to meet the new requirements.

The data provided to the COGCC is also available to the public through the COGIS data system available on the COGCC website. In April 2014, the COENV database was made available for download in an Access database format for those who wish to query large datasets.

3.3.4 Data Downloads

Historically, the COGCC has provided production data, spacing order data, and GIS shapefiles for download from the website. Available GIS data include well surface locations and directional data (updated daily), pits, oil and gas fields, high priority wildlife habitat, 100-year floodplain data, and approximate buffers associated with COGCC Rule 317B - Public Water System Protection (this will be updated to reflect the rule change to Rule 411 and the inclusion of Groundwater Under the Direct Influence of Surface Water and Type III Aquifer Wells).

In addition to GIS data listed above, and in an effort to increase transparency, the COGCC aggregates datasets directly from our MRDB and provides them for public use. The MRDB, managed and maintained by COGCC with assistance from the Governor's Office of Information Technology (OIT), is a comprehensive repository of Colorado's oil and gas data. Although all the data is available through interactive search tools on the website, these downloads allow the industry, public, non-governmental organizations, or other interested parties to access large amounts of data in searchable formats so that they may run their own analyses. These datasets are updated periodically.

The [data downloads](#) available are:

- Complaint Data
- Notice of Alleged Violation (NOAV) Data
- Flowline Notice to Operators (NTO) Inventory
- Mechanical Integrity Test (MIT) Data
- Spill and Release Data
- Analytical Sample Data
- Field Inspection Reports
- Production Data
- Spacing Orders
- GIS Shapefiles

The COGCC is developing additional data downloads for future release.

3.3.5 Online Environmental Reports

Written reports for COGCC-managed baseline sampling projects and other special environmental studies, such as status reports for monitoring Project Rulison in Garfield County and the various aquifer characterizations are posted on the website under the “[Library](#)” tab where they are primarily organized by basin and available for download as portable document format (PDF) files.

Although not new, the brochure, [How Well Do You Know Your Water Well](#) continues to be very popular. The brochure includes information about mitigating methane in water wells, current contact information for various agencies, and water well maintenance and recordkeeping. COGCC provides this useful brochure to water well owners when water samples are collected from their wells by COGCC, operators, or third party contractors.

3.3.6 Daily Activity Dashboard

The [Daily Activity Dashboard](#) is a web-based tool designed to give local governments, the public, and other stakeholders a more efficient way to access, sort, and display the most commonly used data related to oil and gas operations. The Dashboard is a visual interactive tool that allows a user to generate custom statistical charts, graphs, tables, reports, and simple maps based on data that are updated daily.

The Dashboard does not offer any new types of oil and gas data to the public, or replace existing ways of searching for online oil and gas data in the Colorado Oil and Gas Information System, but instead provides a convenient way to access information on pending permits, well status, production, well inspections, NOAVs, active notifications and spills. This tool can be accessed by clicking “Dashboard” in the main menu of the COGCC homepage and continues to be a popular page on our website.

Figure 3-1 Daily Activity Dashboard

Daily Activity Dashboard (DAD)

The COGCC website has been designed for transparency and acts as an important gateway to the COGCC's well, facility, and production information. The existing web-based query tools, while allowing searches on a wide variety of criteria, are less ideal for the quick evaluation, display, and presentation of dynamic data.

To address this, the agency has developed the Daily Activity Dashboard (DAD) to facilitate access to frequently requested oil and gas data at the county and state levels.

A visual, interactive tool, the dashboard allows anyone to generate custom statistical charts, graphs, tables, and simple maps in near real-time. Further, because the information found in many of the tables has been linked to associated COGIS data (e.g. scout cards), users can easily drill down further. The dashboard does not replace the existing web-based data search tools (e.g. COGIS or eForms). It can, however, provide a more efficient pathway for reaching frequently used or requested data.

Data sets currently available include:

- (1) Pending Permits
- (2) Well Status
- (3) Plugged Wells
- (4) Production
- (5) Inspections
- (6) NOAVs
- (7) Notifications
- (8) Spills
- (9) Operator Changes

A full download of the data used by the DAD can be found here: [DAD Export](#)

FIRST, click [HERE](#) to read the 'Daily Activity Dashboard: Getting Started' document

Click [HERE](#) to access the Daily Activity Dashboard

Help

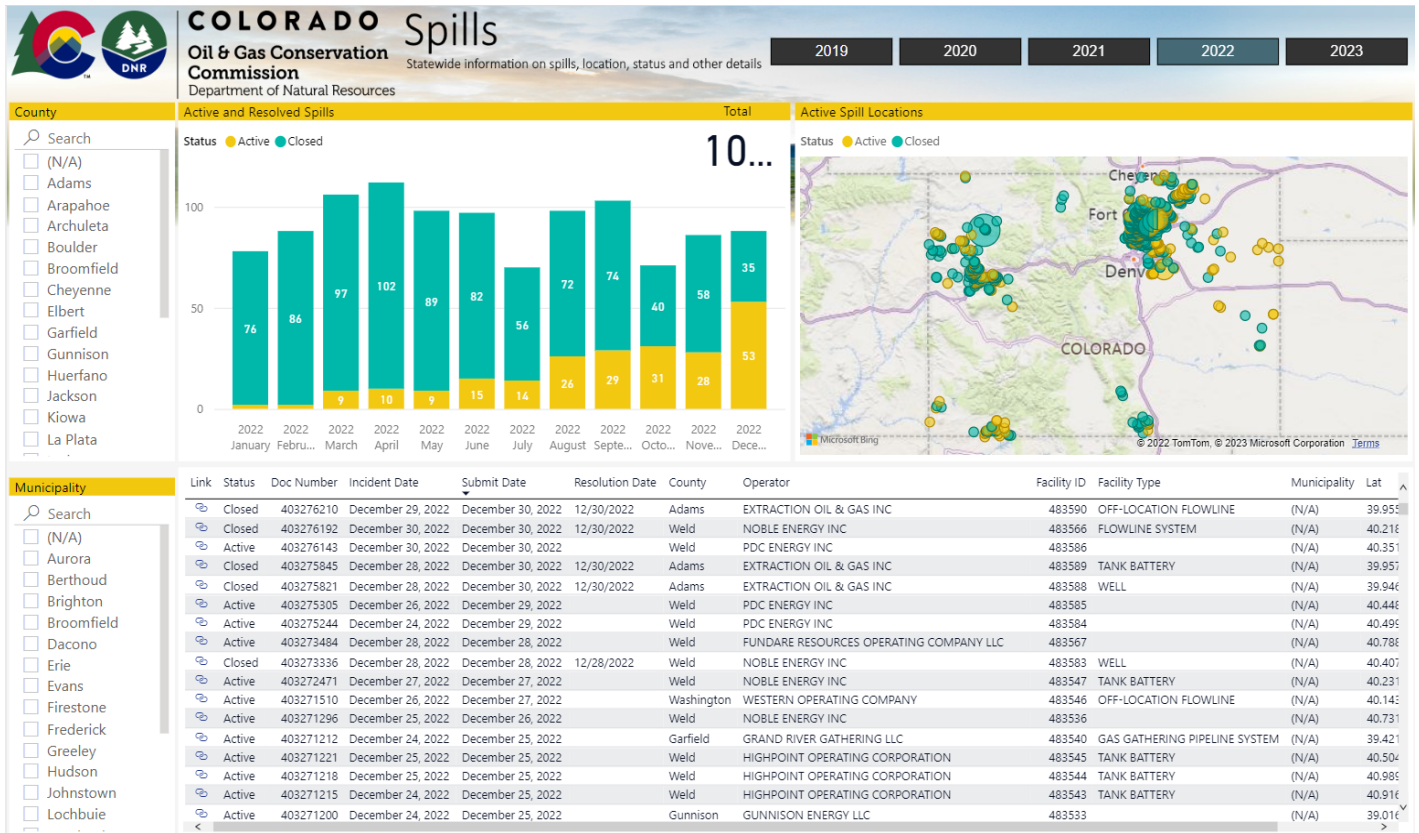
- [Daily Activity Dashboard: Getting Started](#)

Related Links

- [Export of Data](#)

Anybody interested in tracking spills related to oil and gas in Colorado can use the Daily Activity Dashboard. It provides spill data back to 2019 and provides current numbers of spills reported by year with functionality to search spills by County or Municipality. It also provides a map with spill locations and links to the actual spill reports. For a more in depth dive into spill and remediation information, COGCC developed a tutorial available on the website under the Environmental section on the Help page. This tutorial helps explain the Daily Activity Dashboard search methods as well as COGCC database tools available to the public on the website. Last, under the Data tab on the website, COGCC provides several data downloads available to the public for spills under the Environmental section.

Figure 3-2. Daily Activity Dashboard Screenshot (Spills)



3.4 COGCC Environmental Program and Project Funding

The General Assembly annually appropriates a line item within COGCC’s budget for the environmental staff to respond to, investigate, prevent, monitor, or mitigate conditions that threaten or actually cause adverse impacts to air; water; soil; public health, safety, and welfare; or wildlife resources. This work includes, but is not limited to, the collection of water and soil samples, laboratory analyses of the samples, and review and analysis of laboratory results and other environmental data. For Fiscal Year 2022-2023, the appropriation for this line item remained at \$312,033.

In addition, the General Assembly annually appropriates a line item to fund special environmental protection and mitigation studies including, but not limited to, gas seepage mitigation studies, outcrop monitoring studies, soil gas surveys in the vicinity of plugged Orphaned wells, and baseline water quality and subsequent follow-up

studies. The intent was to provide readily available funds for special projects as the need arises. The COGCC reports all expenditures made from this line item in the previous year to the General Assembly in its annual budget request. The full appropriation for this line item in Fiscal Year 2022-2023 remains at \$325,000.

In addition to the foregoing, COGCC receives an annual appropriation to respond to emergencies related to oil and gas operations that threaten or cause significant adverse impacts to public health, safety, welfare, or the environment. For FY 2022-23, this appropriation is \$150,000, consistent with prior year appropriations. The COGCC also receives an annual appropriation to plug wells, abandon flowlines, decommission production equipment, perform environmental sampling and remediation, and reclaim the surface. The FY 2022-23 appropriation for the budget line item is \$6.65 million.

4.0 Regulatory Updates

4.1 Senate Bill 19-181

On April 3, 2019, the Senate passed SB 19-181, which the Governor signed into law on April 16, 2019. This legislation amended the Oil and Gas Conservation Act and required several changes to the overall regulatory framework of the COGCC. Changes included: appointment of a professional commission by the Governor, increased local government control over the siting of oil and gas locations, changes in the Oil and Gas Location Assessment review process, and changing of to the COGCC mission to “regulate the development and production of the natural resources of oil and gas in the state of Colorado in a manner that protects public health, safety, welfare, the environment and wildlife resources.” As a result of this Mission Change, the Commission undertook rulemakings for Flowlines, Practice and Procedure, Alternative Location Analysis, Cumulative Impacts and more generally, “Mission Change.”

Finally in 2021 and 2022, the Commission conducted an overhaul of the Financial Assurance rules. The Commission gave direction to Staff for this rulemaking to reflect the spirit and mandates of SB 19-18. Significant changes and protections from this rulemaking include:

- Ensuring each operator has the financial capability to meet all of their obligations under the Act through the development of a first-ever individual operator-specific financial assurance plan requirement;
- Increasing financial assurance for transferred and inactive wells;
- Requiring financial assurance accounts for new wells funded in the initial years of operations;
- Creating an orphan well fund;
- Applying Colorado’s new Financial Assurance rules to Federal wells for the first time;
- Broadening access for local governments regarding plugging of wells; and
- Developing a first in the nation out-of-service plugging program.

The full record of the COGCC Mission Change rulemaking efforts can be found on our website under the “Hearings” link.

4.2 Emerging Energy Technologies

The State of Colorado currently has regulatory uncertainty due to lack of oversight of several new and emerging energy technologies and carbon capture opportunities. The COGCC is exploring the changes to its regulatory program to ensure the safe and efficient development of these opportunities so as to support innovation and provide regulatory certainty, in a manner consistent with our current mission to protect the public health, safety, welfare, and the environment and wildlife resources. The COGCC can leverage its full-time, professional Commission, staff's technical knowledge, and the agency's existing processes to create safe and effective pathways for new energy and carbon management technologies.

4.2.1 UIC Class VI Program

The USEPA regulates Class VI underground injection control (UIC) wells used for the geologic sequestration of carbon dioxide gas (CO₂) in deep rock formations. The USEPA UIC Class VI program is part of the process frequently referred to as “carbon capture and storage” (CCS) and is part the Federal efforts to reduce CO₂ emissions to the atmosphere and a tool to mitigate climate change. The USEPA can delegate primacy of its Class VI program to states with established and approved regulatory programs.

In 2021 the State Legislature passed Senate Bill SB-21-264 that tasked the COGCC with compiling report to evaluate the resources needed for the State of Colorado to implement a safe and effective UIC Class VI program. The COGCC published its report in November 2021. Based on discussions with the USEPA, Wyoming and North Dakota (currently the only states with Class VI UIC programs), the COGCC estimates that completing a successful primacy application and gaining EPA's approval is around 2 to 5 years, following legislative approval.

4.2.2 Geothermal Energy

Geothermal energy production involves the use of wells or loops which cycle fluids to transfer subterranean heat to the surface for use in direct heating applications or

energy production. Shallow geothermal wells used for direct heating have been in use for decades and have typically been administered by the Division of Water Resources. Deep geothermal wells have the potential to generate significant amounts of energy and can use new or existing vertical or horizontal wells drilled with the exact same technologies as oil and gas development. The COGCC is awaiting legislative direction to fully engage its resources in an appropriate and protective regulatory program for geothermal technologies.

4.2.3 Natural Gas Storage

Oil and Gas Midstream and Distribution companies temporarily store natural gas in subsurface geologic formations to provide dispatchable gas to generate power as market demand dictates. The COGCC currently has state jurisdiction over the gas storage well permitting and construction, but does not regulate the operations of the wells or gas storage fields since those facilities are regulated by the Pipeline and Hazardous Materials Safety Administration (PHMSA). The COGCC seeks an agreement with PHMSA to regulate the intrastate gas storage facilities in Colorado and to regulate facilities used to inject and store non-hydrocarbon gasses. Centralizing regulation of gas storage activities may provide a more protective regulatory environment that also supports innovation and economic investment.

4.2.4 Direct Air Capture

Direct air capture is part of the CCS industry and includes facilities that reduce legacy climate change causing pollutants emissions by capturing CO₂ and other pollutants at the source and directly from the atmosphere and transporting it to sequestration facilities. The COGCC is poised to fold this emerging technology into its existing regulatory programs for well permitting, construction, and wellbore integrity.

4.2.5 Hydrogen

The hydrogen industry involves the production, transport, storage, and distribution of hydrogen gas; it includes subsurface operations such as wells, underground storage

facilities, and pipelines, and surface operations such as tanks storage, truck transport, and distribution facilities. Production, transportation, and storage are crucial considerations for the success of the hydrogen industry. Consolidating the regulatory program of those components will increase operational certainty, and provide a consistent approach to protective permitting and oversight of the burgeoning industry. Developing the regulatory structure for the hydrogen industry is consistent with the Colorado Energy Office Roadmap for Low-Carbon Hydrogen in Colorado, consistent with the State’s Greenhouse Gas Roadmap. The COGCC is also well positioned to work with our surrounding states to develop the Western Inter-State Hydrogen Hub, which will compete for Federal dollars allocated in the 2021 Infrastructure Investment and Jobs Act.

5.0 Oil and Gas Exploration and Production Activity

The following sections describe statewide oil and gas activity. Data presented are current through December 2022, unless otherwise noted. Additionally, monthly oil and gas production reporting is required to be submitted 45 days following the end of the month; COGCC staff then process the production reports, resulting in a delay of 60 to 90 days before production is finalized. Therefore, annual production data provided in this report are estimates, with final annual production typically available on the COGCC website by April of the following year.

5.1 Drilling Permits and Rig Activity

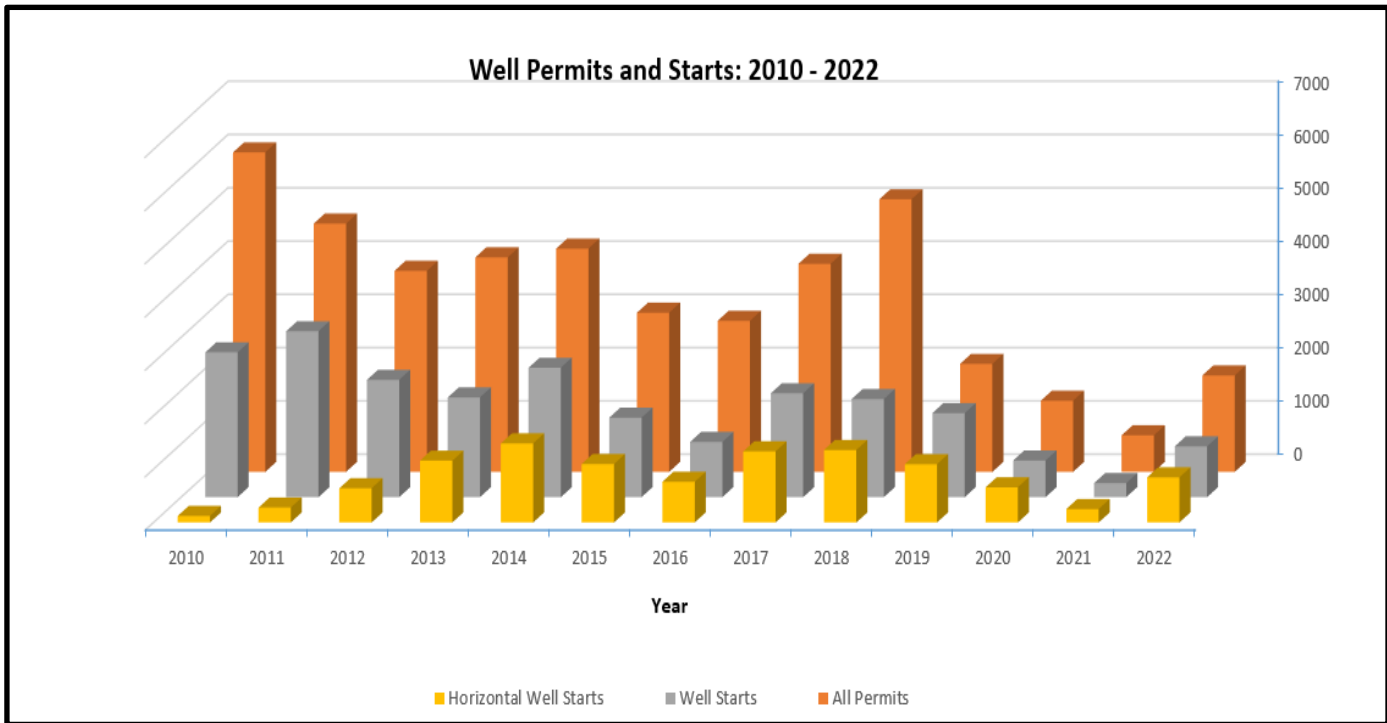
The COGCC approved 1,810 Permits to Drill (APDs) as of December 31, 2022. Sixty percent of the approved well permits were located in Weld County, followed by Garfield County (11%), La Plata County (8%) and Adams County (6%).

Another metric to gauge activity level is the number of wells drilled; COGCC tracks all well starts including conventional and horizontal well starts. As of December 31, 2022, there were 954 well starts statewide, compared to 263 well starts in 2021, 688 in 2020, and 1,578 in 2019. In 2022, 848 wells starts were for horizontal wells, or approximately 89% of the total well starts for the state. As in recent years, horizontal drilling associated with the Niobrara and Codell Formations in the Denver-Julesburg (DJ) Basin continues to dominate the drilling activity in the State. Over the past decade, wells drilled in Colorado have shifted from a dominance of vertical wells to horizontal wells as shown in Table 5-1 and Figure 5-2, below.

Table 5-1. Annual Permit and Well Start Activity 2010 - 2022

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
All Permits	5996	4659	3773	4025	4190	2987	2835	3906	5116	2026	1336	686	1810
Well Starts	2719	3114	2202	1872	2428	1492	1036	1950	1842	1578	688	263	954
Horizontal Well Starts	123	280	641	1160	1484	1096	764	1334	1360	1094	661	252	848
Percent Horizontal	5%	9%	29%	62%	61%	73%	74%	68%	74%	69%	96%	96%	89%

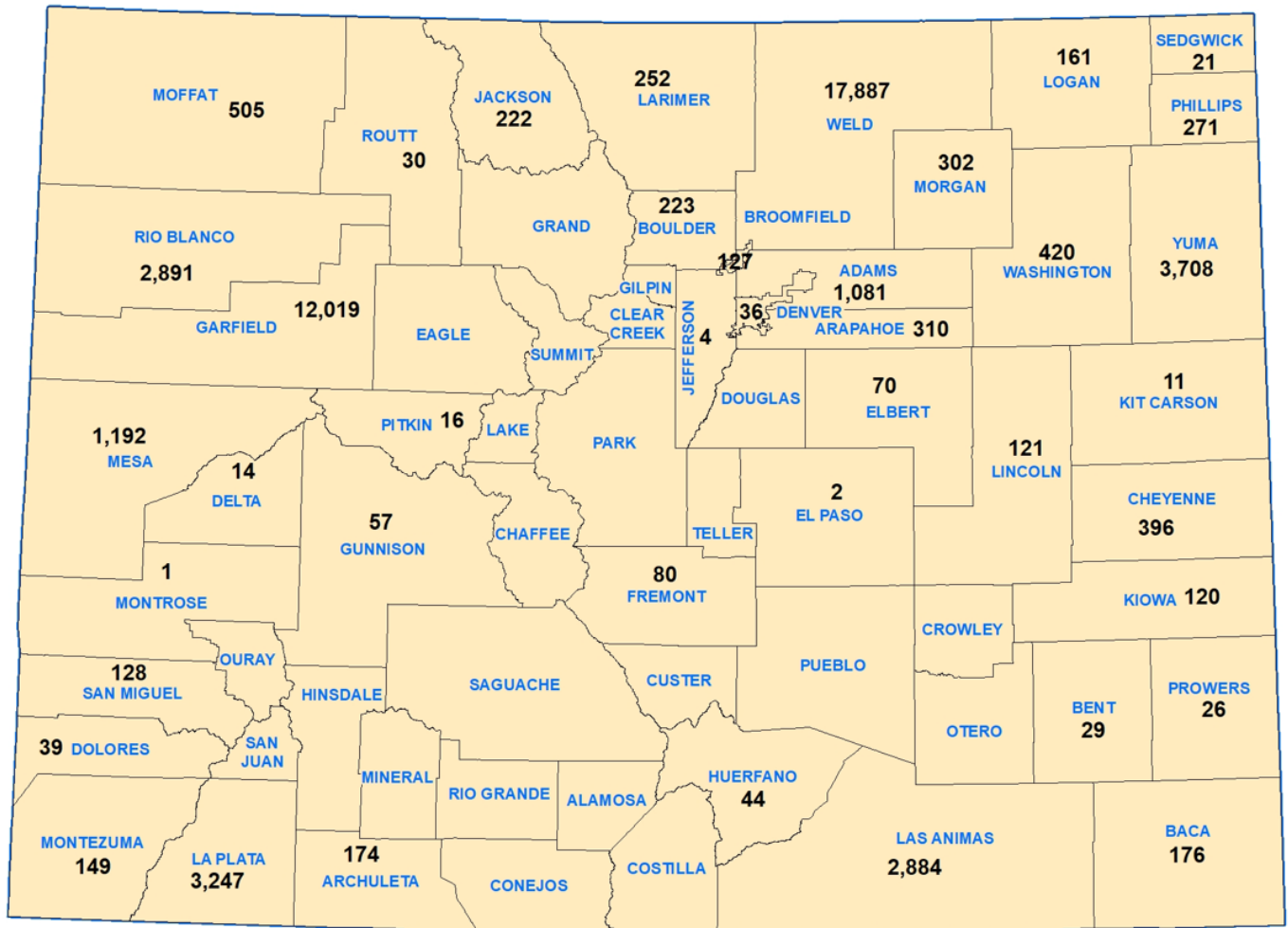
Figure 5-1. Annual Permit and Well Start Activity 2010 - 2022



The 2022 average weekly active rig count for Colorado stood at 17 through the first week of November. By comparison, the average weekly active rig count in Colorado was 10 rigs in 2020 and 2021 and 30 rigs in 2019. Assuming crude oil and natural gas prices remain elevated and drilling capital is available, a modest increase in rig activity in 2023 is expected.

As of December 2022, there were 49,187 active wells in the state. Figure 5-2 shows the number of active wells by County. Weld and Garfield counties have the most active wells, with 17,887 and 12,019 wells, respectively, followed by Yuma County with 3,708 and La Plata County with 3,247 wells.

Figure 5-2. Number of Active Wells by County



5.2 Oil Production

COGCC estimates that statewide oil production for 2022 will be approximately 158.8 million barrels (Mbbbls) of oil produced after final accounting. Oil production is slightly increased over the 153.7 Mbbbls in 2021. The production high (all-time) was in 2019 of nearly 193 Mbbbls. According to the U. S. Energy Information Administration (EIA), Colorado accounts for approximately 4.2% of the total crude oil produced in the United States and ranks 5th among states in production as of June 2022.

Development of the prime Niobrara Formation assets in the Greater Wattenberg Area continues with the rapid production decline rates of horizontal wells (estimated to be

from 30% to greater than 50% in the first year). Generally production decline rates are offset by new drilling, however, the decrease in new well drilling (starting in 2020 and continuing through 2022) is reflected in the drop in cumulative production. In the longer term, estimates indicate the Niobrara Formation may contain as much as 2 billion BBLs of oil with the Denver Basin being the 5th largest liquid resource in the U.S. based on proven reserves.

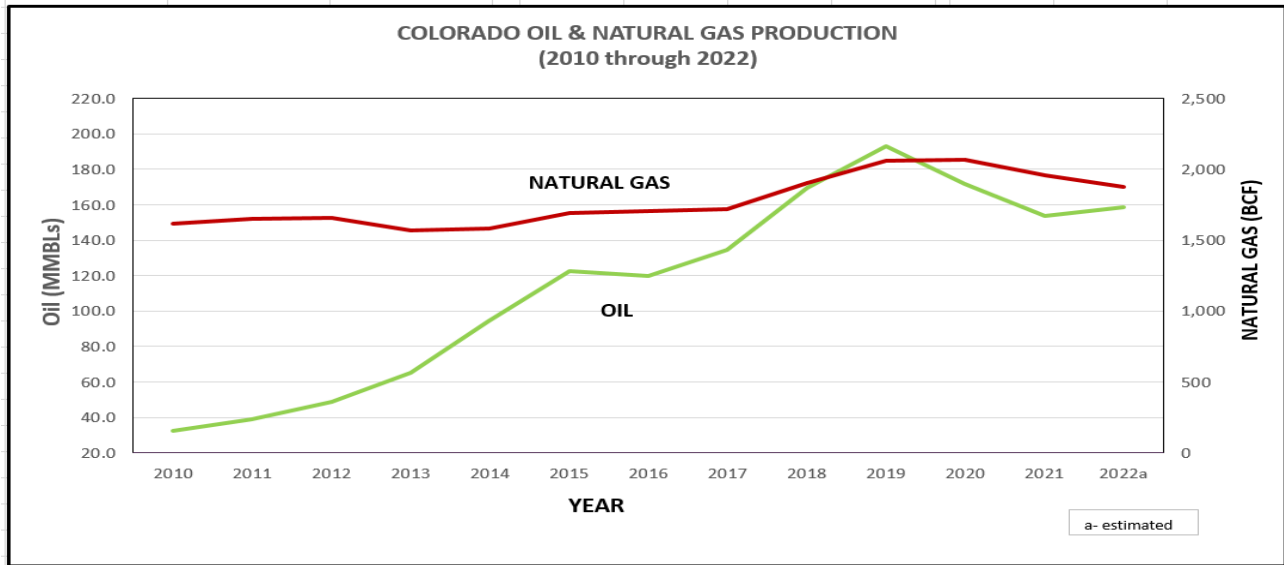
5.3 Natural Gas Production

In 2021, Colorado was ranked seventh in the nation for marketed natural gas production. The EIA estimates that conventional and unconventional output from Colorado basins accounts for 4% of the total annual U.S. natural gas production. The state contains 11 of the largest natural gas fields in the country, leads the nation in gross withdrawals from coalbed methane (CBM) wells, and contains almost a quarter of the economically recoverable coalbed methane in the country.

The COGCC estimates that approximately 1.88 trillion cubic feet (tcf) of natural gas were produced in Colorado in 2022. This volume is on track to be slightly less than the production in 2021; down from all-time highest production record of 2,070 tcf in 2020.

Since 2010, Colorado's oil production has dramatically increased from 30 million bbl to the current levels, while natural gas production has remained relatively flat (Figure 5-3).

Figure 5-3. Colorado Oil and Gas Production 2010-2022



5.4 Economic Value

The COGCC estimates the total dollar value for combined oil and natural gas produced in Colorado in 2022 to be approximately \$25.6* billion - 60% higher than in 2021 and 160% higher than 2020. This all-time high production value is the result of the sustained higher crude oil and natural gas prices in 2022 despite a marginal increase in oil production and a decrease in natural gas production (Leeds School of Business, 2022). For comparison, the combined production value was \$15.7 billion in 2021, \$9.4 billion in 2020, \$15.3 billion in 2019, \$16.3 billion in 2018 and \$11.4 billion in 2017.

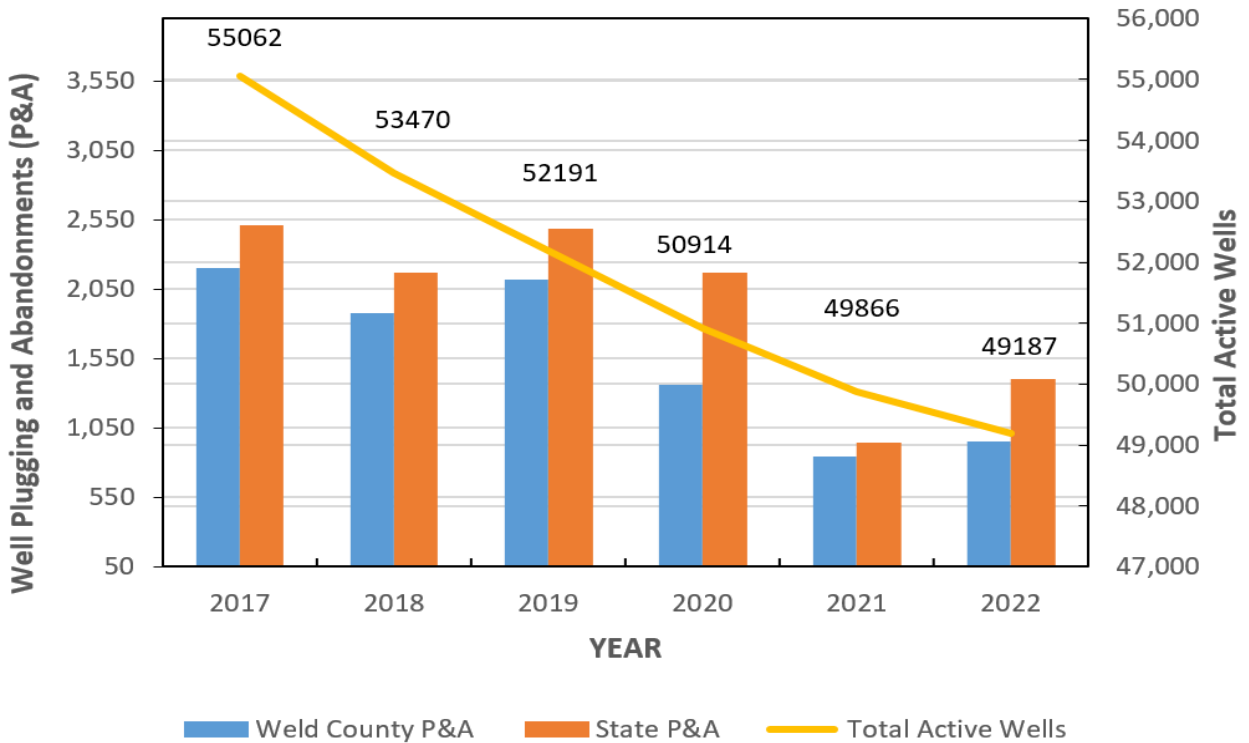
*\$83 per BBL for oil and \$6.50 MMCF for gas was used in the estimate.

5.5 Total State Well Count vs Well Plugging and Abandonment

A total of approximately 1,400 wells were plugged and abandoned (P&A) statewide in 2022 bringing the state active well count down to 49,187; a significant decrease from the all-time high well count of 55,062 in 2017. Since 2017 approximately 11,678 wells have been P&A'd state-wide.

Weld County continues to lead the state in well P&A's with approximately 950 wells plugged in 2022, slightly above the 842 well plugged 2021. The ongoing horizontal development in the Greater Wattenberg Area (GWA) Field (primarily in Weld County) has resulted in a significant number of older conventional wells being plugged.

Figure 5-4. Well Plugging and Abandonment and Total Active Wells 2017 - 2022



6.0 Statewide Spills/Releases, Remediation Projects, and Environmental Investigations

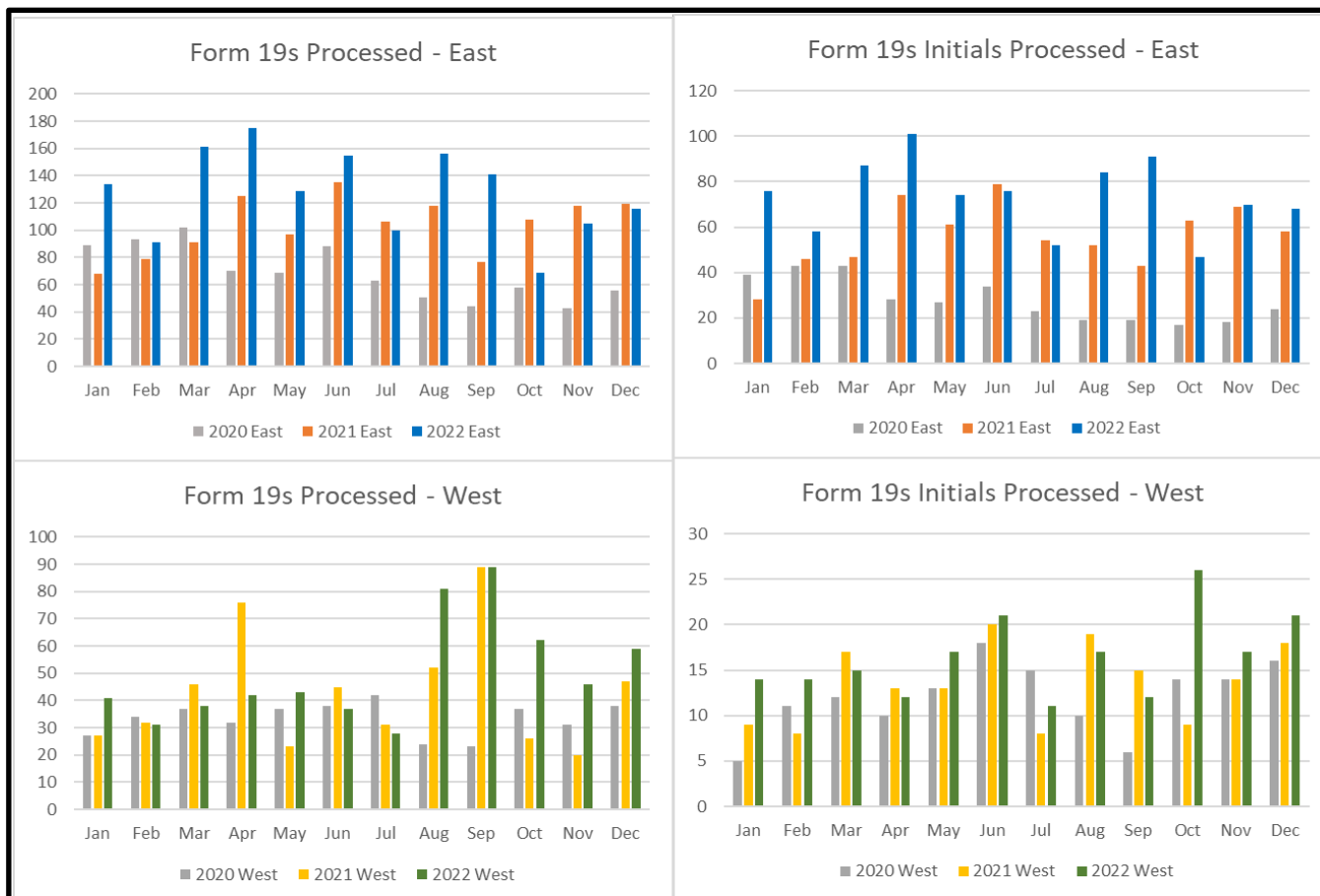
Operators are required to report spills and releases of E&P waste and produced fluids that occur as a result of oil and gas operations in accordance with COGCC Rule 912 using a Form 19 - Spill/Release Report. Reporting is required for all types of produced fluids and E&P waste, although oil, condensate, and produced water are the substances most commonly spilled or released. These substances fall under the E&P waste exemption to regulation as hazardous wastes under Subtitle C of the Resource Conservation and Recovery Act (RCRA); therefore, they are subject to COGCC jurisdiction. COGCC defines spills as “any unauthorized sudden discharge of E&P waste to the environment” and releases as “any unauthorized discharge of E&P waste to the environment over time.”

Through December 31, 2022, a total of 1,050 spills/releases were discovered and reported to the COGCC for the calendar year. In comparison, there were 851 spills in 2021, 476 spills in 2020, 639 in 2019 and 578 reported in 2018. There were two primary reasons for the large increase in reported spills in observed in 2021 and 2022. First, the Mission Change Rules (as required by SB 19-181) went into effect on January 15, 2021; as updated, Rule 912 included several new reporting thresholds for spills. Second, Rule 911 required Operators to submit Form 27 remediation plans to document the closure of all facilities when wells are plugged and related production facilities (including flowlines) are decommissioned. In the past, there was no formal requirement for closure documentation except for pits and partially buried vessels. During these closure events, operators are now documenting historical releases through a Form 19 and then closing them through their site investigation and remediation process.

Figure 6-1 shows the number of Form 19s (all) and Initial Form 19s processed the past 3 years. The data are divided by the eastern and western halves of the state. It is clear that the number of Initial Form 19s (new spills or releases) has risen sharply in the eastern half of the state where most plugging and abandonment activity is occurring. This is a direct result of better environmental oversight during those P&A

and facility decommissioning activities.

Figure 6-1. 2020-2022 Spill Reporting



In accordance with the MOA for Response to Spills/Releases to Surface Water, the COGCC notifies the WQCD of spills or releases impacting surface waters. In 2022 there were four such spills or releases to surface waters reported to WQCD staff. COGCC and WQCD staff coordinate on the follow up and oversight of these spill cleanups, including enforcement for any rule violations that led to or resulted from the spill or release.

During 2022 71 spills were reported that either impacted or threatened to impact groundwater. Of those 71 spills, 66 were located in the east half of the state primarily in the Greater Wattenberg Area typically within Weld and part of Adams County.

Where groundwater has been threatened or impacted, operators are required to:

- immediately eliminate any ongoing release,
- investigate the extent of contamination,
- remove the source of contamination (such as the impacted soils in contact with groundwater or liquid phase hydrocarbon product),
- establish points of compliance,
- remediate to the extent practicable, and
- monitor any remaining contaminant levels until contaminants of concern are in compliance with Table 915-1 standards and Regulation 41 groundwater quality standards.

Spills and releases are considered “closed” when both all soils and groundwater have been demonstrated to meet the cleanup criteria of Table 915-1 or when the operator requests to continue their site investigation and remediation under an approved workplan. Spills and releases which impact groundwater are closed through the latter process due to the duration of the remediation projects, and as required by rule. In 2022, 950 spills and releases were closed.

Remediation projects are tracked in the COGCC’s database and can be accessed on the COGCC website. Through December 31 2022 the COGCC received 2,382 new remediation plans and closed 1,041 remediation projects. Figure 6-2 and Figure 6-3 show the number of active remediation projects in the east and west halves of the state, respectively. These charts show a dramatic increase in active remediation projects in the eastern half of the state, again reflecting the significant P&A activity in the DJ Basin, and a smaller, but still significant increase in active remediation projects on the western slope. In addition to the growing number of active remediation projects, COGCC is also monitoring hundreds of ongoing cleanup projects statewide, these are reflected in the relatively flat lines of “Update/Monitoring Report Due” in each graph. In all COGCC staff processed over 6,500 Form 27s in 2022.

Figure 6-2. Eastern Colorado Remediation Projects

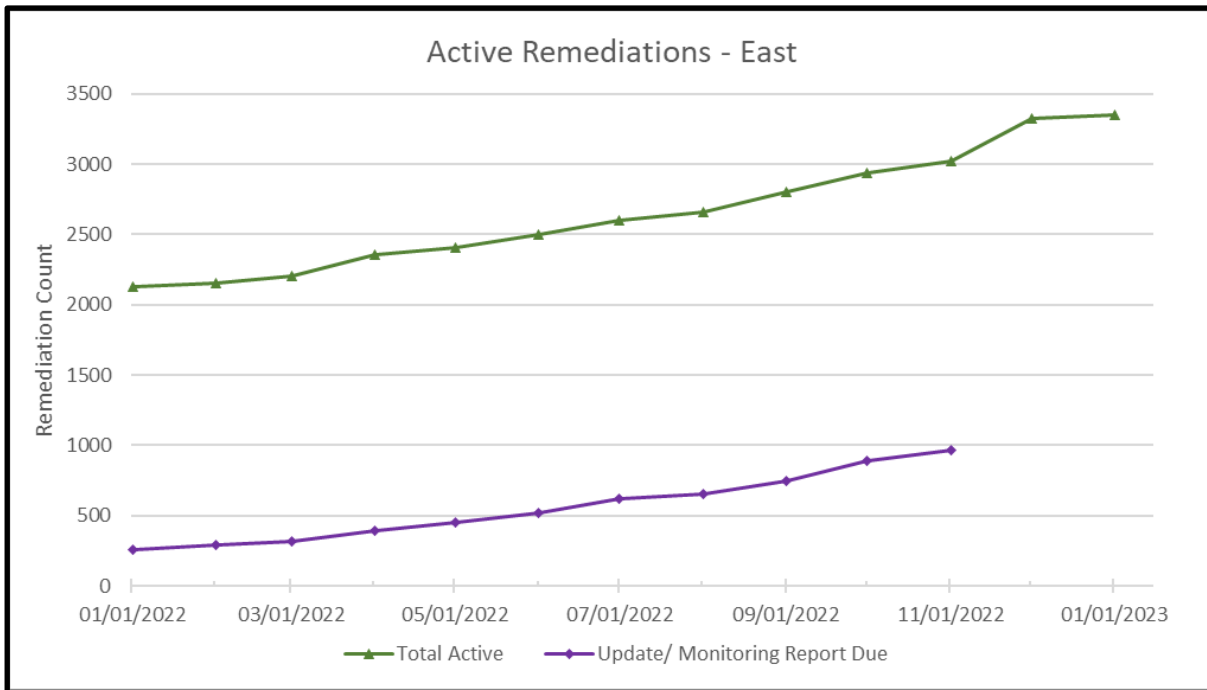
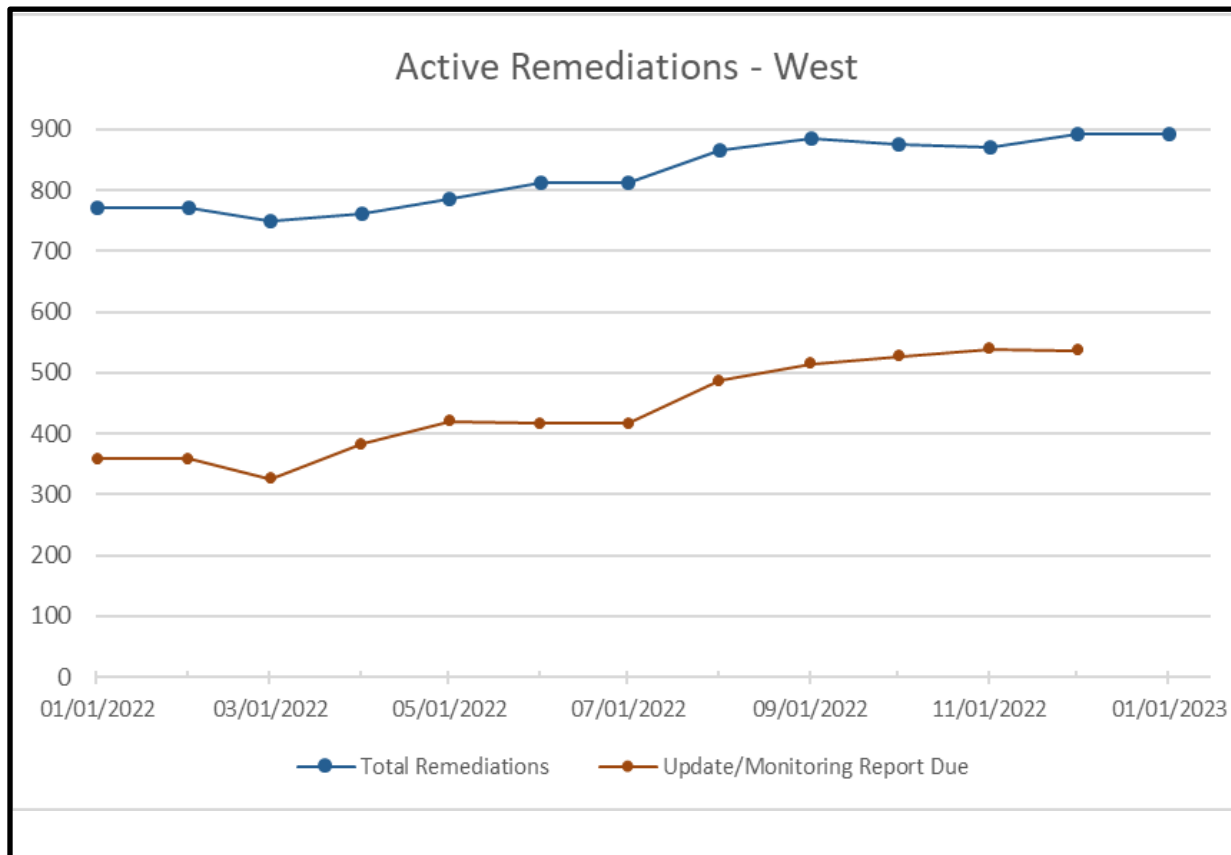


Figure 6-3. Western Colorado Remediation Projects



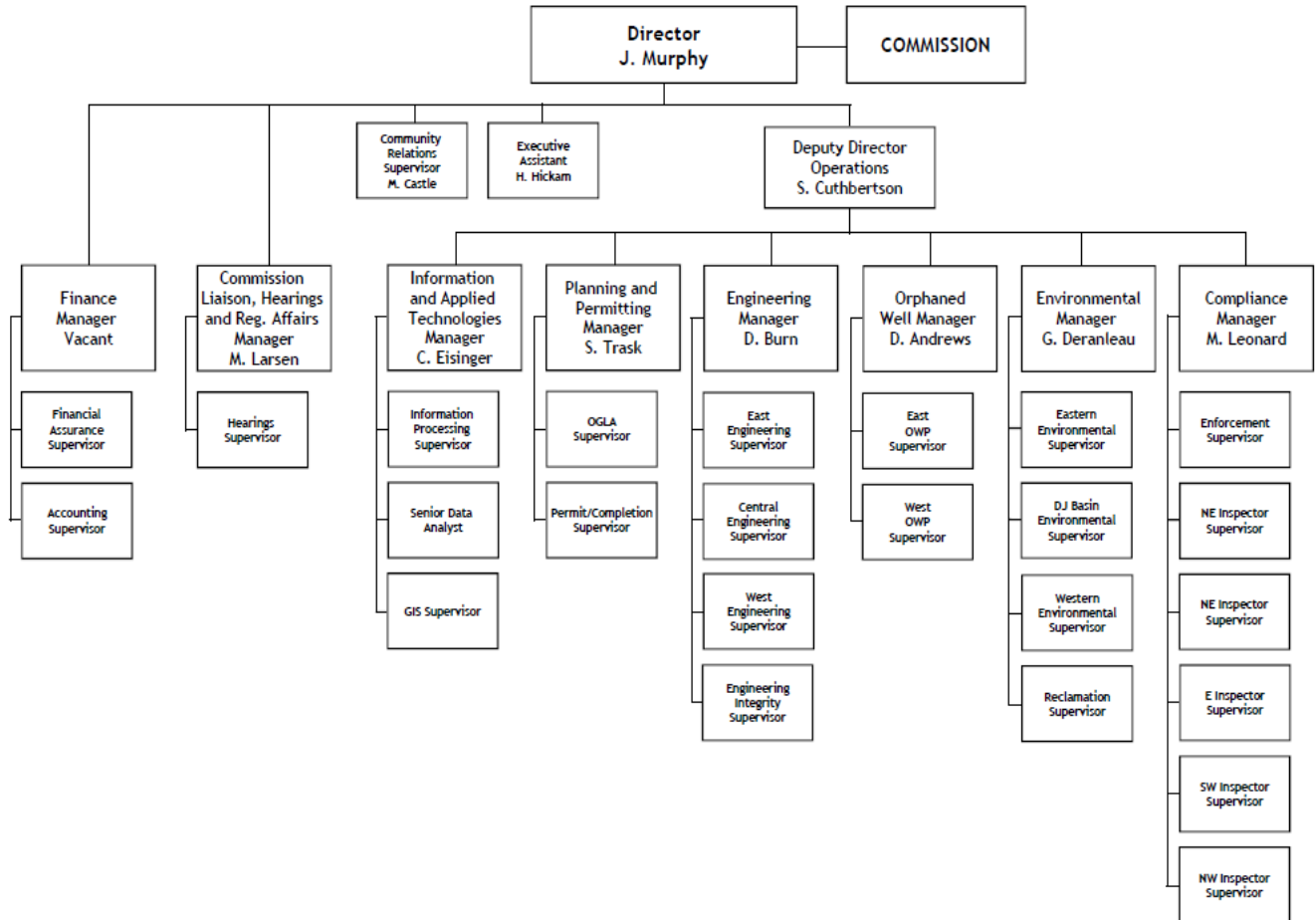
As previously stated, the new spill reporting thresholds and facility closure requirements have resulted in a substantial increase in the number of spills reported on Form 19s and the number of investigation and remediation projects established and reported on Form 27s. The significance of this increase is better protection of the environment and groundwater resources at the end of the life of an oil and gas development project and decreased risk of residual contamination being left in place for a landowner or surface owner to discover later. Because of the required site assessments performed to document facility closure, many more spills/releases were discovered and reported. These spills were not generally active spills, but more typically historic impacts most commonly of residual soil contamination.

In 2022, 204 spills or releases were discovered and reported at wellheads during plugging and abandonment. Prior to 2021, these spills might not have been discovered or reported because there was no closure assessment required directly at the wellhead; the documentation of cleanup of these spills or releases is a net positive for the environment and groundwater protection.

APPENDIX 1

COGCC Organizational Chart

COLORADO OIL & GAS CONSERVATION COMMISSION



Reg = Regulatory
OWP = Orphaned Well Program
OGLA = Oil and Gas Location Assessment

References

Leeds School of Business, 2022, Fifty-Eight Annual Colorado Business Economic Outlook 2023:
Leeds School of Business, University of Colorado Boulder, 161 pgs.

