# COLORADO OIL AND GAS CONSERVATION COMMISSION (COGCC)

# 2020 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**

**January 11, 2021**

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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 29th annual report provides an overview of COGCC functions and a summary of calendar year 2020 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 2020 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 April 29, May 24, August 16, and November 15 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. Due to COVID-19 in person meeting restrictions, all 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 2020, the COGCC held one hearing outside of Denver: Adams County (February). The remaining 34 hearings were virtual meetings due to COVID-19 in person meeting restrictions. There were a large number of commission hearings in 2020 in support of SB-19 181 “Mission Change” rulemakings. As described in Section 3.1, in July, 2020, the Commission transitioned from a 9 member volunteer body to a 5 member professional Commission, which allowed for an increased frequency and duration of Commission hearings. Public participation in the virtual meetings remained high throughout the rulemaking hearings and at periodic regular business meetings of the Commission.

### 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. Issues with in-person meetings and COVID-19 restrictions limited some of the regularly scheduled meeting in 2020. The Gas and Oil Regulatory Team (GORT), established by COGCC Order focuses on oil and gas operations in the San Juan basin in southwestern Colorado. GORT provides a forum for meaningful dialogue between operators, citizens, county and local governments, the Southern Ute Indian Tribe (SUIT), the Bureau of Land Management (BLM), the U.S. Forest Service (USFS), and the COGCC. The GORT did not meet in 2020. The Northwest Colorado Oil and Gas Forum (NWCOGF) which focuses on the Piceance basin and other operations in the northwestern part of the state, did not meet in 2020. The NWCOGF is co-chaired by Garfield County and the COGCC Director or Deputy Director; other state, federal, and local government agencies, the oil and gas industry, and concerned landowners and citizens regularly participate. COGCC staff typically attend GORT and NWCOGF meetings and give presentations on emerging issues and hot topics, as well as routine updates on operations statewide and in the respective geographic areas.

### 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. During the Mission Change rulemakings, there were approximately 90 registered stakeholder groups representing a variety of interest perspectives throughout the hearings.

### 2.2.4 Local Government Designee Program

COGCC 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 and which includes LGL staff working under the supervision of the COGCC Communications Director.

As of December 2020, 170 local governments, including two combined city-county governments (Denver and Broomfield), 53 other counties, 103 municipalities (besides Denver and Broomfield), and 10 special districts are registered to participate in the LGD program.

In 2020, LGL staff outreach included the following:

- Navigating the COGCC Website (May 21)
- LGD Orientation and Refresher Training (April 16)
- Form 29 Training (February 13)

The COGCC Staff supported issues of local government concern, including source water protection planning meetings and local government oil and gas permitting processes. In addition, COGCC staff worked to inform community members and LGDs of other events such as stakeholder outreach meetings related to the SB 19-181 rulemakings including the Mission Change Rulemaking (July through November 2020).

The Local Governmental Liaison position was vacated in June 2020 and is being supported currently by various COGCC subject matter experts and field operations staff to respond to questions received from local government stakeholders.

### 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 voting members who are the Executive Directors of the Department of Natural Resources (DNR) and the CDPHE.

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 126 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 inspectors, permitting technicians, hearings specialists, and a variety of other professionals. Table 3-1 summarizes each group and their primary functions. New work groups and staff functions related to water resource protection and compliance are described in more detail in the paragraphs that follow. The current organizational chart and a series of maps showing regional areas of responsibility are included as Appendix 1.

**Table 3-1. COGCC Groups and Primary Functions**

| Group | Number of FTE | Primary Functions |
|---|---|---|
| **Executive** | 3 | Director, Deputy Director and Executive Assistant |
| **Environmental** | 25 | Spills, remediation projects, pit closures, complaint response, environmental projects, Oil and Gas Location Assessments (OGLA) & pit permitting, environmental database, special projects |
| **Engineering** | 19 | Permitting downhole wellbore plans, underground injection control (UIC) permitting, oil/gas facility oversight, flowline integrity |
| **Orphaned Well Program** | 5 | Plugging orphan wells, orphan site clean-up, site reclamation |
| **Compliance** | 38 | Inspection of oil/gas wells, facilities, and locations; complaint response complaint intake, management and resolution; interim and final reclamation; enforcement, agency contact for responding to emergency situations and working with emergency response personnel |
| **Community Relations** | 1 | Local government liaison and communications |
| **Permitting & Technical Services** | 24 | Permitting oil and gas wells, bonding, production reporting and levy collection, financial assurance, database management/support, GIS, website and eForm development/support |
| **Hearings** | 5 | Hearings, rulemaking |
| **Financial** | 6 | Budget management, procurement, purchasing |

**Community Relations** – In 2018, the COGCC created the Community Relations Unit (CRU) as a new work group. The Communications Officer was added in 2019 to expand interaction and communication with media, local, state and federal government agencies, the general public, the oil and gas industry, and various other stakeholders.

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 and installed to prevent the migration of fluids or gas between formations or into aquifers. Permit technicians and engineering staff review drilling permit applications for surface casing and cementing requirements, among other requirements designed to protect aquifers. The COGCC issued 1,336 APDs in 2020 through December.

**Location Assessments** - Under the 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 in the environmental group review and evaluate Form 2A applications, as well as publicly available information, to determine whether the proposed oil and gas operations have the potential to negatively impact water resources; public health, safety and welfare; the environment; or wildlife resources.

On May 16, 2019, COGCC initiated the SB 19-181 required Director Objective Criteria, which consists of 16 criteria that the Form 2A must be reviewed against for approval. Those Form 2A's which meet the Objective Criteria review are often approved with site-specific conditions of approval (COA) to minimize or mitigate potential impacts. A specific criteria was whether or not the oil and gas location was proposed in a sensitive area for water resources. For such locations, OGLA staff ensured enhanced surface and groundwater protection through site-specific best management practices or conditions of approval. The COGCC approved 155 Form 2A Oil and Gas Location Assessments in 2020 through December.

**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 works with WQCD and USEPA staff to ensure that operators of Class II injection wells in Colorado comply with UIC rules and regulations to prevent groundwater contamination. COGCC's staff geologic experts review UIC permits for site-specific matters, such as the occurrence of faults and potential for induced seismic activity. UIC permits include restrictions on injection pressures, daily injection rates and volumes, based on staff analysis. 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. 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. Through December, COGCC Staff approved 12 Class II UIC well permits in 2020.

**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 2020, COGCC approved one Form 15. 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 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 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 2020, the COGCC permitted no new centralized E&P waste management facilities and closed 1. There are 48 active permitted centralized E&P waste management facilities in the state.

**Oversight of Produced Water Disposal –** Well 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 it's 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 (formerly the Field Inspection Unit) handles a large percentage of complaints such as odor, noise, dust, trash and storm water issues. As related to protection of groundwater, the Environmental Group responds to complaints alleging 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 groundwater quality was impacted by oil & gas operations. 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 2020, COGCC received 218 complaints. The majority (143; 66%) were related to noise with the second largest category (29; 13%) related to odors. Forty-two complaints 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 42, a total of 12 complaints were specifically related to concerns about water quality from domestic water wells. Each of the water wells was sampled and a report was provided to the complainant with a detailed discussion of the results. One new water well was found to have been possibly impacted by oil and gas operations in 2020. An investigation into the possible impact is ongoing.

**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 –** COGCC used appropriated funds and claimed financial assurance to perform plugging and abandonment, remediation, or reclamation work at 102 orphaned oil and gas sites in 19 counties: Adams, Baca, Broomfield, Delta, Fremont, Jackson, La Plata, Larimer, Lincoln, Logan, Mesa, Moffat, Montezuma, Montrose, Morgan, Rio Blanco, San Miguel, Washington, and Weld. As part of this work, COGCC plugged 61 wells and commenced remediation or reclamation at 12 sites during Fiscal Year 2020. 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 2021 and future fiscal years, the Orphaned Well Program budget is sufficient to plug up to about 35 wells and remediate or reclaim up to about 75 typical sites each year.

**Enforcement –** As of December 1, 2020, the Commission has issued 33 enforcement orders, including 27 Administrative Orders by Consent and six Orders Finding Violations. These orders resolved 49 Notices of Alleged Violations and imposed $25,305,893 in gross penalties, of which $83,500 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 2020 include:

- eForms – additional forms developed and some existing forms revised
- Geographic Information Systems (GIS)
- Environmental Database improvements
- Data Downloads – new data sets made available
- Online Environmental Reports
- Daily Activity Dashboard on website updated

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

### 3.3.1 eForms

COGCC uses an electronic form filing system built on a Microsoft Silverlight™ platform called "eForms." The eForm application allows operators to submit applications and notices electronically, and the system also provides for automatic email notices to appropriate parties, including the applicant or operator, COGCC staff, and local governments or other regulatory entities. Because Microsoft will no longer support Silverlight™ past 2020, COGCC has begun the transition to a new electronic form system. Additionally, Rule changes from implementation of SB-181 is requiring revision of many existing eForms and the creation of several more.

With eForms, operators are able to submit forms and attachments electronically. COGCC staff review and approve the forms electronically, and data from the forms are uploaded to the MRDB instantaneously upon approval. For forms that require review by multiple staff members (e.g., permitting, engineering, etc.), each staff member involved in the process passes their task within the eForm system.

### 3.3.2 GIS – Geographic Information Systems

The GIS Online 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 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 GIS Online 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 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 our 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's online mapping tool 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 20,175 sample locations and 58,623 individual samples (as of December 11, 2020). In 2020, 6,113 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 14,536 water samples from 3,234 separate locations from operators in compliance with the rules.

The data can be easily accessed through the GIS Online 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 current baseline water quality sampling 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 are accessible through COGCC COGIS data system. 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.

At this time the COGCC is amending the Form 43 to allow operators to submit analytical data related to the new rules promulgated under SB19-181 going into effect on January 15, 2021. Analytical data will continue to be submitted via Form 43 to meet the following new requirements:

- Rules 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; and
- Rule 909.j - Produced Water Quality Analysis.

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. GIS data available include well surface locations and directional data (updated daily), pits, oil and gas fields, sensitive wildlife habitat, some 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 was updated and revised in 2011 to include 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

In late 2016, the COGCC launched the Daily Activity Dashboard, 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.

## 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 2020-2021, the appropriation for this line item remained at $312,033. That said, the COGCC is anticipating lower spending levels over the fiscal year due to statewide and department-wide budget constrictions, although they do not inhibit our ability to spend up to the full appropriation should the need arise.

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 2020-2021 remains at $325,000. However, similar to the previously described line item, the COGCC anticipates lower spending levels this fiscal year.

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 2019-20, this appropriation is $150,000, reduced from prior year appropriations. The COGCC also receives an annual appropriation for plugging, abandoning, and reclaiming orphaned wells (PROW). The FY 2019-20 appropriation for the PROW line item is $3.85 million.

## 4.0 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 Bill required several changes to the overall regulatory framework of the COGCC, which included; appointment of a professional commission appointed by the Governor, increased local government control over the siting of oil and gas locations, changes in the review Oil and Gas Location Assessment process, and formal rulemakings for Flowlines, Practice and Procedure, Alternative Location Analysis, Cumulative Impacts and "Mission Change." Mission Change is discussed in more depth in Section 4.3.

Starting in late 2019 and continuing through 2020 many key issues identified in SB 19-181 were addressed in a thorough examination of the COGCC's Rules. Significant rule revisions included:

- Defining the new relationships between state and local government;
- Addressing cumulative impacts by developing a new program with the CDPHE;
- Establishing new setbacks for location siting purposes;
- Establishing an Oil and Gas Development Plan permitting process that incentivizes landscape level planning, alternative location assessment, and early collaboration with stakeholders;
- Enacting a prohibition on routine gas flaring or venting, and increasing protections for wildlife; and
- Reorganizing the rules using updated language to ensure accessibility.

### 4.1 Actions Completed Under the Volunteer Commission

**Administrative Law Judge Rules (500 Series) Enacted, August 2019.** Modifications to the 500-Series rules of practice and procedures allowed the COGCC to use Administrative Law Judges in Hearings. This process increases the efficiency of the COGCC Hearing Unit in processing orders, including for enforcement.

**Flowline Rules (1100 Series) Adopted in November 2019**. The COGCC strengthened its oversight of flowlines and of operators returning inactive wells to production or injection within Colorado. The adopted rules require operators to provide a map of the actual paths of all flowlines in the state of Colorado, while at the same time balance transparency with the need for public safety. The rules ensure that flowlines are abandoned in a manner—either abandoned in place or removed—that is least impactful to public health, safety, welfare, the environment, or wildlife resource.

**Wellbore Integrity Rules (200, 300, 600 Series) adopted June 2020.** The wellbore integrity rulemaking was completed and the Commission adopted the proposed amendments during its hearing, June 10. These amendments became effective on Nov. 2, 2020. The focus of the rulemaking was to strengthen existing rules on lifecycle well monitoring including enhanced well casing and cement testing standards. The new rules adopted a robust off-set well evaluation and mitigation process that increases safety through the avoidance of accidental wellbore collisions or well-to-well communication. The wellbore integrity program, as modified, decreases the risk of contamination to groundwater.

### 4.3 Actions Completed Under the Professional Commission

The appointed Professional Commission was seated on July 1, 2020 and the new Commission conducted significant rulemaking hearings addressing Mission Change, Alternative Location Analysis, Cumulative Impacts, and Compensatory Mitigation for Wildlife, as required by SB 19-181. The hearings began August 24, and addressed the **200-600 Series rules** followed by the **800, 900 and 1200 Series rules** in October. Those rule revisions addressed the following series:

- 200 Series – General Rules
- 300 Series – Drilling, Development, Production and Abandonment
- 400 Series – Unit Operations, Enhanced Recovery Projects
- 500 Series – Practice and Procedure
- 600 Series – Safety Regulations
- 800 Series – Aesthetic and Noise Control
- 900 Series – Environmental Impact Prevention
- 1200 Series – Protection of Wildlife Resources

These major revisions to the COGCC rules were approved by the Commission at the November 23, 2020 hearing. The implementation date of the new rules is January 15, 2021. The rulemakings were required to implement the change to the COGCC's mission from "fostering the responsible development of oil and gas resources in a manner that protects" to "regulating the development of oil and gas resources to protect" public health, safety, welfare, and the environment and wildlife resources.

Significant changes with this rulemaking include:

**Public Participation:**

- Creating broader access to the COGCC.
- Expanding standing to allow citizens the ability to participate in hearings, permits applications, and requests from operators for a variance or waiver from a rule.

**Increased Protections for Public Health, Safety, Welfare, Wildlife and Environmental Resources:**

- Incentivizing comprehensive landscape-level planning through the permitting process.
- Creating a "one-permit" Oil and Gas Development Plan process.
- Transferring the oil and gas location permitting authority from administrative approvals by the Commission's Staff to the Commissioners through a public hearing, increasing transparency and public participation.
- Establishing new regulatory relationships with local governments, including COGCC involvement early on in local permitting and siting processes and including recognition that operators must comply with the most protective regulations.
- Ensuring environmental justice for disproportionately impacted communities and allowing them to be involved in the permit process. These are Colorado's first ever rules to be adopted that incorporate environmental justice as a consideration in facility siting.
- Creating a first-of-kind cumulative impacts data gathering system with an annual reporting requirement to the public for transparency.
- Establishing protective setbacks for oil and gas development from residential building units, schools, and high priority habitat, including riparian areas.
- Increasing protections for wildlife resources.
- Increasing protections for water resources.

Many of the changes to the individual rule series will improve the overall protection of groundwater in the state. The 900 Series, Environmental Impact Prevention (formally the Exploration and Waste Management) Series was updated significantly to provide additional overall protection to the environment. Notable updates to the 900 Series specific to the protection of groundwater include:

- Rule 909.j. requires operators to perform sampling and analysis of produced water being disposed in pits. This will provide better overall characterization of the water and help the COGCC determine if more controls, such as liners or netting, are required at existing pits. The COGCC also coordinated with the CDPHE on this rule regarding their new Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM) rules to require sampling for isotopes of radium to determine if the produced water will be subject to TENORM regulations.
- Rule 911.a.(4) requires operators to submit a Form 27 Site Characterization and Remediation Workplan for all oil and gas facility closures. In the past, no formal documentation was required for most facilities such as tank batteries where production activity may have taken place for decades. In many instances, residual subsurface impacts to soil and groundwater were found at these facilities after closure during development of the land. This rule revision helps ensure that any residual contamination is documented and cleaned up at the time of facility or site closure.
- Rule 912.b. strengthens the spill/release reporting requirements to better document incidents that in the past were not required to be reported and in some cases were not properly cleaned up.

- Rule 915 and Table 915-1 updates the soil and groundwater concentration levels. The COGCC worked in close coordination with CDPHE to bring the cleanup standards up to date.

Another important update was made to Rule 615 regarding the statewide groundwater baseline sampling requirements. This rule consolidated previous rules into one single statewide requirement and provided ongoing groundwater monitoring at intervals for the life of an oil and gas well, not only to establish baseline groundwater quality conditions, but to determine if there are changes to the baseline over time.

As of January 15, 2021, the professional Commission will assume responsibility for reviewing and approving or denying oil and gas location permits. The Commission will take up additional rulemakings at future hearings, including Financial Assurance for oil and gas development, Worker Safety, and the enactment of Permit Fees in 2021. To learn more about the new rules, upcoming hearings and the rulemaking schedule, visit the COGCC website: cogcc.state.co.us.

## 5.0 Oil and Gas Exploration and Production Activity

***Data used in the following discussion are current as of December 2020 unless otherwise noted.**

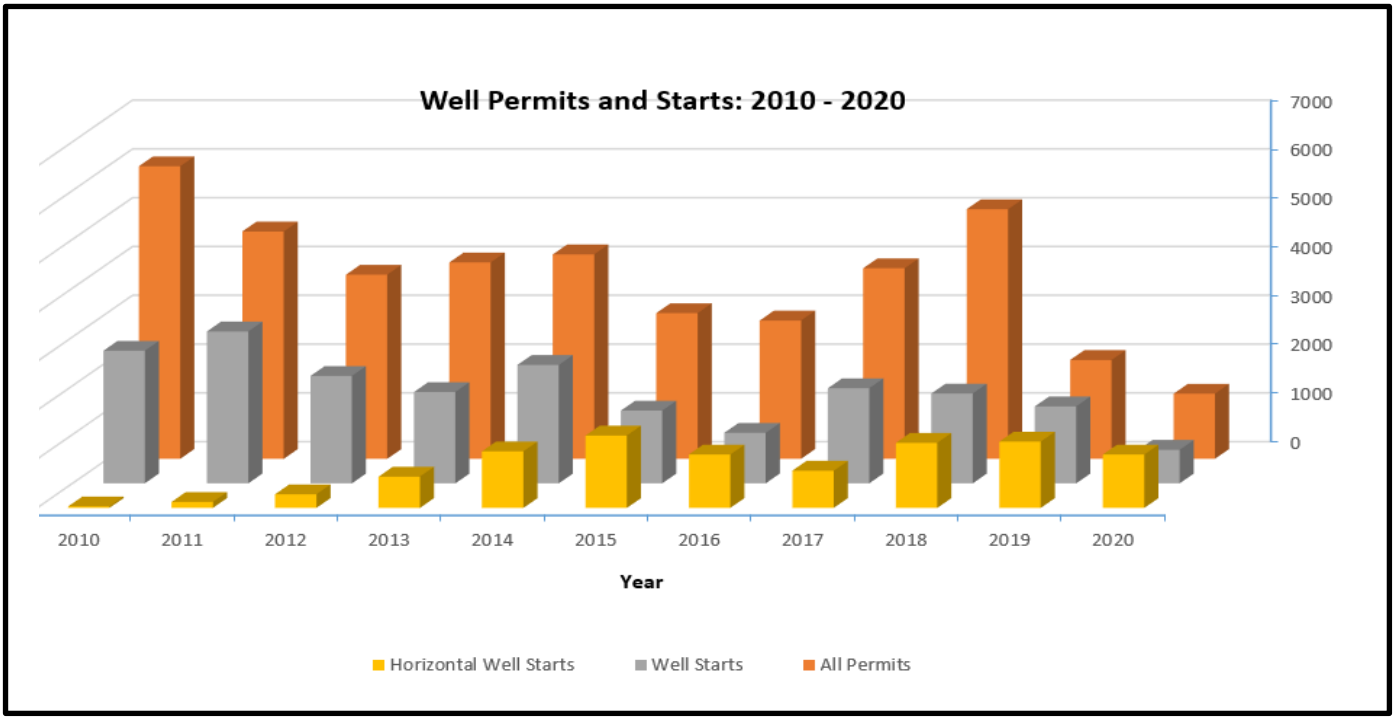
One metric used to measure exploration and development activity levels is the number of approved permits. A total of 1,336 permits to drill were issued in 2020 compared to 2,026 in 2019, 5,116 in 2018, 3,906 in 2017, and 2,835 in 2016. In 2020, consistent with recent years, most of the permits, approximately 79%, were issued in Weld County (1,054 permits) in the active shale play of the Niobrara and Codell Formations.

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 2020, there were 688 well starts statewide, compared to 1,578 in 2019 and 1,842 well starts in 2018. In 2020, 661wells starts were for horizontal wells, or approximately 96% 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. In 2020, 464 (71%) of the horizontal wells starts for the state were in Weld County targeting the Niobrara and Codell Formations. Over time, wells drilled in Colorado have shifted from a dominance of vertical wells to horizontal wells as shown in Table 5-1 and Figure 5-1, below.

**Table 5-1. Annual Permit and Well Start Activity 2010 – 2020**

| Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Permits** | 5996 | 4659 | 3773 | 4025 | 4190 | 2987 | 2835 | 3906 | 5116 | 2026 | 1336 |
| **Well Starts** | 2778 | 3220 | 2297 | 1976 | 2428 | 1492 | 1036 | 1950 | 1842 | 1578 | 688 |
| **HZ Well Starts** | 123 | 280 | 641 | 1160 | 1484 | 1096 | 764 | 1334 | 1360 | 1094 | 661 |
| **Percent Horizontal** | 5% | 9% | 29% | 62% | 61% | 73% | 74% | 68% | 74% | 69% | 96% |

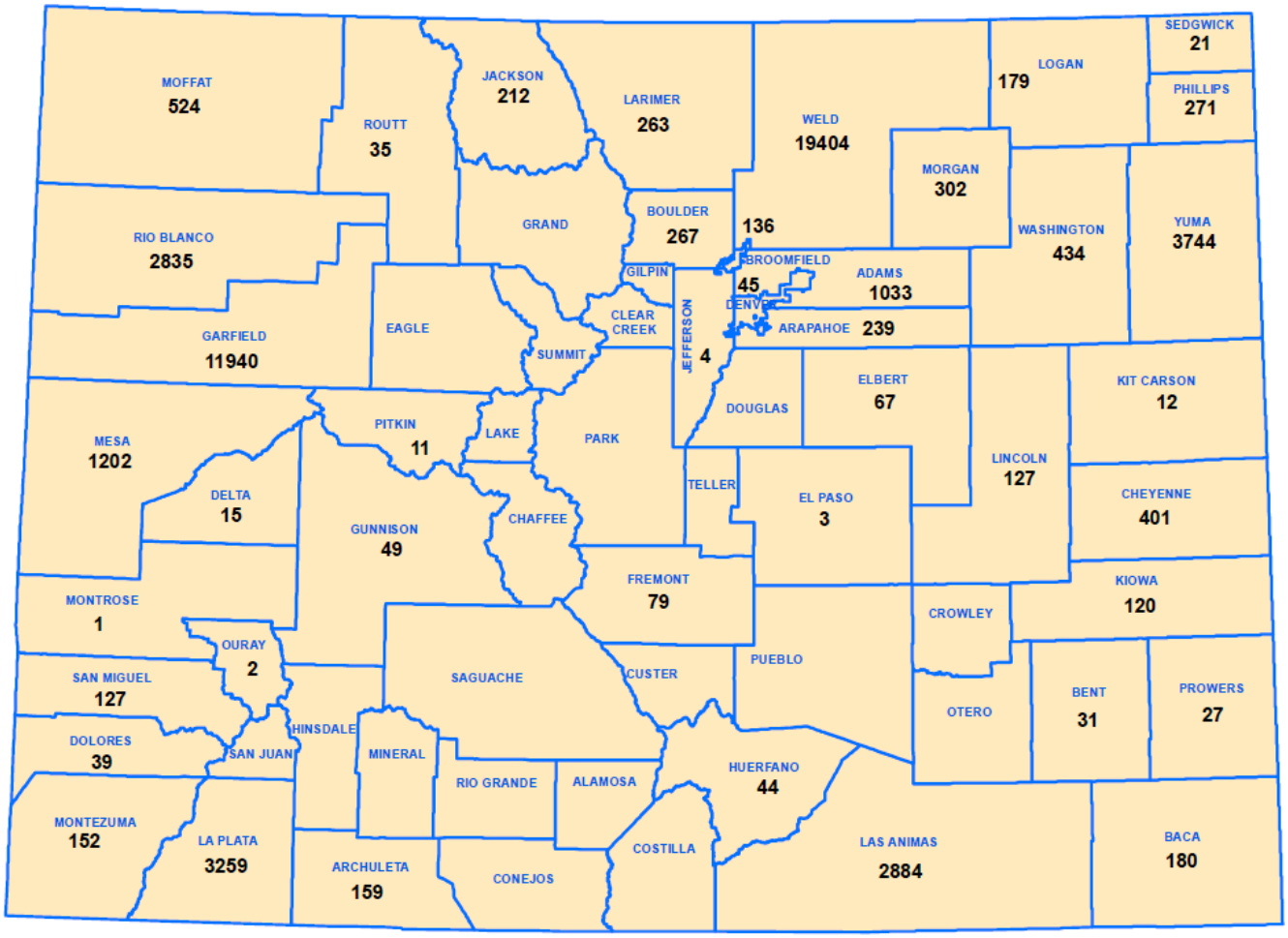
**Figure 5-1. Annual Permit and Well Start Activity 2010 – 2020**




Fallout from the COVID19 pandemic coupled with ongoing struggles in the oil and gas price environment, has made 2020 one of the most challenging in recent years for the Colorado oil and gas industry. Not surprisingly, the spud rate and rig count have dropped precipitously since April, and new drilling permits received by the Colorado Oil & Gas Conservation Commission (COGCC) in 2020 are on track to be down by more than 65% from 2019 and 74% from 2018. While some operators have been able to create an economically viable production environment at $40 per barrel in prime Wattenberg areas, economic and regulatory uncertainties will likely keep development depressed into 2021 and possibly further.

As of December 2020, there were 50,914 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 19,428 and 11,912 wells, respectively, followed by Yuma County with 3,745 and La Plata County with 3,262 wells.

**Figure 5-2. Number of Active Wells by County**




****Oil and gas production reports for 2020 are not yet complete and, therefore, final production figures for 2020 are not available. The COGCC expects production reporting to be finalized by April 2021****

## Oil

COGCC estimates that statewide oil production for 2020 will be approximately 177 million barrels (Mbbls) of oil produced after final accounting. This is the first significant year over year decline in crude oil production in nearly a decade. The previous production high (all-time) was in 2019 of nearly 193 Mbbls. According to the U. S. Energy Information Administration (EIA), Colorado accounts for over 4% of the total crude produced in the United States and ranks 5th among states in production as of July 2020.

Development of the prime Niobrara shale 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) up until recently being offset by new drilling. In the longer term, estimates of the Niobrara shale resource are as high as 2 billion barrels of oil with the Wattenberg field being the fourth largest in the nation based on proven reserves.

## Natural Gas

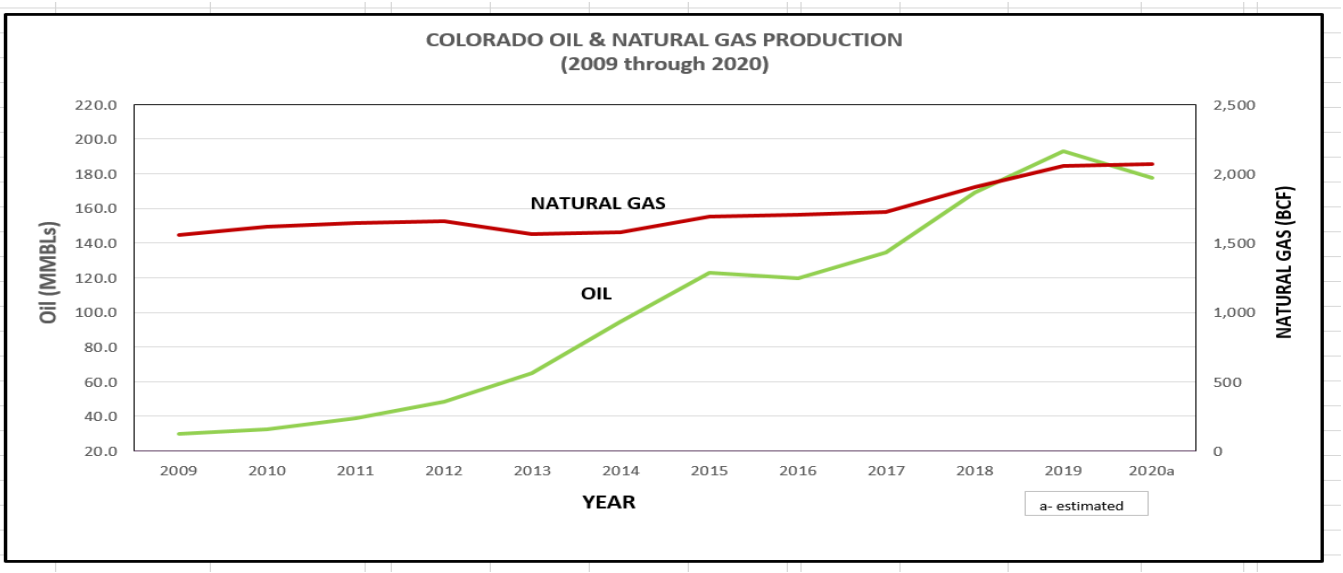
In 2019, Colorado was ranked seventh in the nation for marketed natural gas production. The EIA estimates that conventional and unconventional output from Colorado basins accounts for 5.5% of the total annual U.S. natural gas production. The state contains 11 of the largest natural gas fields in the country, leads the nation in gross withdrawals from coalbed methane wells, and contains almost a quarter of the economically recoverable coalbed methane in the country.

The COGCC estimates that approximately 2.07 trillion cubic feet (tcf) of natural gas will be produced in Colorado during 2020. This volume is on track to be slightly greater than the previous highest production record of 2.06 tcf in 2019. Since 2009, Colorado's oil production has dramatically increased from 30.0 million bbl to the current levels, while natural gas production has remained relatively flat (Figure 5-3) although natural gas production increased in step with oil production since 2017.

## Economic Value

The COGCC estimates the total dollar value for combined oil and natural gas produced in Colorado in 2020 to be approximately $9 billion. For comparison, the combined value was $14.6 billion in 2019, $15.5 billion in 2018, $11.5 billion in 2017 and $8.7 billion in 2016.

**Figure 5-3. Colorado Oil and Gas Production 2009-2020**




## Total State Well Count vs Well Plugging and Abandonment

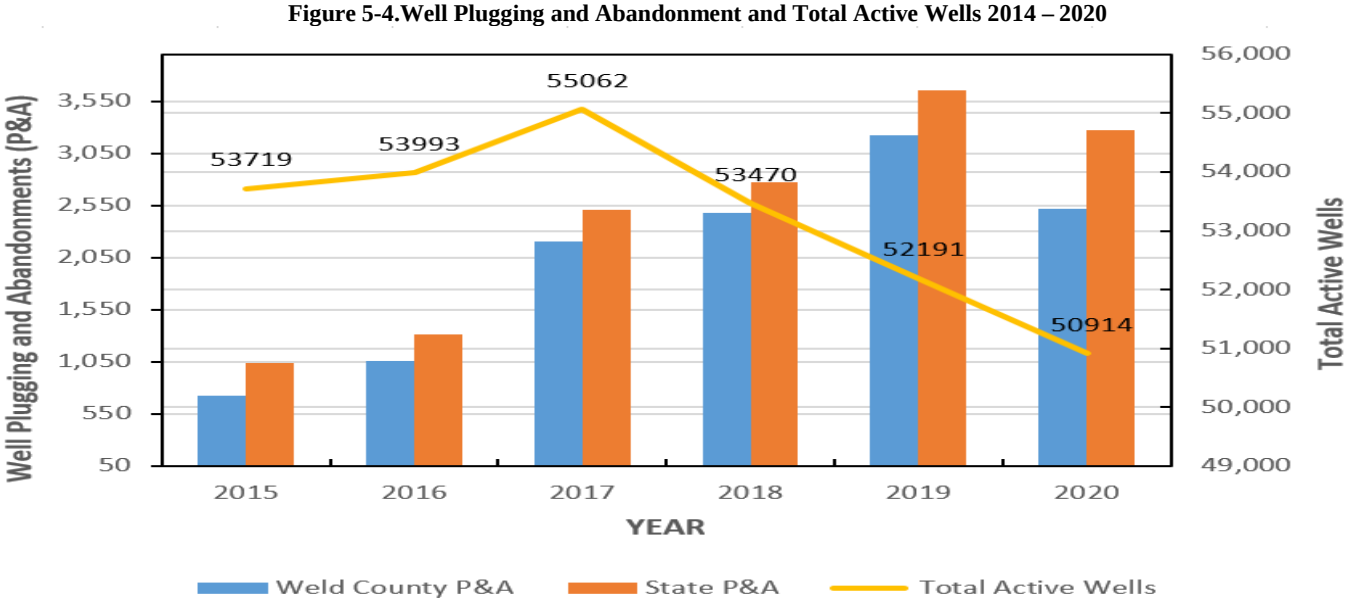
The horizontal development in the Greater Wattenberg Field Area (GWA), centered in Weld County, and policies by the COGCC engineering staff (the Offset Well Policy, now included in the Wellbore Integrity rules discussed above) has resulted in a large number of older conventional oil & gas wells being plugged & abandoned (P&A). This also results in the decommissioning of the production facilities (tank batteries, gas meter runs, produced water tanks/vaults, flowlines, etc.) related to those wells. Horizontal wells (generally with laterals of 1 to 3 miles in length) are replacing numerous older

vertical wells while more efficiently producing the mineral resource. Additionally, the Offset Well Policy requires that existing (mostly older vertical) wells undergo engineering review to eliminate any possible potential for communication between horizontal wells that are being hydraulically stimulated. This requirement (beginning in 2013) has increased operator P&A activities in the GWA and the resulting removal of the older production facilities.

With the removal of older production facilities, the modern horizontal well production facilities are purpose built to centralize production from numerous horizontal wells, which helps to minimize adverse impacts to air, soil, groundwater and surface water resources, while reducing land disturbance. The typical new production facility construction is co-located on the well pad minimizing off location flowline runs. The consolidation of the production facilities decreases potential spill/release locations and, through preventative measures such as production facility liners, also provides improved fluid containment in the result of spills/releases.

This development has resulted in the P&A of approximately 15,000 wells since 2014 with the majority (76%) in Weld County. At the same time approximately 10,861 new wells have been drilled resulting in a State-wide total well count reduction of approximately 4,100 wells since the high count of 55,062 in 2017. The majority of these new wells are new horizontal wells in GWA (Figure 5-4).

**Figure 5-4.Well Plugging and Abandonment and Total Active Wells 2014 – 2020**




## 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 906, as revised in 2013, 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 7, 2020, 445 spills/releases were discovered and reported to the COGCC for the calendar year. In 2020, a total of 598 spills/releases were closed State-wide, which includes some spill/releases from previous years. Some spills are transitioned into remediation projects if the timeframe for closure exceeds 90 days or the spill has caused a significant impact that will require more detailed planning and a longer remediation timeframe. As an example, most spills/releases that cause impacts to groundwater are transitioned to a remediation project under a Form 27.

A spill is considered closed when the operator has cleaned up the impacted media and provided the COGCC with documentation that remaining soil and/or groundwater is in compliance with Table 910-1 contaminant concentration levels. The operator must also demonstrate that E&P waste is properly treated or disposed and that any surface disturbance is restored. Once this documentation is provided, the COGCC EPS will administratively change the spill to closed status.

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 2020, there were 7 such spills or releases to surface waters reported to WQCD staff.

Although only spills and releases that meet certain thresholds require reporting, operators are required to remediate environmental impacts associated with any spill or release of E&P waste of any size. The COGCC environmental staff review and approve remediation plans, evaluate analytical data, monitor the progress of the remediation, and ensure cleanup standards and other remediation requirements are met through verification sampling, data review, site inspections, and other measures. If operators find impacts from historical operations during the course of routine operations or facility closure, those impacts are typically reported as releases and the operator proceeds with investigation and cleanup.

Where groundwater has been impacted, operators are required to eliminate any continued 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), remediate, establish points of compliance, and monitor any remaining contaminant levels.

Remediation projects are tracked in the COGCC's database and can be accessed on the COGCC website. Through December 2020, the COGCC received approximately 596 new remediation plans, and closed approximately 940 remediation projects. It should be noted that not all reported spills and releases are required to be closed under an approved remediation plan, but certain facilities, like production pits and partially buried produced water vessels are required by COGCC rule to be closed in accordance with an approved plan.

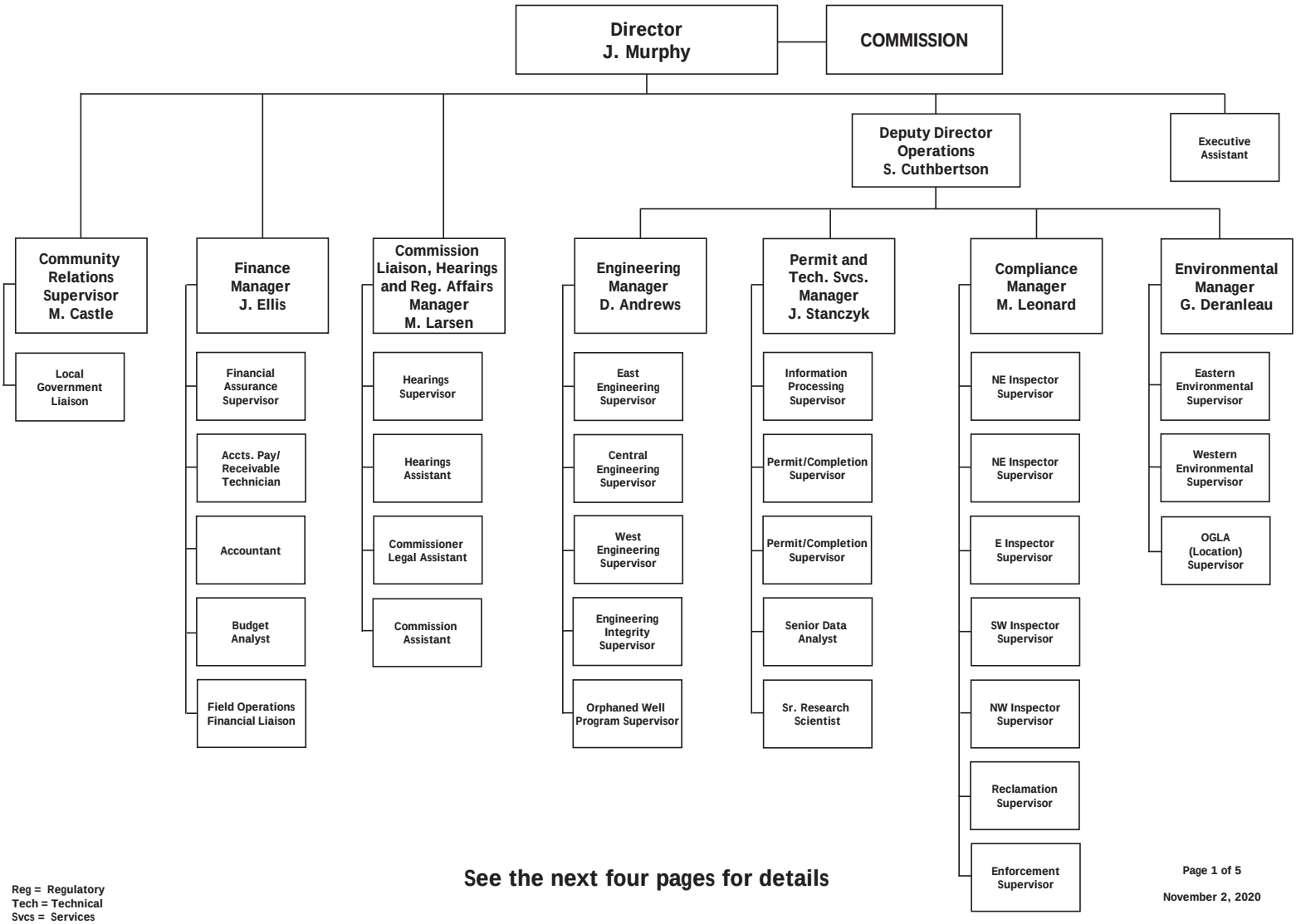
As discussed in the previous section, the P&A of conventional wells and decommissioning of associated production facilities has led to the submittal of a high number of Form 27s to document the removal of buried or partially buried vessels. In many cases, historic releases are discovered during the removal of these vessels or at other locations during the decommissioning of older production facilities. It is a positive outcome that these impacts are reported and cleaned

up during the decommissioning process and it is anticipated that even more historic impacts will be cleaned up as a result of new Rule 911.a.(4) for facility closure as previously discussed.

# APPENDIX 1

# COGCC Organizational Chart

# COLORADO OIL & GAS CONSERVATION COMMISSION

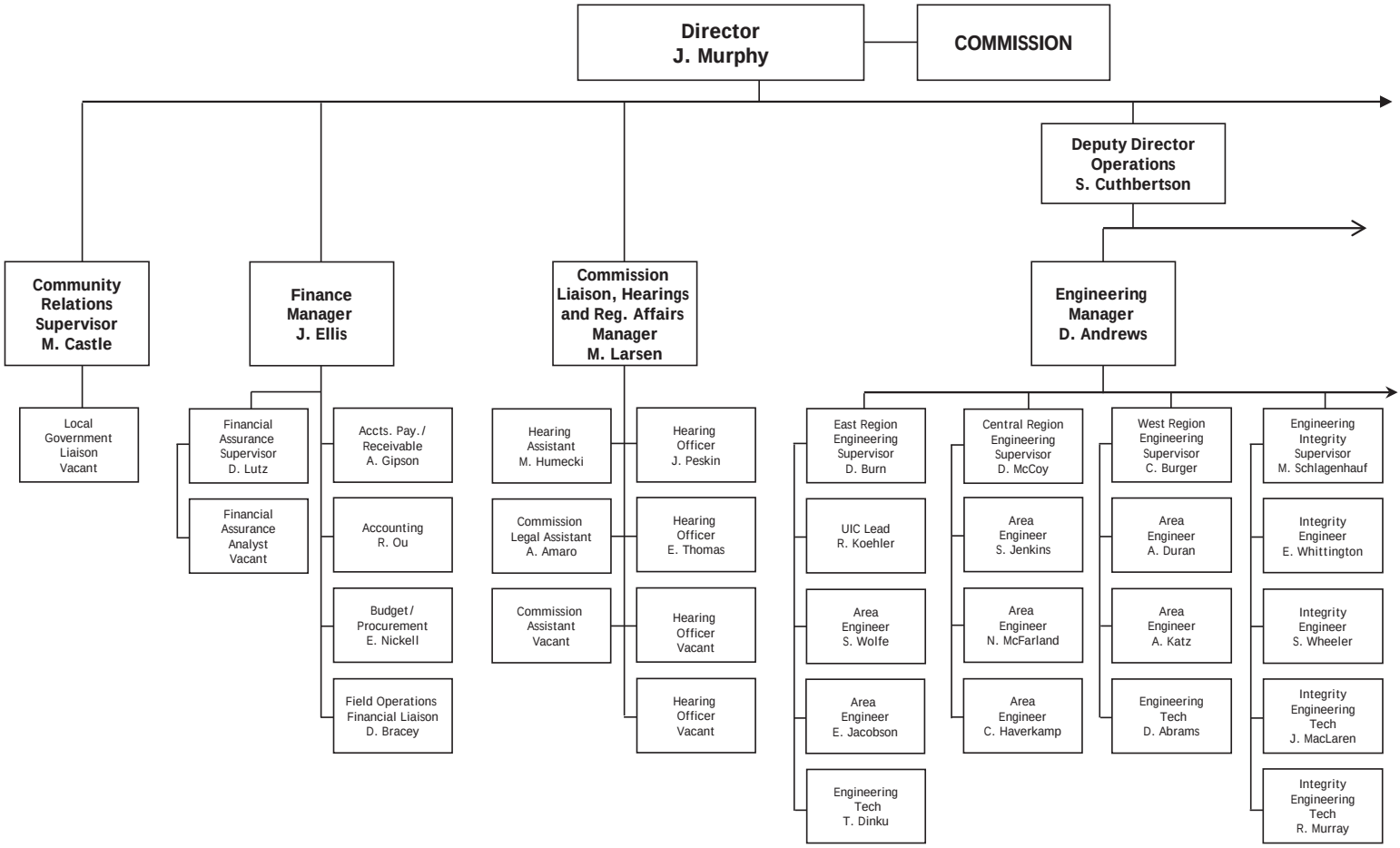



**See the next four pages for details**

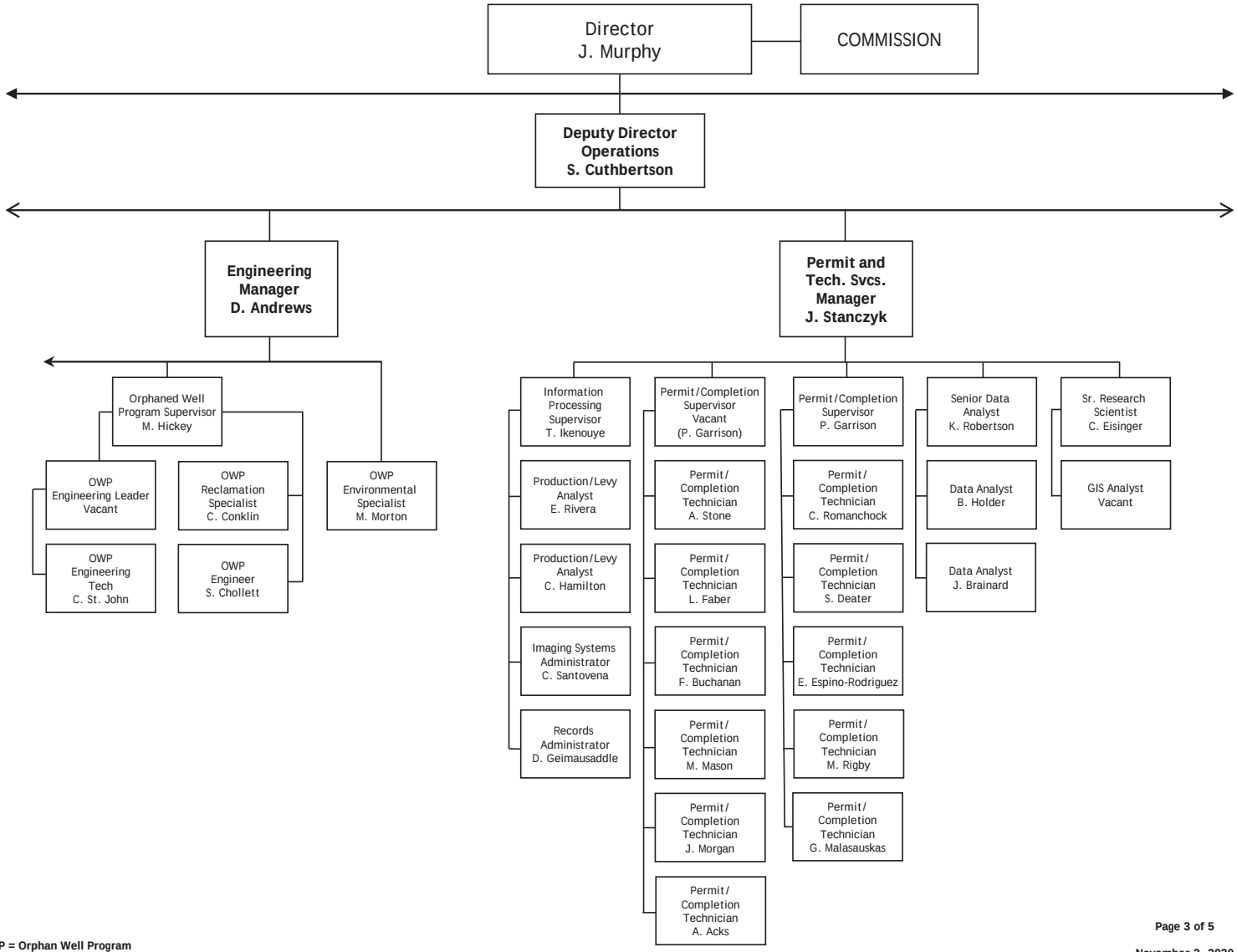
Reg = Regulatory
Tech = Technical
Svcs = Services



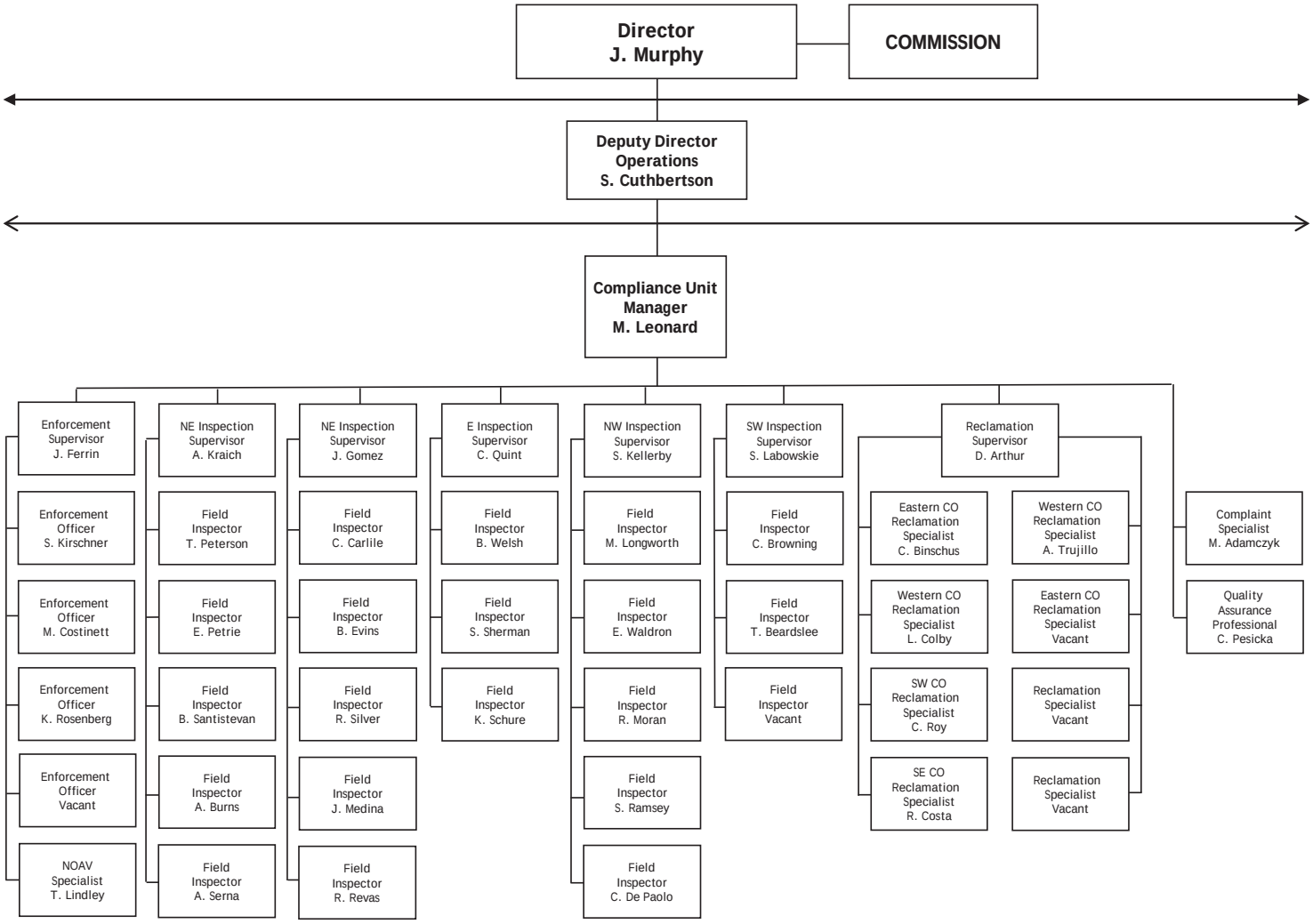
November 2, 2020

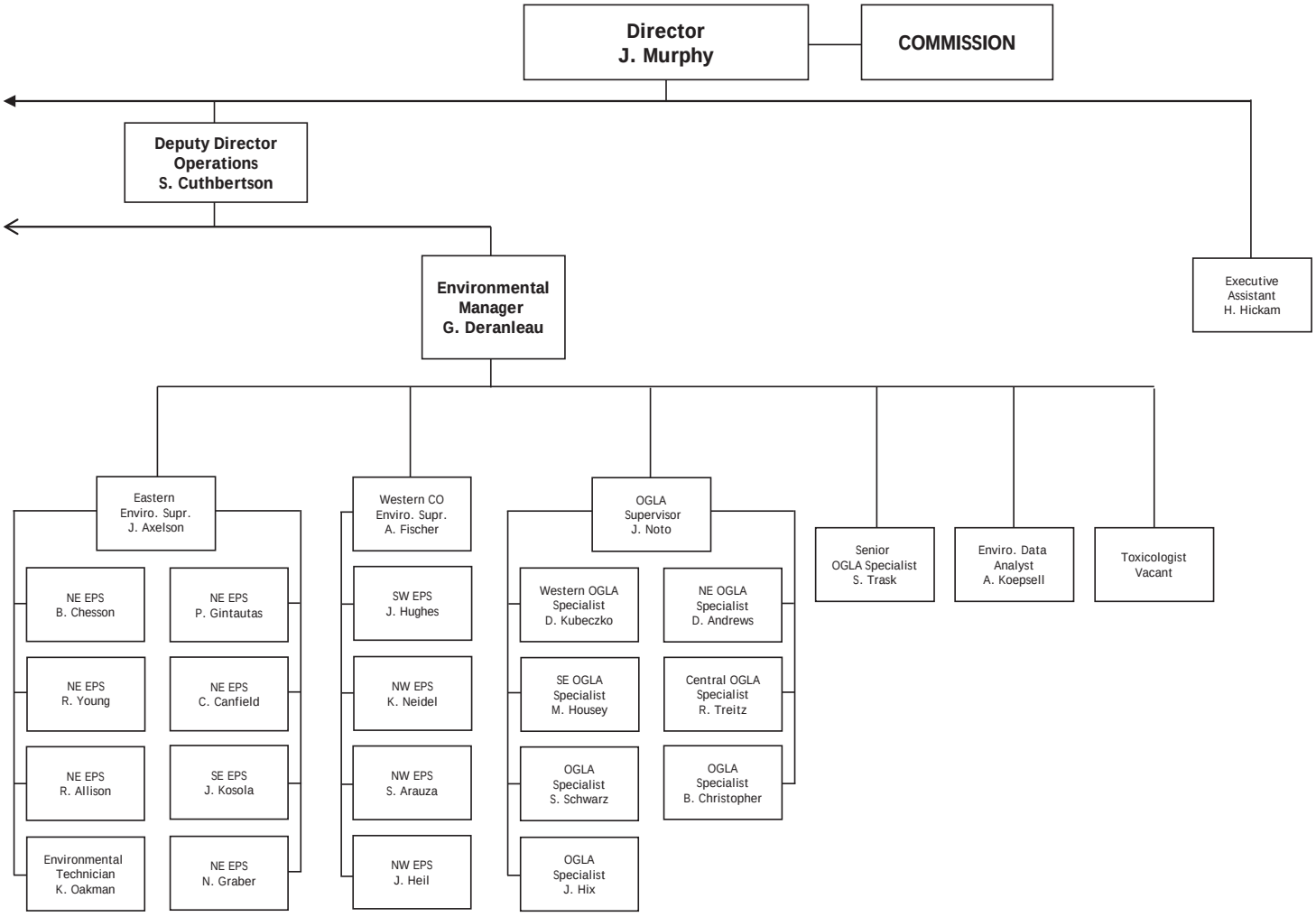



**Acct./Pay. = Accounts Payable/ Receivable**
**NOAV = Notice of Alleged Violation**
**UIC = Underground Injection Control**




**OWP = Orphan Well Program**
**GIS = Geographic Information System**


Director
J. Murphy
COMMISSION
Deputy Director
Operations
S. Cuthbertson
Compliance Unit
Manager
M. Leonard
Enforcement Supervisor J. Ferrin
Enforcement Officer S. Kirschner
Enforcement Officer M. Costinett
Enforcement Officer K. Rosenberg
Enforcement Officer Vacant
NOAV Specialist T. Lindley
NE Inspection Supervisor A. Kraich
Field Inspector T. Peterson
Field Inspector E. Petrie
Field Inspector B. Santistevan
Field Inspector A. Burns
Field Inspector A. Serna
NE Inspection Supervisor J. Gomez
Field Inspector C. Carlile
Field Inspector B. Evins
Field Inspector R. Silver
Field Inspector J. Medina
Field Inspector R. Revas
E Inspection Supervisor C. Quint
Field Inspector B. Welsh
Field Inspector S. Sherman
Field Inspector K. Schure
NW Inspection Supervisor S. Kellerby
Field Inspector M. Longworth
Field Inspector E. Waldron
Field Inspector R. Moran
Field Inspector S. Ramsey
Field Inspector C. De Paolo
SW Inspection Supervisor S. Labowskie
Field Inspector C. Browning
Field Inspector T. Beardslee
Field Inspector Vacant
Reclamation Supervisor D. Arthur
Eastern CO Reclamation Specialist C. Binschus
Western CO Reclamation Specialist L. Colby
SW CO Reclamation Specialist C. Roy
SE CO Reclamation Specialist R. Costa
Western CO Reclamation Specialist A. Trujillo
Eastern CO Reclamation Specialist Vacant
Reclamation Specialist Vacant
Reclamation Specialist Vacant
Complaint Specialist M. Adamczyk
Quality Assurance Professional C. Pesicka






**EPS = Environmental Protection Specialist**
**OGLA = Oil and Gas Location Assessment**

**November 2, 2020**