FY 2008-2009 REPORT TO THE

WATER QUALITY CONTROL COMMISSION
and
WATER QUALITY CONTROL DIVISION
of
THE COLORADO DEPARTMENT OF
PUBLIC HEALTH AND ENVIRONMENT

by

THE COLORADO OIL AND GAS CONSERVATION COMMISSION

of

THE DEPARTMENT OF NATURAL RESOURCES

IN ACCORDANCE
WITH

THE AUGUST 28, 1990 MEMORANDUM OF AGREEMENT
and
THE IMPLEMENTING PROVISIONS OF SENATE BILL 181

NOVEMBER 2009

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1. 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 ground water protection. This authority was provided by 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 about how its programs assure compliance with WQCC water quality standards and classifications for the activities, which are subject to the jurisdiction of the COGCC.

This 18th annual report includes a summary of COGCC activities and changes in ground water protection programs that were made during the preceding year. Major issues concerning the implementation of water quality standards and classifications are also reported.

2. COGCC ORGANIZATION AND FUNCTIONS

Public Outreach and Communication

The COGCC employs the following strategies for effective communication with the public and the regulated industry:

- Ten staff reports are prepared for submittal to the COGCC Commissioners. Ongoing staff activities such as compliance and enforcement actions, environmental and landowner issues, and other topics relevant to the mission of the COGCC are summarized in these reports. They are distributed widely to interested parties and they are posted on the COGCC website www.cogcc.state.co.us.

- A toll free telephone number (888-235-1101) to the Denver office has been established as a complaint hotline for citizen use.

The Commission attempts to hold at least three of its 10 hearings outside Denver each year. We continue to be successful in securing funding for these trips as part of our annual budget. In FY 2008-2009, due to the Commission's comprehensive rulemaking activities, the COGCC did not hold any of its regular hearings outside of Denver; however during FY 2009-2010 the Commission has held four (4) of its ten (10) hearings outside of Denver in Glenwood Springs (Piceance Basin), Pagosa Springs (San Juan Basin), Trinidad (Raton Basin), and Longmont (DJ Basin).

- The COGCC continues to solicit participation on all levels from stakeholders including, the oil and gas industry, local government, citizens, other agencies, agriculture, and the environmental community.

- The COGCC continues to expand our internet presence. In addition to accessing oil and gas well data, internet users are able to access information regarding pits, spills/releases, complaints, and remediation projects and reports from numerous baseline ground water quality studies and environmental monitoring and investigation projects. The queries by which users access these data continue to be modified and refined to make them more "friendly". Please visit our website at www.cogcc.state.co.us.

COGCC Commissioners

The Colorado Oil and Gas Conservation Act, as amended by HB 07-1341, requires that the Commission consist of nine (9) members. HB 07-1341 also includes the following requirements for the members: seven (7) members appointed by the governor with the consent of the senate and two (2) ex officio voting members who are the Executive Directors of the Department of Natural Resources and the Department of Public Health and the Environment. At least two (2) members are appointed from west of the continental divide and the other members are appointed taking into account the need for geographical representation of other areas of the state with high levels of oil and gas activity or employment. Of the seven, three (3) members are to have substantial experience in the oil and gas industry and at least two (2) of these must have college degrees in petroleum geology or petroleum engineering; one (1) member must be a local government official; one (1) member must have formal training or substantial experience in environmental or wildlife protection; one (1) member must have formal training or substantial experience in soil conservation or reclamation; and one (1) member must be actively engaged in agricultural production and also be a royalty owner. Biographical sketches of the COGCC Commissioners are included in Appendix 1.

COGCC Staff

The COGCC has 69 full time employees (FTE) positions, with Information Technology (IT) support provided by four (4) employees of the Office of Information Technology. This is an overall increase of 15 FTE positions since our previous report. However four (4) of the new positions have not been filled due to budget constraints. Several changes have been made to the organization structure. The current organization chart is included in Appendix 2.

The Engineering Unit now includes 10 engineers/engineers-in-training and one (1) engineering/environmental technician. One (1) of the engineers and two (2) of the engineers-in-training are located in Rifle and one (1) of the engineers is located in Durango.

The Environmental Unit now includes 14 environmental protection specialists; however only 12 of these positions are currently filled. Six (6) of the environmental protection specialists (EPS II) are located in offices in Brighton, Durango, Rifle, and Trinidad, which helps to minimize their complaint response time and maximize their ability to identify and address other potential environmental issues related to oil and gas development. In addition a new Oil and Gas Location Assessment (OGLA) group was formed to review the environmental information provided on Form 2As, as required by COGCC Rule 303.

Previously the field inspectors were part of the Engineering Unit, but they are now organized in a new Field Inspection Unit. This unit now includes several environmental protection specialists, which bring additional expertise related to reclamation and other environmental issues. Twelve (12) field inspectors and four EPS I positions (two of which are filled) are located in Broomfield, Cheyenne Wells, Durango, Fort Morgan, Greeley, Parachute, Rifle, and Trinidad, which helps to maximize their time for field inspections and helps to minimize their response time for complaints and incidents.

COGCC Environmental Unit

The COGCC environmental staff all have professional experience and expertise in environmental issues associated with oil and gas operations, hydrogeology and geology. We continue to handle questions, concerns, problems, programs, and issues relating to the oil and gas industry's impact on the environment, and public health safety and welfare. In addition, one (1) of the environmental protection specialists implements the COGCC's Onsite Inspection Policy, which is discussed in more detail in Part G. The environmental staff works closely with

the COGCC engineering staff and the field inspectors. Incidents resulting in environmental impacts are typically referred to the environmental staff for investigation and enforcement. The primary responsibilities of the environmental staff are discussed below.

Spill/Release Response

Operators are obligated to report spills and releases that occur as a result of oil and gas operations, in accordance with COGCC Rule 906. Produced oil, gas, and water are the substances most commonly spilled or released. These substances fall under the exploration and production (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. Generally, impacts from these events are limited to soils and are relatively small in areal extent.

Spill response by the environmental staff includes onsite inspections, sample collection, remediation oversight, review of reports, remediation plans, and analytical data, as well as operating practices, to ensure protection of surface and ground water, in accordance with COGCC rules and WQCC standards and classifications. Spills are tracked in COGCC's master relational database (MRDB) and can be accessed via the COGCC website. In FY 2008-2009 approximately 346 spills and releases were reported and remediated or are in the process of being remediated.

Complaint Response

The COGCC responds diligently to complaints, which are received from individuals and other agencies. Complaints are tracked in the COGCC's MRDB database and can be accessed via the COGCC website. In FY 2008-2009 approximately 200 complaints were filed and responded to, and approximately 159 complaints were resolved. Often complaints are from landowners, alleging damage to their land or water wells. The environmental staff follows up where appropriate, taking samples when necessary. Operators are required to perform additional investigation and remediation, as needed, to bring sites into compliance with soil and ground water standards.

Remediation Projects

Operators are required to remediate significant adverse environmental impacts that occur as a result of oil and gas activities. Situations requiring remediation often result from spills and releases of produced water and hydrocarbons discovered at the time of occurrence, during due diligence investigations, during the plugging of wells and abandonment of locations, and during pit closures. The environmental staff manages remediation projects by reviewing and approving plans, evaluating analytical data and the progress of the remediation work, and by implementing cleanup standards, points of compliance, and other requirements for operators to meet. Remediation projects are tracked in the COGCC's MRDB database and can be accessed on the COGCC website. During FY 2008-2009, approximately 32 operators submitted approximately 178 new remediation plans for approval and approximately 67 remediation projects were closed. The environmental staff managed a total of approximately 696 remediation projects during FY 2008-2009.

Where ground water has been impacted, operators are required to: mitigate any continued release; investigate the extent of contamination; remove the source of contamination (such as the impacted soils in contact with ground water or free hydrocarbon product); remediate, establish points of compliance, and monitor contaminant levels.

Pit Program

During FY 2008-2009, COGCC staff approved permits for 350 new pits and approved the closure of 23 pits. Many of these new pits are located in Las Animas County and are associated with coalbed methane (CBM) wells. There are approximately 12,200 permitted pits shown as open in the MRDB. COGCC environmental staff continues to verify this number as time allows.

Permitted Centralized Waste Management Facilities

Non-commercial centralized exploration and production (E&P) waste management facilities are permitted by COGCC under Rule 908. The rule requires that operators apply for a permit and as part of the approval process, staff evaluates the proposed site, operation, financial assurance, and preliminary closure plans. Generally these facilities are larger than a typical tank battery that might handle wastes from only one or a few wells. These larger facilities handle wastes from many wells and wastes that may be from more than one field or lease and may include lined pits, landfarms, or tank batteries. These facilities are currently required to have financial assurance of $50,000. During FY 2008-2009 the COGCC permitted one (1) new centralized E&P waste management facility. There are 27 active permitted centralized E&P waste management facilities in the state.

Disposal and Reuse of Produced Water

Approximately 44% of the water co-produced with oil and gas 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 Colorado Discharge Permit System (CDPS) permit, and a small amount of produced water is used for dust suppression on oil and gas lease roads. In addition, to minimize waste and the use of fresh water, operators often reuse and recycle produced water and other fluids for drilling and well completion activities including fracing.

Onsite Inspections

In January 2005, COGCC adopted a policy to conduct onsite inspections where oil and gas wells are proposed on lands where the surface owner did not execute a lease or is not party to a surface use agreement. Under COGCC Rule 306, an operator is required to use its best efforts to consult in good faith with the affected surface owner with regard to locations of proposed wells and surface facilities, access roads, and final reclamation and abandonment. If the COGCC Rule 306 good faith consultation between the operator and the surface owner does not resolve operational issues related to the proposed well, the surface owner may request that the COGCC conduct an onsite inspection under the policy.

During the onsite inspection, the surface owner, operator, and COGCC staff meet at the location and discuss issues related to the proposed well and associated surface facilities. The local government designee may also attend if requested by the surface owner. Following the inspection, the COGCC may apply appropriate site specific drilling permit conditions, if necessary, to avoid potential unreasonable crop loss or land damage, or to prevent or mitigate health, safety and welfare concerns, including potential significant adverse environmental impacts. Any such conditions of approval must be consistent with applicable Commission spacing orders and well location rules, and must take into account cost-effectiveness, technical feasibility, protection of correlative rights, and prevention of waste. The COGCC cannot require an operator to use an exception location, directional drilling techniques, or otherwise compromise its reasonable geologic and petroleum engineering considerations.

To date the COGCC has received a total of 133 requests for onsite inspections. Twenty-

nine onsite inspections have been conducted, 87 requests for inspections have been withdrawn, one onsite inspection is being scheduled, and 16 onsite inspections are pending and will be scheduled, if necessary, after the APD is received, or after issues related to local governmental designee consultation, location change, or surface use agreements are resolved.

Of the 133 requests for onsite inspection, 72 were for locations in Weld County, 24 for Las Animas County, nine (9) for Adams County, seven (7) for La Plata County, five (5) for Garfield County, three (3) each for Archuleta, Boulder and Yuma Counties, two (2) each for Logan and Morgan Counties, and one (1) each for Baca, Kiowa, and Larimer Counties.

In addition to the Onsite Inspection Policy, onsite inspections also are conducted in the San Juan Basin under Cause 112, Order Nos. 156 and 157 where an Onsite Inspection was required because an APD was submitted without a surface use agreement. Several onsite inspections under Cause 112, Orders 156 and 157 are anticipated in the next few months, depending upon operator activity in the area.

Oil & Gas Location Assessment (OGLA)

In December 2008, new rules and amendments were promulgated by the COGCC which require operators to submit an Oil and Gas Location Assessment Form 2A for any "new oil and gas location". The new rules and amendments became effective on May 1, 2009 on federal land and April 1, 2009 on all other land. This new Form 2A requires additional environmental information about surface locations and provides for consultations by CDPHE and CDOW with the surface owner. See Section 4 of this report for additional information on the new rules and amendments.

In September 2009, the OGLA group was added to the COGCC Environmental Unit to review the Form 2As and facilitate the consultation process with CDPHE and CDOW. Prior to September, existing Environmental and Permitting staff took on the additional tasks of reviewing the Form 2A and facilitating consultations.

The OGLA team consists of one Environmental Supervisor and two EPS IIs. One EPS II is primarily responsible for west slope activity and works out of the Rifle office. The second EPS II is primarily responsible for activity on the east slope and in the southern part of the state, and works out of the Denver office.

Oil and Gas Conservation and Environmental Response Fund (Fund 170)

The COGCC receives an annual appropriation of $312,033 that is used primarily by the environmental staff to respond to and investigate complaints alleging impacts from oil and gas operations and an appropriation of $500,000 that can be used to conduct special environmental projects such as baseline ground water testing, gas seep investigations, regional investigations of potential impacts from oil and gas operations, and verification of COGCC information. Because of the COGCC's need to respond to emergency situations related to oil and gas operations, the COGCC has been appropriated $1,500,000 for emergency response activities. In addition, the COGCC continues to receive an appropriation of $220,000 for plugging, abandoning, and reclaiming orphaned wells.

In FY 2008-2009 the COGCC used the entire $312,000 appropriation to respond to and investigate complaints and spills/releases, and to ensure compliance with COGCC rules. In addition the Special Environmental Projects conducted by the COGCC environmental staff included, ongoing monitoring of methane impacts to ground water from an orphaned gas well in Bondad, CO; oversight of required environmental monitoring for gas wells drilled in the vicinity of the Project Rulison site; completion of the Upper Crow Creek baseline ground water study;

and third party review of ground water data and a report prepared for Garfield County regarding potential impacts from oil and gas activity. Approximately $81,000 was spent on these projects. Information from these projects is available on the COGCC website Library.

A total of approximately $204,000 was spent by the engineering staff to plug and abandon and to reclaim orphaned oil and gas sites in Archuleta, Boulder, Fremont, Huerfano, Las Animas, Montezuma, Weld, and Yuma Counties. Funding was a combination of claimed bonds ($3,048) and Fund 170 monies. In FY 2009-2010 the COGCC staff plans on plugging and abandoning and reclaiming orphaned oil and gas wells in Archuleta, La Plata, Mesa, Rio Grande, Routt, Washington, and Weld Counties.

Approximately $1.9 million dollars was spent on projects related to monitoring and mitigating impacts from coalbed methane development in La Plata and Archuleta Counties. These monies came from an additional appropriation (SB 198). Work on these projects continues through FY 2009-2010.

Data Management and Geographical Information Systems (GIS)

In response to the implementation of the new rules in April of 2009, changes were made to the applications that support the data systems to accommodate tracking and the overall processing of permits. Major modifications were made to the following systems along with their associated databases:

- Permit processing – eForm was implemented;
- COGIS Database – Many new tables and queries to support eForm and other applications;
- Imaging System – Migration from Content Manager to LaserFiche
- GIS- Addition of several new map layers.

A brief description of the changes for each system is provided below:

Permit Processing -eForm

The eForm application allows Operators to submit Applications for Permit to Drill, Form 2 and Oil and Gas Location Assessment, Form 2A electronically. The COGCC staff then reviews the forms along with the electronically submitted attachments. Each staff member involved in the process then passes their portion of the form (i.e. spacing, engineering, etc.) online. No paper file is generated for these new permits. Each form is assigned a number of tasks that must be passed before the form is approved. All of the tasks are listed and the status of each task is visible on the public interface. As the form is working its way through the COGCC review process, the public is able to track the status of the form through the use of the public user interface. The IT staff is currently converting additional COGCC Forms to the electronic format.

Database

The database that supports the agency underwent numerous modifications this past year to support the new rules. One new major entity added to the database is the "Location". A Location exists independent of the oil and gas facilities that may be on it. It is best described as a geographic area where oil and gas activities take place. This definition is consistent with the new Oil and Gas Location Assessment Regulatory review process. A Location is related to all of the wells that are on it, along with all of the associated equipment and facilities. This information can be obtained from the online database "Scout Card" by clicking on the "Related" link.

Data improvement and cleanup activities are an ongoing process. A project to migrate the environmental data from Access to the SQL-server database is in the planning phase. The project is tasked with identifying new processes to allow for electronic submission of baseline analytical data that will be submitted in response to a variety of rules and orders.

Document Imaging

LaserFiche, a new document imaging system was brought online this year that allows for improving functionality with respect to uploading and indexing images. The new system allows the user the ability to sort and query the image repository in ways that were not previously possible.

GIS

The GIS Online map continues to be a critical application that staff, industry, other agencies, and the general public depend on to process permits, create reports and to view information that can assist in exploration programs, or address environmental concerns. Additionally some of the new rules require industry to view the online map in order to determine if a proposed location falls within a CDPHE 317B Buffer Zone, a Sensitive Wildlife Habitat (SWH), and/or a Wildlife Restricted Occupancy (RSO) Area.

The GIS Online map contains over 100 map layers including oil and gas wells, permits, spacing orders, field boundaries, along with a number of base layers such as cities, rivers, roads, sections, land ownership, etc. Aerial photos, topographic quads, and geologic maps are displayed as images in the map. The well points, permits, and a few other layers are produced dynamically by a direct connect to the COGIS database, so that if a new well is permitted it will show up immediately on the map.

Some of the more important layers that have been added to the map this year are listed below:

- Pending Permits – Permits to drill that are in process;
- Pending 2A Locations – Permits for Locations that are in process;
- Locations – Historic and new Location polygons that encircle facilities that occupy one location;
- Wildlife RSO Areas – Restricted Surface Occupancy Areas;
- Wildlife SWH Areas – Sensitive Habitats; and
- Rule 317B Buffer Zones – CDPHE Buffer Zones near Public Water System source water intakes.

During the upcoming year, new online mapping software will be tested and deployed. New

map layers will include directional survey bottom-hole locations, and the 2009 aerial photographs.

Online Access to Baseline and Special Studies Reports

The written reports for COGCC managed baseline sampling projects and other special environmental studies, such as the Coalbed Methane Stream Depletion Assessment Studies, are posted on the website under the tab “Library. Many of these reports are in PDF format and are primarily organized by basin. Ongoing pressure and water quality monitoring reports are also posted in this location.

Industry Services

The COGCC continues to promote its mission to foster the responsible development of Colorado’s oil and gas natural resources by providing information and assistance in complying with the COGCC rules and requirements, including our expanded website and GIS capabilities.

Industry Compliance/Violations/Penalties

In FY 2008-2009, the COGCC assessed penalties against 6 operators for violations of rules and orders. The total amount of penalties assessed was $168,000, of which $162,000 was associated with enforcement for violations that resulted in or had the potential to impact public health, safety, welfare, or water resources. The violations included:

Failure to:

- construct unlined drilling pits with materials to prevent likely communication with ground/surface waters,
- ensure E&P waste is properly stored, handled or disposed of to prevent threatened significant adverse environmental impacts to water, soil or biological resources, obtain APD approval, and file Drill Site Access/Road Reclamation Form prior to commencing drilling operations,
- provide notice and consult with surface owner and local government prior to commencing drilling operations,
- control, contain and remediate spills/releases,
- construct and operate an E&P pit to protect waters of the state,
- prevent unauthorized discharge of E&P waste,
- remove oil from pits within 24 hours,
- complete interim reclamation of a reserve pits within 12 months of well completion
- maintain well site to minimize erosion and with respect to trash and excessive equipment/supplies,
- install appropriate fencing to prevent significant adverse environmental impacts resulting from access to a pit by wildlife, migratory birds, domestic animals, or members of the general public,
- conduct E&P waste management activities and construct and operate facilities to protect waters of the state from significant adverse impacts, and
- implement best management practices to minimize erosion and offsite sedimentation by controlling stormwater run-off.

Underground Injection Control (UIC)

COGCC staff continues to work with WQCD and EPA staff to ensure that operators of Class II injection wells in Colorado are in compliance with ground water standards and classifications and points of compliance are established. COGCC approved Class II UIC well

permits for 21 disposal wells and one enhanced recovery well during Federal fiscal year 10/1/2008-9/30/2009.

3. COGCC COORDINATION WITH WQCD/WQCC

In FY 2008-2009 the COGCC, WQCD, and WQCC semi-annual meeting schedule was disrupted by the intensive demands placed on staff related to the COGCC rulemaking activities. Craig Wiant and Joshua Epel will be representing the WQCC and COGCC Commission, respectively, now that the semi-annual meetings schedule resumed.

4. RULEMAKING

On December 11, 2008, new rules and amendments to the Rules and Regulations and Rules of Practice and Procedure ("Rules") were promulgated by the COGCC. These Rules were promulgated to provide additional protection to public health, safety and welfare, including the environment and wildlife resources, from impacts from oil and gas development in Colorado. The Rules became effective on May 1, 2009 on federal land and April 1, 2009 on all other land.

Among a host of other requirements, these new rules require operators to submit an Oil and Gas Location Assessment Form 2A for any "new oil and gas location". This new Form 2A requires additional environmental surface location information and provides for consultations by CDPHE and CDOW with the surface owner. The addition of these consultations reflects the COGCC's response to the General Assembly's directive that the CDPHE and CDOW have a consultative role in certain aspects of COGCC decision-making and the COGCC's belief that such consultation will lead to better informed decisions.

Amended Rule 306.d. provides this new consultation process with the CDPHE. Consultation with the CDPHE will occur where: 1) the local government designee requests participation of the CDPHE because of health, safety, welfare or environmental concerns; 2) the operator seeks a variance from rules intended to protect public health, safety, welfare or the environment (e.g. rules pertaining to public water system protection, underground disposal of water, setback requirements in high density areas, coalbed methane wells, odors and dust, E&P waste management , and storm water management); or 3) the operator seeks to increase well density to more than one well per 40 acres or the Commission develops a basin-wide order involving public health, safety ,welfare or the environment.

For the latest information, to review the final amended rules, and to examine training materials on the amended rules, a "Final Amended Rules" page has been established on the COGCC website at www.cogcc.state.co.us

5. OIL & GAS EXPLORATION & PRODUCTION ACTIVITY IN COLORADO BY REGION/FIELD

This section summarizes oil and gas activities within the State of Colorado and highlights COGCC studies, issues and concerns relating specifically to ground water by region. In each region there are remediation projects of various size and type in which impacted soils and/or ground water are being investigated or cleaned up by operators. Not all of the projects are described individually in this report. The COGCC environmental staff directs and monitors these projects, as described in Section 1.

Southwest Colorado

Oil and Gas E&P Activity

Most of the gas produced in the southwestern part of Colorado comes from coalbed methane (CBM) wells. Drilling activity had increased notably in response to increased well density in certain counties. In FY 2008-2009 approximately 465 permits for new wells and recompletions of existing wells were approved. Currently there are approximately 3,150 active wells in La Plata County. These wells produce approximately 1.15 billion cubic feet (bcf) of natural gas per day, which is approximately 30% of the total gas production in the state. Also there are approximately 454 active oil, gas, and carbon dioxide wells in four other southwestern Colorado counties, including San Miguel, Dolores, Montezuma, and Archuleta. Approximately 94% of the carbon dioxide produced in the state is produced from wells in Montezuma County.

Public Involvement

La Plata County Gas and Oil Regulatory Team (GORT)

The COGCC established the La Plata County Gas and Oil Regulatory Team (GORT) to provide a forum for meaningful dialogue between operators, citizens, La Plata County, the Southern Ute Indian Tribe, the Bureau of Land Management (BLM) and the COGCC. Archuleta County representatives also participate in this group. Members of this group continue to fund and provide technical support for the ongoing monitoring and mitigation of methane seeps along the Fruitland Coal outcrop.

Northern San Juan Basin Stakeholders Group

In July 2006 the USFS and US BLM issued the final Environmental Impact Statement (EIS) for the Northern San Juan Basin. As an outgrowth of the EIS process, the USFS and US BLM established the Northern San Juan Basin Stakeholders Group to provide a forum similar to the GORT group that reaches into Archuleta County and more directly addresses issues relating to oil and gas development within the EIS geographic area.

Ground Water and Other Environmental Issues

Conditions for Optional Additional Coalbed Methane Wells

As a result of COGCC Orders 112-156 and 112-157 and other orders related to CBM development in the San Juan Basin, operators have collected more than 3,500 water samples from more than 1,875 water wells. The analytical results have been submitted to the COGCC and to the land owners. To date impacts to water wells from CBM wells drilled under these orders have not been detected. As a result of the December 2008 rulemaking, water well sampling in advance of CBM development is now required in statewide Rule 608.

3M Project

Methane gas has been observed seeping from the outcrop of the Fruitland Formation in many areas along the northern margin of the San Juan Basin in southwestern Colorado. Some of these seeps were identified prior to the initial development of any Fruitland Coal wells; however, in places the intensity and areal extent of these seeps appears to have increased subsequent to CBM production. In addition, what appear to be new seeps have been identified in some areas. Questions persist about whether gas seepage at the newly identified areas and expanding seeps could be due to CBM production.

The COGCC and the US BLM funded the installation of a network of monitoring wells at four locations between the outcrop of the Fruitland Formation and down basin production. The

wells are equipped with transducers and data loggers and are used for the long term monitoring of pressure and water levels in the Fruitland Formation. A total of seven (7) wells, were completed and data are being collected. Pressure monitoring data from these wells are available on the COGCC website. In late FY 2008-2009 upgraded transducers and data loggers were installed in each of the existing seven (7) outcrop monitoring wells to allow for the use of satellite telemetry for remote data collection.

During FY 2008-2009, approximately $50,000 in Fund 170 money was used for the operation and maintenance of these wells, and report preparation.

Fruitland Outcrop Study La Plata County and Archuleta County

Industry, La Plata County, BLM, and the COGCC continue to contribute money and/or staff for the ongoing evaluation, maintenance, and monitoring of the 140 permanent soil gas monitoring probes and one meteorological station. Aerial surveying with infrared imagery technology is also being used to detect areas of stressed and/or dead vegetation, which can be an indication of methane gas seepage. This detailed work has been expanded to cover the entire Fruitland Formation outcrop in La Plata County and Archuleta County on land north of the Southern Ute Indian Tribe Reservation boundary. The expanded survey includes the mapping of springs discharging from the Fruitland Formation. The 2003, 2004, 2005, 2006, 2007 and 2008 La Plata County reports are available on the COGCC website (www.cogcc.state.co.us) under Library, Area Reports, San Juan Basin, 3M Project Reports. The 2004, 2005, 2006, 2007 and 2008 Archuleta County reports are available on the COGCC website (www.cogcc.state.co.us) under Library, Area Reports, San Juan Basin, Archuleta County. The report of the results of the 2008 field work in La Plata and Archuleta Counties will be posted on the COGCC website when they are finalized.

4M Project

The COGCC received an additional appropriation of $4,452,000 from Fund 170 to fund the Fruitland Formation Seep Mitigation Project in La Plata County and the Fruitland Formation Outcrop Monitoring Project in Archuleta County; collectively known as the 4M Project. This project builds on and adds to the existing 3M Project monitoring network. The COGCC will spend up to $2,944,000 of this appropriation to evaluate methods for mitigating the seepage of methane gas and to expand the existing monitoring network along the outcrop of the Fruitland Formation in La Plata County, and up to $1,508,000 to install monitoring wells in the Fruitland Formation in Archuleta County. The COGCC Commission approved a mill levy increase under §34-60-129 C.R.S. which was required to fund the 4M project.

The first phase of the 4M project was to install, test and operate two (2) pilot scale methane gas mitigation systems in La Plata County, one along the South Fork of Texas Creek and one in the Pine River Ranches subdivision. Methane gas escapes to the atmosphere via surface seeps at these locations, killing vegetation and creating safety hazards. The intent of each system is to capture the gas in the shallow subsurface and route it to a combustion chamber where it can be used to generate electricity to power the mitigation system. COGCC awarded the contract for this work in May 2008. The system was designed during the summer of 2008 with review by the Technical Working Group (TWG). Installation of the systems began in October 2008. Operation and testing of the systems will extend into mid-2010.

Start-up of both 4M Outcrop Mitigation Pilot Projects in La Plata County occurred during the week of May 4, 2009, and continuous operations were implemented during the week of May 18, 2009. Both systems are functioning as planned, however methane concentrations are too low at the Pine River Ranch location for effective combustion. Electricity is being generated at the South Fork Texas Creek location and system optimization is planned to increase the overall methane recovery and electrical generation. Several operational issues are being addressed to

best optimize methane recovery at both locations. Data collection and assessment will continue for a period of one year.

Additional monitoring wells are also scheduled for installation in La Plata County under 4M funding. COGCC staff successfully obtained three surface use agreements in areas where there were no Fruitland Formation monitoring wells. A Request for Proposal (RFP) for 4M La Plata County Monitoring Well Installation (PHA-950) was issued on April 13, 2009 and was awarded in July 2009. Field work commenced in September 2009 and should be complete in late 2009. Three new wells are scheduled for installation at this time; however if additional surface use agreements are obtained and funding remains, additional wells may be installed in early 2010.

Six monitoring wells were installed in Archuleta County in late 2008 and have been equipped with pressure transducers and telemetry systems to monitor Fruitland Formation pressure and water levels. Data collected from the existing seven (7) La Plata County, six (6) new Archuleta County, and three (3) new La Plata County monitoring wells are all being managed using the same InSitu telemetry monitoring system allowing COGCC staff real-time viewing of site data. Some wellhead leakage is apparent in a couple of the wells and field visits are being scheduled to evaluate and address the how best to fix these leaks.

An additional aspect of the 4M Project included mapping by the Colorado Geological Survey of the outcrop of the Fruitland Formation and adjacent formations along the eastern edge of the San Juan Basin in Archuleta County. The work included mapping the surface expression of the uppermost Cretaceous units including, Pictured Cliffs Sandstone, Fruitland Formation, Kirtland Shale, for approximately 23 miles along the rim of the San Juan Basin in Archuleta County between the La Plata-Archuleta County line and the northern boundary of the Southern Ute Indian Reservation.

In addition to mapping unit contacts, the study included measurement and analysis of fractures and cleats in these formations and mapping of individual coal beds in the Fruitland Formation. Field work began in May 2008 and was completed in late July 2008. Compilation of data and report production is ongoing. Twenty-two measured sections were completed or compiled from previous work. CGS used faculty and staff from Fort Lewis College in Durango and the University of Colorado - Denver to assist in the mapping project.

When completed, the final report will be added to the Library section of the COGCC website. Formation contact data has been made available as a layer on the COGCC online GIS maps under the drop down layer San Juan Basin – Archuleta_Kf.

San Juan Basin Ground Water Quality Analysis (WQA)

The objective of this study is to assess long-term trends in general ground water quality in the San Juan Basin based on data available in the existing COGCC database from water wells. AMEC-Geomatrix was awarded the contract on August 28, 2009, and a project kick-off meeting was held on September 10, 2009. A draft report should be available for staff review by the end of 2009.

Citizen Complaints, Spills and Other Issues Regarding Ground and Surface Water

The COGCC received 27 complaints alleging impacts from oil and gas operations in La Plata, Archuleta, Montezuma and Dolores Counties. Six (6) complaints alleged impact to water wells and three (3) were requests for baseline sampling. COGCC staff determined that all but one of the water well complaints were not related to oil and gas activities. One complaint is still under investigation. In addition, staff continues to monitor several water wells previously impacted by an orphaned gas well, which has been plugged by the COGCC. In FY 2008-2009

Approximately $50,000 of Fund 170 money was used to investigate these complaints and requests and to conduct the ongoing monitoring.

The COGCC received 18 complaints regarding other environmental damage or operational issues. Of these nine (9) were noise complaints, six (6) were related to reclamation or surface damage issues, and three (3) were related to leaking well or air quality issues. Five (5) NOAVs were issued to operators in response to these complaints.

Thirty-three spills/releases of E&P waste were reported in La Plata, Dolores and Montezuma Counties. Of these, three (3) were releases to surface water; and one (1) release, from a buried flowline break, impacted both surface- and ground- water. Site assessments and remedial action plans were implemented on two (2) of the surface water and the combined surface/ground water release. One (1) of the site cleanups is complete and two (2) are either still being addressed or are in a monitoring phase. Analytical testing indicated no impact on the fourth spill and no further action was required. Seven (7) releases occurred on Southern Ute Tribal land and were reported to the COGCC as a courtesy and three (3) were reported as a part of an operator's partially buried vessel upgrade program.

COGCC staff and 3rd party contractors continue to investigate and monitor soil and ground water impacts associated with methane leakage from a 1930's orphan oil and gas well (Bryce 1-X). COGCC has shown this well and a previously plugged and abandoned orphan well (Nick Spatter Bryce Farm #1) were the sources of the elevated levels of methane in the subsurface soils and in six (6) nearby water wells. Fund 170 money has been used to respond to this emergency situation, install methane monitors and alarms in three homes, a fire station, and a water well house, to continue monitoring of the aerial extent of the gas seepage, and to investigate and identify the source of the gas. In July and August 2006 COGCC staff and a 3rd party contractors successfully plugged and abandoned the Bryce 1-X. This resulted in a decrease in the concentration of methane in the soil. Methane has not been detected in the soil and shallow subsurface since July 2007. Soil gas testing will no longer be conducted unless field conditions change. Elevated concentrations of methane persist in the ground water and water wells; however ongoing ground water sampling indicates a gradual decrease in the methane concentration in each well.

Northwest Colorado

Oil and Gas E&P Activity

Northwest Colorado continues to experience a high level of oil and gas activity, especially in Garfield, Mesa, and Rio Blanco Counties. Northwest Colorado drilling permits account for 54 percent of the state total with the most new drilling permits issued in Garfield County. The driving force behind this active development continues to be the extensive natural gas reserves in the Piceance Basin, and an expanding pipeline infrastructure that enables improved marketing of natural gas from the area.

Public Involvement

The Northwest Colorado Oil and Gas Forum

The Northwest Colorado Oil and Gas Forum (NWCOGF) meets quarterly in Rifle. The NWCOGF is an important forum for the discussion of oil and gas issues and concerns at the local level. The participants include of the COGCC, other federal, state, and local government agencies, the oil and gas industry, and concerned landowners and citizens. Meetings are well attended by the various stakeholders.

Southern Piceance Basin Water Resource Project

The COGCC assisted the USGS in developing a common repository for water quality data. Significant water-resource data sets, publications, and other materials have been developed for the Southern Piceance Basin from numerous agencies, energy companies, private consulting firms, universities, and stakeholder groups. A web-based repository has been created that will greatly improve understanding of factors affecting water resources in the Southern Piceance Basin. The link to this repository is:
http://rmgsc.cr.usgs.gov/cwqdr/Piceance/

Environmental Issues

Approximately $ 121,000 of Fund 170 money was spent investigating citizen and county complaints or requests for baseline sampling, spill/release reports submitted by operators, and the findings of COGCC field inspections and conducting other environmental studies in northwestern Colorado. In accordance with the MOA for Response to Spills/Releases to Surface Water, the COGCC notified the CDPHE of releases impacting waters of the state. In all cases where ground water was impacted, operators are required to conduct a site investigation and perform appropriate remediation to comply with COGCC requirements.

Ground Water

There were twenty (20) complaints alleging impacts to water wells or requesting baseline sampling in the northwestern portion of Colorado. Upon investigation, COGCC staff determined that no water wells had been impacted.

Surface Water

The COGCC investigated a variety of releases either impacting or threatening to impact surface waters in northwestern Colorado. There were four (4) complaints alleging impacts to springs. Upon investigation, COGCC staff determined that several springs had been impacted. Investigation, remediation, monitoring, and enforcement is ongoing. There was one (1) spill/release event in which E&P waste fluids reached surface water. In this case, the operators responded with appropriate emergency procedures and other corrective measures to comply with COGCC and WQCD requirements. Finally, there was one (1) spill/release event in which E&P waste fluids reached a dry drainage feature leading to surface water. In each of the above-mentioned situations, the COGCC has enforced on the responsible operators or enforcement actions are pending.

Drilling Near Project Rulison Test Site

In 1969, the Atomic Energy Commission, a predecessor to the U.S. Department of Energy (DOE), conducted several experiments on the use of nuclear devices to enhance natural gas production from wells. The project conducted in Garfield County is known as Project Rulison and the well in which the nuclear device was detonated is located on Battlement Mesa.

In 2005, Presco Corporation (PRESCO) submitted APDs for and began drilling a number of wells in Garfield County in the vicinity of Project Rulison, but outside the 0.5 mile buffer zone established by the COGCC. To address concerns regarding the potential for new gas wells to intercept materials impacted by the nuclear test, Presco agreed to conduct a monitoring program to test for a number of radionuclides. This monitoring program included background monitoring of non-impacted gas and water from the Williams Fork and overlying formations, of surface and ground water in the vicinity, and monitoring of drilling mud, cuttings and gas brought to the surface during drilling, completion, and production at selected locations. Reports

summarizing the results of the 2004 Baseline and the 2005 and 2006 Annual Water Sampling activities conducted by Presco have been submitted to the COGCC. Reports summarizing the results of Gas Well Drilling Monitoring activities have also been submitted by Presco to the COGCC. These reports are available on the COGCC website, www.cogcc.state.co.us Library.

The U.S. Department of Energy – Office of Legacy Management (DOE-OLM) completed a Draft Rulison Path Forward report. DOE developed the path forward report as guidance for Colorado state regulators and other interested stakeholders in response to increased drilling for natural gas reserves in the vicinity of the Project Rulison test site. COGCC and CDPHE staff reviewed the report with their comments are being incorporated by DOE-LM.t. The Draft Path Forward Report is available on the DOE-LM website at http://www.lm.doe.gov/land/sites/co/rulison/rulison.htm.

Noble Energy, Inc., EnCana Oil & gas (USA), Inc., and Williams Production RMT, Inc. prepared revision 2.0 of the Sampling and Analysis Plan (SAP). This recent version of the SAP, comments from regulatory agencies and other interested parties, quarterly monitoring reports, and annual monitoring reports are available in the COGCC website (www.cogcc.state.co.us) under Library, Piceance Basin. The COGCC is collaborating with the CDPHE, BLM, DOE, operators and surface owners in the preparation and review of version 3.0 of the SAP.

West Divide Creek Gas Seep Remediation Update – Garfield County

In accordance with the COGCC requirement for periodic reporting on the ongoing remediation of shallow ground water contamination at the West Divide Creek Seep, EnCana provides quarterly reporting on the status of the seep remediation and these status reports are available on the COGCC website (www.cogcc.state.co.us) under Library, Piceance Basin. The low-flow air sparge system designed to remediate shallow ground water contaminated with benzene, toluene, ethylbenzene, and total xylenes (BTEX), continues to decrease concentrations and aerial extent of these compounds in the impacted area. The concentration and aerial extent of thermogenic methane in the ground water in the impacted area also continues to decrease although at a lower rate than the BTEX compounds. There were no detections of BTEX compounds in any West Divide Creek surface water sample locations in FY 2008-2009.

Northeast Colorado

Oil and Gas E&P Activity

Oil and gas activity in the northeastern portion of the state remains high although overall numbers of new permits are down significantly when compared to previous years. In general this reflects both the slowdown related to low commodity prices and implementation of new COGCC rules with respect to well permitting. In 2008, approximately 27% of the total number of well permits were issued to operators in Weld County and approximately 2% were issued to operators in Yuma County. Smaller oil fields with lower levels of activity are located in other counties throughout northeast Colorado.

Public Involvement

COGCC staff continues to receive and follow-up on complaints from the Weld County Department of Public Health & Environment, Tri-County Health Department, Larimer County Environmental Advisory Board, Morgan County Office of Emergency Management, Northeast Colorado Health Department, other municipalities, and the public throughout northeastern Colorado.

Environmental Issues

Approximately $112,000 of Fund 170 money was spent investigating citizen complaints or requests for baseline sampling, spill/release reports submitted by operators, and the findings of COGCC field inspections and conducting other environmental studies in northeastern Colorado. Samples were collected and analyzed from 32 water wells and one stream.

Ground Water

In all cases where ground water was impacted, operators are required to conduct a site investigation and perform appropriate remediation to comply with COGCC requirements. In addition, the COGCC continues to oversee the investigation and remediation of contaminated soil and ground water associated with gas plants and compressor stations throughout northeast Colorado.

Upon investigation, COGCC staff determined that four (4) water wells had been impacted by thermogenic gas. The investigations to identify the sources of the gas in these water wells are continuing. In three (3) of the instances, the owners of the impacted water wells and the operators have reached private settlements that includes a hook up to a public drinking water source.

Ellsworth Water Well and COGCC Laramie/Fox Hills Aquifer Water Well Sampling, Weld County

Sampling of the Ellsworth water well in September 2008 and March 2009 indicated that this water well contains a combination of biogenic and thermogenic methane gas and other thermogenic hydrocarbon gases. The source of the thermogenic gases was investigated and although a particular oil and gas well was not identified as the source, COGCC staff concluded that the source of the thermogenic methane and other hydrocarbon gases is related to oil and gas activities. The owner of the impacted water well and the operator have reached private settlements that included the installation of a treatment system.

In response to concerns from other area residents near the towns of Ft. Lupton and Hudson regarding the potential for impacts from oil and gas activities and flammable gas in their water wells, the COGCC conducted a public meeting on March 27, 2009, in Hudson. In response to concerns regarding the presence of methane gas in water wells completed in the Laramie/Fox Hills Aquifer, COGCC, Noble Energy, and Anadarko/Kerr McGee sampled a total of 28 water wells between March 25, 2009 and April 7, 2009 across an approximately 170 square mile area. Sample results show that these wells contained either no methane gas or biogenic (biological generated) methane gas. None of these wells, other than the Ellsworth water well, contained thermogenic methane gas. The sample results along with letters discussing the results were sent by COGCC staff to the 28 well owners.

Establishment of Wattenberg Field - Bradenhead Testing Area, Weld County

In response to the incidents of water wells impacted by thermogenic methane and other hydrocarbon gases from oil and gas activities, the COGCC staff proposed and on November 30, 2009 the COGCC Commission approved, in accordance with Rule 207, the establishment of a bradenhead testing area covering approximately 25 townships of the Wattenberg Field in Weld County. This will provide the COGCC and operators with a tool for cost effectively and systematically identifying oil and gas wells with a potential to act as conduits for gas migration into the Laramie/Fox Hills and other aquifers. As these wells are identified, operators will be required to perform appropriate remediation. Testing must begin by January 15, 2010, but most operators have already begun testing their wells.

Nelson Water Well, Logan County

COGCC began investigating the Nelson water well in 2007. Water samples had been collected from the Nelson well by other entities as early as 1984 and comparison of the analytical results from earlier samples with those collected by the COGCC indicated that the quality of the water had deteriorated significantly over time. To determine the source of the apparent impact, COGCC retained Terracon Consultants, Inc. to perform additional sampling of the Nelson well and sampling of produced water from nearby oil and gas operations. Terracon also evaluated all historic data and concluded in a report dated December 3, 2008, that the Nelson water well had been impacted by produced water disposed in pits at a nearby oil and gas operation. Over two million barrels of produced water had been disposed at this location between 1954 and 1998.

COGCC agreed with the conclusion and issued a notice of alleged violation (NOAV) to the current operator. Although the current operator never disposed of produced water in the offending pits, they, in cooperation with previous operator of the lease, agreed to install a replacement water well at the Nelson residence. The replacement well was installed in October 2009, and the current operator has also agreed to close the produced water pits and remediate any contaminated soil associated with the pits, in accordance with COGCC 900 Series rules.

Surface Water

There were eight (8) spill/release events in which E&P waste fluids reached surface water. These were reported to the WQCD in accordance with our MOA. In cases where surface water was impacted, the operators responded with appropriate emergency procedures and other corrective measures to comply with COGCC and WQCD requirements.

Upper Crow Creek Designated Groundwater Basin – Northern Weld County

The COGCC used Fund 170 money to finalize a baseline water quality investigation in the Upper Crow Creek Designated Groundwater Basin in northern Weld County. Twenty three (23) domestic water wells and one municipal water well in selected townships within the basin were sampled. This project significantly expanded the COGCC database of analytical data for ground water in this area. Analytical data are one of the primary tools used by the COGCC staff in responding to landowners who allege impacts to water wells from oil and gas activities. These and other available data will be used by staff to determine whether impacts to ground water resources from oil/gas operations have occurred. A total of approximately $4,000 of Fund 170 money was spent in FY 2008-2009 on this project.

Orphaned Wells and Sites

Approximately $120,000 of Fund 170 money was used to restore and reclaim one orphaned site in Weld Colorado. This work was conducted as part of the COGCC's investigation of the Ellsworth water well complaint mentioned above. Proper plugging and well abandonment ensures that the fresh water aquifers and surface water are protected from fluid migration in the boreholes.

Southeast Colorado

Oil and Gas E&P Activities

Southeastern Colorado produces conventional gas, CBM gas, and crude oil from several basins, including the Raton, the DJ and the Hugoton Embayment. There are approximately 3,629 active wells within the region. Approximately 2,848 and 303 of the active wells are located in Las Animas and Cheyenne Counties, respectively. Approximately 151bcf of gas is produced in this region with 80.2% of the gas produced from the 2,848 CBM wells in Las Animas County. A total of 1,855,032 barrels (bbls) of crude oil were produced in southeastern Colorado in FY 2008-2009 with 78% of the oil production coming from the 303 wells in Cheyenne County

Fewer drilling permits were issued for oil and gas wells to be drilled in southeastern Colorado in FY 2008-2009 than in the previous fiscal year (346 versus 517). Approximately 81% of the 346 were issued in three counties (57% in Las Animas, 14% in Lincoln, and 10% in Cheyenne).

Approximately 122,347,783 barrels of produced water were generated in southeast Colorado during FY 2008-2009. Ninety (90) per cent of the produced water was generated from wells in Las Animas. Produced water is managed by underground injection, CDPS permitted surface water discharge, and in evaporation/percolation pits. There are eighty five (85) active injection wells in this region; 41 in Cheyenne County, 14 in Las Animas County, 12 in Baca County, 10 in Kiowa County, and eight (8) additional wells in various counties.

Public Involvement

COGCC staff participated as a stakeholder in the Colorado Water Quality Forum Agricultural Diversion Work Group held in previous years. The work group consisted of representatives from the oil and gas industry, the Colorado Water Quality Control Division (WQCD), irrigators, the agriculture community and wastewater treatment facilities. Draft permits including narrative standards that were discussed by this group, to protect agricultural interests have been issued to four operators in the Raton Basin. Norwest Applied Hydrology (on behalf of Pioneer Natural Resources) installed and maintains continuous monitoring stations in the Apishapa River drainage in an attempt to better define possible impacts from WQCD permitted discharges of CBM produced water into the waters of the state. Temperature, conductivity and pressure are monitored at three (3) locations in the watershed. Local irrigators have been granted access to data collected from these stations. The measurement of pressure can be used to estimate flow. The conductivity of the water can be used to calculate sodium adsorption ratio (SAR) by comparison with laboratory measured sodium, calcium and magnesium concentrations collected on a monthly basis. Three (3) oil and gas operators plan to install a similar monitoring network in the upper Purgatoire River drainage as part of an effort to gather information that might aid them in understanding whether there are impacts from discharging produced water from CBM wells under permits issued by the WQCD.

Environmental Issues

Approximately $ 78,000 of Fund 170 money was spent investigating citizen complaints and requests for baseline water sampling and findings of COGCC field inspections, and conducting special projects and emergency response actions. The citizen complaints included investigating water wells, sampling produced water, investigating pit overflows and leaks,

sampling springs and soil. The special projects included two ground water monitoring projects, soil sampling at an abandoned pit, and gas sampling at two leaking P&A gas wells. A methane monitoring project was also completed including soil surveys, ground water sampling and well testing and monitoring.

Ground Water

Thirty-five (35) water wells were sampled during FY 2008-2009. Six water wells were sampled as part of continuing investigations in Huerfano County. Thirteen (13) water wells were sampled in the North Fork Ranch area in Las Animas County as part of investigations regarding possible impacts to groundwater from nearby CBM operations.

Alleged Impacts

A well owner in Las Animas County alleged that the quantity of water produced from his domestic well had decreased significantly as a result of nearby CBM activities. The chemistry of water in his well indicates the domestic well is completed in a coal seam. The water is of a sodium-bicarbonate character with relatively high dissolved methane. COGCC staff, the landowner and the operator's staff and consultants have continued investigation of this complaint to achieve a better understanding of the subsurface geology and hydrology of the area in an attempt to resolve whether the water well has been impacted by CBM operations.

Baseline Sampling

Sixteen (16) water wells were sampled at the request of landowners to establish baseline conditions prior to drilling. Overall the water quality in the sampled wells is good.

Huerfano County Methane in Water Wells

As part of the ongoing investigation, monitoring, and mitigation efforts conducted by a CBM operator in response to impacts to water wells, more than 85 water wells are routinely monitored for methane. Gas samples have been collected from approximately 20 water wells. Stable isotope analysis of these samples indicate that the gas is thermogenic and similar to the CBM gas produced from the Vermejo Formation. The operator's CBM wells remain shut-in as specified by order of the COGCC Commission.

The operator has also installed a monitoring well, three (3) removal wells and eight (8) injection wells as part of the remediation and investigation activities. As required by the COGCC order, the operator began active pump and treat operations of water from the impacted Poison Canyon Formation in December, 2008 and has also requested permission from the office of the State Engineer to use three CBM wells as a source of water for Phase II of the remediation. The operator has also requested approval from the U.S. EPA to inject treated water from the coal-bearing Vermejo Formation. Phase II operations will also need approval from the staff of the COGCC before the added pump and treat operation could be started.

North Fork Ranch Water Well Impacts

COGCC Staff and a gas operator continue to investigate and monitor two (2) domestic water wells in the North Fork Ranch (NFR) subdivision in western Las Animas County that were impacted during the drilling of a nearby CBM well in 2006. The gas operator has installed five (5) monitoring wells in this area. The monitoring includes downhole continuous monitors for pressure and conductivity. Water samples are collected and analyzed on a regular basis and the analytical results for samples from the monitoring well system are reported to the COGCC

on a semi-annual basis. The initial three (3) monitoring wells were installed in late November 2006 and two (2) domestic wells have been added to the monitoring network, one (1) in 2007 and one (1) in 2008. No pressure upsets have been observed since installation of the monitoring network.

In fiscal year 2008-2009, benzene was detected above the groundwater standard in two (2) of the monitoring wells installed by the operator. Dissolved methane concentrations in two (2) of the operator's monitoring wells also increased significantly. Five (5) NOAVs have subsequently been issued concerning continuing or new impacts to groundwater from CBM activities in and around the North Fork Ranch subdivision. The source of benzene detected above the groundwater standard in the two (2) monitoring wells has not been determined at present. The source of increasing methane concentrations in four (4) of the monitoring wells may be of microbial and not of thermogenic character.

Lincoln County Ground Water Impact

The investigation and remediation of a well site in Lincoln County continued in FY 2008-2009. The soils and groundwater at this site were impacted due to the improper management of E&P waste. The issue was first observed during a site inspection conducted by a COGCC field inspector. The operator has submitted a Form 27 Site Investigation Plan and has conducted an extensive soil and groundwater investigation. The investigation has included the installation of monitoring wells and ground water and soil sampling. Analytical data indicates that the shallow alluvial aquifer has been impacted by produced water. Additional work has included the excavation and remediation of the pit and removal of all production equipment from the site.

Elevated levels of total dissolved solids (TDS) are present in the groundwater, but BTEX compounds have not been detected. The extent of the plume has been determined and points of compliance established. No water wells have been impacted. Quarterly monitoring is conducted and results evaluated.

Springs

No impacts to springs were observed in the past year.

Surface Water

- Stream Depletion Study

In November 2006 the COGCC, in conjunction with the Colorado Geological Survey (CGS) and the State Engineer's Office Division of Water Resources (DWR), evaluated proposals to conduct a stream depletion study in the Raton Basin. The purpose of this study was to develop a quantitative assessment of the levels of stream depletion or reduction in formation outflows (spring flows or flowing stream systems gaining from contact with formations), if any, that may be occurring as a result of the removal of water by CBM wells, in addition to defining areas where the ground water in the coal seams in the Raton and Vermejo Formations is tributary or non-tributary to the surface water flow system. This study was funded by the CGS and the contract was awarded to S.S. Papadopoulos and Associates of Boulder, Colorado. This study has been completed. The analysis indicates that stream depletion from all wells producing in the Colorado portion of the Raton Basin is approximately 2,500 acre-feet per year.

Two operators in the Raton Basin have conducted a more detailed stream bed depletion

study of a portion of the Purgatoire River drainage using ground water modeling (MODFLOW) and data from more than 1,000 CBM wells. The operator funded study concluded that depletions in the upper Purgatoire drainage were less than calculated by the Glover model, which was used in the state funded study. The operator funded study has been revised and resubmitted to the Office of the State Engineer for further analysis and review.

- Spills of E&P Waste to State Waters

There were seven (7) spills/release events in which E&P waste entered waters of the state. E&P waste included produced water, drilling fluids and drill cuttings. These seven (7) events occurred within the Raton Basin. Four spills involved pipeline ruptures. Three spills involved human errors such as failing to remove water from a pit as production continued and the pit overflowed. Surface water samples were collected and analyzed by operators and contractors and potential impacts to water quality were noted and enforcement actions taken with respect to four spills/ releases of E&P wastes. WQCD staff was notified as required under the MOA between WQCD and COGCC.

- Stormwater and Surface Water Complaints

One complaint alleging impacts to a tributary of San Pablo Canyon from sediment was received where a lease road crosses an intermittent stream channel. The BMP's installed by the operator at the location proved inadequate to control sediment migration into the stream channel. An NOAV was issued to the operator regarding this complaint and violation. The operator installed more effective erosion controls at the site after the NOAV was issued.

Several complaints regarding spills or releases into or near tributaries of the Apishapa River near Gulnare were received and investigated. As a result of the investigations of these complaints, NOAVs were issued to the operator related to maintenance of adequate freeboard on pits and to other operating procedures including those for pipelines.

Orphaned Wells and Sites

Approximately $6,600 was spent on reclamation activities in Huerfano County. More than $59,000 was spent in an effort to plug the Trinidad MGP-1 well in Las Animas County. Methane seeping from the Trinidad MGP-1 well had caused a house explosion in 2007, but the well has not yet been successfully plugged and abandoned by COGCC engineering staff. Currently the well is surrounded by a security fence and, to prevent gas from building up in the subsurface, gas is allowed to vent from the well.

Approximately $5,000 was spent investigating and plugging a pre-1910 oil well in Fremont County. There are indications from surface seeps of gas in the same area that more unplugged, orphaned oil and gas wells may be present in the city of Florence. COGCC staff will be developing a program to systematically search for orphaned wells that may pose a threat to public health, safety, and welfare.

APPENDIX 1

COGCC COMMISSIONER BIOGRAPHIES

BIOGRAPHICAL SKETCHES OF
COLORADO OIL & GAS CONSERVATION COMMISSIONERS
as of 8/8/07

Richard D. Alward is an ecologist and environmental scientist based out of Grand Junction. He earned his Ph.D. in Ecology from Colorado State University (1999) and both an M.S. (1992) and B.S. (1984) in Biology from the University of Nebraska. Mr. Alward has performed research projects on wildlife habitat management, climate change, grazing, weed control, vegetation monitoring, and native species restoration in Colorado, Utah, Nebraska, South Dakota, Swaziland (while a Peace Corps Volunteer) and Antarctica. He is a member of the Ecological Society of American and the Society for Conservation Biology. His current consulting has him involved in a restoration project with the National Park Service and numerous biological studies that are required as part of the environmental permitting process for development projects, including energy development, throughout western Colorado.

Mark Cutright, P.E. is Operations Manager for Excell Services, Inc. a subsidiary of J-W Operating Co. He earned a B.S. in Petroleum Engineering from the Colorado School of Mines in 1980 and is a Registered Professional Engineer in Oklahoma. During his oilfield career of over 27 years, Mr. Cutright has held various engineering, operations and management positions with EnCana Oil and Gas, Grey Wolf Drilling, Exeter Drilling (an Occidental Petroleum subsidiary) and Brinkerhoff-Signal Drilling. He has extensive experience in the oil industry throughout the Rocky Mountains, California, North-Eastern U.S., Mid-Continent, South-Eastern U.S., South Texas, Ark-La-Tex and South America regions. He has served on numerous boards and committees for Petroleum and Professional Engineering related organizations. He is a member of Society of Petroleum Engineers, International Association of Drilling Contractors, American Association of Drilling Engineers, and International Society of Explosives Engineers. He also serves as a Community Advisor on the Cherry Creek Schools - Long-Range Facility Planning Committee.

Tom Compton and his wife, Penni, own and operate a beef cattle ranch near Hesperus in Southwest Colorado. He holds an M.S. degree in Biology from the University of Alaska and a Ph.D. degree in Zoology from the University of Wyoming. He has taught biology at several colleges including Wheaton College in Illinois, Letourneau University in Texas, Fort Lewis College in Durango and the University of Texas at Tyler. Compton is a past president of the Colorado Cattlemen's Association and served as the original chairman of the board of the Cattlemen's Land Trust. He is the current vice president of the Colorado Rural Electric Association. He also served on Colorado's Roadless Area Task Force.

Michael P. Dowling is a founder and the current chairman of the Colorado Conservation Trust, a former chairman of the Colorado Wildlife Federation, and a former board member of the Colorado Coalition of Land Trusts. He is also a founder and principal of Western Ranchland Investors, a conservation real estate firm that designs and implements limited development solutions for threatened agricultural and natural landscapes. Mr. Dowling has also worked as an energy and environmental consultant, as a management consultant with the international firm of McKinsey & Company, and as an entrepreneur and investment manager in the oil and gas industry. Mr. Dowling has a B.S. in Geology and Geophysics (with honors) from Yale College, a Master of Forest Science degree from the Yale School of Forestry and Environmental Studies, and a Master of Public and Private Management degree from the Yale School of Management. Michael is also an active outdoorsman, a former river guide, and a trustee of the Colorado Symphony Orchestra.

Joshua Epel provides legal counsel to DCP Midstream, LLC. The company is one of the nation's largest natural gas gatherers and processors and operates 52 plants and hundreds of

other facilities. Mr. Epel has practiced environmental law for over 25 years, and specializes in air pollution law. His practice has ranged from representing public interest organizations and working for a lead planning agency, to providing legal counsel to the oil and gas, cement, titanium, CFC recycling and other manufacturing industries. Mr. Epel has also authored economic analyses of the cost effectiveness of substituting alternative fuels for conventional motor vehicle fuels for U.S. EPA, NASA and public utilities. In addition to his private sector work, Mr. Epel has served on the Public Advisory Committee of the Grand Canyon Visibility Transport Commission, the Stationary Sources Joint Forum of the Western Regional Air Partnership, and the Denver Metropolitan Regional Air Quality Council, and chaired the Mobile Sources Sub-committee. Most recently, Mr. Epel was a member of the New Mexico Climate Change Advisory Committee.

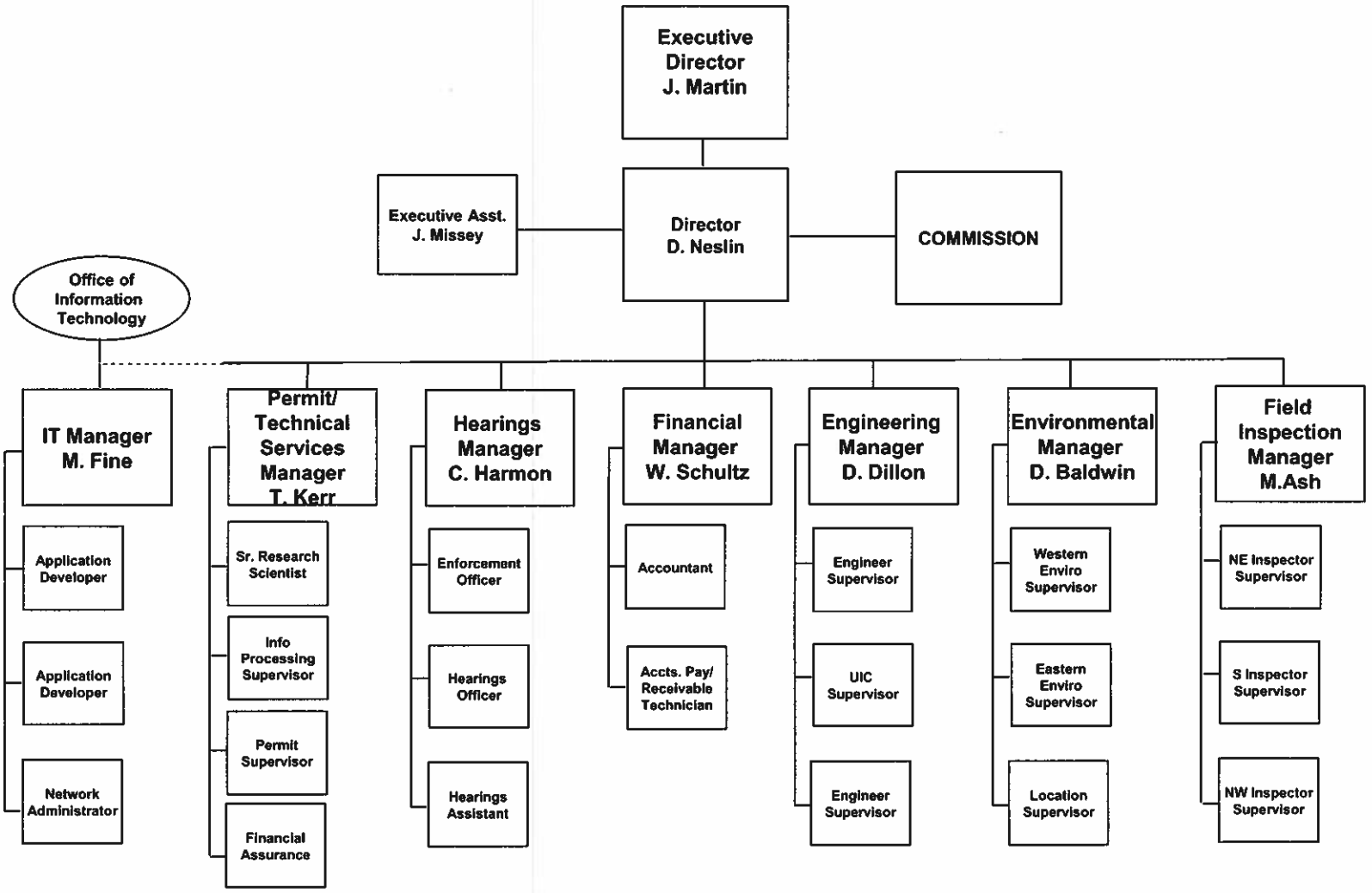
Trési B. Houpt, a Colorado native, serves as a Garfield County Commissioner. She is a former School Board Member for the Roaring Fork School District, Executive Director of Valley Resource Management and long-time member of the non-profit community. Ms. Houpt is the Chair of the Colorado Counties Inc. (CCI) Natural Resource and Land Use Steering Committee and a member of the National Association of Counties (NACO) Environment, Energy and Land Use Steering Committee. She has worked extensively with Colorado's Congressional Delegation, State Legislators, Local Officials and Industry representatives on creating and proposing laws and regulations that would bring a reasonable balance to energy development in the State of Colorado. Ms. Houpt is currently a member of the Executive Committee and Past-Chair for the I-70 Mountain Corridor Coalition, Past-President for CCI's Western District, current Board Member and Past-Chair for the Rural Resort Region, Board Member for the Rocky Mountain Rail Authority, Advisory Board Member for the Colorado Mountain College Rifle Campus, Advisory Board member for the Ruedi Water and Power Authority, served on the Advisory Board for the State Park System Strategic Planning Process and served on Governor Owens' Blue Ribbon Panel on Housing. Commissioner Houpt has a B.S. in Political Science and Sociology from Lewis and Clark College.

James B. Martin is the Executive Director of the Colorado Department of Natural Resources, responsible for broad-based health programs and a full array of environmental activities, including air and water quality protection and improvement; hazardous waste; solid waste management; radiation services; pollution prevention; consumer protection; and environmental leadership. Prior to joining the department, Mr. Martin was the Executive Director of Western Resource Advocates, a Boulder-based environmental law and policy organization. Prior to that, he was Director of the Natural Resources Law Center at the University of Colorado School of Law. He also was Senior Attorney and Director of the energy program for Environmental Defense, and from 1986 to 1992 he worked for former U.S. Representative and Senator Tim Wirth, including four years as State Director and Counsel. Mr. Martin also served on the Colorado Air Quality Control Commission from February 21, 2003 to January 12, 2007. He earned his undergraduate degree in Biology from Knox College in Illinois and his law degree from Northwestern School of Law, Lewis and Clark College, in Oregon.

APPENDIX 2

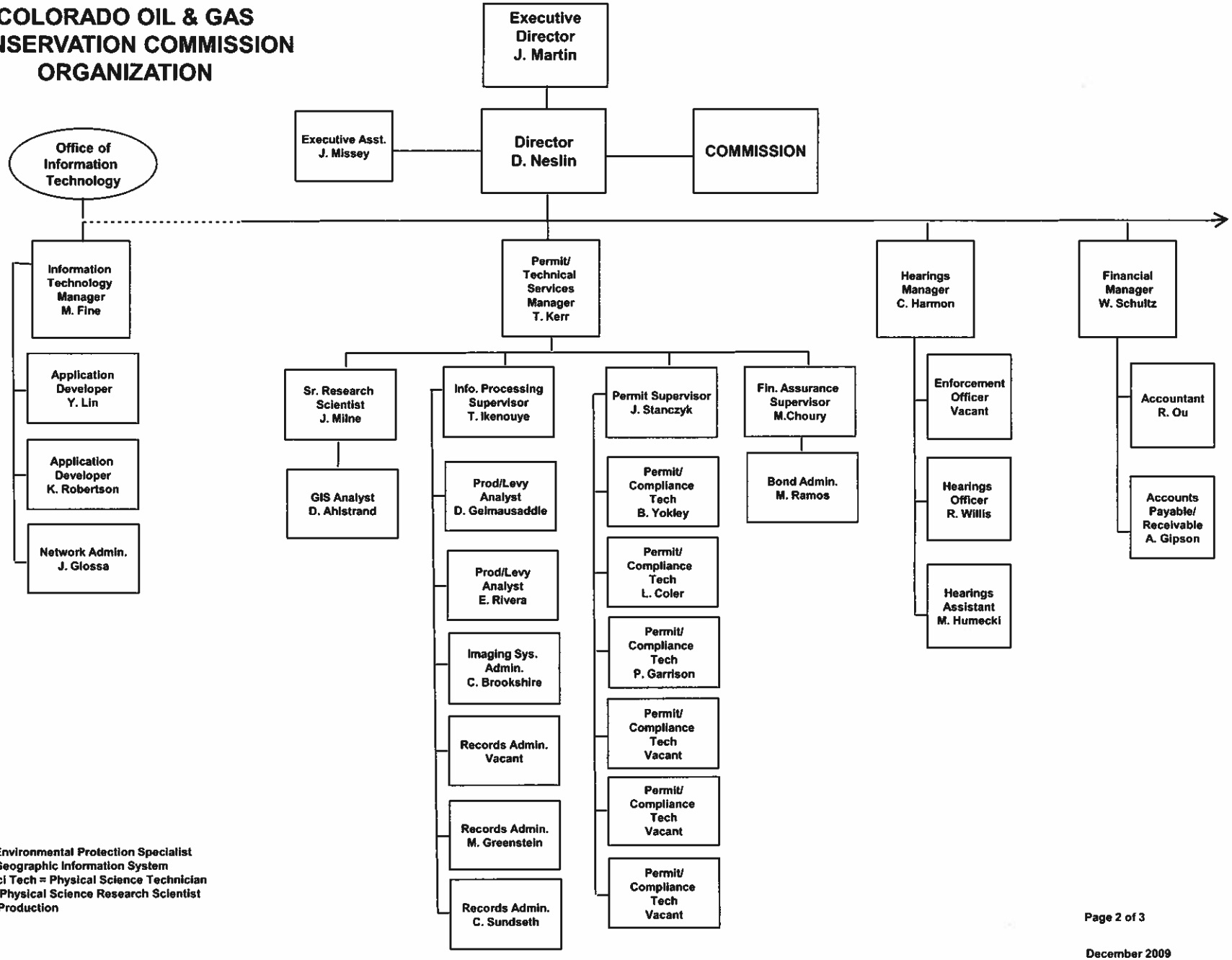
COGCC ORGANIZATION CHART

COLORADO OIL & GAS CONSERVATION COMMISSION



See the next two pages for details

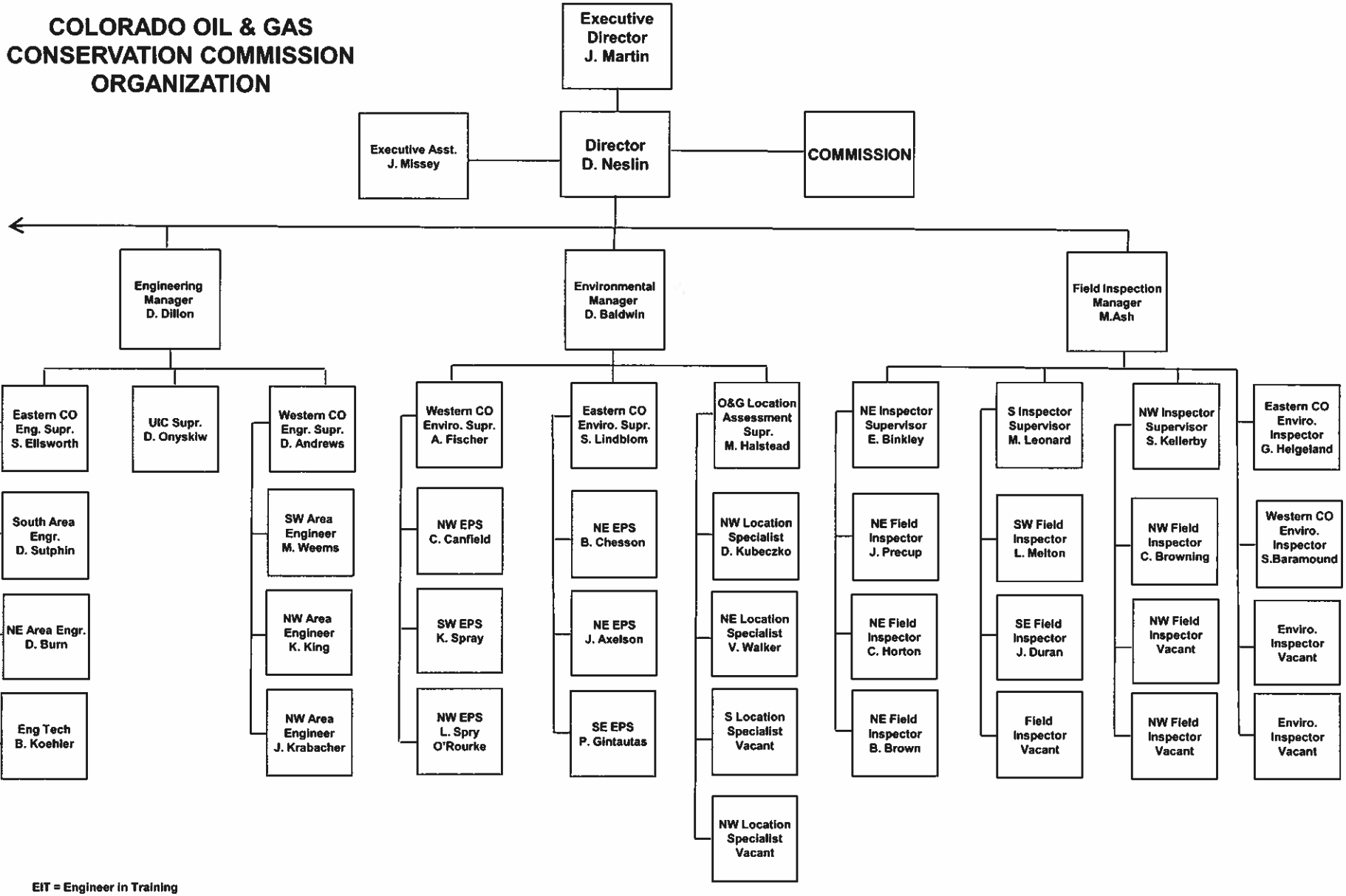
COLORADO OIL & GAS CONSERVATION COMMISSION ORGANIZATION



EPS = Environmental Protection Specialist
GIS = Geographic Information System
Phys/Sci Tech = Physical Science Technician
PSRS= Physical Science Research Scientist
Prod = Production

December 2009

COLORADO OIL & GAS CONSERVATION COMMISSION ORGANIZATION



EIT = Engineer in Training
EPS = Environmental Protection Specialist
OGLA = Oil & Gas Location Assessment
Phys Sci Tech = Physical Science Technician
UIC = Underground Injection Control

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