900 SERIES
ENVIRONMENTAL IMPACT PREVENTION

901. GENERAL STANDARDS

a. **Addressing Impacts and Potential Impacts to Public Health, Safety, Welfare, the Environment, and Wildlife Resources.** Whenever the Director has reasonable cause to determine that an Operator, in the conduct of any Oil and Gas Operations, is impacting or threatening to impact public health, safety, welfare, the environment, or wildlife resources, the Director may require the Operator to take action to avoid, minimize, or mitigate the potential impacts to public health, safety, welfare, the environment, or wildlife resources, including but not limited to:

(1) Suspending operations or initiating immediate mitigation measures until the cause of the threat or potential threat to public health, safety, welfare, the environment, or wildlife resources is identified and the threat or potential threat to public health, safety, welfare, the environment, or wildlife resources is corrected.

(2) Submitting a Form 27, Site Investigation and Remediation Workplan, for site characterization, Remediation, monitoring, permitting, and the establishment of points of compliance.

(3) If the Director requires an Operator to take action pursuant to this Rule 901.a, the Operator may appeal the Director's decision to the Commission pursuant to Rule 503.g.(10). The matter will not be assigned to an Administrative Law Judge pursuant to Rule 503.h. The Commission will hear the appeal at its next regularly scheduled meeting. Operators will continue to comply with any requirements identified by the Director pursuant to this Rule 901.a until the Commission makes a decision on the appeal. The Commission may uphold the Director's decision if the Commission determines the Director had reasonable cause to determine that an Operator's actions impacted or threatened to impact public health, safety, welfare, the environmental, or wildlife resources, and that the action required by the Director was necessary and reasonable to avoid, minimize, or mitigate those impacts or threatened impacts.

b. **Incorporation by Reference.** Pursuant to § 24-4-103(12.5), C.R.S., the Commission incorporates by reference into these 900 Series Rules the following codes, standards, guidelines, and rules of other federal agencies, state agencies, and nationally recognized organizations and associations.

(1) **Where Materials May Be Found.**

A. Copies of all materials incorporated by reference are available for public inspection during normal business hours from the Public Room Administrator at the office of the Commission, 1120 Lincoln Street, Suite 801, Denver, Colorado 80203.

B. Copies of all materials incorporated by reference are also available at the office or website of the agency or organization that issued the code, standard, guideline, or rule, as specified below.

C. Copies of any materials that are not available to the public on the internet for no cost may be examined at any state publications depository library.

(2) **Current Version.** Only the version of the code, standard, guideline, or rule in effect as of January 15, 2020, and no later amendments or editions of the code, standard, guideline, or rule are incorporated by reference, unless otherwise specified below.

(3) **Materials Incorporated.**

A. Colorado Department of Public Health and Environment, Water Quality Control Commission ("WQCC"), Regulation Number 41, The Basic Standards for Ground Water, 5 C.C.R. § 1002-41, *et seq.* (hereinafter "WQCC Regulation 41"). Only the version of WQCC Regulation 41 in effect as of January 15, 2021 applies; later amendments do not apply. WQCC Regulation 41 may be examined at the Colorado Department of Public Health and Environment, 4300 Cherry Creek Drive South, Denver, CO 80246, and is available online at https://cdphe.colorado.gov/water-quality-control-commission-regulations.

B. Colorado Department of Public Health and Environment, Solid and Hazardous Waste Commission ("SHWC"), Regulations Pertaining to Solid Waste, 6 C.C.R. § 1007-2, *et seq.* (hereinafter "SHWC Solid Waste Regulations"). Only the version of the SHWC Solid Waste Regulations in effect as of January 15, 2021 applies; later amendments do not apply. The SHWC Solid Waste Regulations may be examined at the Colorado Department of Public Health and Environment, 4300 Cherry Creek Drive South, Denver, CO 80246, and are available online at https://cdphe.colorado.gov/solid-waste-regulations.

C. SHWC Regulations Pertaining to Hazardous Waste, 6 C.C.R. § 1007-3, *et seq.* (hereinafter "SHWC Hazardous Waste Regulations"). Only the version of the SHWC Hazardous Waste Regulations in effect as of January 15, 2021 applies; later amendments do not apply. The SHWC Hazardous Waste Regulations may be examined at the Colorado Department of Public Health and Environment, 4300 Cherry Creek Drive South, Denver, CO 80246, and are available online at https://cdphe.colorado.gov/hazardous-waste-regulations.

D. Colorado Department of Public Health and Environment, Air Quality Control Commission ("AQCC"), Regulation No. 7, Control of Ozone Via Ozone Precursors and Control of Hydrocarbons Via Oil and Gas Emissions (Emissions of Volatile Organic Compounds and Nitrogen Oxides), 5 C.C.R. § 1001-9, *et seq.* (hereinafter "AQCC Regulation No. 7"). Only the version of AQCC Regulation No. 7 in effect as of January 15, 2021 applies; later amendments do not apply. AQCC Regulation No. 7 may be examined at the Colorado Department of Public Health and Environment, 4300 Cherry Creek Drive South, Denver, CO 80246, and is available online at https://cdphe.colorado.gov/aqcc-regulations.

E. Colorado State Board of Examiners of Water Well Construction and Pump Installation Contractors, Rules and Regulations for Water Well Construction, Pump Installation, Cistern Installation, and Monitoring and Observation Hole/Well Construction, 2 C.C.R. § 402-2, *et seq.* (hereinafter "State Engineer's Water Well Construction and Permitting Rules"). Only the version of the State Engineer's Water Well Construction Rules in effect as of January 15, 2021 applies; later amendments do not apply. The State Engineer's Water Well Construction and Permitting Rules may be examined at the Colorado Division of Water Resources, 1313 Sherman St., Suite 821, Denver, CO 80203, and are available online at https://dwr.colorado.gov/services/well-construction-inspection.

F. U.S. Environmental Protection Agency, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods (May 2019 edition) (hereinafter, "EPA SW-846"). Only the May 2019, "Update VI" edition of EP SW-846 applies to this rule; later amendments do not apply. EPA SW-846 may be examined at the U.S. Environmental Protection Agency, Region 8, 1595 Wynkoop St, Denver, CO 80202, and is available online at https://www.epa.gov/hw-sw846/sw-846-compendium.

G. U.S. Environmental Protection Agency, 40 C.F.R. § 60.5375a, What GHG and VOC standards apply to well affected facilities? (2016) (hereinafter, "40 C.F.R. § 60.5375a"). Only the version of 40 C.F.R. § 60.5375a that became effective on August 2, 2016 applies to this rule; later amendments do not apply. 40 C.F.R. § 60.5375a may be examined at the U.S. Environmental Protection Agency, Region 8, 1595 Wynkoop St, Denver, CO 80202, and is available online at https://www.govinfo.gov/content/pkg/FR-2016-06-03/pdf/2016-11971.pdf.

H. U.S. Environmental Protection Agency, Regional Screening Levels for Chemical Contaminants at Super Fund Sites (Nov. 18, 2020) (hereinafter, "EPA's RSLs"). Only the November 2020 version of EPA's RSLs applies; later amendments do not apply. EPA's RSLs may be examined at the U.S. Environmental Protection Agency, Region 8, 1595 Wynkoop St, Denver, CO 80202, and are available online at https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables.

I. Western Coordinating Committee on Nutrient Management, Soil, Plant and Water Reference Methods for the Western Region (4th edition, 2013). Only the 4th edition (2013) of the Soil, Plant and Water Reference Methods for the Western Region applies to this rule; later amendments do not apply. Soil, Plant and Water Reference Methods for the Western Region may be examined at the Soil Science Society of America, 5585 Guilford Road, Madison, WI 53711, and is available online at https://www.naptprogram.org/files/napt/publications/method-papers/western-states-methods-manual-2013.pdf.

J. Rocky Mountain Low-Level Radioactive Waste Board, Rules (Dec. 3, 2010). Only the 2010 version of the Rocky Mountain Low-Level Radioactive Waste Board's Rules apply to this Rule; later amendments do not apply. The Rocky Mountain Low-Level Radioactive Waste Board's Rules may be examined at Rocky Mountain Low-Level Radioactive Waste Board, 999 18th St., Suite 2400 S, Denver, CO 80202, and are available online at http://www.rmllwb.us/documents/Rules_12-3-10.pdf.

902. POLLUTION

a. Operators will prevent Pollution.

b. Operators will prevent adverse environmental impacts on any air, water, soil, or biological resource resulting from Oil and Gas Operations and will protect and minimize adverse impacts to public health, safety, welfare, the environment, and wildlife resources.

c. Operators will prevent the unauthorized discharge or disposal of oil, condensate, gas, E&P Waste, Chemical substances, trash, discarded equipment, and other oil field waste.

d. No Operator, in the conduct of any Oil or Gas Operation, may violate numeric or narrative water quality standards or classifications established by the WQCC for Waters of the State, or any Point of Compliance established by the Director pursuant to Rule 914. The Director may require the Operator to establish one or more Points of Compliance for any event of Pollution, which will be complied with by all parties determined to be a Responsible Party for such Pollution.

e. No Operator, in the conduct of any Oil or Gas Operation, may violate any applicable air quality law, regulation, or permit as administered by the Air Quality Control Commission or any other local or federal agency with authority for regulating air quality associated with such activities.

f. No person may accept water produced from Oil and Gas Operations, or other oil field waste for disposal in a commercial disposal facility, without first obtaining a certificate of designation from the county in which such facility is located, in accordance with the regulations pertaining to Solid Waste Disposal sites and facilities as promulgated by CDPHE.

903. VENTING OR FLARING NATURAL GAS

Venting and Flaring of natural gas represent waste of an important energy resource and pose safety and environmental risks. Venting and Flaring, except as specifically allowed in this Rule 903, are prohibited.

a. Notice to Local Governments and Emergency Responders.

(1) **Prior Notice.** As soon as practicable prior to, but no later than two hours before, any planned Flaring of natural gas allowed pursuant to this Rule 903, Operators will provide verbal, written, or electronic notice to the Relevant and Proximate Local Governments and to the local emergency response authorities.

(2) **Subsequent Notice.** In the event of Flaring due to an Upset Condition, Operators will provide verbal, or electronic notice as soon as possible, but no later than 12 hours, to the Relevant and Proximate Local Governments and to the local emergency response authorities.

(3) **Waiver.** Relevant and Proximate Local Governments and local emergency response authorities may waive their right to notice under this Rule 903.a at any time, pursuant to Rule 302.f.(1).A.

(4) **Recordkeeping.** Operators will maintain records of notice provided pursuant to this Rule 903.a, and provide the records to the Director upon request.

b. Emissions During Drilling Operations.

(1) Operators will capture or combust gas downstream of the mud-gas separator using best drilling practices while maintaining safe operating conditions.

(2) If capturing or combusting gas would pose safety risks to onsite personnel, Operators may Vent and will provide verbal notification to the Director within 12 hours and submit a Form 4, Sundry Notice within 7 days. The Operator need not seek a formal variance pursuant to Rule 502. A Form 23, Well Control Report may also be required if the criteria in Rule 428.c are met. If Venting pursuant to this Rule 903.b.(2) exceeds 24 hours, the Operator will seek the Director's approval to continue Venting.

(3) Combustors will be located a minimum of 100 feet from the nearest surface hole location and enclosed.

c. Emissions During Completion Operations.

(1) **Reduced Emission Completions Practices.** Operators will adhere to reduced emission completion practices as specified in 40 C.F.R. § 60.5375a, as incorporated by reference in Rule 901.b, on all newly Completed and re-completed oil and gas Wells regardless of whether the Well is hydraulically fractured, unless otherwise specified in this Rule 903.c.

(2) **Flowback Vessels.** Operators will enclose all Flowback vessels and adhere to the AQCC Regulation No. 7 standards for emission reduction from pre-production Flowback vessels as specified in 5 C.C.R. § 1001-9:D.VI.D, as incorporated by reference in Rule 901.b.

(3) Operators may Flare gas during completion operations with specific written approval from the Director under any of the following circumstances:

A. The Operator obtains the Director's approval to Flare through an approved gas capture plan pursuant to Rule 903.e;

B. The Operator submits, and the Director approves, a Form 4 allowing the Operator to Flare gas that would otherwise not be permitted pursuant to Rule 903.c.

i. On the Form 4 the Operator will explain why Flaring is necessary to Complete the Well, and will protect and minimize adverse impacts to public health, safety, welfare, the environment, and wildlife resources.

ii. On the Form 4 the Operator will estimate anticipated Flaring volume and duration.

iii. On the Form 4 the Operator will explain its plan to connect the facility to a Gathering Line or otherwise utilize the gas in the future.

iv. The Director may approve a Form 4 requesting permission to Flare during completion if the Director determines that the Flaring is necessary to Complete the Well and will protect and minimize adverse impacts to public health, safety, welfare, the environment, and wildlife resources; or

C. The Operator may direct gas to an emission control device and combust the gas if necessary to ensure safety or during an Upset Condition for a period not to exceed 24 cumulative hours. If Flaring pursuant to this Rule 903.c.(3).C exceeds 24 hours, the Operator will seek the Director's approval to continue Flaring. Within 7 days of the Flaring event, the Operator will submit a Form 4 reporting the Upset Condition or safety issues that resulted in the Flaring event and include the estimated volume of gas Flared.

d. Emissions During Production.

(1) After the Commencement of Production Operations at an Oil and Gas Location, Venting or Flaring of natural gas produced from any Completed Well is prohibited except under the following circumstances:

A. Gas Flared or Vented during an Upset Condition is allowed for a period necessary to address the upset, not to exceed 24 cumulative hours. Operators will maintain records of the date, cause, estimated volume of gas Flared or Vented, and duration of each Upset Condition resulting in Flaring or Venting, and will make such records available to the Director upon request.

B. Gas Vented during and as part of active and required maintenance and repair activity, including pipeline pigging, as long as the Venting is not prohibited by AQCC Regulation No. 7, 5 C.C.R. § 1001-9, as incorporated by reference in Rule 901.b. Operators will use operational best practices to minimize Venting during maintenance and repair activity.

C. If approved by the Director on a Gas Capture Plan pursuant to Rule 903.e, gas Flared during a Production Evaluation or Productivity Test for a period not to exceed 60 days.

D. Gas Vented during a Bradenhead test pursuant to Rule 419.

E. Any event of Well liquids unloading, as long as the Well liquids unloading employs best management practices to minimize hydrocarbon emissions as required by the AQCC Regulation No. 7, 5 C.C.R. § 1001-9, as incorporated by reference in Rule 901.b. Operators will capture or Flare gas escaping into the air during liquids unloading if the escape of the gas poses a risk to public health, safety, or welfare due to the risk of a fire, explosion, or inhalation. Pursuant to Rule 405.s, all Well liquids unloading, including swabbing, will be reported to the Director. The Operator will submit a Form 42, Field Operations Notice – Notice of Well Liquids Unloading, no less than:

i. 48 hours prior to conducting Well liquids unloading; or

ii. As soon as possible prior to conducting Well liquids unloading if 48 hours notice would require an alternative or extended Well liquids unloading practice that increases emissions.

F. Flaring or Venting approved pursuant to Rule 903.d.(3) or on a Form 4 prior to January 15, 2021.

(2) For any instance of Venting or Flaring permitted pursuant to Rules 903.d.(1).A–E for a period that exceeds 8 consecutive or 24 cumulative hours, the Operator will submit a Form 4 reporting:

A. The estimated or measured volume and content of gas Vented or Flared;

B. Gas analysis of the gas Vented or Flared, including hydrogen sulfide;

C. Explanation, rationale, and cause for the Venting or Flaring event; and

D. A description of any operational best practices used to minimize Venting during maintenance and repair activity.

(3) At Wells that have Commenced Production Operations prior to January 15, 2021 and that are Venting or Flaring natural gas because they are not connected to a natural gas Gathering Line or putting the natural gas to beneficial use, the Operator may request permission from the Director to Flare or Vent by submitting a gas capture plan via a Form 4 no later than the date the Operator's previously approved Form 4 expires and in no case later than January 15, 2022. If an Operator loses access to a Gathering Line after January 15, 2021, the Operator will submit a gas capture plan via a Form 4 within 30 days of losing the Gathering Line access. The Operator may not Flare or Vent pursuant to this Rule 903.d.(3) unless and until the Director approves the Form 4. The Director may approve a one-time request to Flare or Vent for a period not to exceed 12 months, if the Director determines that Flaring or Venting is necessary to produce the Well, will minimize waste, and will protect and minimize adverse impacts to public health, safety, welfare, the environment, and wildlife resources. For any such Form 4 submitted prior to January 15, 2022, the Director will not approve the one-time request to Flare or Vent to any date after January 15, 2022. The gas capture plan on the Form 4 will describe:

A. The estimated volume and content of the gas to be Flared or Vented;

B. Gas analysis including hydrogen sulfide for the subject Well;

C. For requests based on lack of available infrastructure, the Operator will state why the Well cannot be connected to infrastructure;

D. When the Well(s) will be connected to infrastructure, why the Operator commenced production of the Well before infrastructure was available, and whether the mineral Owner will be compensated for the Vented or Flared gas; and

E. Options for using the gas instead of Flaring or Venting, including to generate electricity, gas processing to recover natural gas liquids, or other options for using the gas.

(4) Measurement and Reporting.

A. Operators will measure the volume of all gas Vented, Flared, or used at an Oil and Gas Location by direct measurement or by estimating the volume of gas Vented, Flared or used. The volume of gas Vented, Flared, or used will be reported on a per Well basis on the Form 7, Operator's Monthly Report of Operations.

B. Operators will notify all mineral Owners of the volume of oil and gas that is Vented, Flared, or used on-lease. Operators will maintain records of such notice and provide the records to the Director upon request.

(5) All Flared gas will be combusted in an enclosed device equipped with an auto-igniter or continuous pilot light and a design destruction efficiency of at least 98% for hydrocarbons.

(6) Pits.

A. Pits Constructed After January 15, 2021.

i. Operators will design, construct, and operate new Pits that are within 2,000 feet of an existing Building Unit or Designated Outside Activity Area to emit less than 2 tons per year ("tpy") volatile organic compounds ("VOCs").

ii. Operators will design, construct, and operate new Pits within Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer, and Weld Counties to emit less than 2 tpy VOCs.

iii. Operators will design, construct, and operate new Pits in locations that do not meet the criteria of Rules 903.d.(6).A.i–ii to emit less than 5 tpy VOCs, unless:

aa. The Pit is used for recycling or reuse of produced water, subject to the approval of a reuse and recycling plan pursuant to Rule 905.a.(3);

bb. The Operator utilizes a centralized water distribution system to minimize trucks used to transport produced water; and

cc. The Director approves the Operator's plan to minimize emissions pursuant to Rule 903.d.(6).A.iv based on consultation with the Air Pollution Control Division.

iv. Operators will design, construct, and operate new Pits to utilize control technology to minimize emissions to the extent reasonably achievable based on best available practices.

B. Pits Constructed Prior to January 15, 2021. After January 15, 2023, all Pits constructed prior to January 15, 2021 will be operated to emit less than 5 tpy VOCs, unless:

i. The Pit is used for recycling or reuse of produced water and the Pit utilizes control technology to minimize emissions to the extent reasonably achievable, and the Operator submits and obtains the Director's approval of a reuse and recycling plan that meets the requirements of Rule 905.a.(3); or

ii. The Operator submits a Form 15, Earthen Pit Report/Permit pursuant to Rule 903.a.(6).C demonstrating that a greater allowable rate of emissions from the Pit is reasonable and necessary, and the Director approves the Form 15 based on consultation with the Air Pollution Control Division.

C. Operators will provide the basis for their determination of applicability under Rule 903.d.(6) to the Director on a Form 15 submitted concurrently with the initial produced water quality analysis required by Rule 909.j. The basis for determination of applicability will:

i. State the Pit's estimated annual emissions in tpy VOCs;

ii. Describe the method used to estimate emissions; and

iii. If the Operator seeks an exception pursuant to Rules 903.d.(6).B.i or ii, describe the basis for why the exception should be granted.

e. Gas Capture Plans.

(1) Gas Capture Plan Submission.

A. On a Form 2A, Oil and Gas Location Assessment the Operator will commit to connecting to a gathering system by the Commencement of Production Operations, or submit a gas capture plan as an attachment to their Form 2A, pursuant to Rule 304.c.(12).

B. Gas capture plans will demonstrate compliance with the requirements of Rules 903.b–d and include the following information:

i. A description and map of the location of the closest or contracted natural gas gathering system or point of sale.

ii. The name of the company operating the closest or contracted natural gas gathering system.

iii. The Operator's plan for connecting their facility to a natural gas gathering system or otherwise putting gas to beneficial use, including:

aa. Discussion of potential rights of way issues;

bb. Construction schedules;

cc. Date of availability of the gas Gathering Line;

dd. Whether the nearest or contracted gas gathering system has capacity to accept the anticipated gas to be produced at the location at the time of application; and

ee. Options for beneficial use of natural gas that are alternatives to Flaring during production operations prior to connection to gas Gathering Lines, including, but not limited to: onsite use, natural gas liquid processing, electrical power generation, gas to liquid, reinjection for enhanced oil recovery, or other options.

iv. For a Wildcat (Exploratory) Well or if the Operator anticipates conducting a Production Evaluation or Productivity Test, a description of the planned Production Evaluation or Productivity Test and any issues related to the Operator's ability to connect to a gas Gathering Line.

v. Any anticipated safety risks that will require the Operator to allow gas to escape, rather than being captured or combusted during drilling operations, pursuant to Rule 903.b.(2).

vi. A description of operational best practices that will be used to minimize Venting during active and planned maintenance allowed pursuant to Rule 903.d.(1).B.

vii. Procedures the Operator will employ to reduce the frequency of Well liquids unloading events.

viii. Anticipated volumes of liquids and gas production and a description of how separation equipment will be sized to optimize gas capture.

(2) Verification. Operators will verify that their facility has been connected to a gathering line by submitting a Form 10, Certificate of Clearance pursuant to Rule 219.

(3) Compliance. If an Operator does not connect its facility to a gathering line or otherwise put gas to beneficial use as described in the Operator's Form 2A or gas capture plan, the Director may require the Operator to shut in a Well until it is connected to a Gathering Line or the gas is put to beneficial use. The Operator may request a Commission hearing pursuant to Rule 503.g.(10), however, the Well will remain shut in until the Commission's hearing occurs.

904. EVALUATING CUMULATIVE IMPACTS

a. No later than January 15, 2022, and annually by May 15 thereafter, the Director will report the following information to the Commission based on consultation with CDPHE, CPW, and the Department of Natural Resources:

(1) A report from the Director about:

A. Data gathered regarding anticipated and existing impacts in the Cumulative Impacts Data Evaluation Repository ("CIDER"), including but not limited to data regarding impacts to Wildlife Resources, including High Priority Habitat, and a comparison of water volume data reported pursuant to Rules 315.a.(2).C.iv and 431.b; and

B. Information regarding reclamation during the prior year, including Wells plugged and Locations that achieved final reclamation pursuant to Rule 1004, and information regarding interim reclamation pursuant to Rule 1003;

(2) Information from the Air Pollution Control Division ("APCD") or Air Quality Control Commission ("AQCC") regarding the current status of the Greenhouse Gas Pollution Reduction Roadmap and any initiatives developed by the APCD and AQCC to achieve Colorado's statewide greenhouse gas emission reductions, and the role of Oil and Gas Operations in achieving the reduction targets for the oil and gas sector;

(3) Information from the APDC or AQCC regarding the information reported pursuant to AQCC Regulation No. 7 in the oil and gas emissions inventories, including a summary of the NOx and Greenhouse Gas Intensity Targets identified in approved Oil and Gas Development Plans, Form 2Bs, Form 2Fs, and Form 4s;

(4) Information regarding ambient air quality standard attainment, trends, and contributions from Oil and Gas Operations, including ground-level ozone ambient air quality standards;

(5) Information regarding evolving or new innovative technologies or measures, including technologies and measures employed by Operators during the prior year, that may provide innovative methods to reduce emissions or otherwise avoid, minimize, or mitigate adverse Cumulative Impacts to public health, safety, welfare, the environment, or wildlife resources;

(6) Any reports prepared or published by other Governmental Agencies or academic research institutions that provide relevant information about avoiding, minimizing, or mitigating adverse Cumulative Impacts to public health, safety, welfare, the environment, or wildlife resources;

(7) Any additional information that is requested by the Commission or that the Director determines is relevant to avoiding, minimizing, or mitigating adverse Cumulative Impacts to public health, safety, welfare, the environment, and wildlife resources; and

(8) Any recommendations for future rulemakings, guidance, work groups, or studies to address Cumulative Impacts to public health, safety, welfare, the environment, or wildlife resources and any air, water, soil, or Biological Resources based on the information presented pursuant to Rules 904.a.(1)–(7).

b. As a condition of approving an Oil and Gas Development Plan pursuant to Rule 307.b.(1), the Commission may require an Operator to participate in studies evaluating cumulative impacts of oil and gas development that is related to an Oil and Gas Location approved pursuant to the Oil and Gas Development Plan, or the impacts of that Oil and Gas Location.

(1) The studies may be conducted in consultation with CDPHE, CPW, the Public Utilities Commission, the Colorado Energy Office, or other third parties.

(2) Participation in the study may involve providing data, conducting investigations, performing monitoring, or other methods of gathering data, supplying data to the Director, or providing the Director or other authorized party access to a physical location. An Operator participating in a study will provide all data and other information gathered as part of the study to the Director upon request. Participation in a study will not require an Operator to fund the study, unless the Operator chooses to provide funding voluntarily.

c. The Commission may establish an informational docket on its own motion pursuant to Rule 503.a. Through the informational docket, the Commission may solicit general or specific information necessary and reasonable to evaluate the cumulative impacts of Oil and Gas Operations. Participation in the informational docket will not require payment of a docket fee or filing fee.

905. MANAGEMENT OF E&P WASTE

a. General Requirements.

(1) **Operator Obligations.** Operators will ensure that E&P Waste is properly stored, handled, transported, treated, recycled, or disposed to prevent threatened or actual adverse environmental impacts to air, water, soil, or biological resources, or to the extent necessary to ensure compliance with the concentration levels in Table 915-1, radiation control standards, and WQCC Regulation 41 numeric and narrative Groundwater quality standards and classifications, as incorporated by reference in Rule 901.b.

(2) **Protecting Waters of the State.** Operators will conduct E&P Waste management activities, and construct and operate all Oil and Gas Locations, to protect the Waters of the State from adverse environmental impacts caused by E&P Waste.

(3) **Reuse and Recycling.** To encourage and promote waste minimization, Operators may propose plans for managing E&P Waste through beneficial use, reuse, and recycling by submitting a written management plan to the Director for approval on a Form 4, Form 15, or Form 28, Centralized E&P Waste Management Facility Permit. Such plans will describe, at a minimum:

A. The type(s) of waste;

B. The proposed volume and use of the waste;

C. The method of waste treatment and storage;

D. Recycled materials quality assurance;

E. Final disposition of the waste;

F. A copy of any certification or authorization that may be required by other laws and regulations;

G. A proposed timeline for reuse and recycling;

H. Beneficial use criteria;

I. Anticipated method of transporting waste; and

J. Any additional information requested by the Director.

(4) **Waste Management Plans.** Each Operator that generates E&P Waste as a result of their operations will prepare a comprehensive waste management plan detailing how the Operator will treat, characterize, manage, store, dispose, and transport all types of waste generated. The Director may require a waste management plan to include a description of proposed haul routes, including any applicable Local Government traffic requirements.

A. Operators will submit their waste management plans with their Form 2A pursuant to Rule 304.c.(11).

B. If an Operator seeks to change its E&P Waste management practice, the Operator will update its waste management plan by submitting a revised waste management plan for the Director's approval or denial on a Form 4.

C. Any Oil and Gas Development Plan filed on or after January 1, 2026, will include in its waste management plan a Produced Water recycling and reuse plan with a commitment to use the minimum percentages of Recycled Produced Water in Well Stimulations as described in the compliance periods listed in Rule 905.c.(6).A.i through iii.

D. The Produced Water recycling and reuse plan will:

i. Quantify the anticipated volumes of Recycled Produced Water used;

ii. Include a description of how the Operator will meet the requirements of Rule 905.c.(6);

iii. Describe and request Commission approval for any water used to satisfy the requirements as a Recycled Produced Water Alternative;

iv. Specify the methods and locations for treatment of Produced Water;

v. Specify the means of transporting Produced Water, treated Produced Water, and Recycled Produced Water Alternative to and from off-location treatment facilities;

vi. Include an affirmative commitment that the Operator will not use the chemicals listed in Table 437-1 as additives in Hydraulic Fracturing Fluid;

vii. Include a description of the source of Recycled Produced Water and whether any of the chemicals listed in Table 437-1 are known to be present in the Recycled Produced Water at any concentrations by laboratory analysis or by process knowledge; and

viii. Include any other information that the Director or Commission determines is necessary to ensure the protection of public health, safety, welfare, the environment and wildlife resources during waste management operations.

(5) Should evidence indicate that conditions at an active or closed Oil and Gas Location, Oil and Gas Facility, or Land Application site where produced Fluids and E&P Waste are currently or were previously generated, stored, treated, or disposed indicate contaminant concentrations in soils or Groundwater exceeding applicable standards, then the Commission authorizes the Director to require further investigation, Remediation, and Reclamation.

b. E&P Waste Transportation.

(1) **Off-Site Transportation Within Colorado.** Operators will only transport E&P Waste off-site within Colorado to facilities authorized by the Director, to permitted commercial waste disposal facilities, permitted commercial waste recycling facilities, or beneficial use sites approved to receive E&P Waste by CDPHE and the Relevant Local Government.

(2) **Off-Site Transportation Outside of Colorado.** Operators will only transport E&P Waste off-site for treatment or waste disposal outside of Colorado to facilities authorized and permitted by the appropriate regulatory agency in the receiving state. Operators will comply with the Rocky Mountain Low-level Radioactive Waste Board's Rules, as incorporated by reference in Rule 901.b.

(3) **Waste Generator Requirements.** Any Operator that generates E&P Waste that is transported off-site will maintain, for not less than 5 years, copies of each invoice, bill, or ticket, and such other records as necessary to document the requirements listed in Rules 905.b.(3).A–F. Such records will be signed by the transporter and provided to the Director upon request.

A. The date of the transport;

B. The identity of the waste generator;

C. The identity of the waste transporter;

D. The location of the waste pickup site;

E. The type and volume of waste; and

F. The name and location of the treatment or disposal site.

c. Produced Water.

(1) Treatment of Produced Water. Operators will treat produced water prior to placing it in a production pit to prevent crude oil, condensate, or hydrocarbon sheen from entering the Pit.

(2) Produced Water Disposal. Produced water may be disposed as follows:

A. Injection into a Class II UIC Well, permitted pursuant to the Commission's 800 Series Rules, or a Class I well permitted by EPA;

B. Evaporation/percolation in a properly permitted Pit at an Oil and Gas Location, operated in accordance with permit conditions that will not cause a violation of any applicable WQCC Regulation 41 numeric or narrative Groundwater quality standards and classifications, as incorporated by reference in Rule 901.b;

C. Disposal at permitted commercial facilities;

D. Discharging into Waters of the State under the following conditions pursuant to the Water Quality Control Act and all applicable regulations.

i. Operators will provide the Colorado discharge permit number, latitude and longitude coordinates pursuant to Rule 216.e of the discharge outfall, and sources of produced water on a Form 26, Source of Produced Water for Disposal, and will include a U.S. Geological Survey topographic map showing the location of the discharge outfall.

ii. If the discharge outfall is not located immediately at the receiving water body, the Operator will prevent surface impacts such as erosion or contamination that can result from the produced water flowing across the land surface.

iii. Produced water discharged pursuant to this Rule 905.c.(2).D may be put to beneficial use in accordance with applicable state statutes and regulations governing the use and administration of water.

E. Evaporation in a properly lined Pit at a Centralized E&P Waste Management Facility permitted pursuant to Rule 907.

(3) Produced Water Reuse and Recycling. Operators may reuse produced water for enhanced recovery, drilling, completion, and other approved uses in a manner consistent with existing water rights and in consideration of water quality standards and classifications established by the WQCC for Waters of the State, or any Point of Compliance established by the Director pursuant to Rule 914.

(4) Mitigation. Operators may use water produced during operation of an oil or gas Well to provide an alternative domestic water supply to Surface Owners within the oil or gas Field, pursuant to all applicable laws, including, but not limited to, obtaining the necessary approvals from the Water Quality Control Division for constructing a new "waterworks," as defined by § 25-1.5-203(1)(b)(II)(A), C.R.S. Any produced water not so used will be disposed of pursuant to Rules 905.c.(2) or (3). Providing produced water for domestic use within the meaning of this Rule 905.c.(4) will not constitute an admission by the Operator that the Well is dewatering or impacting any existing water well. The water produced will be to the benefit of the Surface Owner within the oil and gas Field and may not be sold for profit or traded.

(5) **Water Sharing Agreements.** Operators will submit agreements for sharing produced water for the Director's approval or denial no less than 60 days in advance of implementing the water sharing plan. The plan will be submitted as a waste management plan pursuant to Rule 905.a.(4).

(6) **Requirements for the Recycling or Reuse of Produced Water.**

A. Operators will increase the usage of Recycled Produced Water, Recycled Produced Water Alternative, and Recycled Produced Water Credits and decrease the amount of Fresh Water utilized in Well Stimulations according to the following schedule of "compliance periods":

i. Beginning January 1, 2026, an Operator's geologic basin-wide combined oil and gas developments permitted on Oil and Gas Development Plans filed after January 1, 2026, and the combined subsequent operations to recomplete or restimulate any existing Well within the relevant geologic basin, will use a minimum average of 4% Recycled Produced Water and Recycled Produced Water Alternative for Well Stimulations commenced before January 1, 2030.

ii. Beginning January 1, 2030, an Operator's geologic basin-wide combined oil and gas development, regardless of when the Wells were permitted, will use a minimum average of 10% Recycled Produced Water and Recycled Produced Water Alternative for Well Stimulations commenced before January 1, 2034.

iii. No later than June 1, 2028, the Commission will convene a rulemaking to adopt additional minimum averages for new compliance periods that will commence on January 1, 2034 and January 1, 2038. In such rulemaking the Commission will consider additional work and recommendations by the Produced Water Consortium on Produced Water availability and achievable minimum averages, including consideration of whether to include other Recycled Produced Water Alternative sources. In the absence of additional rulemaking, the minimum averages of 20% for the period beginning January 1, 2034 and 35% for the period beginning January 1, 2038 will become law.

B. **Demonstration of Compliance.** Operators will demonstrate compliance with the requirements of Rule 905.c.(6).A on Forms 47 and Annual Certifications (as defined in Subpart D below) using the calculation required by Rule 431.e.(2).G.

C. **Recycled Produced Water Credits.** If an Operator's compliance demonstration under Rule 905.c.(6).B shows that the Operator's average percentage of Recycled Produced Water and Recycled Produced Water Alternative within a specific geologic basin exceeds the percentage required by Rule 905.c.(6).A for the reporting period, the Operator may claim Recycled Produced Water Credits for the total volume of Recycled Produced Water and Recycled Produced Water Alternative used above the minimum during the reporting period.

i. An Operator creating a Recycled Produced Water Credit must identify that Recycled Produced Water Credit in a Form 47 or Annual Certification (as defined in Subpart D below). If the Operator creating the Recycled Produced Water Credit chooses to apply the Recycled Produced Water Credit to its own compliance demonstration, it will do so through its Form 47 or Annual Certification (as defined in Subpart D below). In this event, the Recycled Produced Water Credit must be used within the same compliance period or within 24 months after the compliance period in which the Recycled Produced Water Credit was created.

ii. If a Recycled Produced Water Credit is subsequently transferred to a third-party Operator, the transferor Operator will submit a Form 48 within ten days of the transfer. The Operator shall identify: (1) the Form 47 on which the Recycled Produced Water Credit was established; (2) the number of Recycled Produced Water Credits being transferred; and (3) the Operator receiving the Recycled Produced Water Credits. Recycled Produced Water Credits created by operations in one geologic basin may not be transferred outside of that geologic basin.

iii. An Operator who acquires a Recycled Produced Water Credit from a third-party Operator may apply that Recycled Produced Water Credit to the receiving Operator's average percentage of Recycled Produced Water for the relevant compliance period in a Form 47 or Annual Certification. A Recycled Produced Water Credit that is acquired from a third-party Operator must be used within the same compliance period or within 24 months after the compliance period in which the Recycled Produced Water Credit was created.

iv. The Director will maintain a centralized ledger that tracks the generation, usage, and trading of Recycled Produced Water Credits. In maintaining this ledger, the Director will review Form 47s creating and applying Recycled Produced Water Credits and Form 48s transferring Recycled Produced Water Credits to confirm that the claimed Recycled Produced Water Credits have been properly created, transferred, and applied towards compliance with Rule 905.c.(6).A.

v. An Operator may not create Recycled Produced Water Credits for exceeding the 50% requirement during the first year of any compliance period, but the Operator may create Recycled Produced Water Credits for exceeding the 100% requirement during the first year of any compliance period.

vi. An Operator found by the Commission to have intentionally misrepresented Recycled Produced Water Credits in either an OFV or AOC will be prohibited from creating, applying, conveying or acquiring Recycled Produced Water Credits.

D. Consideration of an Operator's Recycled Produced Water Target Status. No later than April 1 of each year, beginning in 2027, Operators will submit a certification to the Director ("Annual Certification") providing whether the Operator has met the water usage requirements set forth in Rule 905.c.(6).A in the preceding year(s) of a compliance period; provided, however, that in the first year of any compliance period, the Operator need only demonstrate that it has met 50% of the water usage percentage set forth in Rule 905.c.(6).A for that compliance period, and in each subsequent year of a compliance period, the Operator must demonstrate it has averaged 100% of the water usage percentage set forth in Rule 905.c.(6).A over all applicable Wells for the four year compliance period.

i. If an Operator is unable to certify it has met the Rule 905.c.(6).A water usage requirement in its Annual Certification, then the Operator will submit, within 30 days of its Annual Certification, an Annual Compliance Plan that describes in detail the actions the Operator will take during the remainder of a compliance period to come into compliance with the Operator's Rule 905.c.(6).A percentage target by the applicable compliance deadline, as well as benchmarks to measure the Operator's consistent progress toward meeting the applicable compliance deadline.

ii. Following its submission of an Annual Compliance Plan, the Operator will provide, in its quarterly Form 47, the steps the Operator took in the preceding quarter in furtherance of its Annual Compliance Plan to comply with the Operator's Rule 905.c.(6).A percentage target by the applicable compliance deadline ("Compliance Report").

iii. Once an Operator demonstrates in its Compliance Report, or in a subsequent Annual Certification, that the Operator is meeting its Rule 905.c.(6).A percentage target, then the Operator need not continue to submit a Compliance Report.

iv. If an Operator has not met the Rule 905.c.(6).A water usage requirement by the end of the four-year compliance period, as part of the Director's recommendation pursuant to Rule 306.b and Rule 314.g, the Director will condition approval of the Operator's new Oil and Gas Development Plans and Comprehensive Area Plans to meet or exceed the Rule 905.c.(6).A water usage requirement by the end of the next compliance period. This will continue for all of the Operator's applications submitted pursuant to Rule 306 and Rule 314, until the Operator can certify it is meeting the Rule 905.c.(6).A water usage requirement in its Annual Certification.

v. If an Operator has not met the Rule 905.c.(6).A water usage requirement by the end of the four-year compliance period, as part of the Commission's review of the Director's Recommendation pursuant to Rule 307 and 314.h, the Commission will condition approval of all the Operator's new Oil and Gas Development Plans and Comprehensive Area Plans to meet or exceed the Rule 905.c.(6).A water usage requirement by the end of the next compliance period. This will continue for all of the Operator's applications submitted pursuant to Rule 306 and Rule 314, until the Operator can certify it is meeting the Rule 905.c.(6).A water usage requirement in its Annual Certification.

vi. If the Director determines that the information supplied on an Operator's Annual Compliance Plans and Compliance Report indicates that an Operator will be unable to comply with the Operator's Rule 905.c.(6).A percentage target by the applicable compliance deadline, the Director will require the Operator to take such actions as the Director deems necessary to assure compliance with the Operator's Rule 905.c.(6).A percentage target by the applicable compliance deadline.

vii. If an Operator has not met the Rule 905.c.(6).A water usage requirement by the end of the compliance period, the volume of Recycled Produced Water, Recycled Produced Water Alternative, or Recycled Produced Water Credits necessary to bring the Operator into compliance will carry over and be added to the requirements to be met by the Operator in the next compliance period. This carryover will be a separate requirement in addition to meeting the next compliance period requirements. Operators out of compliance at the end of a compliance period will be subject to Rule 905.c.(6).D.iv. and v. until the Operator has submitted an Annual Certification that it has come into compliance and has addressed the carryover from the previous compliance period.

viii. If the Director requires an Operator to take action pursuant to Rule 905.c.(6).D.vi, the Operator may appeal the Director's decision to the Commission pursuant to Rule 503.g.(10). The matter will not be assigned to an Administrative Law Judge or Hearing Officer. The Commission will hear the appeal at its next regularly scheduled meeting. The Commission may uphold the Director's decision if the Commission determines that the Director had reasonable cause to determine that the required actions are necessary to assure compliance with the Operator's Rule 905.c.(6).A percentage target by the applicable compliance deadline.

E. **Water Use Consistent with Limitations.** Unless an Operator can show that water will be diverted from the stream system only during Free River conditions, when all water rights are satisfied, the Fresh Water used in drilling and completion operations must be used in accordance with any limitations on a water right, permit or administrative approval for industrial use.

d. Drilling Fluids.

(1) **Reuse and Recycling.** Operators may recycle drilling Pit contents for reuse at another drilling Pit that is properly permitted and operated pursuant to Rules 908, 909, & 910.

(2) **Treatment and Disposal.** Operators will treat or dispose of drilling Fluids through:

A. Injection into a Class II UIC Well permitted pursuant to the Commission's 800 Series Rules;

B. Disposal at a commercial Solid Waste Disposal facility; or

C. Land Treatment or Land Application at a Centralized E&P Waste Management Facility permitted pursuant to Rule 907.

(3) **Additional Authorized Disposal of Water-Based Bentonitic Drilling Fluids.** Operators may dispose of water-based bentonitic drilling fluids through one of the following methods:

A. Drying and burial in Pits on Non-Crop Land, if:

i. The resulting concentrations will not exceed the concentration levels in Table 915-1; and

ii. The Director approves the Operator's plan for closing the Pit pursuant to a prior approved Form 27.

B. Land Application if permitted by a waste management plan approved by the Director pursuant to Rule 905.a.(4), and if the Operator complies with the following standards:

i. **Application Methods.** Acceptable methods of Land Application include, but are not limited to, Production Facility construction and maintenance, lease road maintenance, and offsite beneficial reuse, subject to Rule 905.a.(4).

ii. **Land Application Requirements.**

aa. The average thickness of water-based bentonitic drilling Fluid waste applied will be no more than 3 inches.

bb. Operators will incorporate the drilling Fluid waste through mechanical means into the uppermost soil horizon.

cc. The waste will be applied to prevent ponding or erosion and will be incorporated as a beneficial amendment into the native soils within 10 days of application.

dd. Operators will not apply water-based bentonitic drilling Fluids to Non-Crop Land.

ee. Prior to application, Operators will analyze water-based bentonitic drilling Fluid waste to ensure that concentrations of contaminants of concern in water-based bentonitic drilling Fluids do not exceed concentrations in Table 915-1.

ff. The results of sampling analysis demonstrating compliance with Table 915-1 will be provided to the Director upon request.

iii. **Surface Owner & Relevant Local Government Approval.** Operators will obtain written authorization from the Relevant Local Government, if required, and the Surface Owner prior to Land Application of water-based bentonitic drilling Fluids and provide the written authorization to the Director upon request.

iv. **Recordkeeping.** Operators will maintain records of the information listed in Rules 905.d.(3).B.iv.aa–cc for 5 years, pursuant to Rule 206.f. Operators will provide all such records to the Director within 5 days, upon request:

aa. The source of any water-based bentonitic drilling Fluids applied;

bb. The volume of any water-based bentonitic drilling Fluids applied; and

cc. The location where the Land Application of the water-based bentonitic drilling Fluid occurred.

v. Operator Responsibility. The Operator with control and authority over the Well(s) from which the water-based bentonitic drilling fluid wastes were obtained retains responsibility for the Land Application operation. All Operators will cooperate with the Director in responding to complaints regarding Land Application of water-based bentonitic drilling Fluids.

e. Oily Waste.

(1) Treatment and Disposal. Operators may treat or dispose of Oily Waste through one of the following methods:

A. Disposal at a commercial Solid Waste Disposal facility;

B. Land Treatment onsite pursuant to 905.e.(2); or

C. Land Treatment at a Centralized E&P Waste Management Facility permitted pursuant to Rule 907.

D. Onsite treatment, for Oily Waste other than Tank bottoms, using alternative methods described on a Form 27 submitted to the Director for prior approval.

(2) Land Treatment Requirements.

A. Prior to commencing any Land Treatment, Operators will submit and obtain approval of a Form 27. The Form 27 will include, at a minimum:

i. A site diagram depicting the location of the planned Land Treatment area;

ii. The duration of the planned treatment; and

iii. The Operator's plan for final disposition of the treated Oily Waste.

B. Operators will adhere to the approved plan provided with the Form 27 and Rules 907 and 915 when performing Land Treatment.

C. Operators will remove free oil from the Oily Waste prior to Land Treatment.

D. Operators will spread Oily Waste evenly to prevent pooling, ponding, and runoff.

E. Operators will prevent Pollution of Stormwater Runoff, Groundwater, and surface water.

i. Operators will establish stormwater controls and use Best Management Practices to prevent contaminated stormwater from leaving the Land Treatment area.

ii. Operators will establish Land Treatment areas where contaminant mobility, soil type, or depth to Groundwater prevent downward migration of contaminants that would cause a violation of any WQCC Regulation 41 numeric and narrative Groundwater quality standards and classifications, as incorporated by reference in Rule 901.b.

iii. Operators will establish Land Treatment areas a minimum of 200 feet from the ordinary high water mark of a surface water.

iv. The Director may require the use of a liner beneath the Land Treatment area as a condition of approval on the Form 27, as appropriate.

F. Operators will enhance biodegradation by routine disking, tilling, aerating, or addition of nutrients, microbes, water or other amendments, at a predetermined frequency pursuant to the approved Form 27.

G. When Operators incorporate land-treated Oily Waste in place or beneficially reuse it, the treated waste may not exceed the cleanup concentrations in Table 915-1, including inorganic constituents and metals.

H. Surface Owner Consent.

i. If an Operator intends to conduct Land Treatment in an area not being utilized for Oil and Gas Operations, the Operator will obtain the Surface Owner's consent to conduct the Land Treatment operations on the Surface Owner's property, and provide a copy of the signed agreement with the Surface Owner to the Director with the Form 27 prior to proceeding with Land Treatment.

ii. If an Operator intends to conduct Land Treatment on an approved Oil and Gas Location prior to completion of interim Reclamation or on the surface disturbance remaining after interim reclamation, the Operator will provide notice to the Surface Owner at least 30 days before commencing the Land Treatment. Notice will, at a minimum, include a site diagram depicting the location of the planned Land Treatment area, the duration of the planned treatment, and planned final disposition of the waste.

I. Operators will conduct Land Treatment in a manner that does not preclude compliance with Rules 1003 and 1004.

J. Operators will not conduct Land Treatment of Oily Waste on an Oil and Gas Location after the final Well has been plugged. Oily Waste will be treated or disposed pursuant to Rules 905.e.1.(A) or (C).

K. Operators will conduct Land Treatment in a manner that achieves compliance with Table 915-1 concentrations in three years or less. If the treated waste does not comply with Table 915-1 within three years of the date of Land Treatment, the Operator will submit a Form 28 at least 90 days in advance of the 3-year anniversary of the Land Treatment Form 27 approval date. Failure to comply with Table 915-1 in 3 years or to submit a Form 28 will result in the requirement to immediately remove and properly dispose any remaining Oily Waste pursuant to Rules 905.e.1.(A) or (C).

f. Other E&P Waste. Operators may treat and dispose other E&P Waste, including but not limited to workover Fluids, Tank bottoms, pigging wastes from Pipelines, and gas gathering, processing, and storage wastes through one of the following methods:

(1) Disposal at a commercial Solid Waste Disposal facility;

(2) Treatment at a Centralized E&P Waste Management Facility permitted pursuant to Rule 907;

(3) Injection into a Class II UIC Well permitted pursuant to the Commission's 800 Series Rules; or

(4) An alternative method proposed in a waste management plan pursuant to Rule 905.a.(4) and approved by the Director.

g. **Drill Cuttings.** Operators will treat or dispose of drill cuttings through one of the following methods:

(1) **Oily Waste.** Operators will manage the following drill cuttings as Oily Waste pursuant to Rule 905.e:

A. Drill cuttings generated from oil-based drilling fluids;

B. Drill cuttings that exceed Table 915-1 concentrations for organic compounds in soil; and

C. Drill cuttings that have not been sampled and analyzed to demonstrate compliance with Table 915-1 for organic compounds in soil.

(2) **Drill Cuttings.** Operators will demonstrate compliance with Table 915-1 through sampling and analysis. Management of drill cuttings that exceed Table 915-1 for constituents listed under soil suitability for Reclamation by the methods listed below is subject to prior approval by the Director, pursuant to Rule 915.b. Operators may manage drill cuttings that comply with Table 915-1, are not Oily Waste, and are generated using water-based bentonitic drilling Fluids through one of the following methods:

A. Disposal at a commercial Solid Waste Disposal facility;

B. Disposal at a Centralized E&P Waste Management Facility permitted pursuant to Rule 907;

C. Subject to Surface Owner approval, Land Application as a beneficial soil amendment to native soil subject to a waste management plan approved pursuant to Rule 905.a.(4).

D. If permitted by Rule 1003.d, and subject to Surface Owner approval, drying and burial in on-location drilling Pits that are documented with a Form 27 submitted for prior Director approval for closure of the Pit; or

E. Subject to Surface Owner approval, and prior Director approval of a Form 27, burial in a Cuttings Trench.

906. MANAGEMENT OF NON-E&P WASTE

a. Certain wastes generated by Oil and Gas Operations that do not meet the 100 Series definition of E&P Waste are regulated as solid or hazardous wastes by CDPHE's Solid and Hazardous Waste Commission ("SHWC"). Operators will properly identify and dispose of these wastes pursuant to applicable state and federal regulations.

b. The SHWC Hazardous Waste Regulations, as incorporated by reference in Rule 901.b, require that a hazardous waste determination be made for any non-E&P solid waste. Operators will comply with all hazardous waste storage, treatment, and disposal requirements in the SHWC's Hazardous Waste Regulations, as incorporated by reference in Rule 901.b.

c. All non-hazardous/non-E&P Wastes are considered solid waste. Operators will comply with all storage, treatment, and disposal requirements in the SHWC's Solid Waste Regulations, as incorporated by reference in Rule 901.b.

d. Operators will not burn or bury non-E&P Waste on Oil and Gas Locations.

907. CENTRALIZED E&P WASTE MANAGEMENT FACILITIES

a. **Applicability.** Operators may establish non-commercial, Centralized E&P Waste Management Facilities for the treatment, disposal, recycling, or beneficial reuse of E&P Waste. This Rule 907 applies only to non-commercial facilities, which means the Operator does not represent itself as providing E&P Waste management services to third parties, except as part of a unitized area or joint operating agreement or in response to an emergency. Centralized E&P Waste Management Facilities may include components such as Land Treatment or Land Application sites, Pits, and recycling equipment.

b. **Permit Requirements.** Before any Operator commences construction of a Centralized E&P Waste Management Facility, the Operator will file and obtain the Director's approval of an application on a Form 28, Centralized E&P Waste Management Facility Permit, and pay a filing fee established by the Commission (see Appendix III). The Operator will submit a Form 28 application at the same time it submits any permit applications required by the Commission's 300 Series Rules, if any, including an Oil and Gas Development Plan or a Form 2A. In addition, the Form 28 will contain the following:

(1) The name, address, phone and email address of the Operator, and a designated contact person.

(2) The name, address, phone number, email address, and written authorization of the Surface Owner of the site, if not the Operator.

(3) The legal description of the site.

(4) A general topographic, geologic, and hydrologic description of the site, including immediately adjacent land uses and a topographic map of a scale no less than 1:24,000 showing the location and the average annual precipitation and evaporation rates at the site.

(5) **Centralized E&P Waste Management Facility Siting Requirements and Limitations.**

A. A site plan showing drainage patterns and any diversion or containment structures, and facilities such as roads, fencing, tanks, Pits, buildings, and other construction details.

B. Scaled drawings of entire sections containing the proposed facility. The field measured distances from the nearer north or south and nearer east or west section lines will be measured at 90 degrees from said section lines to facility boundaries and referenced on the drawing. A survey will be provided including a complete description of established monuments or collateral evidence found and all aliquot corners.

C. The facility will be designed to control public access, prevent unauthorized vehicular traffic, provide for site security both during and after operating hours, and prevent illegal dumping of wastes. Appropriate measures will also be implemented to prevent access to the Centralized E&P Waste Management Facility by wildlife or domestic animals.

D. Centralized E&P Waste Management Facilities will have a fire lane of at least 10 feet in width around the perimeter of the active treatment areas and within the facility fencing. In addition, a buffer zone of at least 10 feet will be maintained within the perimeter fire lane.

E. Surface water diversion structures, including but not limited to berms and ditches, will be constructed to accommodate a 100-year, 24-hour storm event. The facility will be designed and constructed with a run-on control system to prevent flow onto the facility during peak discharge and a run-off control system to contain the water volume from a 25-year, 24-hour storm event.

F. Operators will provide evidence that they have complied with any Relevant Local Government land use regulations and facility siting or construction or operation requirements.

G. Operators will not construct new Centralized E&P Waste Management Facilities within 2,000 feet of the nearest Building Unit or High Occupancy Building Unit, unless all Building Unit owners and tenants within 2,000 feet consent to a closer location.

H. Operators are prohibited from siting new centralized Produced Water storage or treatment facilities within Disproportionately Impacted Communities. This prohibition does not apply to any Produced Water storage or treatment facilities excluded from the definition of Centralized E&P Waste Management Facilities.

(6) **Waste Profile.** For each type of waste, Operators will estimate the amounts to be received and managed by the facility on a monthly average basis. For each waste type to be treated, Operators will complete a characteristic waste profile, which will include analysis of representative waste samples by an accredited laboratory.

(7) **Facility Design and Engineering.** Facility design and engineering data, incorporating Best Management Practices, including plans and elevations, design basis, calculations, and process description. Facility design, engineering, and as-constructed plans will be reviewed and stamped by a Colorado Professional Engineer ("P.E.").

A. Geologic data, including, but not limited to:

i. Type and thickness of unconsolidated soils;

ii. Type and thickness of consolidated bedrock, if applicable;

iii. Local and regional geologic structures; and

iv. Any Geologic Hazards that may affect the design and operation of the facility.

B. Hydrologic data, including, but not limited to:

i. Water wells within 1 mile of the site boundary including, but not limited to, information such as well construction details, total depth, static water level, screened interval(s), yields, and Aquifer name(s).

ii. Surface water features within 2 miles;

iii. Site location in relation to the Floodplain of nearby surface water features;

iv. Depth to Groundwater, including specifically identifying the shallowest unconfined Groundwater and any underlying Groundwater formations;

v. Existing quality of the shallowest Groundwater;

vi. Hydrologic properties of the shallowest Groundwater at the location including flow direction, flow rate, and potentiometric surface; and

vii. An evaluation of the potential for impacts to nearby surface water and Groundwater.

C. Engineering data, including, but not limited to:

i. Type and quantity of material required for use as a liner, including design components;

ii. Location and depth of cut for liners;

iii. Design of leak detection system for Pits or other containment systems;

iv. Location, dimensions, and grades of all surface water diversion structures;

v. Location and dimensions of all surface water containment structures; and

vi. Location of all proposed facility structures and access roads.

(8) **Operating Plan.** An operating plan, incorporating Best Management Practices, including, but not limited to:

A. A detailed description of the method of treatment, loading rates, and application of nutrients and soil amendments;

B. Dust and moisture control;

C. Sampling;

D. Inspection and maintenance;

E. Emergency response;

F. Recordkeeping;

G. Site security;

H. Hours of operation;

I. Stormwater management plan;

J. Noise, visual impacts, and odor mitigation; and

K. Final disposition of waste. If the Operator intends to beneficially reuse treated waste, the Operator will describe the reuse and method of product quality assurance.

(9) Groundwater Monitoring.

A. Water Wells. Operators will collect water samples from water wells known to the Operator or registered with the Colorado State Engineer, following all protocols established by Rule 615, except that the Operator will collect water samples from known water wells within 1 mile of the proposed Centralized E&P Waste Management Facility. An Operator may request an exception from the requirements of this Rule 907.b.(9).A by submitting a Form 4 pursuant to Rule 615.c.

B. Site-Specific Monitoring Wells.

i. As a condition of approval, the Director may require the Operator to install site-specific monitoring wells to ensure compliance with the concentration levels in Table 915-1 and WQCC Regulation 41, as incorporated by reference in Rule 901.b, by establishing Points of Compliance.

ii. All monitoring well construction must be completed pursuant to the State Engineer's Water Well Construction and Permitting Rules, as incorporated by reference in Rule 901.b.

iii. Where monitoring is required, the direction of flow, Groundwater gradient, and quality of water will be established by the installation of a minimum of 3 monitor wells, including an up-gradient well and 2 down-gradient wells that will serve as Points of Compliance, or other methods authorized by the Director.

iv. The Operator will propose for prior Director approval monitoring schedules, reporting schedules, and appropriate analyte lists.

(10) Surface Water Monitoring. Where applicable, the Director will require baseline and periodic surface water monitoring to ensure compliance with WQCC surface water standards and classifications, including narrative standards. Operators will use reasonable good faith efforts to obtain access to such surface water for the purpose of collecting water samples. If access cannot be obtained, then the Operator will notify the Director of the surface water for which access was not obtained and sampling of such surface water by the Operator will not be required.

(11) Contingency Plan. A contingency plan that describes the emergency response operations for the facility, 24-hour contact information for the person who has authority to initiate emergency response actions, contact information of local emergency response authorities, and an outline of responsibilities under any joint operating agreement regarding maintenance, operations, closure, and monitoring of the facility.

c. Permit Review.

(1) Within 90 days of the submission for a Form 28, the Director will issue a determination about whether the Form 28 application is complete.

(2) The Director may approve the Centralized E&P Waste Management Facility permit if it protects and minimizes adverse impacts to public health, safety, welfare, the environment, and wildlife resources. The Director may require any conditions of approval that are determined to be necessary and reasonable to protect public health, safety, welfare, the environment, and wildlife resources, or to the extent necessary to ensure compliance with the concentration levels in Table 915-1, or WQCC Regulation 41 Groundwater standards and classifications, as incorporated by reference in Rule 901.b.

(3) The Director may deny a Centralized E&P Waste Management Facility permit if it does not adequately protect and minimize impacts to public health, safety, welfare, the environment, and wildlife resources.

d. **Financial Assurance.** The Operator of a Centralized E&P Waste Management Facility will submit for the Director's approval such Financial Assurance as required by Rule 703.a prior to the Director approving the Form 28.

e. **Facility Modifications.** Throughout the life of the facility, the Operator will submit proposed modifications to the facility design, operating plan, permit data, or permit conditions to the Director for prior approval through a Form 4.

f. **Permit Expiration.** The Form 28 will expire 3 years after approval if the Operator has not commenced construction of the permitted facility.

g. **Annual Permit Review.** To ensure compliance with permit conditions and the Commission's Rules, the facility permit will be subject to an annual review by the Director. To facilitate this review, the Operator will submit an annual report summarizing operations, including the types and volumes of waste handled at the facility. The Director may require additional information.

h. **Closure.**

(1) **Preliminary Closure Plan.** A general preliminary plan for closure will be submitted with the Form 28. The preliminary closure plan will include, but not be limited to:

A. A general plan for closure and Reclamation of the entire facility, including a description of the activities required to decommission and remove all equipment, close and reclaim Pits, dispose of or treat residual waste, collect samples as needed to verify compliance with soil and Groundwater standards, implement post-closure monitoring, and complete other Remediation, as required.

B. An estimate of the cost to close and reclaim the entire facility and to conduct post-closure monitoring. Cost estimates will be subject to review by the Director to verify that the Financial Assurance provided pursuant to Rules 907.d & 703.a is appropriate.

(2) **Final Closure Plan.** The Operator will submit a detailed Form 27 at least 60 days prior to closure for approval or denial by the Director. The workplan will include, but not be limited to, a description of the activities required to decommission and remove all equipment, close and reclaim Pits, dispose of or treat residual waste, collect samples as needed to verify compliance with soil and Groundwater standards, implement post-closure monitoring, and complete other Remediation and Reclamation, as required.

908. PIT PERMITTING/REPORTING REQUIREMENTS

a. Operators will submit a Form 15, Earthen Pit Report/Permit to the Director for review and approval prior to constructing any of the following:

(1) All Production Pits;

(2) Special Purpose Pits except those listed in Rules 908.c.(1) or (2);

(3) Drilling Pits; and

(4) Multi-Well Pits, including those located at Centralized E&P Waste Management Facilities.

b. Operators will submit a Form 15, to the Director for review and approval prior to enlarging or otherwise modifying an existing properly permitted Pit.

c. Operators will submit a Form 15 within 30 days after constructing:

(1) Emergency Pits, Plugging Pits, and Workover Pits if they are used in the initial phase of an emergency response; and

(2) Cuttings Trenches approved on a Form 2A.

d. In order to allow adequate time for Pit permit review and approval, Operators will submit a Form 15 at the same time they submit a Form 2A or Oil and Gas Development Plan. The Director may condition approval of the Form 15 upon compliance with additional terms, provisions, or requirements necessary to protect and minimize adverse impacts to public health, safety, welfare, the environment, and wildlife resources. The Director may deny a Form 15 if the Director determines it does not provide necessary and reasonable standards to protect and minimize adverse impacts to public health, safety, welfare, the environment, and wildlife resources. Notwithstanding the foregoing, no Form 15 will be approved until the associated Form 2A or Oil and Gas Development Plan is approved.

909. PITS – CONSTRUCTION AND OPERATION

a. Operators will ensure that the Pits they operate are:

(1) Properly permitted through a Form 15 approved by the Director, or registered in their names with an active Pit Facility ID;

(2) Accurately mapped; and

(3) Listed according to current facility records in the Commission's database. Operators may update facility records using a Form 15.

b. Operators will construct, maintain, and operate Pits used for exploration and production of oil and gas in a manner that protects and minimizes adverse impacts to public health, safety, welfare, the environment, and wildlife resources. Operators will operate and maintain Pits and Pit liners to prevent Spills and Releases.

c. Operators will construct, monitor, and operate Pits to provide for a minimum of 2 feet of freeboard at all times between the top of the Pit wall at its point of lowest elevation and the Fluid level of the Pit. Operators will employ a method of monitoring and maintaining the freeboard. Operators will report any unauthorized Release of Fluids from a Pit pursuant to Rule 912.

d. Operators will not store oil or any other produced liquid hydrocarbon substance in earthen Pits or reservoirs, except in emergencies where such substances cannot be otherwise contained. Operators will remove the oil or produced hydrocarbons as soon as the emergency is controlled. Operators will submit a Form 15 for the Director's approval within 30 days of the emergency, pursuant to Rule 908.c.

e. No liquid hydrocarbons may be present in a Pit unless the Pit is specifically permitted as a Skimming/Settling ("Skim") Pit.

(1) Immediately upon discovery or notification, Operators will remove any accumulation of oil or condensate, including free product or hydrocarbon sheen, from a Pit. If the Operator is unable to immediately remove the accumulation, the accumulation will be removed within 24 hours of discovery.

(2) Operators will use skimming, steam cleaning of exposed liners, or other safe and legal methods as necessary to maintain Pits in clean condition and to control hydrocarbon odors.

(3) If an Operator allows oil or condensate (free product or sheen) to accumulate in a Pit, then the Director may revoke the Operator's Form 15 and require the Operator to close and remediate the Pit.

f. Operators will fence and net or install CPW-approved exclusion devices on all new Pits pursuant to Rule 1202.a.(4).

g. Operators may use Multi-Well Pits for a period of no more than 3 years, unless:

(1) The Operator obtains a permit to operate the Multi-Well Pit pursuant to Rule 907 at a Centralized E&P Waste Management Facility;

(2) The Multi-Well Pit is located in Huerfano or Las Animas Counties and was constructed prior to May 1, 2011; or

(3) The Multi-Well Pit is located in Logan, Morgan, Washington, and Yuma Counties and was constructed prior to May 1, 2013.

(4) Based on evidence of risks to public health, safety, welfare, the environment, or wildlife resources, the Director may require an Operator to line, net, cover, fence, or close an existing Multi-Well Pit that is subject to Rules 909.g.(2) & (3), or submit a Form 28 for such a Multi-Well Pit.

h. Operators will treat produced water pursuant to Rule 905.c.(1) before placing it in a Production Pit.

i. Operators will utilize appropriate biocide treatments to control bacterial growth and related odors.

j. **Produced Water Quality Analyses.** Beginning January 15, 2021, Operators will submit an initial water quality analysis for produced water for each Well from which produced water is placed into a permitted or registered Pit, including Pits that were constructed prior to January 15, 2021.

(1) The water sample will be analyzed for the following:

A. pH;

B. Specific conductance;

C. Total dissolved and suspended solids (TDS and TSS);

D. Alkalinity (total, bicarbonate, and carbonate as $CaCO_3$);

E. Major anions (bromide, chloride, fluoride, sulfate, nitrate and nitrite as N, and phosphorus);

F. Major cations (calcium, iron, magnesium, manganese, potassium, and sodium);

G. Other elements (barium, boron, selenium, and strontium);

H. Naphthalene;

I. Total petroleum hydrocarbons ("TPH") as total volatile hydrocarbons (C6 to C10) and total extractable hydrocarbons (C10 to C36);

J. BTEX compounds (benzene, toluene, ethylbenzene, and xylenes); and

K. Radium (^{226}Ra and ^{228}Ra).

(2) Subsequent Sampling and Analysis. After initial sampling, Operators will collect and analyze subsequent samples at the following frequencies:

A. For lined Pits, Operators will collect and analyze a second confirmation sample during the period between 33 and 39 months after the initial sampling and analysis;

B. For unlined Pits:

i. Operators will collect and analyze samples on an annual basis after the initial sampling and analysis;

ii. If subsequent sampling and analysis indicates stable water quality over time, the Operator may request relief from further subsequent sampling and analysis by submitting a Form 4, which the Director will review and approve or deny;

C. For all Pits, Operators will collect and analyze a subsequent sample for any new Well that contributes water to the Pit;

D. For all Pits, Operators will collect and analyze a subsequent sample any time the Operator or Director has reason to believe the water quality in the Pit has changed; and

E. For all Pits, if subsequent sampling and analysis indicates variable water quality, the Director may require more frequent or additional sampling.

(3) Operators will submit all water quality analysis data using a Form 43, Analytical Sample Submittal, and will include suitable electronic data deliverable generated by the laboratory and PDF of lab reports within 3 months of sample collection. Results for the initial samples collected pursuant to Rule 909.j.(1) will be submitted no later than July 15, 2022, or prior to Pit closure, whichever is earlier.

(4) Operators will collect samples according to standard environmental procedures.

(5) Operators will analyze samples in an accredited laboratory using established methodologies. For those analytes with Groundwater threshold concentrations listed in WQCC Regulation 41, as incorporated by reference in Rule 901.b, the analytical technique will be capable of achieving, and will achieve, reporting limits at concentrations less than the WQCC Regulation 41 thresholds in the matrix submitted. The Director may review the analytical standard used for each analyte and may request the analysis be run by a different method.

(6) As an alternative to the sampling required by Rules 909.j.(1)–(5) the Operator transporting produced water produced from the same formation(s) in the same Field or unit to the same Pit may submit a Form 4 to request the Director's approval for an alternative sampling program to consolidate the number of samples required from the same formation(s).

910. PIT LINING REQUIREMENTS AND SPECIFICATIONS

a. Except for Cuttings Trenches and Pits constructed as an initial emergency response measure pursuant to Rule 908.c.(1), all Pits constructed after January 15, 2021 will be lined.

b. **Skim Pits.** Operators will not construct new Skim pits. All existing Skim Pits, regardless of date of construction, will be lined. For any unlined Skim Pits in existence on January 15, 2021, the Operator will submit a Form 27 outlining the Operator's plan to delineate and remediate any associated impacts and a plan to either properly line or close the Pit. The Form 27 for an unlined Skim Pit must be submitted to the Director by April 1, 2021. If the Pit will be lined and returned to service, the Operator will also submit and obtain the Director's approval of a Form 15.

c. Operators will construct all Pits according to the following specifications:

(1) Materials used in lining Pits will be of a synthetic material that is impervious, has high puncture and tear strength, has adequate elongation, and is resistant to deterioration by ultraviolet light, weathering, hydrocarbons, aqueous acids, alkali, fungi, or other substances in the produced water.

(2) All Pit lining systems will be designed, constructed, installed, and maintained in accordance with the manufacturers' specifications and good engineering practices. Operators will maintain records demonstrating that the Operator followed manufacturers' specifications, and provide them to the Director upon request.

(3) Field seams will be installed and tested in accordance with manufacturer specifications and good engineering practices. Operators will maintain testing results, repair documentation (including the dates of tests and repairs), and provide them to the Director upon request.

d. Operators will construct all Pits, except those at Centralized E&P Waste Management Facilities, according to the following specifications:

(1) Liners will have a minimum thickness of 24 mils. The synthetic or fabricated liner will cover the bottom and interior sides of the Pit with the edges secured with at least a 12-inch deep anchor trench around the Pit perimeter. The anchor trench will be designed to secure, and prevent slippage or destruction of, the liner materials.

(2) The foundation for the liner will be constructed with material containing no sharp rocks, debris or other material that could puncture the liner. The foundation for the liner will have a minimum thickness of 12 inches after compaction, cover the entire bottom and interior sides of the Pit, and be constructed so that the hydraulic conductivity will not exceed 1.0×10^{-7} cm/sec after testing and compaction. Operators will maintain compaction and permeability test results measured in the laboratory and field and provide the results to the Director upon request.

(3) As an alternative to the soil foundation described in Rule 910.d.(2), Operators may construct the foundation with bedding material that exceeds a hydraulic conductivity of 1.0×10^{-7} cm/sec, if a double synthetic liner system is used. However, the bottom and sides of the Pit will be padded with soil or synthetic matting type material and will be free of sharp rocks or other material that are capable of puncturing the liner. Each synthetic liner will have a minimum thickness of 24 mils.

e. Operators will construct Pits used at Centralized E&P Waste Management Facilities according to the following specifications:

(1) Liners will have a minimum thickness of 60 mils. The synthetic or fabricated liner will cover the bottom and interior sides of the Pit with the edges secured with at least a 12-inch deep anchor trench around the Pit perimeter or in accordance with the liner manufacturer's specifications. The anchor trench will be designed to secure, and prevent slippage or destruction of, the liner materials.

(2) The foundation for the liner will be constructed with material containing no sharp rocks, debris, or other material that could puncture the liner. The foundation for the liner will have a minimum thickness of 24 inches after compaction, cover the entire bottom and interior sides of the Pit, and be constructed so that the hydraulic conductivity will not exceed 1.0×10^{-7} cm/sec after testing and compaction. Operators will maintain compaction and permeability test results measured in the laboratory and field and provide them to the Director upon request.

(3) As an alternative to the soil foundation described in Rule 910.e.(2), Operators may use a secondary liner consisting of a geosynthetic clay liner, which is a manufactured hydraulic barrier typically consisting of bentonite clay or other very low permeability material, supported by geotextiles or geomembranes, which are held together by needling, stitching, or chemical adhesives.

(4) As an alternative to the soil foundation described in Rule 910.e.(2), Operators may use a double synthetic liner system. However, the bottom and sides of the Pit will be padded with soil or synthetic matting type material and will be free of sharp rocks or other materials that are capable of puncturing the liner. Each synthetic liner will have a maximum thickness of 60 mils.

(5) All Pits will be constructed and operated with a leak detection system.

f. The Director may require the use of additional liners or a leak detection system for the Pit or other equivalent protective measures, including but not limited to, increased recordkeeping requirements, monitoring systems, and underlying gravel filled sumps and lateral systems. In making such a determination, the Director will consider the site-specific information provided by the Operator, including but not limited to surface and subsurface geology, the presence and depth to Groundwater, the quality of the produced water, the hydraulic conductivity of the surrounding soils, the distance to surface water and water wells, and the type of liner.

911. CLOSURE OF OIL AND GAS FACILITIES

a. Operators will close all Oil and Gas Facilities, including Drilling Pits and Cuttings Trenches, in accordance with an approved Form 27.

(1) Operators will obtain the Director's approval of the Form 27 prior to conducting any investigation or closure operations.

(2) The Form 27 will include a description of the proposed investigation and Remediation activities pursuant to Rule 913.

(3) Operators will close and remediate Emergency Pits as soon as the initial phase of emergency response operations is complete or any process Upset Conditions are controlled.

(4) Oil and Gas Facility closure pursuant to this Rule 911.a will be at the time of final site closure, Plugging and Abandonment, or decommissioning, unless the Director determines that a substantive change to the site requires a Form 27, or a reportable Spill or an historic impact is discovered during facility operation or removal.

b. **Discovery of a Spill or Release During Closure.** If an Operator discovers a Spill or Release during closure operations, the Operator will report the Spill or Release on a Form 19, Spill/Release Report, pursuant to Rule 912.

c. **Pit Closure.**

(1) **Pit Evacuation.** Operators will treat or dispose of E&P Waste pursuant to Rule 905 prior to backfilling and site Reclamation.

(2) Operators will collect a sufficient number of representative samples from locations beneath a Pit to demonstrate that no leakage of managed fluids has occurred. Operators will ensure that any soil left in place meets the cleanup concentrations listed in Table 915-1.

(3) **Liner Disposal.**

A. **Synthetic Liner Disposal.** Operators will remove and dispose of synthetic liners pursuant to all state and federal requirements for Solid Waste Disposal.

B. **Constructed Soil Liners.** Operators may remove constructed soil liner material for treatment or disposal. Alternatively, if an Operator leaves the constructed soil liner material in place, the Operator will rip the material and mix it with native soils in a manner to alleviate compaction and prevent an impermeable barrier to infiltration and Groundwater flow. Operators will demonstrate that the resulting material meets cleanup concentrations for contaminants of concern listed in Table 915-1.

912. SPILLS AND RELEASES

a. General.

(1) Immediately upon discovering any Spills or Releases of E&P Waste, produced Fluids, or unauthorized Releases of natural gas that meet the criteria of Rules 912.b.(1).H, I, or J, regardless of size or volume, Operators will control and contain the Spill or Release to protect and minimize adverse impacts to public health, safety, welfare, the environment, and wildlife resources.

(2) Operators will investigate, clean up, and document impacts resulting from Spills and Releases as soon as the impacts are discovered.

(3) The Director may require the Operator to perform any action the Director determines to be necessary and reasonable to prevent or mitigate adverse impacts on any air, water, soil, or biological resource caused by a Spill or Release.

(4) Operators will document and maintain records to demonstrate compliance with the concentration levels in Table 915-1, and, if surface water or Groundwater are impacted, WQCC Regulation 41 numeric and narrative Groundwater quality standards and classifications, as incorporated by reference in Rule 901.b.

(5) For any Spills or Releases that do not meet the reporting requirements of Rule 912.b, Operators will document cleanup efforts and provide documentation of the cleanup to the Director upon request.

b. Reporting Spills or Releases of E&P Waste, Gas, or Produced Fluids.

(1) **Report to the Director.** Operators will submit an initial report ("24 Hour Notification") of a Spill or Release of E&P Waste, natural gas, or produced Fluids that meet any of the following criteria to the Director verbally, via electronic mail, or on a Form 19, Spill/Release Report – Initial within 24 hours of discovery, unless otherwise specified below.

A. A Spill or Release of any size that impacts or threatens to impact any Waters of the State, Public Water System, residence or occupied structure, livestock, wildlife, or publicly-maintained road;

B. A Spill or Release in which 1 Barrel or more of E&P Waste or produced Fluids is spilled or released outside of berms or other secondary containment;

C. A Spill or Release of 5 Barrels or more of E&P Waste or produced Fluids regardless of whether the Spill or Release is completely contained within berms or other secondary containment.

D. Within 6 hours of discovery, a Grade 1 Gas Leak. For a Grade 1 Gas Leak from a Flowline, the Operator also must submit the Form 19 – Initial, document number on a Form 44, Flowline Report, for the Grade 1 Gas Leak.

E. The discovery of 10 cubic yards or more of impacted material resulting from a current or historic Spill or Release. Discovery and reporting will not be contingent upon confirmation samples demonstrating exceedance of Table 915-1 standards.

F. The discovery of impacted Waters of the State, including Groundwater. Discovery and reporting will not be contingent upon confirmation samples demonstrating exceedance of Table 915-1 standards. The presence of free product or hydrocarbon sheen on Groundwater or surface water is reportable. The presence of contaminated soil in contact with Groundwater or surface water is reportable.

G. A suspected or actual Spill or Release of any volume where the volume cannot be immediately determined, including a Spill or Release of any volume that daylights from the subsurface.

H. A Spill or Release resulting in vaporized hydrocarbon mists that leave the Oil and Gas Location or Off-Location Flowline right of way from an Oil and Gas Location and impacts or threatens to impact off-location property.

I. A Release of natural gas that results in an accumulation of soil gas or gas seeps.

J. A Release that results in natural gas in Groundwater.

(2) The 24 Hour Notification to the Director will include, at a minimum,

A. The specific location of the Spill or Release, including latitude and longitude;

B. Certification that the Operator provided additional party notifications as required by Rules 912.b.(7)–(10), below;

C. A description of any threat to Waters of the State, Public Water Systems, residences or occupied structures, livestock, wildlife, air quality, or publicly-maintained roads from the Spill or Release; and

D. Any information available to the Operator about the type and volume of Fluid or waste involved, including whether it is controlled or uncontrolled at the time of the 24 Hour Notification.

(3) If the Operator did not submit the 24 Hour Notification through a Form 19 – Initial, the Operator will submit a Form 19 – Initial no less than 72 hours after discovery of the Spill or Release unless the Director extends the timeframe in writing.

(4) In addition to the Form 19 – Initial, the Operator will file a Form 19 – Supplemental not more than 10 days after the Spill or Release is discovered that includes:

A. A topographic map showing the governmental section and location of the Spill or Release, or an aerial photograph showing the location of the specific Spill or Release site.

B. All pertinent information about the Spill or Release known to the Operator that has not been reported previously, including photo documentation showing the source of the Spill or Release, the impacted area, and initial cleanup activity; and

C. Information relating to the initial mitigation, site investigation, and Remediation measures conducted by the Operator.

D. Global Positioning System data that meets the requirements of Rule 216 if latitude and longitude data provided pursuant to Rule 912.b.(2).A did not meet the requirements of Rule 216.

(5) The Director may require any Form 19 – Supplemental reports or information the Director determines are necessary.

(6) No later than 90 days after a Spill or Release is discovered, the Operator will have submitted, and obtained the Director's approval of either:

A. A Form 19 – Supplemental requesting closure pursuant to Rule 913.h and supported by adequate documentation to demonstrate that the Spill or Release has been fully cleaned up and complies with Table 915-1; or

B. A Form 27 if any of the criteria listed in Rules 912.b.(6).B.i–iii apply. If Remediation will continue under an approved Form 27, the Operator will also submit a Form 19 – Supplemental which requests closure of the Spill or Release and includes the Remediation project number assigned by the Director.

i. A Form 27 is required by the Commission's Rules;

ii. Cleanup or Remediation will continue for longer than 90 days after the Spill or Release was discovered; or

iii. The Director requests a Form 27.

C. On the Form 19 – Supplemental or Form 27 submitted pursuant to this Rule 912.b.(6), the Operator will provide information about general liability insurance pursuant to Rule 705.

(7) **Notification to Local Governments.** At the same time the Operator makes the 24 Hour Notification, the Operator will provide verbal or written notification to the entity with jurisdiction over emergency response within the local municipality if the Spill or Release occurred within a municipality or the local county if the Spill or Release did not occur within a municipality. The notification will include, at a minimum, the information listed in Rule 912.b.(2).

(8) **Notification to the Surface Owner.** The Operator will provide verbal or written notification to the affected Surface Owner or the Surface Owner's appointed tenant concurrent with providing the 24 Hour Notification.

A. If the Surface Owner cannot be reached within 24 hours, the Operator will continue to make good faith efforts to notify the Surface Owner until notice has been provided.

B. The verbal or written notification will include, at a minimum, the information listed in Rule 912.b.(2).

C. The Operator will document the notification including the name of the person contacted, phone number or email of contact, date, and time on the Form 19 – Initial and update the information as necessary on the Form 19 -- Supplemental.

(9) **Report to Environmental Release/Incident Report Hotline.** Operators will report a Spill or Release of any size that impacts or threatens to impact surface waters to the Director and to the Environmental Release/Incident Report Hotline (1-877-518-5608). Spills and Releases that impact or threaten a Public Water System intake, as described in Rules 411.a.(4) & 411.b.(5), will be verbally reported to the emergency contact for that facility concurrent with providing the 24 Hour Notification to the Director pursuant to Rule 912.b.(1).

(10) At the same time the Operator submits a Form 19 – Initial, the Operator will provide verbal or written notification to CPW if the Spill or Release occurred within 300 feet of surface Waters of the State, or within High Priority Habitat.

(11) Reporting Chemical Spills or Releases. Operators will report Chemical Spills and Releases pursuant to applicable state and federal laws, including the Emergency Planning and Community Right-to-Know Act, the Comprehensive Environmental Response, Compensation, and Liability Act, the Oil Pollution Act, and the Clean Water Act.

c. Remediation of Spills or Releases.

(1) The Director may require Operators to submit a Form 27 if the Director identifies any threatened or actual adverse impacts to any air, water, soil, wildlife, or other environmental resource from a Spill or Release, or if necessary to ensure compliance with the concentration levels in Table 915-1 and WQCC Regulation 41 numeric and narrative Groundwater quality standards and classifications, as incorporated by reference in Rule 901.b.

(2) Not including initial emergency response operations, the Operator will notify and consult with any affected Surface Owners, or the Surface Owner's appointed tenant, prior to commencing operations to remediate a Spill or Release in an area not being utilized for Oil and Gas Operations. It is the Operator's burden to timely notify and negotiate access with the Surface Owner. Failure to do so will not relieve the Operator from its responsibility to commence or complete Remediation approved by the Director.

d. Spill and Release Prevention.

(1) Operators will determine and document the cause of a Grade 1 Gas Leak or Spill or Release of E&P Waste or produced Fluids. After identifying the cause, Operators will implement measures to prevent Spills or Releases due to similar causes in the future, and document all changes made.

(2) The Director may take enforcement action if a Spill occurs at any site subject to control of the same Operator as a result of similar causes identified in Rule 912.d.(1).

(3) Operators will provide documentation of the Spill or Release evaluation and any steps taken to prevent Spills or Releases due to similar causes in the future to the Director upon request.

e. Suspected Spill or Release Closure.

(1) Operators will submit a Supplemental Form 19 providing documentation that any suspected Spill or Release reported pursuant to Rule 912.b.(1).G did not exceed any applicable reporting thresholds. The Operator will clean up any actual Spill below the reporting threshold of Rule 912.b pursuant to the requirements of Rule 912.a.(5).

(2) If the suspected Spill or Release reported pursuant to Rule 912.b.(1).G did in fact exceed any reporting threshold identified in Rule 912.b.(1), the Operator will clean up the Spill pursuant to the requirements of Rule 912.c.

f. Changes of Operator. Within 60 days of the Director's approval of a Form 9, Transfer of Operatorship – Subsequent pursuant to Rule 218.e, the Buying Operator will submit a supplemental Form 19 designating the responsible Operator for each open Spill and Release.

913. SITE INVESTIGATION, REMEDIATION, AND CLOSURE

a. Applicability. This Rule 913 applies to the investigation, Remediation, and reporting required for Spills and Releases, Remediation projects, and decommissioning of Oil and Gas Facilities. All site investigation, Remediation, and closure operations will be conducted in accordance with the Commission's Rules, including the Commission's 1000 Series Rules.

b. General Site Investigation and Remediation Requirements.

(1) Site Investigation and Remediation Workplan. Operators will submit and obtain the Director's approval of a Form 27 whenever it is required by the Commission's Rules, prior to commencing the operations addressed by the Form 27.

(2) Sampling and Analyses. Operators will conduct sampling and analysis of soil and Groundwater pursuant to Rule 915 to determine the horizontal and vertical extent of any contamination in excess of the cleanup concentrations in Table 915-1 or in WQCC Regulation 41 numeric and narrative Groundwater quality standards and classifications, as incorporated by reference in Rule 901.b.

A. Sampling and analyses will be required to profile E&P Waste, delineate extent of contamination, and confirm compliance with applicable standards upon completion of Remediation.

B. Laboratory method detection limits must be less than or equal to Table 915-1 or WQCC Regulation 41 standards, as incorporated by reference in Rule 901.b.

C. Composite sample results may be submitted for preliminary analysis and waste profiling. Discrete sample results will be required for confirmation sampling.

(3) Management of Investigation-Derived Waste. Investigation-Derived Waste will be managed pursuant to Rules 905 or 906.

(4) Pit Evacuation. Prior to site investigation and Remediation, E&P Waste will be treated or disposed pursuant to Rule 905.

(5) Remediation.

A. Remediation will be performed in a manner that reduces or removes contamination that exceeds the cleanup concentrations in Table 915-1 or in WQCC Regulation 41 numeric and narrative Groundwater quality standards and classifications, as incorporated by reference in Rule 901.b, and that protects and minimizes adverse impacts to public health, safety, welfare, the environment, and wildlife resources.

B. When conducting Remediation activities, Operators will conform to the following standards:

i. Operators will fence or cover open excavations to prevent access when sites are not attended.

ii. Operators will protect topsoil, consistent with the Commission's 1000 Series Rules.

iii. Operators will minimize surface disturbance.

iv. Operators will properly store, handle, and manage all E&P Waste to prevent contamination of stormwater, surface water, Groundwater, and soil.

v. If Remediation occurs within High Priority Habitat, the Operator will incorporate Best Management Practices protective of the relevant wildlife species or habitat in the Operator's Form 27.

C. Groundwater that does not meet the cleanup concentrations in Table 915-1 or WQCC Regulation 41 numeric and narrative Groundwater quality standards and classifications, as incorporated by reference in Rule 901.b, will be remediated pursuant to a Form 27.

(6) **Surface Reclamation.** If the Director approves the closure of a Remediation project, the Operator will reclaim the site(s) pursuant to the Commission's 1000 Series Rules.

c. **Form 27, Site Investigation and Remediation Workplan.** Operators will prepare and obtain the Director's approval of a Form 27 prior to conducting the following operations and Remediation activities:

(1) Pit or Cuttings Trench closure;

(2) Buried or partially buried vessel closure, which will be by removal;

(3) Remediation of Spills and Releases pursuant to Rule 912;

(4) Land Treatment of Oily Waste pursuant to Rule 905.e;

(5) Closure of Centralized E&P Waste Management Facilities pursuant to Rule 907.h;

(6) Remediation of impacted Groundwater pursuant to Rule 915.e.(3).D, and the contaminant concentrations in Table 915-1;

(7) Investigation and Remediation of natural gas in soil or Groundwater;

(8) When requested by the Director due to any potential risk to soil, Groundwater, or surface water; and

(9) Decommissioning of Oil and Gas Facilities.

d. **Implementation Schedule.** Each Form 27 will include a specific implementation schedule to complete investigation and Remediation.

(1) Operators will investigate impacts to soil, Groundwater, and surface water as soon as the impacts are discovered.

(2) Any change from the approved implementation schedule will be requested at least 14 days in advance, and the Operator may not make the change without the Director's approval.

e. **Reporting Schedule.** After initial approval of a Form 27, the Operator will provide quarterly update reports in a Supplemental Form 27 to document progress of site investigation and Remediation, unless an alternative reporting schedule has been requested by the Operator and approved by the Director. The Director may request a more frequent reporting schedule based on site-specific conditions.

(1) Operators may not change the reporting schedule without the Director's approval.

(2) By April 15, 2021, Operators of existing Remediation projects approved prior to January 15, 2021 will submit a Supplemental Form 27 with a detailed project summary and status.

(3) For existing Remediation projects approved prior to January 15, 2021, the Operator will adopt a quarterly reporting schedule unless a more frequent or specific reporting schedule was already approved by the Director.

(4) At least one of the Operator's quarterly reports each calendar year will address the adequacy of general liability insurance held by the Operator pursuant to Rule 705, or Financial Assurance otherwise provided by the Operator, to fully address the anticipated costs of Remediation.

f. **Discovery of a Spill or Release During Closure.** If a Spill or Release is discovered during facility closure operations, the Operator will report it to the Director on a Form 19 pursuant to Rule 912.

g. **Changes of Operator.** Within 60 days of the Director's approval of a Form 9 – Subsequent pursuant to Rule 218.e, the Buying Operator will submit a supplemental Form 27 designating the responsible Operator for all open Remediation projects.

h. **Closure.**

(1) Remediation will be considered complete when the Operator has demonstrated compliance with:

A. The cleanup concentrations in Table 915-1;

B. WQCC Regulation 41 numeric and narrative Groundwater quality standards and classifications, as incorporated by reference in Rule 901.b, if applicable; and

C. Any condition of approval of a Form 27.

(2) An Operator may request a variance pursuant to Rule 502 to comply with an alternative standard in lieu of one or more of the standards in Rules 913.h.(1).A & C. In addition to applying for a variance, the Operator will also submit a Form 27 demonstrating that their alternative clean-up process protects and minimizes adverse impacts to public health, safety, welfare, the environment, and wildlife resources.

(3) For contaminated groundwater where periodic monitoring has been required, closure may not occur until after 4 consecutive quarters of sampling and analysis demonstrating compliance with Table 915-1 and WQCC Regulation 41 numeric and narrative Groundwater quality standards and classifications, as incorporated by reference in Rule 901.b, if applicable.

(4) Notification of Completion. Within 30 days after conclusion of site Remediation activities:

A. Operators conducting Remediation operations pursuant to an approved Form 27 will submit to the Director a Supplemental Form 27 containing documentation sufficient to demonstrate compliance with the Commission's Rules.

B. Operators will coordinate with the Director through a Form 4 regarding additional surface Reclamation required by the Commission's 1000 Series Rules, if applicable.

i. **Release of Financial Assurance.** Financial Assurance required by Rule 706 may be held by the Director until the required Remediation of soil and/or Groundwater impacts is completed in accordance with the approved workplan, or until cleanup goals are met.

914. CRITERIA TO ESTABLISH POINTS OF COMPLIANCE

In determining a Point of Compliance, the Director will take into consideration recommendations of the Operator or any Responsible Party or Parties, if applicable, together with the following factors:

a. The classified use established by the WQCC, for any Groundwater or surface water that was impacted by contamination. If not so classified, the interim narrative standard applies, and the domestic and agricultural uses are to be protected;

b. The geologic and hydrologic characteristics of the site, such as depth to Groundwater, Groundwater flow, direction and hydraulic conductivity, soil types, surface water impacts, and any seasonal hydrologic variability;

c. The toxicity, mobility, and persistence in the environment of contaminants released or discharged from the site;

d. Established wellhead protection areas;

e. The potential of the site as an Aquifer recharge area;

f. The distance to the nearest permitted domestic water well or Public Water System supply well completed in the same Aquifer affected by the event; and

g. The distance to the nearest permitted livestock or irrigation water well completed in the same Aquifer affected by the event.

915. CONCENTRATIONS AND SAMPLING FOR SOIL AND GROUNDWATER

a. **Soil Concentrations.** Operators will adhere to the concentrations for soil cleanup in Table 915-1. Operators will use Residential Soil Screening Level Concentrations as cleanup levels unless required otherwise by the Director. The Director will require adherence to the Protection of Groundwater Soil Screening Levels when a pathway to Groundwater exists. When the Director has reasonable cause to believe that oil and gas exploration-related compounds or parameters other than those listed in Table 915-1 may be present, the Director may require additional analyses of compounds included in the EPA RSLs, as incorporated by reference in Rule 901.b.

b. **Soil Suitability for Reclamation.** Operators will adhere to the concentrations for soil in Table 915-1 for restoring soil to the agronomic properties for electrical conductivity ("EC"), sodium adsorption ratio ("SAR"), pH, and boron for soils. Subject to prior approval by the Director, Operators may leave materials with elevated concentrations of EC, SAR, or pH *in situ*. In such cases, the Operator will provide a detailed Reclamation plan that includes, but is not limited to, soil analysis from adjacent undisturbed lands, revegetation techniques, site stabilization, and details of seeded species.

c. **Groundwater Concentrations.** Operators will adhere to the concentrations for Groundwater in Table 915-1. The Groundwater standards and analytical methods are derived from the Groundwater standards and classifications established by WQCC Regulation 41 numeric and narrative Groundwater quality standards and classifications, as incorporated by reference in Rule 901.b.

d. **Additional Groundwater Analyses**. When the Director has reasonable cause to believe that oil and gas exploration-related compounds or parameters other than those listed in Table 915-1 may be present, the Director may require additional analyses beyond the list of compounds included in Table 915-1 for Groundwater including but not limited to:

(1) Any element, compound or parameter listed in Table A and Tables 1, 2, 3, and 4 of WQCC Regulation 41, as incorporated by reference in Rule 901.b.

(2) In accordance with the Narrative Standards of WQCC Regulation 41.5.A, any element, compound, or parameter not listed in Table A or Tables 1, 2, 3, and 4 of WQCC Regulation 41, as incorporated by reference in Rule 901.b, which alone or in combination with other substances, are in concentrations shown to be:

A. Carcinogenic, mutagenic, teratogenic, or toxic to human beings; or,

B. A danger to public health, safety, and welfare.

e. **Sampling and Analysis.** Analysis will be conducted using EPA SW-846 analytical methods, as incorporated by reference in Rule 901.b, or, with the Director's approval, other analytical methods published by nationally-recognized organizations. Analyses of samples will be performed by laboratories that maintain state or national accreditation programs. Operators will adhere to the specialized agricultural analytical methods where required pursuant to footnote 2 to Table 915-1. A lab with experience with agricultural analysis will be used.

(1) **Methods for Sampling and Analysis.** Sampling and analysis for site investigation or confirmation of successful Remediation will be conducted to determine the nature and extent of impact and confirm compliance with appropriate concentration levels in Table 915-1 and WQCC Regulation 41 numeric and narrative Groundwater quality standards and classifications, as incorporated by reference in Rule 901.b.

A. **Field Analysis.** Field measurements and field tests will be conducted using appropriate equipment, calibrated and operated according to manufacturer specifications, by personnel trained and familiar with the equipment. Operators will provide all field measurements and tests to the Director upon request, including but not limited to field notes, field screening logs, soil boring logs, monitor well construction Logs, pump test reports, photographs, and soil vapor screening results.

B. **Sample Collection.** Samples will be collected, preserved, documented, and shipped or delivered to a laboratory under a chain-of-custody protocol using standard environmental sampling procedures in a manner to ensure accurate representation of site conditions.

C. **Laboratory Analytical Methods.** Laboratories will analyze samples using standard methods (including but not limited to EPA SW-846, as incorporated by reference in Rule 901.b) appropriate for detecting the target analyte. The method selected will have detection limits less than or equal to the cleanup concentrations in Table 915-1 and WQCC Regulation 41, as incorporated by reference in Rule 901.b.

D. **Background Sampling.** The Director may require the Operator to take site-specific samples, outside of the area disturbed by Oil and Gas Operations, of comparable, nearby, non-impacted, native soil, Groundwater or other media to establish background conditions.

(2) Soil Sampling and Analysis.

A. Applicability. If soil contamination is suspected or known to exist as a result of Spills or Releases or E&P Waste management, Operators will collect and analyze representative samples of soil pursuant to this Rule 915.e.(2).

B. Sample Collection. Samples will be collected from areas most likely to have been impacted, and the horizontal and vertical extent of contamination will be determined. The number and location of samples will be appropriate to determine the horizontal and vertical extent of the impact.

C. Sample Analysis. Operators will analyze soil samples for contaminants of concern listed in Table 915-1 as appropriate to assess the impact or confirm Remediation. If an Operator believes it is appropriate to modify the list of contaminants of concern, the Operator will submit, and obtain the Director's approval of, a modified list of contaminants of concern through a Form 19 or Form 27, as applicable. The list will be based on site specific E&P Waste profile and process knowledge. Operators will analyze samples for additional contaminants of concern upon the Director's request.

D. Soil Background Determination. For impacts to soil due to E&P Waste, samples from comparable, nearby non-impacted native soil will be collected and analyzed for purposes of establishing background soil conditions including pH, EC, SAR, and other constituents as identified in the E&P Waste profile.

(3) Groundwater Sampling and Analysis.

A. Applicability. Operators will collect and analyze representative samples of Groundwater if:

i. Groundwater contamination is suspected or is known to exceed the concentrations in cleanup Table 915-1 or WQCC Regulation 41 numeric and narrative Groundwater quality standards and classifications, as incorporated by reference in Rule 901.b;

ii. Impacted soils are in contact with Groundwater; or

iii. Impacts to soils extend down to the high water table.

B. Sample Collection. Operators will collect samples as soon as possible from areas most likely to have been impacted: immediately downgradient or in the middle of excavated areas in close proximity to the suspected source of the impact.

i. The number and location of samples will be appropriate to determine the horizontal and vertical extent of the impact.

ii. If the cleanup concentrations in Table 915-1 or WQCC Regulation 41 numeric and narrative Groundwater quality standards and classifications, as incorporated by reference in Rule 901.b, are exceeded, the direction of flow and a Groundwater gradient will be established.

iii. The Director may require the installation of temporary or permanent monitoring wells as necessary for sample collection. All monitoring wells will be constructed and permitted in accordance with the State Engineer's Water Well Construction and Permitting Rules, as incorporated by reference in Rule 901.b.

C. **Sample Analysis.** Operators will analyze Groundwater samples for constituents of concern listed in Table 915-1, or other parameters appropriate for evaluating the impact, to assess the impact or confirm Remediation. If an Operator believes it is appropriate to modify the list of constituents of concern, the Operator will submit, and obtain the Director's approval of, a modified list of constituents of concern through a Form 19 or Form 27, as applicable. The list will be based on site specific E&P Waste profile and process knowledge. Operators will analyze samples for additional constituents of concern upon the Director's request.

D. **Impacted Groundwater.** Pursuant to Rule 913.c.(6), if Groundwater contaminants exceed the concentrations listed in Table 915-1 or in WQCC Regulation 41 numeric and narrative Groundwater quality standards and classifications, as incorporated by reference in Rule 901.b, Operators will notify the Director and submit to the Director for prior approval a Form 27 for the investigation, Remediation, or monitoring of Groundwater to meet the required cleanup concentrations in Table 915-1 or in WQCC Regulation 41 numeric and narrative Groundwater quality standards and classifications, as incorporated by reference in Rule 901.b.

(4) **Waste and Produced Fluids Sampling and Analysis.** When required by the Director, Operators will collect samples necessary to adequately characterize the composition of produced oil, condensate, water, drilling Fluids, drill cuttings, production gases, Bradenhead gases, soil gas, and soil gas seeps. The Operator will submit, and obtain the Director's approval of the number of samples collected, the analyte lists, and analytical methods appropriate to the waste or production stream.

f. **Remediations in Progress.** For sites that are subject to an open Form 19 or Form 27 as of January 15, 2021, Operators may seek the Director's permission to comply with the version of Table 910-1 that was previously in effect, if Remediation is completed by January 15, 2022. If Remediation at a site subject to an open Form 19 or Form 27 is not completed by January 15, 2022, then the Operator will comply with the current version of Table 915-1.

Table 915-1
CLEANUP CONCENTRATIONS

Contaminant of Concern	Concentrations
Soil TPH (total volatile [C_6-C_{10}] and extractable [C_{10}-C_{36}] hydrocarbons)	500mg/kg
Soils and Groundwater - liquid hydrocarbons including condensate and oil	below visual detection limits
Soil Suitability for Reclamation	
Electrical conductivity (EC) (by saturated paste method)[1,2]	<4mmhos/cm
Sodium adsorption ratio (SAR) (by saturated paste method)[1,2,3]	<6
pH (by saturated paste method)[1,2]	6–8.3
boron (hot water soluble soil extract)[1,2,3]	2mg/l
Organic Compounds in Groundwater[4]	
benzene	5µg/l
toluene[5]	560 to 1,000µg/l
ethylbenzene	700µg/l
xylenes (sum of o-, m- and p- isomers = total xylenes)[5]	1,400 to 10,000µg/l
naphthalene	140µg/l
1,2,4-trimethylbenzene	67µg/l
1,3,5-trimethylbenzene	67µg/l
Groundwater Inorganic Parameters[4]	
total dissolved solids (TDS)[1]	<1.25 X local background
chloride ion[1]	250mg/l or <1.25 X local background
sulfate ion[1]	250mg/l or <1.25 X local background

Table 915-1 (continued)

Contaminant of Concern	Concentrations	
	Residential Soil Screening Level Concentrations (mg/kg)[7]	**Protection of Groundwater Soil Screening Level Concentrations (mg/kg) Risk Based (R) and MCL Based (M)**[7,8]
Organic Compounds in Soils[6, 9, 10]		
benzene	1.2	0.0026 (M)
toluene	490	0.69 (M)
ethylbenzene	5.8	0.78 (M)
xylenes (sum of o-, m- and p- isomers = total xylenes)	58	9.9 (M)
1,2,4-trimethylbenzene	30	0.0081 (R)
1,3,5-trimethylbenzene	27	0.0087 (R)
acenaphthene	360	0.55 (R)
anthracene	1800	5.8 (R)
benz(a)anthracene	1.1	0.011 (R)
benzo(b)fluoranthene	1.1	0.3 (R)
benzo(k)fluoranthene	11	2.9 (R)
benzo(a)pyrene	0.11	0.24 (M)
chrysene	110	9 (R)
dibenzo(a,h)anthracene	0.11	0.096 (R)
fluoranthene	240	8.9 (R)
fluorene	240	0.54 (R)
indeno(1,2,3-cd)pyrene	1.1	0.98 (R)
1-methylnaphthalene	18	0.006 (R)
2-methylnaphthalene	24	0.019 (R)
naphthalene	2	0.0038 (R)
pyrene	180	1.3 (R)
Metals in Soils [1, 6, 9, 10, 11]		
arsenic	0.68	0.29 (M)
barium	15000	82 (M)
cadmium	71	0.38 (M)
chromium (VI)	0.3	0.00067 (R)
copper	3100	46 (M)
lead	400	14 (M)
nickel	1500	26 (R)
selenium	390	0.26 (M)
silver	390	0.8 (R)
zinc	23000	370 (R)

Table 915-1 (continued) footnotes

[1] The Director will consider site-specific background concentrations or reference levels in native soils and Groundwater.

[2] Soil suitability thresholds for electrical conductivity ("EC"), pH, and sodium adsorption ratio ("SAR") in soils are based on use of saturated paste preparation methods, followed by analysis. Soil suitability thresholds for available boron are based on hot water soluble (or DPTA/sorbitol) extraction followed by analysis. Methods for preparation and analysis of the soil suitability parameters can be found in Soil, Plant, and Water Reference Methods for the Western Region, as incorporated by reference in Rule 901.b.

[3] With the Director's prior approval, SAR levels and the concentration for hot water soluble boron may be modified based on land use, depth, or characteristics of the vegetative community.

[4] Concentrations for Groundwater are taken from WQCC Regulation 41, as incorporated by reference in Rule 901.b.

[5] For toluene and xylenes (total), the first number in the range is a strictly health-based value based on the WQCC's established methodology for human health-based standards. The second number in the range is a maximum contaminant level ("MCL"), established under the federal Safe Drinking Water Act which has been determined to be an acceptable level of this Chemical in public water supplies, taking treatability and laboratory detection limits into account. The WQCC intends that control requirements for this Chemical be implemented to attain a level of ambient water quality that is at least equal to the first number in the range except as follows: 1) where Groundwater quality exceeds the first number in the range due to a Release of contaminants that occurred prior to September 14, 2004 (regardless of the date of discovery or subsequent migration of such contaminants), clean-up levels for the entire contaminant plume will be no more restrictive than the second number in the range or the Groundwater quality resulting from such Release, whichever is more protective; and 2) whenever the WQCC has adopted alternative, site-specific standards for the Chemical, the site-specific standards will apply instead of these statewide standards.

[6] Concentrations for organic compounds and metals in soils are taken from the November 2020 EPA Regional Screening Levels ("EPA RSLs") for Chemical Contaminants at Superfund Sites, as incorporated by reference in Rule 901.b.

[7] If there is no pathway for communication with Groundwater, then residential soil screening levels apply for organic compounds and metals. If the Director determines that a pathway to Groundwater exists, then the protection of Groundwater soil screening levels will apply, secondary to actual measured concentrations of the contaminants of concern in Groundwater.

[8] The letter "(R)" following a protection of Groundwater soil screening level indicates the concentration is derived from a risk-based approach. The letter "(M)" following a protection of Groundwater soil screening level indicates the concentration is derived from the drinking water MCL.

[9] If the method detection limit ("MDL") or practical quantitation limit ("PQL") for a pollutant is higher (less stringent) than a threshold concentration listed in Table 915-1, the Director may allow an Operator to substitute the MDL or PQL for the concentration listed in Table 915-1.

[10] The risk based cleanup concentrations for organic compounds in soils shown in Table 915-1 are taken from the EPA RSLs, as incorporated by reference in Rule 901.b, tables for Target Risk ("TR") = $1x10^{-6}$ and Target Hazard Quotient ("THQ")=0.1. The risk-based cleanup concentrations for metals in soils shown in Table 915-1 are taken from the EPA RSLs, as incorporated by reference in Rule 901.b, tables for TR=$1X10^{-6}$ and THQ=1. The EPA RSL Frequently Asked Questions pages suggest that the THQ=0.1 tables are appropriate when more than 1 compound of concern is to be considered as present or likely to be present as is typical in soils impacted with organic compounds in Spills or Releases of produced water or liquid hydrocarbons.

[11] The Director will consider Residential Soil Screening Level Concentrations up to 1.25 times site specific background levels for metals in soil.