Chapter 4.3 Completing Facility Activity Details

4.3 Facility Activity Tab

Applicants applying for a facility permit must complete the facility application tab in the Application Management System. The facility tab is made up of three components: facility overview; facility details including equipment details, technical specifications and exemptions; and land details.

This section includes an overview of facility permitting, guidance regarding facility planning and design, details related to facility-specific application requirements and detailed instructions for completing the data fields within the facility tab.

Please Note:

This manual is written as a whole and provided to industry in sections to allow permit holders to access activity chapters. It is prudent of the permit holder to review the manual in its entirety and be aware of the content in other sections of the manual.

4.3.1 Facility Permitting Defined

Facilities are an energy resource activity, and are defined in ERAA as:

- A system of vessels, piping, valves, tanks and other equipment used to gather, process, measure, store or dispose of petroleum, natural gas, water or a substance referred to in paragraph (d) or (e) of the definition of pipeline.

Approved energy resource applications receive a permit under Section 25 of ERAA to carry out construction and operations pertinent to the activity. The permit expires where construction activities have not started within two (2) years

of permit issuance. Unless expired, the permit remains active until cancelled, suspended or declared spent, according to the provisions of ERAA.

Facility Types

Applicants must apply for a specific type of facility. The appropriate facility type must be selected in the facility details component of the facility tab in the Application Management System. Facility types include (and are further defined in the Regulator's glossary):

- Battery site
- Compressor Dehydrator
- Compressor station
- Disposal station
- Gas dehydrator
- Gas processing plant
- Gas sales meter
- Injection station
- LNG facility
- Oil sales meter
- Processing battery
- Satellite battery
- Tank terminal
- Water hub
- Well facility
- Pump station
- NGL fractionation facility
- Hydrogen Manufacturing Facility
- Ammonia Manufacturing Facility
- Methanol Manufacturing Facility
- Carbon Dioxide Storage Facility
- Gas Conversion Facility
- Petroleum Refinery

Facilities and operational equipment required in energy resource activities, whether temporary or permanent require a facility permit. The facility application tab in AMS is used for all facility applications, whether within an existing right of way, wellsite or over new Crown land or private land.

Facility Names

Facility names are generated by, and populated into AMS automatically when spatial data is uploaded. Facility names are based on information gathered at the application stage and formatted as follows:

- Operator Abbreviation – Oil & Gas Field Name – NTS/DLS Location – Name Qualifier

AMS will spatially derive the oil and gas field name or display "not found" when a facility location is not located within a defined field. When "not found" displays, applicants may select the nearest appropriate field from the oil and gas field name drop-down list, or enter the nearest geographical location. To enter a field name that is not available in the drop-down list, select "Other Areas" from the list and type the name in the 'specify area' text field.

Liquefied Natural Gas and Gas Processing Plants

Liquefied Natural Gas (LNG) facilities, oil refineries and gas processing plants are considered facilities under ERAA. New plant or refinery applications are submitted under facilities; amendments are submitted when certain equipment is added to an existing plant, such as a new compressor or processing train.

Facility Numbering

Upon issuance of a facility permit, the Regulator's information systems will assign a facility identification number (FACID) to the facility. The codes are used to track facilities and associated operational submissions in the Regulator's KERMIT information system.

4.3.2 Creating a New Facility Activity Application

New Facility Application

A new facility application is submitted to obtain a facility permit on either a new well/facility area or on a previously permissioned well/facility area. A permit is required prior to any construction or installation of equipment and flow of product.

Facilities can be applied for individually or with other energy resource activities as part of a multi-activity project application. The AMS generates data input requirements for additional activities specified within the spatial data upload.

Facility Permit Amendments

An amendment must be used for modifications beyond what is authorized in the permit and is required for facility expansions and activities where work initiates or impacts noise and/or air emissions. Examples where a permit amendment is required include:

- The addition of any equipment listed in AMS under the Facilities Details tab, for example: flare stack, main gas compressor, glycol dehydration unit. (please refer to Appendix C of this Manual for a more specific list),
- Addition of production storage tanks (oil, water, emulsion or condensate)
- Replacing equipment where additional regulatory considerations may be required (e.g. replacing with a larger unit that may consequentially increase processing capacity, noise emissions or waste discharge),
- Increasing the permitted H_2S concentration,
- Increasing the inlet capacity of a gas plant,
- Modifying an aspect of the facility outside the limits of the permissions and authorizations of the permit (such as increases in flare limits).

Appendix C provides a comprehensive list of facility changes requiring a facility permit amendment. Appendix D includes examples of changes that can be made under the existing permit without submission of amendment applications, NOI or updated as-built record drawings.

Please Note:

Drawings included with amendment applications must include clouded areas to indicate amended areas.

Notice of Equipping Wells

Effective December 1, 2025, the installation of piping, equipment and instrumentation on additional wells do not require an amendment and can be submitted as a notice of “Equipping Wells” providing the well facility permit includes the notification permission and:

- Prior notice of the installation is provided, in the form and manner the BC Energy Regulator requires;
- Installation is not started before the 7th day after the notice is submitted or the day the permit holder receives notification from the BC Energy Regulator, whichever occurs first;

- Each additional well has an approved, valid Well Authorization number;
- The new equipment is required to safely produce the additional wells and does not include a process gas compressor, flare system, produced fluid storage tank or dehydrator;
- There is no increase in the H_2S permitted content for the facility;
- There is no substantive impact to any aspect of the facility that was included in the consultation;
- The design and operation of the facility continues to meet all regulatory requirements.

More information on the notification process, including how to submit a notification, can be found in the Energy Activity Operations Manual.

Notice of Intent to Remove All Equipment from a Site

When a permit holder has removed all the equipment and pilings (or cut 1 metre below grade and buried) from a facility site, they must submit a Notice of Intent (NOI). A project description and documentation of proof must be submitted to the Regulator which should clearly identify all facility equipment and piping that was removed. The documentation of proof could include pictures of the location showing the equipment has been removed or a signed confirmation from the contractor that completed the removal. The Regulator's Energy Resource Activity Operations Manual provides more information on Notice of Intent submissions.

Notice of Intent to Suspend a Gas Plant or Other Facility

Suspension of a facility must be carried out in accordance with Section 79 of the Drilling and Production Regulation and notice submitted via a Notice of Intent (NOI). The Regulator's Energy Resource Activity Operations Manual provides more information on Notice of Intent submissions.

Facility Permit Amendment for Change of Service

A change of service typically applies to both a facility and a pipeline and requires that each be amended under the permit in which they were originally issued. If the change of service includes a pipeline that was not originally approved in the same permit as the facility, the permit number for the pipeline must be entered in the description box in the facility amendment.

If a product is introduced into a facility or pipeline that was not originally designed for sour service, an Engineering Assessment, in accordance with the latest edition of CSA Z662, must be completed and attached to the amendment application. A facility permit amendment is also required to increase the permitted H_2S concentration of a facility.

For changes in service at a facility to decrease H_2S concentration, a Notice of Intent (modify equipment or facility) may be appropriate depending on the limitations of the permit permissions. The Regulator's Energy Resource Activity Operations Manual provides more information on Notice of Intent submissions.

Historical Submission: Facility

The historical facility submission is intended to collect missing data into KERMIT. This includes equipment and compressor details that were not required at the time the facility was originally permitted.

The historical facility entry submission is selected from the create "application type" menu as "historical submission". It is often required when the facility has incomplete, absent or incorrect data.

Historical facility submissions pass fewer data validation checks upon submission. No fees are collected for an historical facility submission.

In order to complete a historical facility submission AMS searches facilities approved prior to October 4, 2010 based on the permit holder's information including:

- Approval determination number.
- Legacy BCER File number.
- Authorized activity number (Facility ID#).

Once the permit holder enters the historical activity description, AMS pre-populates the information fields based on the current information; where available. Complete and/or edit the activity details within the AMS tabs. Spatial data may be uploaded where it does not exist providing it meets the spatial data standards and the spatial data provides the physical location of the facility. Spatial data for historical submission is optional.

4.3.3 Facility Planning and Design

This section provides typical planning and design requirements, guidelines and considerations when planning and designing a facility for an energy resource activity application. The standards and guidelines presented here form a substantial basis for assembling an application. The Regulator reviews the facility application relative to the engineering and technical information provided in the Application Management System; therefore, applicants should review this section for an indication of any application requirements or attachments required in relation to the required components.

Regulatory Requirements

Facilities must meet the design and operational requirements outlined in the Energy Resource Activities Act (ERAA), Oil and Gas Waste Regulation (OGWR), Drilling and Production Regulation (DPR), or the Liquefied Natural Gas Facility Regulation (LNGFR), as applicable, and the Environmental Protection and Management Regulation (EPMR).

If an exemption is requested from regulatory requirements, an exemption request may be submitted prior to application submission, at the time of application, or following application determination, depending on the specifics of the circumstance, and the regulatory requirements from which exemption is being requested. Exemption requests must include:

- Specific regulatory provision requiring an exemption.
- Rationale for exemption (explanation of why an exemption may be required).
- Proposed plan showing mitigation strategies to reduce associated impacts relative to the feature that the regulatory provision addresses.

If exemptions are approved prior to the application, this approval must be attached to the application.

Guidance Requirements

In addition to this Energy Resource Activity Application Manual and CSA Z276, CSA Z662 and ASME B31.3 standards, facility activities should be designed to meet guidance recommendations in the following Regulator documents:

- BC Measurement Guideline.
- Flaring and Venting Reduction Guideline.
- BC Noise Control Best Practices Guideline.

If energy resource activities cannot adhere to the guidance recommendation then justification must be included in the permit application. Include specifics of the guidelines not followed or met, an explanation of why they cannot be followed or met, the alternative proposed plan and any relevant mitigation strategies.

Safety Standards Amendment Act: Regulatory Authority and Process Changes

The Safety Standards Amendment Act came into force on November 7, 2016, and has resulted in changes to the administration of regulatory authority and processes by the Regulator and Technical Safety BC.

The Regulator and Technical Safety BC have a revised MOU in place. Please refer to Technical Safety BC for guidance.

All permit holders of Regulator regulated facilities must prepare, regularly update as required, and keep on file the following documentation. These management systems and processes are to be followed in the design, construction, operation, maintenance, and decommissioning of facilities in the province of British Columbia for the particular permit holder. The submission of this information is NOT required in a permit application package, but must be available upon request, or for audit purposes.

1. Permit holders must have the following in place prior to the start-up of new or modified facilities:
    a. a report from a Qualified Professional confirming that all of the elements of a quality assurance/quality control process necessary for construction are documented and applicable to the scope of work. The scope of validation should include at a minimum:
        i. quality planning, control, assurance and continuous improvement processes;
        ii. a full explanation of how the quality objectives will be managed for the duration of the construction including those for the subcontractors and/or the suppliers;
        iii. details regarding how the plan addresses the project quality policy and objectives, quality organization, resource management, information management, codes, standards and specifications,

management of change, control of deviations and concessions, and regulatory legislation compliance; and,

iv. a plan to verify of the effectiveness of the quality assurance program during design, construction and testing.

b. a written description of the management of change process that will be used by the permit holder in the design, construction, and operation of the facility. The management of change system should:

i. include written procedures for managing change;

ii. address the basis for each change;

iii. evaluate potential safety, health and environmental impacts for each change;

iv. define requirements for authorizing changes to be made; and,

v. include methods by which the permit holder will appropriately inform and train affected workers before changes occur.

The Center for Chemical Process Safety Guidelines for Management of Change for Process Safety identifies key components of what would be an acceptable change management system to the Regulator.

c. a Facility Integrity Management Program in accordance with s. 78.1 of the Drilling and Production Regulation.

2. In lieu of Pressure Piping Registration for ASME B31.3 facility piping that was previously under Technical Safety BC jurisdiction, permit holders must have the following in place prior to the start-up of new or modified facilities:

a. P&IDs that include the following information:

i. Number and revision

ii. Design code of construction information

iii. Line identification list showing maximum design pressures, maximum and minimum design temperatures, and pipe specifications including:

- Fluid service
- Dimensions
- ASME material specifications

- Flange, valve and fitting standards
- Heat treatment
- Non-destructive examination requirements
- Corrosion allowance
- Impact testing
- Pressure test conditions and fluid
- Formulas used or reference to code section

b. Stress analysis calculations demonstrating the piping system can withstand or is isolated from all ambient influences, dynamic effects, weight effects, and interface loads, as defined in ASME B31-series code. If these conditions are unknown, clearly stated worst-case loading restrictions shall be included

Liquefied Natural Gas (LNG)

Applicants planning to construct and operate a Liquefied Natural Gas facility (LNG facility) in British Columbia should review the Liquefied Natural Gas Facility Application and Operations Manual. Operators must be familiar with the requirements and procedures for applying and obtaining a permit to construct and operate an LNG facility. Permit holders must follow key regulatory milestones and requirements during the facility's construction, operations and site restoration phases.

Gas Processing Plants

Before submitting an application for a gas processing plant(s), applicants are encouraged to meet with the Regulator and allow sufficient time for application processing based on the specifics of the proposal. The Regulator has defined a process where one or more meetings may be necessary as part of application review and determination. This process includes:

- Submission of a brief written description of the project scope, including sketches of the proposed tentative gathering/processing system and sales tie-in points. Timing for this should be a week prior to the pre-application meeting to allow more meaningful feedback to assist in the preparation of the application. The submission should be directed to pipelines.facilities@bc-er.ca,
- Pre-application meeting with key Regulator staff, and,

- Mid-process meeting to discuss Regulator application reviewed feedback. This meeting is arranged on a case by case basis only when written communication isn't sufficient to answer regulatory questions.

Gas Plant Proliferation Analysis

A gas processing plant proliferation review must be included with the application and must contain the rationale for constructing the newly proposed plant after consideration of existing active plants and pipeline infrastructure feeding into active plants within a 50 km radius. This is required as an attachment with the application for new plants and amendments that increase the throughput of the plant. Other plant amendments do not require a proliferation review.

Flare and Incinerator Systems

Flare and incinerator systems must be designed and operated within the limits specified by a Qualified Professional. Applicants should seek guidance on flare system design from the following regulations and guides:

- API Standard 521.
- Flaring and Venting Reduction Guideline.
- Drilling and Production Regulation (DPR):
    1. Section 47 (c) and (h)
    2. Section 44 (a), (b), (c), (d) and (e)
    3. Section 42 (1) and (5)
    4. Section 43 (1), (2) and (3)
- Energy Resource Activity Operations Manual
    1. Section 9.6.15

The Regulator considers uninterrupted flared volumes with a constant and visible flame under routine operations to be "continuous". This includes fuel gas being burned to maintain a pilot and / or continuous purge in the flare header.

Flare Blackened Areas

Flare blackened areas must be maintained within permissioned well and/or facility application area. If new area is required to accommodate the blackened area, a land amendment to the well and/or facility area is required. Note: Flare blackened area determination must take into consideration the current elevated risks of

wildfires due to recent drought conditions. This may increase the flare blackened area requirements.

If a post construction plan (PCP) has not been submitted or a Statutory Right of Way (SRW) has not been issued for the existing permissioned well and/or facility area, the spatial data file for the land amendment may include a replacement polygon. The replacement polygon must represent the existing permissioned well and/or facility area plus the additional area required for the blackened area.

If a PCP has already been submitted or the well and/or facility area is tenured under a SRW, the spatial data for the land amendment should only include the new area required for the blackened area. The additional area should be referenced as "new" (AREA_TYPE = N) in the spatial data file. Upon submission of the amendment application, the new land area will be assigned a LAND_ID and upon approval, the appropriate tenure will be assigned.

Natural Gas Venting Requirements

Effective January 1, 2025, applicants for new facilities or amendments for existing facilities that include the installation of major equipment such as a compressors, dehydrators or production tanks must demonstrate near elimination of natural gas venting.

It is expected that venting during normal operations will not occur from the following sources:

- Production tanks.
- Compressor seals.
- Glycol dehydrators.
- Pneumatic devices and pumps that are powered by natural gas.

Emergency shutdown devices and pneumatic compressor starters are not included in the definition of pneumatic devices.

For new well facility applications, venting of natural gas is prohibited. For existing well facilities, consideration should be given to eliminating venting.

Venting from the above sources, except for pneumatic devices at new facilities, may be permitted if an applicant demonstrates that it is impractical to eliminate the venting for one or more of the following reasons:

- Impairment of the safe operation of the facility;
- Impairment of the reliable operation of the facility;
- Economic feasibility based on a net present value that considers the following:

- Capital costs
- Operating costs
- Total emission reduction achieved
- Provincial price of carbon emissions

Economic feasibility calculations should be completed in a manner that is consistent with section 1.8.1 of the Flaring and Venting Reduction Guideline.

Calculations should be based on a CO_2 equivalent basis using a global warming potential of 28 for methane.

Leak Detection

Leak detection system with adequate controls must be in place according to Section 39 of the Drilling and Production Regulation. The Regulator may require additional levels of detection and control based on the location and specifics of a facility installation. Examples of common leak detection and control include high/low pressure alarms/shutdown, H_2S/LEL/fire detection, ESDV, etc.

Overpressure Protection

Overpressure protection must be designed and operated according to CSA Z662 and/or ASME B31.3. The Regulator may require additional levels of detection and control based on the location and specifics of a facility installation.

Secondary Containment

All produced oil, water and condensate storage (production) tanks as outlined in Section 50 of the DPR have secondary containment requirements.

On a case-by-case basis, there is an option for produced water tanks to utilize a double wall design in place of a dyke or berm for secondary containment.

- The double wall design option must include a secondary tank system capable of holding 110 per cent of the primary tank's volume where the space between the tanks has a level indicator and high-level shutdown.
- The main tank must have a high-level shutdown.

The Regulator has established standards for secondary containment for above-ground tanks storing fluids not produced from an oil, gas or water well. Installations adhering to the standards detailed below will meet regulatory requirements for secondary containment, as per the Drilling and Production

Regulation, Section 50 (1) and (2), the most recent version of CSA Z662 and the most recent version of the National Fire Protection Association (NFPA) Code Section 30, (specifically, but not limited to NFPA 30, Chapter 1, section 1.4.2).

The minimum requirements for secondary containment of non-production tanks include:

- Tanks greater than 45 gallons (one barrel) and less than 12,000 gallons (U.S. gallon), 45,400 litres or 45.4 m^3, storing chemicals, fuel or other products, for example, methanol and corrosion inhibitor, on a wellsite or facility site, will meet the standard for secondary containment with a double-walled tank design.
- The installation of a single-walled tank design with a catch-bin for containment or a dyke, as long as the capacity provides for 110 per cent of the tank volume.
- Tanks less than 45 gallons do not require secondary containment and tanks greater than 12,000 gallons (U.S. gallon), 45,400 litres or 45.4m^3, require dyking or berming to contain an unexpected release of fluid.

Barrels containing non-production fluids such as chemicals (glycol, amine, corrosion inhibitor, etc.); fuel for gensets or helicopters; oil (lube, engine crankcase) for compressors, one or more barrels can be stored at a location without secondary containment as long as the barrels are located in a manner where a spill would be contained within the facility area, and the spilled fluid would be contained in an area free of hazards such as away from a source of ignition. For production tanks in a tank farm, NFPA 30 requires the dyke / berm secondary containment to be sized for the containment of the full volume of the largest tank only. The requirement for barrel docks are described in NFPA 30.

Typical pop tank installations do not require secondary containment, as long as the facility site is constructed to contain all on-site fluid storage volumes and surface run-off. Where a pop tank is being used as both a drain tank and for emergency PSV fluid carry-over capture, secondary containment is required.

Truck Out Boxes

Truck out boxes are considered spill or leak prevention devices, not secondary containment. As a best practice, the Regulator recommends the boxes are installed inside the tank's secondary containment boundary. Any deviation from this design must achieve the same results, and is considered on a case by case

basis. The design should be configured to enable the truck operator to remain outside the secondary containment area while loading and unloading the fluid.

Truck out boxes should be reflected on the drawings relative to the tank's secondary containment boundary as follows:

- By showing the location of the truck out boxes on the Plot Plan, PFD or P&ID, and/or
- By inserting a note on the drawings stating the location of the truck out boxes.

Petroleum Storage Tank Design

The general standards for atmospheric and low-pressure petroleum storage tanks in B.C. are included in the following American Petroleum Institute (API) documents:

API-650	Welded Steel Tanks for Oil Storage: governs the construction of tanks storing products with internal pressures of up to 2.5 psig.
API-651	Cathodic Protection for Above-Ground Petroleum Storage Tanks.
API-652	Lining of Above-Ground Petroleum Storage Tanks.
API-653	Tank Inspection, Repair, Alteration, and Reconstruction.
API-620	Design and Construction of Large Welded Low-Pressure Storage Tanks: construction of tanks with internal pressures of up to 15 psig.
API-2000	Venting Atmospheric and Low-Pressure Storage Tanks.
API-2350	Overfill Protection for Petroleum Storage Tanks.
API-2015	Cleaning Petroleum Storage Tanks.
API-2550	Measurements and Calibration of Petroleum Storage Tanks.

For general requirements on underground tank inspections and abandonment, refer to CSA Z662, API-1604 and NFPA 30.

Water Storage at Facility Sites

Long-term produced water storage sites where containment ponds and/or other produced water storage and treatment equipment is constructed for reclaimed, blended, or produced water, including frac flow back water, are part of the facility

application process. This type of stand-alone produced water storage facility must be applied for as a water hub facility. If a produced water storage containment pond is to be constructed at an existing facility site, such as a compressor facility, a new application must be submitted for a water hub facility. Existing facilities other than a water hub, cannot be amended to add a water hub via permit amendment to add storage capacity or related equipment.

If a facility is proposed to store only fresh water (fresh water storage site), an application for an associated activity can be submitted, as described in Section 4.6 of this manual. Fresh water storage sites may also be subject to authorizations under the Water Sustainability Act and Dam Safety Regulation.

Light Control

The Regulator requires that operations at a well or facility do not cause excessive emanation of light. It is expected that permit holders have done all that is reasonable to mitigate light emissions to surrounding areas, without compromising the safety of workers or the facility's safe operation.

Mitigation measures that might be considered include:

- Minimizing the amount of lighting required while ensuring safe operation of the facility,
- Minimizing brightness of lights to the extent practicable,
- Use of automated sensors that shut down lighting in areas of no activity where it is safe to do so, and,
- Re-angling, shading or screening of lighting.

As required in Appendix B of this manual, a summary of how light pollution has been identified, considered and mitigated must be included as a mandatory application deliverable for gas processing plants.

4.3.4 Facility Specific Activity Requirements

This section outlines application requirements for facility applications. Requirements are dependent on the characteristics of each facility activity and are outlined in full details below including a description, details of additional information and requirements. In most cases, the details are input into the facility

application tab within AMS, but may require the upload of an attachment to support the details including:

- Project description (as described below).
- Piping and instrumentation diagram.
- Process flow diagram.
- Gathering system schematic.
- Plot plan.
- Air dispersion model (as described below).
- Dehydration engineering and operations sheet (as described below).
- Discharge of waste reporting (as described below).
- Sand Management Plan (as described below).
- A table of all design codes to be used in the facility design, construction and operation including a summary of the scope of application of each code within the facility.
- a table of all natural gas fired appliances proposed at the facility with the corresponding ASME Boiler and Pressure Vessel Code section, burner control system standard, appliance rating, and pressure piping standard, for which the appliance was designed.

Attachments must meet specific size and file formatting restrictions in order to be uploaded correctly as defined in Section 5.8 of this manual.

1. Project description

Provide a brief description of the project and any comments relevant to the facility and/or application. Specific information is required in project descriptions accompanying new facility applications and facility amendment applications and should include:

- New facility application – include oil condensate capacities in project description,
- New facility application – include the means and plans for security and access control in accordance with Section 39(3) of the Drilling and Production Regulation and/or Section 8(1)(e) of the Liquefied Natural Gas Facility Regulation in project description,
- Notice of Intent to suspend a gas plant or other facility: include a list of wells from the schematic, a rationale for shut-in and plan and duration of

shut in in project description. Must also show provisions have been made to:

i. Store, handle and dispose of toxic material,

ii. De-pressure the facility,

iii. Dispose of corrosive, combustible or explosive fluids,

iv. Minimize or prevent degradation of the plant or facility equipment, vessels and piping,

v. Secure the plant or facility against unauthorized entry and vandalism,

vi. Periodically have the plant or facility and site inspected by qualified persons, and,

vii. Address any other concerns the Regulator has identified.

2. Air Dispersion Modelling

Applicants shall consider the impacts to ambient air quality as a result of routine combustion of sour gas and / or combustion of gas containing >=1 mole per cent H_2S for a duration of >=15 minutes or that results in 1 tonne/rolling 24 hours of sulphur emissions. Results and records of air dispersion modelling must be attached to facility permit applications where this applies. Further information can be found in the Flaring & Venting Reductions Guideline, Section 6.10.

3. Dehydrator Engineering and Operations Sheet

A Dehydrator Engineering and Operations Sheet (DEOS) must be attached to facility applications or amendment applications where new or used glycol dehydration equipment is to be installed, where existing glycol dehydration equipment is to be modified, or requested changes to the facility affect the dehydration process. The DEOS must show that the dehydration process will follow the Regulator's policy on benzene emissions outlined in the Flaring and Venting Reduction Guideline.

4. Discharge of Waste

Some facilities require a waste discharge authorization under Section 6 of the Oil and Gas Waste Regulation. This approval is required when:

- The cumulative rated power of all compressor drivers is greater than 600 but less than 3,000 kilowatts of total power,
- The cumulative rated power of all oil pump drivers is greater than 600 but less than 3,000 kilowatts of total power,

- The cumulative rated power of all electricity generator drivers is greater than 600 but less than 3,000 kilowatts of total power,
- The facility includes dehydrators, line heaters or treaters that combust high sulphur gas (> 1 per cent) and are each rated at 150 kilowatts or more, or,
- The facility is a processing plant.

The first three items in the bulleted list above are individual entities and must not be combined to determine total driver power. The Application Management System prompts for the upload of a completed Schedule 3 form if an approval under Section 6 OGWR is required. The Regulator's Environmental Management and Reclamation department conducts the appropriate review and determination process for waste discharge approvals based on the information entered at time of facility application. No separate application is needed.

Some facilities are not subject to the OGWR, thus requiring a Waste Discharge permit under the Environmental Management Act and are described in Section 2(1) of the OGWR. Contact the Regulator's Director, Environmental Management and Reclamation for more information.

Additional Facility Requirements

1. Engineering Assessment

   The Regulator may request an engineering assessment, as deemed necessary. Engineering assessments must be completed in accordance with the latest version of CSA Z662, including:

   - Design capacity of the facility and design standard used.
   - Gas rate for a gas facility and solution gas rate for an oil facility.
   - Total sulphur emissions of the facility.

2. Sand Management Plan

   All operators of wells within British Columbia utilizing sand fracturing are required to develop and implement an appropriate Sand Management Plan. The Sand Management Plan is a comprehensive plan outlining the preventative steps to reduce, monitor, and capture sand returns, incorporate leak detection, monitor and maintain piping integrity, and ultimately minimize the risk of loss of containment due to sand erosion. The Sand Management Plan, and all records relating to sand monitoring

and testing programs, must be reviewed and updated at regular intervals or as required and made available to the Regulator upon request. The Sand Management Plan must take into consideration and document:

- procedures for monitoring sand returns during cleanup and define the cleanup target criteria for sand returns,
- procedures for monitoring sand returns upon initial production, during the life of a well, and after periods of extended pressure buildup,
- proposed de-sanding equipment upon initial production and throughout the life of a well,
- when a well workover, recompletion, or well-bore alteration takes place there must be an adequate plan to either complete additional flowback through well testing equipment, or another means to control sand returns and potential erosion in surface and equipment,
- piping configurations to minimize erosion,
- well facility design to detect and control leaks as quickly as practicable,
- maximum velocity determination and methods to keep velocities within appropriate and defined parameters as stated by API RP 14E or the NORSOK standard P-001. Either standard may be used, but must then be followed in its entirety for erosion calculations,
- baseline and ongoing ultrasonic testing, and interpretation of results,
- justification for location of erosion sensing devices and demonstration of effectiveness, if applicable,
- the application and as-built P&IDs must include the maximum well design flow rates that incorporate the calculated maximum design erosion flow velocities in the facility piping,
- management of design changes, and
- communication and documentation procedures of operating limits with field personnel.

3. Produced Water Storage Facility Requirements

   A Produced Water Storage Facility (ie: water hub) is established where produced (saline) fluid is stored separately from a facility used to compress, dehydrate, store, or process gas, oil or byproducts. Produced

Water Storage Facilities can be a single activity application or may exist at the same site as another facility such as a compressor station or gas processing plant. Regardless of application type, produced water storage will be permitted as a separate water hub facility type. Examples of water hubs include containment ponds, long-term above-ground walled storage systems (C-Rings), or large steel tanks used to contain fluid partially or wholly sourced from produced (saline) water. Water hub facilities may be constructed for fluid storage prior to hydraulic fracturing, water treatment, mixing or blending, or storage prior to disposal.

Applications for a Produced Water Storage Facility must include a Preliminary Operation, Maintenance and Surveillance (OMS) Plan with the application. The OMS plan is a comprehensive asset life-cycle plan that provides operational staff with the information required to ensure safe operation of the facility. Content within the OMS plan will vary and is dependent on the Failure Consequence Classification of the facility, when required. Applicants may use the latest Canadian Dam Association's Dam Safety Guidelines as a reference for the expected content and format of an OMS plan.

The Preliminary OMS Plan, at a minimum, is expected to include:

- Project Description.
- Facility roles and responsibilities.
- Design and geotechnical details, including consideration of groundwater conditions and rationale for facility site selection determined by the geotechnical assessment.
- Anticipated operating lifespan and year of decommissioning based on liner life.
- Discussions on conformance / deviation relative to the Management of Saline Fluids for Hydraulic Fracturing Guideline.
- Description of the produced, fresh, and treated water process flow, including sources of storage fluids.
- Produced water inventory management and monitoring accountabilities. This may include fresh and treated water.
- Operating requirements including routine operating procedures, allowable deviations from routine procedures and emergency procedures.
- Maintenance requirements including vegetation management, control of potential burrowing animals, cleaning / flushing of piping, erosion control measures, fencing, netting, signage and access ways.

- Surveillance requirements including frequency of routine visual inspections, formal engineering inspections, instrumentation and special inspection triggers (heavy rainfall, seismic activity, exceedance of maximum water level, etc.).
- Leak management:
    - Leak detection system(s) description, including sub-drain system management and surface water management.
    - Method of monitoring and reporting.
- Groundwater Monitoring Plan, in accordance with Appendix A of the Management of Saline Fluids for Hydraulic Fracturing Guideline.
- Counter measures, responses and training in the event of a spill.
- Spill kits and equipment associated with spills and spill response on site.
- Wildlife exclusion measures.

The following may be required within the Preliminary OMS Plan, depending on the results of the Failure Consequence Classification:

- Description of onsite communication infrastructure (phone lines, internet, etc.).
- Description of site access routes, to ensure accessibility in case of emergency.
- Public safety systems.
- Maintenance and security requirements.

When live storage is proposed at a site, a failure mode and environmental consequence assessment must be completed to determine an acceptable site and inform the mitigation options that will reduce the consequences in the event of a failure incident at the selected site. The following **must** be included as appendices to the Preliminary OMS plan when live storage is proposed for a Produced Water Storage Facility:

- Failure Consequence Classification: A Failure Consequence Classification in the event of a breach of the lined-earthen embankment, must be assessed by the owner considering the Dam Safety Regulation, Schedule 1 guidelines, for acceptance by the Regulator. The Failure Consequence Classification shall consider the latest Canadian Dam Association guidelines and bulletins, including Environmental Consequence Classification.
- Hazard and Failure Mode analysis: Both the external hazards (outside the permit holder's control) and internal hazards and the corresponding failure modes of these dam-like structures / ponds must be assessed, considering relevant loadings during

the siting and design stage. Consideration of challenges and issues that may impact the design of such a proposed structure or facility and the potential mitigation measures must be considered during the design stage.

The Regulator may condition the following post-permit requirements:

- Operation, Maintenance and Surveillance Plan: a final site-specific OMS plan for the subject water hub facility.
- Safety Assurance Statement signed by the Professional Engineer(s) responsible for the design and oversight of facility construction, which provides assurance on the adequacy of the facility design and construction of the facility towards the safety of the public and the protection of the environment.
- Annual engineering inspections of the facility.

4. Comingled Production

   Comingled production approvals are required attachments for some facility applications. The Regulator's Production Allowables web page provides more information on comingled production approvals.

Gas Processing Plant: Additional Requirements

The review must include the rationale for constructing the newly proposed plant after consideration of existing active plants and pipeline infrastructure feeding into active plants within a 50 kilometre radius.

Appendix B of this manual provides a detailed listing of technical documentation to be included in an application for a gas processing plant in addition to specific details on requirements for plans, diagrams and maps.

4.3.5 Additional Considerations for Facilities Activity

Emergency Response Planning

An Emergency Response Plan (ERP), or an update to an existing plan, must be submitted to the Regulator in accordance with Section 7 of the Emergency Management Regulation. Emergency planning zones are determined using H_2S content of product in a pipeline, well or at a facility. Review Schedule A of the Emergency Management Regulation for more information.