



## APPENDIX 1

# Water Use Management and Ground Water Protection Standard overview

### Purpose

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To manage the *Risk*<sup>1</sup> to surface and subsurface water resources of water use and aqueous discharges to the environment and to manage the Risk of construction and exploitation activities impacting ground water.

### Who is this for?

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- *Managers*;
- *Authorised Subject Matter Experts* for water assessment;
- *Contract Holders* and *Contractors* where water use with potential *RAM* red Risks to the availability of water have been identified **and/or** if aqueous discharges within the scope of this standard are produced or managed within the *Scope* of the *Contract*.

### What situations are covered?

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This document applies to all routine and non-routine use of water and releases of aqueous discharges to the *Aquatic Environment* and *Aquifers* to all onshore and offshore Sakhalin Energy assets, facilities, operations, marine vessels that are owned or are under the operational control of Sakhalin Energy, projects and activities, including activities undertaken by any contractor on behalf of the Company.

This document addresses compliance with water quality standards during both construction and operation of facilities; environmental industrial control as required by RF legislation including compliance discharge limits calculated for each source of wastewater and limits for pollutants in receiving surface water bodies; and visual and analytical monitoring of ambient water quality in the area of Sakhalin Energy's operations.

This document applies to management the Risk of construction and operation activities impacting ground water.

Aqueous effluents covered by this Standard include, but are not limited to:

- Produced water, used water-based mud (WBM) and WBM cuttings when they are managed as contaminated wastewater, Ballast water, Bilge water,
- Process wastewater, Storage tank bottom water, Boiler blowdown, Cooling water, Brine (from desalination operations), Wastewater treatment plant effluent, Non-routine discharges (e.g., from process upsets, maintenance or construction activities, well services, etc.),
- Domestic wastewater (from living quarters, offices, workshops, kitchens, sinks, showers, laundries, etc),
- Stormwater, Deck wash water, and Fire water.

This Standard does not address:

- Maritime HSE management (refer Maritime HSE<sup>2</sup> and Non-native Invasive Species specifications).
- Management of hazardous and non-hazardous waste including solid, sludge and liquid (non-aqueous) wastes (refer Waste Management Standard).
  - Used oil-based mud (OBM), used synthetic-based mud (SBM), used WBM, and cuttings when they are managed by downhole injection.
  - Transportation and on-shore recycling, treatment or disposal of used OBM, SBM, WBM, and cuttings.
  - Waste oil and oil recovered from wastewater treatment systems shall be returned to the crude oil production stream where practicable. Where not practical, waste oil shall be managed as a waste.
- Discharges to third party *Waste Water* treatment systems.

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<sup>1</sup> Italicized terms in this document are included in the [Sakhalin Energy HSE Glossary](#).

<sup>2</sup> Underlined items in this document refer to Sakhalin Energy Controlled Documents.



- Management of chemicals (refer [Chemicals Management Specification](#)).
- Leaks and spills from process and transfer equipment or responses to spills and accidental discharges (refer [Emergency Preparedness and Response Standard](#)).

**Managers are *Accountable* for requirements 1 to 10 in their own organisation:**

### Requirements – general

1. **Manage Water Use and Aqueous Effluents** in compliance with:
  - a. Russian Federation law (overview is provided in [Legal Requirements for Water Use and Aqueous Discharges](#)) including Water Permits and Licenses (refer websites [Quarterly](#) and [Yearly](#)),
    - Any pollutants that will be discharged must have an MPC and shall be included in the facility's Water Use Decisions, Water Use Licenses, Permits for waste water discharge (WUD/WUL/Permits). Wastewater containing substances without established MPCs shall not be discharged.
    - Water use and wastewater discharges shall meet Water use Agreements (WUA) WUD/WUL/Permits conditions, MPDs and established wastewater standards;
    - Prior to making changes at facilities that may alter the quantity of water intake and quantity or quality of wastewater discharges, or before introducing new wastewater sources at existing facilities, potentially affected WUA/WUD/WUL/Permits shall be reviewed, and if required, appropriate applications shall be submitted for amendment of the WUA/WUD/WUL/Permits.
    - Do not discharge radioactive material (above background levels) to land or water environments.
  - b. Lender and Shareholder requirements defined in Appendix 3 and Appendix 4 Water Use Management and Ground Water Protection Standard.

Water use and wastewater discharges shall meet WUA/WUD/WUL/Permits conditions and standards in 1b. The following requirements shall be established and maintained in accordance with requirement 1.
2. **Implement roles, responsibilities and training** as defined in [Sakhalin Energy Environmental Roles and Responsibilities](#).
3. **Verify, monitor and review** performance as specified in [Water Use Management and Ground Water Protection Standard Assurance](#) and [HSE Performance Monitoring and Review Standard](#).

### Requirements – assess risks and identify controls

4. For existing *Assets*, assess Risks to water availability and of discharges to the Aquatic Environment and Aquifers in line with the standards [Managing Risks](#) and [Asset Integrity and Process Safety](#) and the referenced Design and Engineering Manuals. Assess the Risk of groundwater contamination and review it with the Subject Matter Expert to determine what investigation, control or remedial action is required.
5. For projects, assess the potential impact of discharges to the Aquatic Environment, Ground Water and Aquifers and availability of water in line with [Impact Assessment](#). Conduct baseline study and Risk-based monitoring of water availability and quality in line with [Impact Assessment](#). Establish and maintain controls based on the identified Risk of groundwater contamination, to reduce the Risk to As Low As Reasonably Practicable.

### Contract Holders are Responsible for requirement 6:

6. If potential RAM red Risks to the availability of water have been identified and/or if aqueous discharges within the scope of this standard are produced or managed within the Scope of the Contract /or sites where known or suspected releases to ground water have Risk Assessment Matrix (RAM) red or yellow Risk, or can cause non-compliance with legislation, then require Contractors and subcontractors to include controls for Water Use and/or Aqueous Effluent and/or Ground Water Protection management in the [Contract HSES Management Plan](#) in line with the requirements of this standard.



### Requirements – water use

7. For Assets and projects where potential RAM red Risks to the availability of water have been identified, comply with RF and adopted international requirements, including the development and implementation of a Water Management Action Plan. Subsurface water intake and sea water intake shall be in compliance with Water use Agreements, Water use licenses, and Subsurface use licenses.
8. Seawater and fresh water intake points shall be fitted with appropriate screens or other protection devices as approved by the relevant Russian Federation authorities to prevent the intake of fish and macro aquatic organisms.
  - a. The design of the protection devices shall be determined by the hydrological conditions and biological parameters of the protected species, as well as the required water intake flow, and shall be approved by the relevant Russian Federation authorities.

### Requirements – aqueous discharges

9. **Design.** Reduce the Risk of discharges to the Aquatic Environment and Aquifers for existing Assets and for projects to *As Low as Reasonably Practicable* (ALARP).
  - a. Reduce the amount of *Produced Water* and *Process Water* discharges by selecting alternative processes and/or maximising reuse or recycling.
  - b. Design and install equipment and/or implement *Procedures* to reduce the impact of discharges to the environment.
  - c. Establish disposal routes for all Waste Water.
    - Discharge water only to a receiving Aquatic Environment or Aquifer, which is physically, chemically and biologically compatible.
    - Discharge points to water bodies shall be designed and located to maximise the rate of mixing.
    - Discharges shall have no adverse effects on the visible aesthetics of an area.
    - Efforts shall be made to eliminate acute toxic effects on organisms in the mixing zone.
    - Wastewater and stormwater discharges shall not impinge on any shoreline area where there is unrestricted access by the public.
    - Wastewater discharges shall not impinge on ecologically sensitive habitats, as defined by the relevant authority of the RF.
  - d. Systems and equipment shall be in place to collect potentially contaminated storm and drainage water and wastewater, including deck washing water, and to direct it to appropriate locations for treatment, downhole injection or discharge as appropriate and authorised by water use licenses and wastewater discharge regulations.
    - To the extent authorised by the water use licence, conditionally clean waters that are not contaminated may be discharged without treatment.
  - e. Discharge to marine waters
    - Domestic wastewater shall be collected and treated in appropriately designed sewage treatment plants. Any discharge to the marine environment shall be carried out in accordance with the terms of the relevant WUD/WUL.
    - Waste from sewage/grey water shall be treated (by aerobic methods, settlement, the neutralization of pathogens) to reduce the concentration of pollutants prior to discharges.
    - All wastewater shall be treated and the quality of the effluent monitored. Wastewater shall be discharged below sea level to allow dilution and mixing with seawater. [EIA Volume 5, Section 3.12.3]
  - f. Waste water sampling
    - it is required that wastewater sampling and analysis to be conducted by qualified personnel and in accordance with RF requirements
10. **Operations.** Construct and operate in accordance with design and applicable legal and other requirements (refer requirement 1). Implement the following specific requirements:
  - a. Onshore Aqueous Discharges Specification

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- b. Ground Water Industrial Controls Specification
- c. Offshore Aqueous Discharges Specification
- d. Hydrostatic Testing Specification
- e. Perform **routine inspection and maintenance** of wastewater handling and treatment facilities, and intervention to correct discharges. This shall be undertaken when non-compliance is observed or suspected (on the basis of feedback through the monitoring program).
- f. Identify aqueous discharges relating to **non-routine activities**, and plan work activities and develop procedures/instructions to achieve compliance with permits and the requirements of this Standard.