



# **SEWAGE DISPOSAL PLAN: SUMPS FOR SEWAGE OUTFALLS AT CAM-3, FOX-3, DYE-M, AND BAF-3**

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## CHANGE HISTORY

This sheet is a record of each issue of this document. When the revised document is issued, the previous issue is automatically superseded.

| Revision | Date        | Author    | Pages Changed | Reason for Change  |
|----------|-------------|-----------|---------------|--|
| 1        | 13-Jul-2018 | W. Wyman  | All           | Initial Document Release   |
| 2        | 2-Sep-2020  | J. Berube | All           | Updated head and footers, rebranding and RC references.  |
| 3        | 16-Jul-2021 | A. Leslie | All           | General updates. Adjusted title to conform with RC QMS standards. Addition of discharge criteria values based on NWB licences. |
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## 1.0 INTRODUCTION

This plan has been prepared by Raytheon Canada (RC) for the Department of National Defence, North Warning System Office, in order to meet the requirements of the respective Nunavut Water Board (NWB) licences for CAM-3, FOX-3, DYE-M and BAF-3.

In this licence, a “sewage outfall sump” is a structure or depression that collects, controls, and filters liquid waste. This structure should be designed to prevent erosion while allowing percolation of liquid waste.

## 2.0 OPERATION AND MAINTENANCE

Sewage (Blackwater) and greywater are combined in the sewage system. The sewage system comprises a sump tank, holding tank, and masticating pump within the building train. Sewage is not discharged from the building daily. When the holding tank nears, or reaches, capacity the sewage is discharged out the sewage outfall pipe to the receiving outfall sump located outside.

Up to 10 m<sup>3</sup> is discharged from the building to the outfall sump from two to five times a year, depending on the number of people at the site. RC is planning to increase the size of each lagoon to increase capacity. The NWB will be notified in writing at least sixty (60) days prior to the beginning of the modifications.

The sewage outfall sump will be inspected daily when in use. Preventative maintenance will be conducted quarterly in accordance with WI-TS-29.

## 3.0 DISCHARGE PLAN

During normal operation the wastewater levels in the outfall sumps do not overflow. Wastewater evaporates or percolates into the soil so overflow of the outfall sump does not occur. When sludge or wastewater requires removal from the outfall sumps (due to maintenance, etc) the plans outlined below will be implemented.

### 3.1 Sludge Removal

If sludge requires removal (eg. greater than 5 cm of sludge has accumulated in the bottom of the lagoon), the following will be completed:

1. The sludge will be containerized and dried;
2. The sludge will be sampled using Method 1311 Toxicity Characteristic Leaching Procedure (TCLP) Test, US EPA or Leachate Extraction Procedure 164-GP-1-MP Canadian General Standards Board for the criteria listed in Appendix 1; and
3. The sludge will be shipped for disposal either:
  - a. As waste HAZMAT shipped to a licensed disposal facility if the sludge exceeds the criteria stated in Appendix 1; or
  - b. As non-HAZMAT waste if the sludge is less than the criteria stated in Appendix 1.

### 3.2 Sewage/Wastewater Discharge

If wastewater in the outfall sump requires discharge (e.g. the outfall sump is retaining water and not allowing liquids to percolate) the following steps will be completed:

1. The outfall sump will be discharged greater than 31 m from the high water mark of any water body;
2. A sample of the effluent will be taken from the discharge point and sent to a CALA-accredited Laboratory to be analyzed for the parameters listed in Appendix 1; and,
3. The sludge will be removed as per section 3.1.



## APPENDIX 1 – DISCHARGE CRITERIA

Table 1: Sludge Sampling Criteria

| Parameter                                  | Concentration (mg/L) <sup>1</sup> | Concentration (mg/kg) <sup>2</sup> |
|--|-----------------------------------|------------------------------------|
| Lead (leachable)                           | 5.0                               | N/A                                |
| Mercury (leachable)                        | 0.1                               | N/A                                |
| Chromium (leachable)                       | 5.0                               | N/A                                |
| Cobalt (leachable)                         | 100                               | N/A                                |
| Copper (leachable)                         | 100                               | N/A                                |
| Zinc (leachable)                           | 500                               | N/A                                |
| Hydrocarbons Fraction 1 (C6 to C10)        | N/A                               | 210                                |
| Hydrocarbons Fraction 2 (C10 to C16)       | N/A                               | 150                                |
| Hydrocarbons Fraction 3 (C16 to C34)       | N/A                               | 1300                               |
| Hydrocarbons Fraction 4 (Greater than C34) | N/A                               | 5600                               |

Table 2: Sewage/Wastewater Discharge Criteria

| Parameter                | Maximum Concentration of any Grab Sample |
|--------------------------|--|
| pH                       | 6.0 to 9.0 (pH units)                    |
| Oil and Grease           | No visible sheen                         |
| Biological Oxygen Demand | 120 mg/L                                 |
| Total Suspended Solids   | 180 mg/L                                 |
| Faecal Coliforms         | 10,000 CFU/100 mL                        |

<sup>1</sup> Schedule 1 of the GNT Guideline for Hazardous Waste Management, revised October 2017

<sup>2</sup> Canadian Council of Ministers of the Environment (CCME) Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil, Tier 1 levels of Fine Grain soils for Agricultural use