BRADWELL SITE

FLOW MONITORING (FED A1 OT3)

BRAD/EN/REP/192

Prepared by: _____ Date: 09/08/2016

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1. Purpose

This document is in response to the Environment Agency's request to provide an operating technique to meet condition 2.3 *"A1 OT3 (Flow Monitoring)"* for the Bespoke FED permit EPR/DP3127XB[1]. This operating technique ensures that the measured volume of effluent discharge is credible and can be used to accurately calculate the total nitrate load in a discharge.

2. Volume of Discharge Effluent Measurement

In order to accurately measure the volume of effluent discharged to the estuary, the site uses an Environment Agency's Monitoring Certification Scheme (MCERTS) accredited flowmeter to record the volume of discharges. This process is controlled by a management control process which ensures that measurements adhere to steps outlined in a Quality Plan.

As part of the MCERTS accredited process and to provide further assurance, the volume of effluent discharged is also calculated from the variance in levels within the Final Monitoring Delay Tank 2 (FMDT 2) before and after a discharge. This is achieved by recording the initial level in the FMDT 2 at the start of a discharge and the level on completion of a discharge. The volumes of effluent discharged, recorded from the two processes (i.e. from the MCERTS accredited flowmeter and the difference in levels in the FMDT 2 before and after a discharge) are compared to ensure the difference is within an acceptable error of margin which should not be more than 8%. This is carried out by suitably qualified and experienced personnel and controlled by a Quality Plan.

Discharge will be made using a pump with a maximum capacity of $40m^3/hr$ for a period of 30 minutes within an optimum discharge window of an hour after high water to two hours after high water.

3. Nitrate Loading

The daily nitrate loading must not be exceeded. This is achieved by calculating the pre-discharged mass of nitrate in the FMDT 2 by multiplying the nitrate concentration and the volume of effluent taken from the tank's level gauge. An appointed suitably qualified experienced person only authorises the discharge if the calculated mass of nitrate is below the daily nitrate limit. This is controlled by a management control procedure.

Post-discharge, the nitrate loading will be calculated by multiplying the nitrate concentration and the actual volume of effluent measured at the MCERTS accredited flowmeter. This information will be documented in the site's quality process.

REFERENCE

1 Environment Agency 2016. Treatment Facility Serving Bradwell Site Permit Number EPR/DP3127XB