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SUBJECT: QA/QC During Laboratory Procedures

1.0 SCOPE AND PURPOSE

The purpose of this standard operating procedure (SOP) is to support best laboratory (lab) procedure practices. Best practices will ensure good quality results and aim to reduce erroneous data which requires operators to spend time implementing corrective actions and providing follow up.

This SOP will outline proper sampling, quality assurance and control procedures, and reporting of sample data.

2.0 DEFINITIONS

Quality Assurance - the maintenance of a desired level of quality in a service or product, especially by means of attention to every stage of the process of delivery or production.

Quality Control - a system of maintaining standards in manufactured products by testing a sample of the output against the specification.

Accuracy – is the degree of difference between observed values and known actual values. The more accurate the analysis (procedure) the closer the result will be to the true result. This also builds confidence in our testing procedures.

Precision – is the ability of a measurement to be consistently reproduced.

Composite Sample– Two sample aliquots taken at different times from the same sampling location in a single sample bottle.

Blank – a sample of distilled or deionized water that does not contain the analyte or interference compounds.

Analyte - a substance whose chemical constituents are being identified and measured.

Analyst - The individual performing the analytical work.

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3.0 REFERENCES

- Veolia Laboratory Quality Assurance Program
- Safe Water Drinking Act, 2002
- Ontario Regulation 169/03
- Ontario Regulation 170/03

4.0 PROCEDURE

QA/QC procedures will be completed daily for pH, turbidity and chlorine residual methods.

1. Collect the sample after running the treated water tap in the lab for five minutes.
2. Fill one sample bottle to almost full to have enough to do all the testing.
3. Record the following information on the log sheet:
 - Sample date and time
 - Sample source – use the following identification codes: TW Tap (treated tap water collected from the tap in the lab).
 - Analyst’s name
4. Perform instrument calibrations and sample measurements as outlined below.

pH Measurement Method

1. Complete a calibration on the portable pH meter as per the SOP.
2. Measure the pH standard according to the manufacturer’s method. The standard is temperature dependent and will vary. Verify the value by referencing the table located on the standard bottle and record the appropriate true value with the temperature displayed on the instrument. Record the pH standard result from the pH meter.
3. Pour the treated water sample into a small sample cup and measure. Once stabilized, record the reading as Value A and discard the sample.
4. Pour a second sample into the sample cup and read. Once stabilized, record the result as Value B. This is measuring the sample in duplicate. Discard the sample.

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Chlorine Measurement Method

1. Using the DPD Chlorine – LR secondary standards kit, zero the instrument with the blank (STD 0) and read standard 2 (STD 2). Record the measured value and refer to the certificate provided in the kit to confirm the standard is reading within range on the instrument. Record the results on the log sheet.
2. The verification will have passed or failed. If the verification failed the instrument may need servicing by the manufacturer. If the verification passed, you may proceed to measure your samples.
3. Measure the treated water sample following the manufacturer’s method. Record the reading as Value A and discard the sample.
4. Pour a second sample, and measure. Record the result as Value B. If Value A and Value B results are unusually different, perform another duplicate sample. If results are still poor or highly variable, notify the senior operator.

Turbidity Measurement Method

1. Turn on the turbidimeter. Make sure the turbidimeter is in signal averaging mode and that ratio is turned on (this removes interferences caused by colour). Turbidity readings will take approximately 30 seconds.
2. Verify the turbidimeter daily using the Gelex Secondary Standard Kit. Insert the standard and line up the indicator on the vial with the line on the instrument for proper vial placement. Record the previous reading (labeled on the turbidity meter) and the value of the Gelex standard. The verification allowance is +/- 10%. If the secondary standards fall outside this range, calibration is required.
3. Calibration is required every 3 months according to manufacturer’s recommendations. If calibration is required, follow manufacturer’s procedure using the StabCal Primary Standard Kit. New calibration values shall be labeled on the instrument as this defines the known value for all Gelex standard verifications.
4. Pour the treated water sample into a turbidity vial and measure. Record the reading as Value A and discard the sample. Pour a second sample, read, and record the result as Value B. If Value A and Value B results are unusually different, perform another duplicate sample. If results are still poor or highly variable, notify the senior operator.

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Lab Information Management System (LIMS) Data Entry

Once all the data has been documented on the lab worksheet you will need to enter the data into the LIMS program under the variable view QA/QC. This data automatically populates from the entered data in LIMS and will populate other tables/ graphs.

The Hach Water Information Management (WIMS) data/graphs needs to be reviewed to ensure that we are not exceeding the % warning limits or the limits set on the graphs. Data in LIMS/WIMS should also be reviewed on a regular basis to ensure there are no entry errors.

A monthly report of QA/QC results are submitted to Veolia for review and consideration.

5.0 TRAINING EMPLOYEES

All employees shall be notified of programming changes and procedures. Review all corresponding SOPs for any changes.

Disclaimer

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