Quality Control Procedure for Wastewater Analysis

1. **Introduction**
   The following procedure provides an overview of the quality control elements used within the laboratory.

2. **Apparatus**
   Details of the apparatus to be used can be found within the individual procedures for the various test methods

3. **Quality Control**
   Details of the quality control checks for each parameter are included in the various test procedures.

4. **Reagents**
   Not applicable

5. **Records**
   Quality Control Charts, reference QC Spreadsheet

6. **Procedures**

6.1 Quality control is managed in a number of ways in the laboratory and includes;

- Regular Equipment maintenance, service and calibration
  All equipment used to ensure the protection of the environment are included on an equipment spreadsheet. The sheet includes all environmental monitoring equipment located in the field and in the laboratory including pH meters, HACH, balance, temperature probes, DO probes, bunds etc. The sheet will summarise the service, maintenance and calibration schedules for each piece of equipment.

- Calibration & Validation checks before use
  Calibration & Validation checks are completed on instruments such as the pH meters etc. This is where the instrument is calibrated across its range of use, adjusted as necessary and is then validated for use by check in a standard

- Quality control charts

  Quality Control charts help monitor the precision of the results being obtained within the laboratory. The charts are used in line with the HACH methods to determine if the process/equipment is stable over time. Control charts help to keep a check on the performance of the instrument by using a QC/QA (Quality Control/ Quality Analysis) sample which is purchased from HACH and is close to the Emission Limit Value or expected range of the sample being tested.

  A control chart always has five lines for reference:

  1. The Central line for average (this is the average of at least 20 standard samples)
  2. The Upper line for upper warning limit (this is the + (2 x standard deviation + average)
  3. The Lower line for lower warning limit (this is - (2 x standard deviation + average)
  4. The Upper line for upper control limit (this is the + (3 x standard deviation + average)
  5. The Lower line for lower control limit (this is - (2 x standard deviation + average)

  Each time the QC is run during each of the test methods, the analyst can add the result of the standard check to the control chart to verify the precision and accuracy of the test. The test method can be seen to be out of control if:

  - One value or more fall outside the upper or lower control limits).
  - Two or more consecutive values fall outside the upper or lower warning limits) on the same side of the mean.
  - A series of seven or eight consecutive values fall all above or all below the mean.
  - An increasing or decreasing trend is detected.

7. Calculations

Reference QC Spreadsheet for details on the calculation

8. Attachments

Not applicable

9. Revision History

Date	Changed by	Obsolete Issue	Approved Issue	Details
24/08/2020		**n/a**	**1**	**New SOP**