METHOD STATEMENT

Determinand:
Low Level Soluble Reactive Orthophosphate

Matrix:
Final effluent.

Principle of Method:
The orthophosphate ion reacts with Ammonium Molybdate and Antimony Potassium Tartrate (catalyst) under acidic conditions to form a 12-molybdophosphoric acid complex. The complex is then reduced with ascorbic acid to form a blue heteropoly compound. The absorbance of this compound is measured spectrophotometrically at wavelength 880 nm and is related to the phosphate concentration by means of a calibration curve.

Sampling and Sample Preparation:
There is no sample preservative used. Samples should be analysed as soon after receipt as possible. Samples are normally collected in 1L PET bottles. Other size PET or HDPE bottles are also suitable.

If analysis cannot be immediately undertaken, samples should be stored at 3 ± 2°C until the day of analysis.

Samples are stable for 7 Days (In-House Data) from sampling.

Interferences:
Interference of high levels of hexavalent chromium, nitrite, nitrate and sulphide. Silica forms a pale blue complex which absorbs at 880 nm this interference is insignificant as to produce a positive 1 mg/l error in orthophosphate would require a silica concentration of approximately 4000 mg/l. The determination is also sensitive to variations in acid concentrations, the higher the acidity the lower the sensitivity.

Performance of Method:

Range of Application: 0.01- 2.5mg/l as P
Limit of Detection: 0.009 mg/l as P
Normal Reporting Level: 0.010 mg/l as P

Determinand	Low standard		High Standard	
	Tot RSD %	Bias %	Tot RSD %	Bias %
Soluble Reactive Phosphate	2.00	1.48	2.49	3.84

Determinand		Final Effluent
		1.6mg/l
Soluble Reactive Phosphate	%RSD	4.08
	%Bias	0.05

METHOD STATEMENT

Uncertainty of Measurement:

The reported uncertainty is an expanded uncertainty calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.

Determinand	Uncertainty of Measurement (%)
Soluble Reactive Phosphate	7.024

References:

Atomic Absorption Spectrophotometry 1979 version HMSO Methods for the Examination of Waters and Associated Materials. ISBN: 011 7514616

Ultraviolet and visible Solution Spectrophotometry and Colorimetry 1980 version HMSO Methods for the Examination of Waters and Associated Materials. ISBN: 011 7515388.

"Phosphorus in Waters, Effluents and Sewage 1980" HMSO Methods for the Examination of Waters and Associated Materials. ISBN: 011 7515825.

"Flow Injection Analysis. An Essay Review and Analytical Methods 1990". HMSO Methods for the Examination of Waters and Associated Materials ISBN: 011 7523399. Method F.