METHOD #: 272.2 Approved for NPDES and SDWA (Issued 1978)

TITLE: Silver (AA, Furnace Technique)

ANALYTE: CAS # Ag Silver 7440-22-4

INSTRUMENTATION: AA

STORET No. Total 01077

Dissolved 01075 Suspended 01076

Optimum Concentration Range: 1-25 μ g/L **Detection Limit:** 0.2 μ g/L

- 1.0 Preparation of Standard Solution
 - 1.1 Stock Solution: Prepare as described under "direct aspiration method".
 - 1.2 Prepare dilutions of the stock solution to be used as calibration standards at the time of analysis. These solutions are also to be used for "standard additions".
 - 1.3 The calibration standard should be diluted to contain 0.5% (v/v) HNO₃.
- 2.0 Sample Preservation
 - 2.1 For sample handling and preservation, see part 4.1 of the Atomic Absorption Methods section of this manual.
- 3.0 Sample Preparation
 - 3.1 Prepare as described under "direct aspiration method". Sample solutions for analysis should contain 0.5% (v/v) HNO₃.
- 4.0 Instrument Parameters (General)
 - 4.1 Drying Time and Temp: 30 sec-125°C.
 - 4.2 Ashing Time and Temp: 30 sec-400°C.
 - 4.3 Atomizing Time and Temp: 10 sec-2700°C.
 - 4.4 Purge Gas Atmosphere: Argon
 - 4.5 Wavelength: 328.1 nm
 - Other operating parameters should be set as specified by the particular instrument manufacturer.
- 5.0 Analysis Procedure
 - 5.1 For the analysis procedure and the calculation, see "Furnace Procedure" part 9.3 of the Atomic Absorption Methods section of this manual.

6.0 Notes

- 6.1 The above concentration values and instrument conditions are for a Perkin-Elmer HGA- 2100, based on the use of a 20 μ L injection continuous flow purge gas and non-pyrolytic graphite. Smaller size furnace device or those employing faster rates of atomization can be operated using lower atomization temperatures for shorter time periods than the above recommended settings.
- 6.2 Background correction may be required if the sample contains high dissolved solids
- 6.3 The use of halide acids should be avoided.
- 6.4 If adsorption to container walls or formation of AgCl is suspected, see NOTE 3 under the Direct Aspiration Method 272.1.
- 6.5 For every sample matrix analyzed, verification is necessary to determine that method of standard addition is not required (see part 5.2.1 of the Atomic Absorption Methods section of this manual).
- 6.6 For quality control requirements and optional recommendations for use in drinking water analyses, see part 10 of the Atomic Absorption Methods section of this manual.
- 6.7 If method of standard addition is required, follow the procedure given earlier in part 8.5 of the Atomic Absorption Methods section of this manual.
- 6.8 Data to be entered into STORET must be reported as $\mu g/L$.

7.0 Precision and Accuracy:

7.1 In a single laboratory (EMSL), USing Cincinnati Ohio tap water spiked at concentrations of 25, 50, and 75 μ g Ag/L, the standard deviations were ±0.4, ±0.7, and ±0.9, respectively. Recoveries at these levels were 94%, 100% and 104%, respectively.