N-HEXANE EXTRACTABLE MATERIAL (HEM; OIL AND GREASE) and SILICA GEL TREATED N-HEXANE EXTRACTABLE MATERIAL (SGT-HEM; NON-POLAR MATERIAL)

Extraction and Gravimetry
EPA Office of Water Method 1664, Revision A (February 1999)

Table 1. Summary of Contract Required Detection Limits, Holding Times, and Preservation for HEM; Oil and Grease and SGT-Hem; Non-polar Material

Analytical Parameter	**Contract Required Detection Limit (CRDL)**	**Technical and Contract Holding Times**	**Preservation**
N-Hexane Extractable Material (HEM); Oil and Grease	5 mg/L	Technical: 28 days from collection; Contract: 26 days from receipt at laboratory	pH <2 with HCl or H_2SO4; Cool to 2EC ±2EC
Silica Gel Treated N-Hexane Extractable Material (SGT-HEM); Non-polar Material	5 mg/L	Technical: 28 days from collection; Contract: 26 days from receipt at laboratory	pH <2 with HCl or H_2SO4; Cool to 2EC ±2EC

Data Calculations and Reporting Units:

Calculate HEM and SGT-HEM sample results using Equation 5 provided in Section 12.0 of Method 1664A.

Report water sample results in concentration units of milligrams per liter (mg/L) HEM and mg/L SGT-HEM. Report HEM and SGT-HEM concentrations that are less than 10 mg/L to 2 significant figures, and HEM and SGT-HEM concentrations that are greater than or equal to 10 mg/L to 3 significant figures.

For rounding results, adhere to the following rules:

a) If the number following those to be retained is less than 5, round down;
b) If the number following those to be retained is greater than 5, round up; or
c) If the number following the last digit to be retained is equal to 5, round down if the digit is even, or round up if the digit is odd.

All records of analysis and calculations must be legible and sufficient to recalculate all sample concentrations and QC results. Include an example calculation in the data package.

Table 2. Summary of Calibration Procedures for HEM; Oil and Grease and SGT-Hem; Non-polar Material by Method 1664A

Calibration Element	Frequency	Acceptance Criteria	Corrective Action
Calibrate Analytical Balance at 2 mg and 1000 mg using Class S weights	Daily	±10% at 2 mg (± 0.2 mg) ±0.5% at 1000 mg (± 5 mg)	1. Recalibrate balance and verify before sample analysis
Calibration Verification (CV) at 2 mg and 1000 mg	Daily, after sample analysis	±10% at 2 mg (± 0.2 mg) ±0.5% at 1000 mg (± 5 mg)	1. Recalibrate balance and verify before sample analysis 2. Reweigh the batch

Table 3. Summary of Internal Quality Control Procedures for HEM; Oil and Grease and SGT-Hem; Non-polar Material by Method 1664A

QC Element	Frequency	Acceptance Criteria	Corrective Action
Laboratory Method Blank (MB)	One per Batch or SDG (1 per 20 samples minimum) [a]	< CRDL	1. Halt analyis, eliminate source of contamination and weigh blank showing no evidence of contamination 3. All samples must be associated with an uncontaminated method blank
Duplicate Sample (DUP)	One per batch or SDG	RPD <20% for samples >5X CRDL; ± CRDL for samples <5X CRDL	1. Flag associated data with an "*"
Matrix Spike (MS)[b]	One per batch or SDG	± 25% from expected value	1. Flag associated data with an "N"
Ongoing Precision and Recovery (OPR) Standard [c, d]	One per batch or SDG	Within limits: Avg R ± 2s [e]	1. Identify and correct the problem. 2. Re-extract sample batch. 3. Repeat OPR

[a] SDG - Sample Delivery Group - each case of field samples received; or each 20 field samples within a case; or each 14 calendar day period during which field samples in a case are received.

[b] Spike sample aliquot with the hexadecane/stearic acid spiking solution. Follow Section 9.3 of Method

1664A for Matrix Spike sample.

[c] Refer to Section 9.6 of Method 1664A.

[d] The OPR standard must be spiked with hexadecane/stearic acid solution prepared from a separate source than the solution used for matrix spikes.

[e] Plus or minus 2 standard (s) deviations of the average recovery (R).

Dilute and reanalyze samples with concentrations exceeding the range of the calibration curve. Results for such reanalyses should fall within the mid-range of the calibration curve. Report results and submit documentation for both analyses.