A-1 Summary of Extraction, Digestion and Preparatory Methods

TABLE A-1.a
Extraction and Digestion Procedures

SW846 Method	Sample Preparation
1311	Toxicity Characteristic Leaching Procedure
1312	Synthetic Precipitation Leaching Procedure
3005A	Acid Digestion of Water Samples for Metals Analysis
3010A	Acid Digestion of Aqueous Samples and Extracts for Metals Analysis
3015	Microwave Assisted Acid Digestion of Aqueous Samples and Extracts for Metals Analysis
3020A	Acid Digestion of Aqueous Samples and Extracts for Metals Analysis
3050B	Acid Digestion of Solids, Sediments, and Sludges for Metals Analysis
3051	Microwave Assisted Acid Digestion of Solids, Sediments, and Sludges for Metals Analysis
3060A	Alkaline Digestion for Hexavalent Chromium
3510C	Separatory Funnel Liquid-Liquid Extraction
3520C	Continuous Liquid-Liquid Extraction
3535	Solid-Phase Extraction
3540C/3541	Soxhlet Extraction
3545	Pressurized Fluid Extraction
3550B	Ultrasonic Extraction
5021	Volatile Organic Compounds in Soils and Other Solid Matrices Using Equilibrium Headspace Analysis
5030B	Purge and Trap
5035	Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples

TABLE A-1.b
Analytical Methods and Associated Preparatory Methods

Analytical Method	Parameter	Preparatory Methods
8011	Ethylene dibromide (EDB) (water)	8011, 5030B
8015 (modified)	TPH volatile and extractable (water and soil)	(volatiles) 5030B, , 5035 (extractables) 3510C, 3520C, 3541, 3550B
8021B	Aromatic and halogenated volatile organics (water and soil)	5021, 5030B, 5035
8070A	Nitrosamines (water and soil)	3510C, 3520C, 3540C, 3541, 3550B
8081A	Organochlorine pesticides (water and soil)	3510C, 3520C, 3540C, 3541, 3550B
8082	PCBs (water and soil)	3510C, 3520C, 3540C, 3541
8141A	Organophosphorus compounds (water and soil)	3510C, 3520C, 3540C, 3541, 3550B
8151A	Chlorinated herbicides (water and soil)	3510C, 3520C, 3540C, 3541, 3550B
8260B	Volatile organics (water and soil)	5021, 5030B, 5035
8270C	Semivolatile organics (water and soil)	3510C, 3520C, 3540C, 3541, , 3550B
8280A/8290	Dioxins and furans (water and soil)	(see method)
8310	Polynuclear aromatic hydrocarbons (PAHs) (water and soil)	3510C, 3520C, 3540C, 3541, 3550B
8330	Explosive residues (water and soil)	3510C, 3520C, 3540C, 3541, 3550B
6010B	Trace metals by ICPES (water and soil)	3005A, 3010A, 3015, 3050B, 3051
6020	Trace metals by ICP-MS (water and soil)	3005A, 3010A, 3015, 3050B, 3051
7041	Antimony (water and soil)	(see method), 3005A
7060A	Arsenic (water and soil)	(see method), 3050B
7131A	Cadmium (water and soil)	3015, 3020A, 3050B, 3051
7191	Chromium (water and soil)	3015, 3020A, 3050B, 3051
7196A	Hexavalent chromium	3060A
7421	Lead (water and soil)	3015, 3020A, 3050B, 3051
7470A	Mercury (water)	(see method)
7471A	Mercury (soil)	(see method)
7521	Nickel (water and soil)	3015, 3020A, 3050B, 3051
7740	Selenium (water and soil)	(see method), 3050B
7841	Thallium (water and soil)	3015, 3020A, 3050B, 3051
7911	Vanadium (water and soil)	3015, 3020A, 3050B, 3051
9010B	Cyanide (water)	(see method)

Analytical Method	Parameter	Preparatory Methods
9012A	Cyanide (water)	(see method)
9056	Common anions	N/A
TX 1005	TNRCC method for total petroleum hydrocarbons(	(see method)

TABLE A-1.b.2
EPA-Defined Organic and Inorganic Laboratory Data Qualifiers

Organic Laboratory Data Qualifiers:

U This flag indicates the compound was analyzed for but not detected.

J This flag indicates an estimated value.

N This flag indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N flag is not used.

P This flag is used for a pesticide/Aroclor target analyte when there is greater than method or project difference for detected concentrations between the two GC columns.

C This flag applies to pesticide results where the identification has been confirmed by GC/MS.

B This flag is used when the analyte is found in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user to take appropriate action. This flag shall be used for a tentatively identified compound as well as for a positively identified target compound. The combination of flags BU or UB is expressly prohibited. Blank contaminants are flagged B only when they are detected in the sample.

E This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis. If one or more compounds have a response greater than the upper level of the calibration range, the sample or extract shall be diluted and reanalyzed according to the project requirements. All such compounds with a response greater than the upper level of the calibration range shall have the concentration flagged with an E on Form I for the original analysis.

D If a sample or extract is reanalyzed at a higher dilution factor, for example when the concentration of an analyte exceeds the upper calibration range, the DL suffix is appended to the sample number on Form I for the more diluted sample, and all reported concentrations on that Form I are flagged with the D flag. This flag alerts data users that any discrepancies between the reported concentrations may be due to dilution of the sample or extract.

A: This flag indicates that a tentatively identified compound is a suspected aldol-condensation product.

X: Other specific flags may be required to properly define the results. If used, the flags shall be fully described, with the description attached to the sample data summary package and the SDG Narrative. Begin by using X. If more than one flag is required, use Y and Z as needed. If more than five
qualifiers are required for a sample result, use the X flag to represent a combination of several flags. For instance, the X flag might combine the A, B, and D flags for some samples. The laboratory-defined flags are limited to X, Y, and Z.

Inorganic Laboratory Data Qualifiers

For inorganics, under the columns labeled "C," "Q," and "M," enter result qualifiers as identified below. If additional qualifiers are used, their explicit definitions shall be included on the Cover Page in the Comments section.

C (Concentration) qualifier

Enter "B" if the reported value was obtained from a reading that was less than the reporting limit but greater than or equal to the Instrument Detection Limit (IDL) or method detection limit (MDL) – as required by the project. If the analyte was analyzed for but not detected, IDL/MDL "U" shall be entered.

Q qualifier

Specified entries and their meanings are as follows:

E- The reported value is estimated because of the presence of interference associated with the serial dilution. An explanatory note shall be included under Comments on the Cover Page (if the problem applies to all samples) or on the specific FORM I-IN (if it is an isolated problem).

M – GFAA duplicate injection precision not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance. (See Exhibit E.)

* - Duplicate analysis not within control limits.

+ - Correlation coefficient for the MSA is less than 0.995.

Entering "S," "W," or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

M (Method) qualifier

"P"	for ICP
"A"	for Flame AA
"F"	for Furnace AA
"PM"	for ICP when Microwave Digestion is used
"AM"	for flame AA when Microwave Digestion is used
"FM"	for Furnace AA when Microwave Digestion is used
"CV"	for Manual Cold Vapor AA
"AV"	for Automated Cold Vapor AA
"CA"	for Midi-Distillation Spectrophotometric
"AS"	for Semi-Automated Spectrophotometric
"C"	for Manual Spectrophotometric
"T"	for Titrimetric
" "	where no data have been entered
"NR"	if the analyte is not required to be analyzed.