

**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
DIVISION OF SPILL PREVENTION AND RESPONSE  
CONTAMINATED SITES PROGRAM**

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Technical Memorandum

Date March 2009

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**Environmental Laboratory Data and Quality Assurance Requirements**

**PURPOSE:**

The Alaska Department of Environmental Conservation (DEC) has developed cleanup regulations for oil and other hazardous substances under the site cleanup rules, 18 AAC 75 Article 3. 18 AAC 78 contains regulations specific to Leaking Underground Storage Tanks (LUST) and associated site cleanup. The Underground Storage Tanks (UST) Procedures Manual, adopted by reference in 18 AAC 78.007, contains specific requirements for laboratory quality assurance (QA). However, QA requirements are not as explicit in 18 AAC 75. The Contaminated Sites (CS) program oversees characterization and cleanup of sites under both 18 AAC 75 & 78. As such, the CS program has received reports with different levels of laboratory data and varying degrees of quality assurance depending on the regulations used for the site. In order to ensure consistency in data quality across the CS program, this technical memorandum summarizes the minimum requirements for both laboratory data packages and QA Summaries (data reduction, verification, evaluation, etc.) that must be included in all reports containing analytical data submitted to the CS program under the 18 AAC 75 and 18 AAC 78 regulations. The Department has determined that the QA submittals described below are necessary to meet requirements of 18 AAC 75.335 (b) (2) (B) & (G), 75.335 (c) (3) & (4), 75.355 (a), 75.360 (2) and 18 AAC 78.007.

**Laboratory Data:**

The complete analytical laboratory report(s) shall be included as part of all submittals to the department for which environmental samples have been collected, analyzed and reported. The laboratory reports shall contain, at a minimum, the following information:

**Minimum Requirements for Laboratory Data Reports for Samples**

(Modified from UST Procedures Manual Section 8.4.2)

- (1) laboratory name, address, telephone number, fax number (if available), CS Lab Approval Number, and the name of the person authorizing release of laboratory data; (normally a cover page containing this information)
- (2) report date;
- (3) a case narrative summary report documenting all discrepancies with the data contained in the report, including but not limited to, sample receipt, holding time(s), documentation and discussion of all quality control (QC) discrepancies and resulting corrective action, a discussion of all matrix interferences including low surrogate recoveries, analyte identifications as appropriate, etc.
- (4) type of analysis (gasoline, diesel, etc.);
- (5) the analytical and extraction method used and method number (see Tables 1 and 2 of the UST Procedures Manual);

- (6) the type of matrix;
- (7) the field sample number;
- (8) the laboratory sample number;
- (9) the date sampled;
- (10) the date received;
- (11) the date extracted and digested;
- (12) the date analyzed;
- (13) the site or project name (from the Chain of Custody);
- (14) the concentrations of analyte and limit(s) of detection
  - a. all solids must be reported on a dry weight basis, for all analytical methods
  - b. Alaska petroleum method results (AK101, AK102 and AK103) must be reported in milligrams per liter (mg/L) for liquids and milligrams per kilogram (mg/kg) for solids
  - c. All other analytical methods must include the applicable reporting units and limit(s) of detection
- (15) the dilution factor;
- (16) the analyst's name, signature or initials, and date signed;
- (17) definitions of any characters used to qualify data;
- (18) method blank results per matrix, method and analytical batch
- (19) precision and accuracy values for each sample set, with at least one precision and accuracy evaluation for each set of 20 samples. At a minimum this will include for all organic analyses surrogate recoveries and Laboratory Control Sample/Duplicate (LCS/LCSD) recoveries and relative percent difference (RPD);
- (20) a sample receipt form documenting the condition of the samples and the ambient temperature of the interior of the shipping container adjacent to the sample container (or temperature blank) WHEN RECEIVED by the laboratory;
- (21) a copy of the Chain of Custody(ies) (COC) for each sample or group of samples, including COC for samples transferred to alternate locations

\*Note: The “raw” analytical data, e.g. bench sheets, chromatograms, calibration data, etc., are not required submittals, however, must be retained on file by the laboratory for at least ten years after the analysis date.

### **Laboratory Data Verification and Quality Assurance Summary**

All reports submitted to the Department containing analytical laboratory sample results shall contain a completed Laboratory Data Review Checklist and a Quality Assurance (QA) Summary. The Laboratory Data Review Checklist is located online at <http://www.dec.state.ak.us/spar/guidance.htm#methods> and must be completed, signed and dated by the firm submitting the report to the Department. It is not to be completed by the analytical laboratory that performed the sample analysis. One Laboratory Data Review Checklist must be submitted for each laboratory data packet to the Department. The QA Summary must be included as a specific text section of the report. All laboratory results, including laboratory quality control (QC) sample results, must be reviewed and evaluated for quality, validity and usability. The text must include any affects on data validity and/or usability due to field sampling and laboratory quality control discrepancies. The QA Summary, at a minimum, will describe the following six (6) parameters for all analytical results with respect to the impact that any discrepancies have on the quality and usability of the data.

### **Quality Assurance Summary Requirements**

1. Precision
  - a. Field Duplicate(s) - minimum of 1 per every 10 field samples for each matrix sampled, for each target analyte.
  - b. Laboratory Sample Duplicates and/or Spike Duplicates (Laboratory Control Samples or Matrix Spikes)
2. Accuracy
  - a. Laboratory QC Samples Percent Recoveries– Spikes (Laboratory Control Samples and/or Matrix Spikes)
  - b. Surrogate Percent Recoveries
3. Representativeness
  - a. Degree to which data characterizes actual site conditions
  - b. Consistency with Conceptual Site Model (CSM) and Data Quality Objectives in the approved workplan/sampling and analysis plan
4. Comparability (if applicable)
  - a. Field Screening vs. laboratory data correlation
  - b. Standard methods, procedures, quantitation units, and reporting formats between lab reports and between laboratories, if more than one used.
5. Completeness
  - a. Number of valid (usable or non-rejected) results vs. the total number of results
  - b. 85% minimum completeness goal per UST Procedures Manual
6. Sensitivity
  - a. Limits of detection (MDL or PQL) less than the regulatory cleanup levels and/or project required goals
  - b. Blank results (Trip Blank and Method Blanks) less than PQL