Preparation of a

U.S. EPA Region 9 Field Sampling Plan

for

Private and State-Lead Superfund Projects

Quality Assurance Management Section
USEPA Region 9
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INTRODUCTION

* The purpose of the Field Sampling Plan ("Sample Plan") is to document the objectives, rationale, and procedures for collecting and analyzing environmental samples. This guidance document describes the recommended format and content for Sample Plans prepared for private and State-lead Superfund projects in EPA Region 9. A separate document, Preparation of a U.S. EPA Region 9 Sample Plan for EPA-Lead Superfund Projects, is available for projects led by EPA.

  This Sample Plan guidance has been prepared by the EPA Region 9 Quality Assurance Management Section (QAMS). Questions on the guidance or on site specific field or laboratory concerns can be directed to QAMS staff listed in Appendix E.

  Some general guidelines and information on Sample Plan preparation are listed below.

* The Sample Plan should be a "stand alone" document. It should contain all the information required to conduct a complete sampling project.

* The Sample Plan is part of the overall quality assurance program for work at a given Superfund Site. It must be consistent with other quality assurance documents developed for a program or site, such as a Quality Assurance Program Plan and/or Quality Assurance Project Plan. (Also see the document U.S. EPA Region 9 Guidance for Preparing Quality Assurance Project Plans for Superfund Remedial Projects.)

* Separate Sample Plans should be prepared for each sampling episode, except when the Sample Plan is for periodic monitoring, such as quarterly groundwater monitoring, or when a new sampling proposal involves the same techniques as a previous Sample Plan. In the latter case, an amendment to an existing Sample Plan can be prepared that documents the objective, rationale, and any other changes for the new sampling proposal.

* Keep in mind that much of EPA's review (and other agency's reviews) of the technical adequacy and appropriateness of a sampling proposal will be based on the Sample Plan.

* See page 12 for a bibliography of useful references for preparing a Sample Plan.

RECOMMENDED SAMPLE PLAN FORMAT

Section I - OBJECTIVE

Section II - BACKGROUND

Section III - MAPS

Section IV - RATIONALE FOR SAMPLE LOCATIONS, NUMBERS OF SAMPLES, AND ANALYTICAL PARAMETERS

Section V - SAMPLE ANALYSES
(Narrative and Table required)

Section VI - FIELD METHODS AND PROCEDURES

A) Sample Collection (including well construction)
B) Disposal of Contaminated Materials
C) Equipment Decontamination
D) Sample Containers
E) Sample Preservation
F) Sample Packaging and Shipment
G) Sample Documentation
H) Quality Control Samples

Section VII - SITE SAFETY PLAN

SAMPLE PLAN REQUIREMENTS

I OBJECTIVE

* State the objectives of the sampling proposal. Discuss why the sampling is being proposed and how the data will be used. State the general analytical information needed from the site. Provide detailed objectives; do not just state the obvious.

II BACKGROUND

* Give a concise history of contamination at the site. Discuss activities that resulted in contamination, what is known about the location and extent of contamination, and past and on-going site investigations. Include site information and data that are relevant to the proposed sampling, such as hydrogeology, topography, precipitation, wind direction, surface water, etc. Summarize significant analytical results from past investigations, and discuss unusual analytical parameters or special methods used, if any.

III MAPS

* Maps should contain all sampling points, known and potential contamination sources, directions of surface water and groundwater flow, site boundaries, on-site buildings, and any other relevant information. More than one map is often needed to illustrate all the required information. Draw maps to scale, if possible, or include in the background section a discussion of the size of the site and the size of any significant on-site features. A map showing the location of the site in a county or state is also recommended.

IV RATIONALE FOR SAMPLE LOCATIONS, NUMBERS OF SAMPLES, & ANALYTICAL PARAMETERS

* This section describes in detail how the Sample Plan will meet the stated objectives. It covers the what, where and why of the Sample Plan.

* Describe where samples will be collected and the types of matrices that will be sampled. Explain the rationale for each sampling point, the total number of sampling points, and any statistical approach used to select these points. Discuss if sampling points were selected with a random,

judgmental, or systematic approach, or a combination of these. If some possible sampling points (e.g., specific wells) are excluded, explain why.

* Discuss the rationale for the analytical parameters. The rationale must relate to site history and the objectives of the Sample Plan. Discuss any relevant action levels that relate to the parameters selected and the quantitation limits required. Give an explanation when not all samples from the same matrix will be analyzed for the same parameters. Identify site indicator compounds and other parameters of most interest.

* Discuss the rationale for using a mobile field laboratory or other screening analyses. Describe where samples for these analyses will be collected, if possible, or state the method that will be used in the field to locate these samples. Explain how screening data will be used, such as in selecting samples for analysis at a fixed laboratory. Usually a percentage of all samples for screening analysis should be split with a fixed laboratory to verify the accuracy and precision of field analytical techniques.

V <u>SAMPLE ANALYSES</u> (Tabular and Narrative)

* List all analyses proposed for the project. Include a table that summarizes each analysis to be performed, the analytical method reference (e.g., EPA 601), the analytes to be measured, and the quantitation limits required.

* As a useful reference, Appendix A lists the target compounds and required quantitation limits for routine (RAS) analyses in EPA's Contract Lab Program (CLP).

* Reference the section of the QAPjP that includes the analytical and laboratory quality control procedures for each chemical analyses. If any analyses included in the sample plan are not also addressed in the QAPjP, then the following information must be presented in the Sample Plan for each analytical parameter or group of analytes to be measured by a single analytical method. (See Appendix B for some examples.)

  <u>Analytes</u>: List the specific analytes to be measured.

  <u>Sample Matrices</u>: State the sample matrices and anticipated sample concentrations.

Analytical Procedure and Quantitation Limits: Provide the method reference number or attach a copy of the method. Use EPA approved methods when possible. The method selected must be directly applicable, as written, to all analytes and matrices; if not, modifications to the method must be proposed. Provide or cite documentation of method precision and accuracy. Identify potential analytical interferences, if any, and describe how the interferences should be treated by the laboratory. Specify the required quantitation or detection limits for each analyte.

Sample Holding Times: Specify the required sample holding time; i.e., the time from sample collection to sample extraction and/or analysis.

Calibration Procedure and Criteria: Reference the sections of the method describing instrument calibration, or provide the appropriate procedures. For both initial and continuing calibrations, state the frequency, number of calibration points, and, where appropriate, the calibration range and traceability of standards. Also state the quality control criteria (e.g., %RSD and %Difference) and acceptance limits which indicate the system is calibrated.

Preventive Maintenance: Document the measures, including preventive maintenance and critical spare parts, to assure that field and laboratory equipment function optimally with minimal downtime. For each major piece of field and laboratory equipment, summarize preventive maintenance program in a table.

Internal Quality Control Checks, Control Limits, and Corrective Action: List the required quality control (QC) checks, such as matrix spikes, duplicates, blanks, laboratory control samples, surrogates, second column confirmation, etc. State the frequency of analysis for each type of QC check, and the spike compounds and levels. State or reference the required control limits for each QC check and corrective action required when control limits are exceeded.

Data Calculations and Reporting Units: State the required reporting units, and state or reference the required calculations. For solid sample analyses, indicate whether results are reported on a dry or wet weight basis; dry weight results are more common. Also indicate whether moisture or solids content is needed.

Documentation and Deliverables: Itemize the information and raw data that must be included in a data package, and specify the reporting format, if desired.

* Present the information above for each analytical method separately. Do not combine different analytical methods unless the two methods are very similar, as may be the case with some inorganic methods (e.g., methods 353.2 and 353.3 for nitrate/nitrite).

* For additional guidance in preparing this section, consult Documentation Requirements for Data Validation, USEPA Region 9, October 1989 (DNC 9QA-07-89).

* For chemical measurements made in the field, including pH and electrical conductivity, the above information must also be included in the sample plan or in the QAPjP.

B. Request For Analyses Table (See Appendix B for examples)

* Provide a table that lists the analyses for each sample point. Include a separate table for each matrix, and include the QC samples (blanks, duplicates, lab QC samples and splits) on each table.

* The format of the table in Appendix B is recommended. It also lists the container types, sample volumes, preservatives, special handling and analytical holding times for each parameter. This type of table is very useful in the field. If possible, also include a schedule for all sample collection activities.

VI FIELD METHODS AND PROCEDURES

A. Sample Collection

* Describe how sampling points will be selected in the field, and how these locations will be documented and marked for future reference. If a sampling grid will be used, describe the dimensions and lay out planned for the grid.

* Outline sequentially or step-by-step the procedure for collecting a sample for each matrix and each different sampling technique (including samples for mobile-lab or screening analyses). Include well purging, housekeeping/cleanliness techniques, field measurements, sample preservation and type of sampling equipment (including material equipment is constructed of). The procedures described must ensure that a representative sample is collected, and that sample handling

does not result in cross contamination or unnecessary loss of contaminants. Special care in sample handling required for volatile organic samples must be addressed.

* When Standard Operating Procedures (SOPs) will be used, all relevant SOPs must be included in the Sample Plan. The SOPs should be specific to the type of tasks proposed in the Sample Plan. The SOP must be directly applicable, as written, to the Sample Plan; otherwise, modifications to the SOP must be discussed.

* Describe the procedures for collecting mobile-lab/screening samples separately from primary samples, if the procedures differ.

* When wells are being constructed for sample collection, describe the design and construction details. Include a discussion on well development. This information may be included as an Appendix to the Sample Plan, or in a separate document, such as the QAPjP, which must be referenced in the sample plan and provided for EPA to review.

* For all new and existing wells to be sampled, provide a table of well specifications that includes at least the well depths, casing diameters, screened intervals, and, if available, the last water level measurements.

* Check to make sure that appropriate numbers of blank, background, duplicate and lab QC samples are included for each sample matrix.

B. Disposal of Contaminated Materials

* Describe how contaminated cuttings, well development and purge water, disposable equipment, decontamination water, and any other contaminated materials will be stored or disposed of.

* It is the responsibility of the party conducting the sampling to properly dispose of all waste generated according to local, state and federal regulations.

C. Equipment Decontamination

* The following is an EPA Region 9 recommended generic procedure for decontamination of sampling equipment:

  1) Wash with non-phosphate detergent
  2) Tap-water rinse
  3) 0.1N nitric acid rinse (when cross contamination from metals is a concern)
  4) Deionized/distilled water rinse
  5) Pesticide grade solvent rinse (when semivolatile and non-volatile organic contamination may be present)
  6) Deionized/distilled water rinse (twice)
  7) Organic free water rinse (HPLC grade)

* The above procedure is not appropriate for every field situation. Clearly document your procedure.

* Describe how drilling equipment will be cleaned.

* Whenever possible, obtain sets of sampling tools so that decontamination can be done in batches, preferably just once a day at the start or end of a sampling day. This will minimize the number of blanks needed.

* Sampling equipment should never be reused without first being decontaminated.

D. Sample Containers

* For each type of sample and each analytical parameter, list the type, grade, quantity and size of the containers required; this information can be included in a table, such as the table discussed in section V.

* Appendix C identifies the containers and volumes which are used in the CLP program.

* Describe how containers not precleaned by a vendor (e.g., metal sleeves for soil sampling) will be cleaned.

E. Sample Preservation

* Describe the preservation methods that will be used. See Appendix D for some common preservation requirements.

* Acidification of water samples for volatile organic analyses is required as per SW-846 guidelines.

F. Sample Packaging and Shipment

* Describe how samples will be packaged and shipped. The procedures must comply with DOT regulations.

* Appendix D includes analytical holding times for common parameters. These holding times should be considered when developing sampling and shipping schedules.

G. Sample Documentation

* Discuss the use of all paperwork, including field notebooks, record logs, photographs, sample paperwork, and Chain of Custody forms and seals. Describe the entries that should be made to the field notebook.

* Describe how sample bottles will be labeled.

H. Quality Control Samples

1. Replicates (including splits)

* Replicates (duplicates, triplicates, etc.) are a check for sampling and analytical precision. Region 9 recommends collecting duplicates at a frequency of 1 sample per week or 10% of all field samples, whichever is greater, for <u>all</u> parameters and matrices. Replicates should be from sampling points which are known or suspected to be contaminated. Identify in the Sample Plan the sampling points for replicates, if known, or explain how the locations will be selected.

* Sampling precision is dependent upon both the sampling technique and the naturally occurring small-scale heterogeneity in the media being sampled. Poor precision among replicate samples may indicate a high degree of natural small-scale heterogeneity. When this occurs, as may often be the case with solid samples, it may be necessary to increase the number of samples or take steps to insure analysis of more representative samples in order to properly characterize a site.

* For large projects, replicates should be spread out over the entire site and collected at regular intervals. For example, replicates should usually <u>not</u> be collected from just one soil boring.

* Replicates are collected, numbered, packaged, and sealed in the same manner as other samples; replicate samples are assigned separate sample numbers and submitted blind to the laboratory.

* Describe how replicates will be collected and what the objective of replicate sampling is.

* When soil is sampled in sleeves and the sleeves are sent directly to the lab, replicate samples should be collected as colocated sleeves by selecting adjoining sleeves from the same split spoon.

* If samples are being split to two different labs, include this in the discussion.

2. Blank Samples

* Blank samples are suggested for water and air sampling. At least one blank per day for each parameter is recommended.

* Blank samples are a check for cross-contamination during sample collection and shipment, and in the laboratory. Use analytically-certified organic-free (HPLC-grade) water for organic parameters. Use metal-free (deionized-distilled) water for inorganic parameters.

* Blanks are collected, numbered, packaged, and sealed in the same manner as other samples, and submitted blind to the laboratory.

* Describe how and when blank samples will be collected.

* At least one type of blank needs to be collected. Blanks are listed below in order of collection preference.

a. Equipment Blank

An equipment blank should be collected when sampling equipment is decontaminated and reused in the field or when a sample collection vessel (e.g., a bailer or beaker) will be used. Use the appropriate "blank" water identified above to fill or rinse the sampling equipment after the equipment has been decontaminated, and pour or collect this water in the sample containers.

b. Field Bottle Blank

Collect this type of blank when equipment decontamination is not necessary and when a sample collection vessel will not be used (e.g., with dedicated pumps). The field bottle blank should be poured at a sampling point. Use the appropriate "blank" water identified above to fill the sample bottles.

c. VOA Travel Blank

A VOA travel blank is prepared in a clean environment and kept in the cooler used to ship VOA samples; it is a check for cross contamination during transport. Collect a VOA travel blank when there is no other type of blank for volatiles. All of the VOA vials must be shipped in the same cooler as the VOA travel blank.

3. Background Samples (air, soil & surface water)

* Background (or "reference") samples should be analyzed for the complete set of parameters for each matrix; treat sediments, surface soils and subsurface soils as separate matrices. Background samples should be collected from the same soil types, the same geologic formations, and the same hydrologic units as the investigative samples. A statistical approach may be required to determine the number of samples necessary to establish background concentration (especially for metals).

* Background samples are collected, numbered, packaged, and sealed in the same manner as other samples.

4. Lab QC Samples

* Laboratories routinely perform matrix spike and lab duplicate analyses on field samples as a quality control check. Region 9 recommends that at least one field sample per week or 1 per 20 samples (including field blanks and duplicates), whichever is greater, be designate as the "lab QC sample" for the matrix spike and lab duplicate analyses.

* For water matrices, 2-3 times the normal sample volume must be collected for the lab QC sample. Additional volume is usually not necessary for soil samples.

VII SITE SAFETY PLAN

* Include or reference the site safety plan required for the sampling. It should be approved and signed by the Health and Safety Officer of the organization doing the sampling.

Bibliography of useful references for preparing a Sample Plan.

A Compendium of Superfund Field Operation Methods, EPA 540/P-87/001a & 001b, August 1987.

Data Quality Objectives for Remedial Response Activities, two volumes, EPA 540/G-87/003 and 1004, March 1987.

Guidance for Data Useability in Risk Assessment, U.S. EPA Office of Emergency and Remedial Response, April 1992.

Laboratory Documentation Requirements for Data Validation, 9QA-07-89, U.S. EPA Region 9, Quality Assurance Management Section, January 1990.

Practical Guide for Ground-Water Sampling, EPA 600/2-85/104, September 1985.

Preparation of Soil Sampling Protocol: Techniques and Strategies, EPA 600/4-83-020, August 1983.

US EPA Region 9 Guidance for Preparing Quality Assurance Project Plans for Superfund Remedial Projects, 9QA-03-89, U.S. EPA Region 9, Quality Assurance Management Section, September 1989.

RCRA Ground-Water Monitoring Technical Enforcement Guidance Document, U.S. EPA Office of Waste Programs Enforcement, September 1986.

Soil Sampling Quality Assurance User's Guide, EPA 600/4-84-043, May 1984.

Standard Methods for the Examination of Water and Wastewater, American Public Health Association, 16th Edition, 1985.

Test Methods for Evaluating Solid Waste, Physical and Chemical Methods Manual, SW-846, two volumes, 3rd Edition, U.S. EPA Office of Solid Waste and Emergency Response, November 1986.

User's Guide to the Contract Laboratory Program, U.S. EPA Office of Emergency and Remedial Response, December 1988.

APPENDIX A

CLP Target Compound List

and

Quantitation Limits

TARGET COMPOUND LIST (TCL) AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)

Volatiles	CAS Number	Quantitation Limits* Water ug/L	Low Soil ug/Kg	Med. Soil ug/Kg
1. Chloromethane	74-87-3	10	10	1200
2. Bromomethane	74-83-9	10	10	1200
3. Vinyl Chloride	75-01-4	10	10	1200
4. Chloroethane	75-00-3	10	10	1200
5. Methylene Chloride	75-09-2	10	10	1200
6. Acetone	67-64-1	10	10	1200
7. Carbon Disulfide	75-15-0	10	10	1200
8. 1,1-Dichloroethene	75-35-4	10	10	1200
9. 1,1-Dichloroethane	75-34-3	10	10	1200
10. 1,2-Dichloroethene (total)	540-59-0	10	10	1200
11. Chloroform	67-66-3	10	10	1200
12. 1,2-Dichloroethane	107-06-2	10	10	1200
13. 2-Butanone	78-93-3	10	10	1200
14. 1,1,1-Trichloroethane	71-55-6	10	10	1200
15. Carbon Tetrachloride	56-23-5	10	10	1200
16. Bromodichloromethane	75-27-4	10	10	1200
17. 1,2-Dichloropropane	78-87-5	10	10	1200
18. cis-1,3-Dichloropropene	10061-01-5	10	10	1200
19. Trichloroethene	79-01-6	10	10	1200
20. Dibromochloromethane	124-48-1	10	10	1200
21. 1,1,2-Trichloroethane	79-00-5	10	10	1200
22. Benzene	71-43-2	10	10	1200
23. trans-1,3-Dichloropropene	10061-02-6	10	10	1200
24. Bromoform	75-25-2	10	10	1200
25. 4-Methyl-2-pentanone	108-10-1	10	10	1200
26. 2-Hexanone	591-78-6	10	10	1200
27. Tetrachloroethene	127-18-4	10	10	1200
28. Toluene	108-88-3	10	10	1200
29. 1,1,2,2-Tetrachloroethane	79-34-5	10	10	1200
30. Chlorobenzene	108-90-7	10	10	1200
31. Ethyl Benzene	100-41-4	10	10	1200
32. Styrene	100-42-5	10	10	1200
33. Xylenes (Total)	1330-20-7	10	10	1200

* Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis as required by the contract, will be higher.

TARGET COMPOUND LIST (TCL) AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)

Semivolatiles	CAS Number	Quantitation Limits* Water ug/L	Low Soil ug/Kg	Med. Soil ug/Kg
34. Phenol	108-95-2	10	330	10000
35. bis(2-Chloroethyl) ether	111-44-4	10	330	10000
36. 2-Chlorophenol	95-57-8	10	330	10000
37. 1,3-Dichlorobenzene	541-73-1	10	330	10000
38. 1,4-Dichlorobenzene	106-46-7	10	330	10000
39. 1,2-Dichlorobenzene	95-50-1	10	330	10000
40. 2-Methylphenol	95-48-7	10	330	10000
41. 2,2'-oxybis (1-Chloropropane)#	108-60-1	10	330	10000
42. 4-Methylphenol	106-44-5	10	330	10000
43. N-Nitroso-di-n-propylamine	621-64-7	10	330	10000
44. Hexachloroethane	67-72-1	10	330	10000
45. Nitrobenzene	98-95-3	10	330	10000
46. Isophorone	78-59-1	10	330	10000
47. 2-Nitrophenol	88-75-5	10	330	10000
48. 2,4-Dimethylphenol	105-67-9	10	330	10000
49. bis(2-Chloroethoxy) methane	111-91-1	10	330	10000
50 2,4-Dichlorophenol	120-83-2	10	330	10000
51. 1,2,4-Trichlorobenzene	120-82-1	10	330	10000
52. Naphthalene	91-20-3	10	330	10000
53. 4-Chloroaniline	106-47-8	10	330	10000
54. Hexachlorobutadiene	87-68-3	10	330	10000
55. 4-Chloro-3-methylphenol	59-50-7	10	330	10000
56. 2-Methylnaphthalene	91-57-6	10	330	10000
57. Hexachlorocyclopentadiene	77-47-4	10	330	10000
58. 2,4,6-Trichlorophenol	88-06-2	10	330	10000
59. 2,4,5-Trichlorophenol	95-95-4	25	800	25000
60. 2-Chloronaphthalene	91-58-7	10	330	10000
61. 2-Nitroaniline	88-74-4	25	800	25000
62. Dimethylphthalate	131-11-3	10	330	10000
63. Acenaphthylene	208-96-8	10	330	10000
64. 2,6-Dinitrotoluene	606-20-2	10	330	10000
65. 3-Nitroaniline	99-09-2	25	800	25000
66. Acenaphthene	83-32-9	10	330	10000
67. 2,4-Dinitrophenol	51-28-5	25	800	25000
68. 4-Nitrophenol	100-02-7	25	800	25000

= Previously known by the name bis(2-Chloroisopropyl) ether

Semivolatiles	CAS Number	Quantitation Limits* Water ug/L	Low Soil ug/Kg	Med. Soil ug/Kg
69. Dibenzofuran	132-64-9	10	330	10000
70. 2,4-Dinitrotoluene	121-14-2	10	330	10000
71. Diethylphthalate	84-66-2	10	330	10000
72. 4-Chlorophenyl-phenyl ether	7005-72-3	10	330	10000
73. Fluorene	86-73-7	10	330	10000
74. 4-Nitroaniline	100-01-6	25	800	25000
75. 4,6-Dinitro-2-methylphenol	534-52-1	25	800	25000
76. N-nitrosodiphenylamine	86-30-6	10	330	10000
77. 4-Bromophenyl-phenylether	101-55-3	10	330	10000
78. Hexachlorobenzene	118-74-1	10	330	10000
79. Pentachlorophenol	87-86-5	25	800	25000
80. Phenanthrene	85-01-8	10	330	10000
81. Anthracene	120-12-7	10	330	10000
82. Carbazole	86-74-8	10	330	10000
83. Di-n-butylphthalate	84-74-2	10	330	10000
84. Fluoranthene	206-44-0	10	330	10000
85. Pyrene	129-00-0	10	330	10000
86. Butylbenzylphthalate	85-68-7	10	330	10000
87. 3,3'-Dichlorobenzidine	91-94-1	10	330	10000
88. Benzo(a)anthracene	56-55-3	10	330	10000
89. Chrysene	218-01-9	10	330	10000
90. bis(2-Ethylhexyl)phthalate	117-81-7	10	330	10000
91. Di-n-octylphthalate	117-84-0	10	330	10000
92. Benzo(b)fluoranthene	205-99-2	10	330	10000
93. Benzo(k)fluoranthene	207-08-9	10	330	10000
94. Benzo(a)pyrene	50-32-8	10	330	10000
95. Indeno(1,2,3-cd)pyrene	193-39-5	10	330	10000
96. Dibenz(a,h)anthracene	53-70-3	10	330	10000
97. Benzo(g,h,i)perylene	191-24-2	10	330	10000

* Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis as required by the contract, will be higher.

TARGET COMPOUND LIST (TCL) AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)

Pesticides/Aroclors	CAS Number	Quantitation Limits* Water ug/L	Soil ug/Kg
98. alpha-BHC	319-84-6	0.05	1.7
99. beta-BHC	319-85-7	0.05	1.7
100. delta-BHC	319-86-8	0.05	1.7
101. gamma-BHC (Lindane)	58-89-9	0.05	1.7
102. Heptachlor	76-44-8	0.05	1.7
103. Aldrin	309-00-2	0.05	1.7
104. Heptachlor epoxide	1024-57-3	0.05	1.7
105. Endosulfan I	959-98-8	0.05	1.7
106. Dieldrin	60-57-1	0.10	3.3
107. 4,4'-DDE	72-55-9	0.10	3.3
108. Endrin	72-20-8	0.10	3.3
109. Endosulfan II	33213-65-9	0.10	3.3
110. 4,4'-DDD	72-54-8	0.10	3.3
111. Endosulfan sulfate	1031-07-8	0.10	3.3
112. 4,4'-DDT	50-29-3	0.10	3.3
113. Methoxychlor	72-43-5	0.50	17.0
114. Endrin ketone	53494-70-5	0.10	3.3
115. Endrin aldehyde	7421-36-3	0.10	3.3
116. alpha-Chlordane	5103-71-9	0.05	1.7
117. gamma-Chlordane	5103-74-2	0.05	1.7
118. Toxaphene	8001-35-2	5.0	170.0
119. Aroclor-1016	12674-11-2	1.0	33.0
120. Aroclor-1221	11104-28-2	2.0	67.0
121. Aroclor-1232	11141-16-5	1.0	33.0
122. Aroclor-1242	53469-21-9	1.0	33.0
123. Aroclor-1248	12672-29-6	1.0	33.0
124. Aroclor-1254	11097-69-1	1.0	33.0
125. Aroclor-1260	11096-82-5	1.0	33.0

* Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis as required by the contract, will be higher.

There is no differentiation between the preparation of low and medium soil samples in this method for the analysis of Pesticides/Aroclors.

INORGANIC TARGET ANALYTE LIST (TAL)

Analyte	Contract Required Detection Limit (1,2) (ug/L)
Aluminum	200
Antimony	60
Arsenic	10
Barium	200
Beryllium	5
Cadmium	5
Calcium	5000
Chromium	10
Cobalt	50
Copper	25
Iron	100
Lead	3
Magnesium	5000
Manganese	15
Mercury	0.2
Nickel	40
Potassium	5000
Selenium	5
Silver	10
Sodium	5000
Thallium	10
Vanadium	50
Zinc	20
Cyanide	10

(1) Subject to the restrictions specified in the first page of Part G, Section IV of Exhibit D (Alternate Methods - Catastrophic Failure) any analytical method specified in SOW Exhibit D may be utilized as long as the documented instrument or method detection limits meet the Contract Required Detection Limit (CRDL) requirements. Higher detection limits may only be used in the following circumstance:

If the sample concentration exceeds five times the detection limit of the instrument or method in use, the value may be reported even though the instrument or method detection limit may not equal the Contract Required Detection Limit. This is illustrated in the example below:

For lead:

Method in use - ICP
Instrument Detection Limit (IDL) - 40
Sample concentration - 220
Contract Required Detection Limit (CRDL) - 3

APPENDIX B

Request for Analysis

Example Narrative Format

and Table

Analysis of Hexavalent Chromium (Cr^{+6}) by EPA Method 218.4
(Atomic absorption, chelation-extraction).

Analytes: Hexavalent Chromium

Sample Matrices: Low concentration water samples (specify whether surface water, groundwater, drinking water, or leachates).

Analytical Procedures and Quantitation Limits:

a. Transport and store samples at 4°C until analysis and validation of results are complete.

b. Filter domestic and industrial waste samples before analysis.

c. Determine the initial pH of the samples.

d. Follow EPA Method 218.4 for chelation of hexavalent chromium (Cr^{+6}) with ammonium pyrrolidine dithiocarbamate (APDC) and extraction with methyl isobutyl ketone (MIBK). The diphenylcarbazide colorimetric procedure discussed in Section 2.3 of EPA Method 218.4 may NOT be used.

e. Follow EPA Method 218.4 for analysis of extracts by aspiration into the flame of the atomic absorption spectrophotometer.

f. The contract required quantitation limits is 10 ug/l.

Contract Holding Times: Contract required analysis holding time is twelve (12) hours from the time of sample receipt by the laboratory. The technical analysis holding time is twenty-four (24) hours from the time of sample collection.

Data packages and all other deliverables are required within 35 days from receipt of last sample in each Sample Delivery Group (SDG). A SDG is defined as all samples received within a 14 day period or 20 samples, whichever is reached first.

Calibration Procedure and Criteria:

1. Perform an initial calibration with a calibration blank and at least five levels of standards. The analytical working range must include standards at concentrations of 10 µg/L through 250 µg/L. The correlation coefficient of the calibration curve must be 0.995 or greater. A curve must be prepared with each set of samples.

Internal Quality Control Checks, Control Limits and Corrective Actions:

1. When calibration standard measurements exceed the quality control (QC) requirements for the Initial Calibration, the ICV or the CCVs, analysis must be terminated, the problem corrected, the instrument recalibrated, and the calibration reverified. The CCV standard reflects the conditions of analysis of all associated analytical samples (that is, the preceding analytical samples up to the previous CCV). All samples associated with an out-of-control CCV must be reanalyzed.

2. Analyze an Initial Calibration Verification (ICV) standard at the mid-point concentration after the initial calibration curve. The ICV standard must be from a different source and of a different concentration than those used for the initial calibration standards. Recoveries of 90-110% of the true value are required.

3. Analyze an Initial Calibration Blank (ICB) after the ICV standard. Analyze a Continuing Calibration Blank (CCB) every 10 samples, after unusually concentrated samples, and at the end of the analyses.

4. Analyze a Continuing Calibration Verification (CCV) standard at the mid-point concentration every 10 samples and at the end of the analyses. The CCV standard must be from a source different from that used for the Initial Calibration standards. Recoveries of 90-110% of the true value are required.

5. Laboratory Method Blanks must be prepared and analyzed with each group of samples prepared.

6. If the Cr^{+6} concentration in any of the ICBs, the CCBs, or the Laboratory Method Blanks is above the CRDL, reanalyze the blank in question and all associated samples with results less than 10 times the level of contamination in the associated blank. If the concentration in the blank still exceeds the CRDL, terminate the analysis, correct the problem, recalibrate the instrument, verify the calibration, and reanalyze all associated samples with results less than 10 times the level of contamination in the associated blank.

7. Analyze a Contract Required Detection Limit (CRDL) standard at a frequency of one per sample delivery group. The CRDL standard must be from a source different from that used for the Initial Calibration standards. Recoveries of 80-120% of the true value are required.

8. Analyze Matrix Spikes (MS) at a frequency of one per SDG. Matrix spike concentration must be equivalent to the mid-point standard of the calibration curve. Matrix spike recoveries must be within 75-125%. Matrix spike recoveries that are outside of this QC criteria should be flagged by the laboratory.

9. Analyze laboratory duplicates at a frequency of one per SDG. A QC limit of 20% for relative percent difference (RPD) is required for original and duplicate sample values greater than or equal to 5 times the CRDL. A QC limit of ± the CRDL is required if either the original sample or duplicate sample values is less than 5 times the CRDL. Duplicate results that fail these QC criteria should be flagged by the laboratory.

10. Analyze Laboratory Control Samples (LCS) at a frequency of one per sample delivery group. LCS concentration must be equivalent to the midpoint standard of the calibration curve. The LCS must be from a source different from that used for the calibration standards. Recoveries of 80-120% of the true value are required.

11. Samples containing Cr^{+6} at concentrations above the calibration range are to be diluted and reanalyzed within the calibration range of the Initial Calibration. The laboratory must submit documentation for the analysis of both the diluted and undiluted sample.

12. If the above control limits are exceeded, take appropriate actions to correct the problem and reanalyze the affected samples.

13. The QC requirements listed above are the minimum required. It is impossible to address all analytical situations that might be experienced by a laboratory during the analysis of environmental samples. The laboratory is expected to adhere to good laboratory practices when analyzing samples. If the laboratory has questions concerning the analyses of samples not addressed in this document, this office should be notified IMMEDIATELY.

Data Calculations and Reporting Units:

Calculate the sample results according to Section 8 of EPA Method 218.4. Sample results are to be reported to 1 significant figure for concentrations <10 µg/L and to 2 significant figures for concentrations ≥10 µg/L. All records of sample analysis and the standard curve must be legible and sufficient to recheck all sample concentrations and QC results. Include an example of the calculations in the data package.

Documentation and Deliverables:

Deliverables for each Sample Delivery Group shall include all items described in the appropriate Summary of Documentation Requirements section of the attached Laboratory Documentation Requirements for Data Validation, 01/90, DCN 9QA-07-89. These documents include, but are not limited to:

1. All Sample Tracking Reports (i.e., signed Chain-of-Custody forms).

2. Sample log-in information.

3. Any telephone logs referring to the samples.

4. A Case Narrative, signed by the laboratory manager or his or her designee, certifying the accuracy and validity of all data reported and describing any problems encountered during the analyses and documenting their resolution(s).

5. Tabulated sample results, with units and sample volumes clearly specified.

6. Initial and continuing calibration verifications (ICV and CCV) with calculated percent recovery (%R).

7. Contract Required Detection Limit (CRDL) standard with calculated percent recovery (%R).

8. Blank data (ICB, CCB and laboratory method blanks).

9. Matrix spike result summary with calculated percent recovery (%R).

10. Laboratory duplicate results with calculated relative percent difference (RPD).

11. Laboratory Control Sample (LCS) results with calculated percent recovery (%R).

12. Chelation-extraction logs.

13. Analysis run logs.

14. Raw sample, standard and QC data, including:

    a. instrument output
    b. bench sheets and worksheets
    c. tabulated results

15. Bench sheets for sample preparation (including initial pH information) and QC spikes.

16. Standard preparation logs, including traceable lot numbers, for all standards used for calibration and spiking.

Summary:

Data Requirements:

Parameter	Contract Required Detection Limit (CRDL)
Hexavalent chromium (Cr^{+6})	10 µg/L

QC Requirements:

QC Required	Frequency of QC	Limits (% or Conc.)
Laboratory Blanks	with each group of samples prepared	≤10 µg/L
Laboratory Duplicates	1 per SDG	RPD <20% or ±CRDL
Matrix Spike	1 per SDG	75-125%
Laboratory Control Sample	1 per SDG	80-120%

Action required if limits are exceeded:

If above control limits are exceeded, take appropriate actions to identify the problem by reanalyzing the affected samples. Corrective action should be taken before additional samples are analyzed.

Analysis of Chlorinated Herbicides by SW846 Method 8150A, Revision 1 (11/90)

Analytes: See Table 1.

Sample Matrices: low concentration water and soil samples

Analytical Procedures and Quantitation Limits:

Follow SW846 Method 8150A, Revision 1 (11/90) for extraction and analyses. Contract required quantitation limits (CRQL) are as per Table 1.

a. **CAUTION:** Diazomethane is a carcinogen and can **EXPLODE** under certain conditions. Refer to Section 7.4.1 of SW846 Method 8150A, Revision 1 (11/90) for precautions.

b. Capillary columns may be used for this analysis, as long as the laboratory demonstrates that the analysis meets all the performance and QA/QC criteria specified in SW846 Method 8150A, Revision 1 (11/90) and in this contract.

Contract Holding Times: Contract required holding time is five (5) days for extraction of water samples, ten (10) days for the extraction of soil samples and forty (40) days for analysis from the date of sample receipt by the laboratory.

Data packages and all other deliverables are required within 35 days from receipt of last sample in each Sample Delivery Group (SDG). A SDG is defined as all samples received within a 14 day period or 20 samples, whichever is reached first.

Calibration Procedure and Criteria:

Calibrate according to Sections 5.12 and 7.6 of SW846 Method 8150A, Revision 1 (11/90), and Sections 7.4.2 and 7.5 of SW846 Method 8000, with the following specifications:

1. As per Section 5.12 of SW846 Method 8150A - A minimum of five calibration standards for each parameter of interest should be prepared through dilution of the stock standards with diethyl ether. One of the concentrations should be at a concentration near, but above, the method detection limit. The remaining concentrations should correspond to the expected range of concentrations found in real samples or should define the working range of the gas chromatograph (GC). Calibration standards must be replaced after six months, or sooner if comparison with check standards indicates a problem.

The low concentration standard must have a signal-to-noise ratio of 5:1 or greater for all analytes of interest. If this requirement cannot be met, the laboratory must submit a Method Detection Limit (MDL) study as part of the data package, in order to validate its ability to achieve the contract required detection limits. The MDL is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the value is above zero.

2. A continuing calibration at the mid-point concentration for each analyte is to be analyzed at the beginning of each day and after each group of 10 samples. This standard is to be used to verify instrument performance.

3. Less than 20% relative standard deviation (%RSD) in calibration factors (CF) for the initial calibration standards, and less than a ±15% difference (%D) between the CF for the daily continuing calibrations and the average CF from the initial calibration, are required.

Internal Quality Control Checks, Control Limits and Corrective Actions:

1. Analyze laboratory blanks at a frequency of one per sample delivery group. The laboratory blanks must contain less than or equal to the CRQL of the herbicide compounds listed in Table 1. If a method blank exceeds these criteria, the laboratory must consider the analytical system to be out of control. The source of the contamination must be investigated and appropriate corrective measures must be taken and documented before further sample analysis proceeds. All samples processed with a method blank that is out of control must be re-extracted and reanalyzed at no additional cost to this office. The Laboratory Manager, or his/her designee, must address problems and solutions in the SDG narrative.

2. A herbicide surrogate (e.g., an herbicide or chemically similar compound that is not expected to be present in the samples) must be spiked into the standards, samples, laboratory blanks and QC samples (see Section 5.14 and 8.3 of SW846 Method 8150A, Revision 1 (11/90)). The amount of surrogate added must be at least 10 times the instrument detection limit. Recoveries of 65-125% are required, unless documentation (such as control charts) is available to support a different range of recoveries. The laboratory must submit, as part of the data package, all supporting documentation for surrogate recoveries, and historical surrogate recovery data if necessary.

3. Second column confirmation is required for all positive results reported.

4. Sample extracts containing one or more analytes at concentrations above the initial calibration range are to be diluted and reanalyzed. If dilution is necessary, the dilution must be adjusted so that the highest concentration analyte is determined at a concentration in the upper half of the calibration range. The laboratory must report the results and document both analyses.

5. Analyze matrix spikes and matrix spike duplicates (MS/MSD) at the frequency of one per group of 20 or fewer samples. Concentration of matrix spike solution should be such that the final extracts contain amounts at the mid-range of the calibration curve. The matrix spiking solution should contain a minimum of three herbicides chosen from the analyte list in Table 1. Matrix spike and spike duplicate recoveries of 75-125% for water samples, and 65-135% for soil samples are required, and the relative percent differences (RPD) between spike recoveries must be less than ±30%.

6. The QC requirements listed above are the minimum required. It is impossible to address all analytical situations that might be experienced by a laboratory during the analysis of environmental samples. The laboratory is expected to adhere to good laboratory practices when analyzing samples. If the laboratory has questions concerning the analyses of samples not addressed in this document, this office should be notified IMMEDIATELY.

Data Calculations and Reporting Units:

1. Calculate the CF and the concentration of individual analytes using the equations in Sections 7.4.2 and 7.8.1 of SW846 Method 8000. The sample results are to be reported in the concentration units of micrograms per liter (µg/L) for water samples and micrograms per kilogram (µg/Kg) on a dry weight basis for soil samples.

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

Documentation and Deliverables:

Deliverables for each Sample Delivery Group shall include all items described in the appropriate Summary of Documentation Requirements section of the attached Laboratory Documentation Requirements for Data Validation, 01/90, DCN 9QA-07-89. These documents include, but are not limited to:

1. All Sample Tracking Reports (Chain-of-Custody forms).

2. Any telephone logs referring to the samples.

3. A Case Narrative, signed by the laboratory manager or his or her designee, certifying the accuracy and validity of all data reported and describing any problems encountered during the analyses and documenting their resolution(s).

4. Tabulated sample results with units, percent solids, and sample weights or volumes clearly specified.

5. Surrogate result summaries with calculated percent recovery (%R) values.

6. Matrix Spike/Matrix Spike Duplicate (MS/MSD) result summaries with calculated percent recovery (%R) and relative percent difference (RPD) values.

7. Blank data with tabulated results specifying which samples were analyzed with each blank.

8. Raw Sample data, including

   a. Tabulated results
   b. All sample data system printouts
   c. Manual worksheets

9. Standards data, including:

   a. Standards summaries with calibration factors (CF) and percent relative standard deviation (%RSD) values or percent difference (%D) values.

   b. All standard data system printouts with all compounds clearly identified.

10. Raw QC data, including:

    a. Blank data, in chronological order:
        1. Tabulated results
        2. All blank data system printouts.

    b. MS/MSD data, in chronological order:
        1. Tabulated results
        2. All MS/MSD data system printouts.

11. All computer printouts with integrated areas, peak heights, and calibration factors.

12. Bench sheets for sample preparation, indicating dates, times, methods of sample extraction/preparation, spiking solution identification and volumes/amounts added, instrument run time/date, etc.

13. A formula (including definitions) showing how the results were calculated, with an example of an actual calculation.

14. A form describing the source and traceability of the standards and listing the concentration of the standards used, the quantitation area for the standards, the response factor for the standard, the calculated %RSD for the initial calibration and the %D for the continuing calibrations.

15. Extraction logs, dilution logs and percent solids for all samples.

Summary:

Data Requirements:

Parameter	Contract Required Quantitation Limit (CRQL)
8150A - water or soil	See Table 1

QC Requirements:

QC Required	Frequency of QC	Limits (% or Conc.)
Matrix Spike/ Matrix Spike Duplicate	1 per SDG (not more than 20 samples per SDG)	75-125 %R water 65-135 %R soil <±30% RPD
Laboratory Blanks	1 per SDG	<CRQL
Surrogates	all samples, standards	65-125 %R

Action required if limits are exceeded:

If surrogate control limits are exceeded, take appropriate actions to identify the problem by reanalyzing the affected samples. If reanalysis does not solve the problem, the affected sample must be re-extracted and reanalyzed. If re-extraction and reanalysis solves the problem, submit only data from the analyses with surrogate recoveries within QC limits. If sample re-extraction and reanalysis does not solve the problem, submit the surrogate recovery data and sample analysis data from the analysis of both sample extracts.

TABLE 1
Target Compound List - EPA Method 8150A

Contract Required
Quantitation Limits (CRQL)

Compound	Water (µg/L)	Soil (µg/Kg)
2,4-D	12	240
2,4-DB	9.1	180
2,4,5-T	2.0	40
2,4,5-TP (Silvex)	1.7	34
Dalapon	58	1200
Dicamba	2.7	54
Dichloroprop	6.5	130
Dinoseb	0.7	14
MCPA	2500	50,000
MCPP	1900	38,000

CLP ANALYSES REQUESTED					SPECIAL ANALYTICAL SERVICES (SAS)			ROUTINE ANALYTICAL SERVICES (RAS)								
CONTRACT TYPE					ORGANICS		INORGANICS	ORGANICS					INORGANICS			
SPECIFIC ANALYSES REQUESTED					METHOD 601	METHOD 602	MAJOR ANIONS	TCL VOA's	TCL SEMI VOAs (low conc)	TCL SEMI VOAs (med conc)	PESTICIDES & PCBs (low conc)	PESTICIDES & PCBs (med conc)	TCL METALS (tot) (low conc)	TCL METALS (tot) (med conc)	CYANIDE (med conc)	
PRESERVATIVES					Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C		Add 2 drops 1:1 HCl Chill to 4 C	Chill to 4 C	Chill to 4 C	Chill to 4 C	Chill to 4 C	Chill to 4 C add HNO3 to pH <2	Chill to 4 C add HNO3 to pH <2	Chill to 4 C, add NaOH to pH>12	
ANALYTICAL HOLDING TIME (s)					Hold <14 days	Hold <14 days		Hold <14 days	Hold <7 days prior to extraction, 40 days after extraction	Hold <7 days prior to extraction, 40 days after extraction	Hold <7 days prior to extraction, 40 days after extraction	Hold <7 days prior to extraction, 40 days after extraction	Hold to <6 months (28 days for Hg)	Hold to <6 months (28 days for Hg)	14 days	
CONTRACT HOLDING TIME (s)								Hold <10 days	Hold <5 days prior to extraction, 40 days after extraction	Hold <5 days prior to extraction, 40 days after extraction	Hold <5 days prior to extraction, 40 days after extraction	Hold <5 days prior to extraction, 40 days after extraction	Hold to <6 months (28 days for Hg)	Hold to <6 months (28 days for Hg)	14 days	
SAMPLE x SAMPLE					NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	TOTAL NO. OF BOTTLES PER WELL
EXAMPLE MATRIX	SAMPLE LOCATION	SAMPLING SCHEDULE	CONCENTRATION LOW	CONCENTRATION MED.	2 x 40 ml glass vial	2 x 40 ml glass vial	1 x 1 liter polyethylene bottle	2 x 40 ml glass vial	2 x 1 liter amber glass bottles	2 x 32 oz wide mouth glass jar	2 x 1 liter amber glass bottle	2 x 32 oz wide mouth glass jar	1 x 1 liter polyethylene bottle	1 x 16 oz wide mouth glass jar	1 x 16 oz wide mouth glass jar	
TOTALS		Low Conc														
		Med Conc														

ANALYSES REQUESTED

CHEMISTRY TYPE			ORGANICS			INORGANICS			
ANALYSES REQUESTED									
PRESERVATIVES									
ANALYTICAL HOLDING TIME (s)									
CONTRACT HOLDING TIME (s)									
SAMPLE x SAMPLE		NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS
SAMPLE LOCATION	SAMPLING SCHEDULE								
	TOTALS								

ANALYSES REQUESTED MATRIX = LOW CONCENTRATION WATERS

CHEMISTRY TYPE			ORGANICS			INORGANICS			
ANALYSES REQUESTED		VOA's low CRQLs	VOA's	SEMI VOAs	PEST & PCBs	METALS (total)	CYANIDE	TRITIUM	Gross alpha& beta, gamma
PRESERVATIVES		Add 1:1 HCl to pH < 2 Chill to 4	Add 1:1 HCl to pH < 2 Chill to 4	Chill to 4 C	Chill to 4 C	add HNO3 to pH <2	Chill to 4 add NaOH to pH>12	none	none in field
ANALYTICAL HOLDING TIME (s)		Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, 40 days after extraction	Hold <7 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	<14 days	Hold to <6 months	Hold to <6 months
CONTRACT HOLDING TIME (s)		Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, 40 days after extraction	Hold <5 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	<12 days	Hold to <6 months	Hold to <6 months
SAMPLE x SAMPLE		NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS
SAMPLE LOCATION	SAMPLING SCHEDULE	3 x 40 ml glass vial	2 x 40 ml glass vial	2 x 1 liter amber glass bottle	2 x 1 liter amber glass bottle	1 x 1 liter poly bottle	1 x 1 liter poly bottle	1 x 8 oz amber glass bottle	4 x 1 liter poly bottle
MW-109	2/25-2/28		2			1		1	4
MW-112	2/25-2/28		2			1		1	4
MW-147	2/25-2/28	3				1		1	4
MW-206 LAB QC	2/25-2/28		4	4	4	2	2	2	8
GW-210 blank near MW-206	2/25-2/28	3		2	2	1	1	1	4
MW-219	2/25-2/28		2			1		1	4
GW-220 dup of MW-219	2/25-2/28		2			1		1	4
MW-251	2/25-2/28	3				1		1	4
	TOTALS	9	12	6	6	9	3	9	36

Table 5.0 - ANALYSES REQUESTED (page 1 of 4) MATRIX = GROUNDWATER

CHEMISTRY TYPE			ORGANICS			INORGANICS			
SPECIFIC ANALYSES REQUESTED			VOAs low CRQLs	Tetrahydro-thiophene	SEMI VOAs	METALS (total)	Cl,NO2/NO3, SO4, ALK & TDS	TOC and COD	
PRESERVATIVES			Add 1:1 HCl to pH < 2 Chill to 4 C	Add 1:1 HCl to pH < 2 Chill to 4 C	Chill to 4 C	Add HNO3 to pH <2	Chill to 4 C	H2SO4 to pH <2 & Chill	
ANALYTICAL HOLDING TIME (s)			Hold <14 days	Hold <14 days	Hold <7 days to extraction then 40 days	Hold to <6 months [28 days for Hg]	Hold to <7 days	Hold <28 days	
CONTRACT HOLDING TIME (s)			Hold <10 days	Hold <10 days	Hold <5 days to extraction then 40 days	Hold to <6 months [28 days for Hg]	Hold to <5 days	Hold <26 days	
SAMPLE x SAMPLE			NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALY	NO. OF BOTTLES PER ANALY	
SAMPLE NUMBER	SAMPLING SCHEDULE	CONCEN L/M	3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 1 liter amber glass bottle (1)*	1 x 1 liter polyethylene bottle (1/2)*	1x500ml poly bottle (1/2)*	1x500ml poly bottle (1/2)*	TOTAL BOTTLES
P-1D	1/8/90	L	3	2	2	1	1	1	10
P-2D (LAB QC)	1/8/90	L	6	4	4	2	2	2	20
E-2D (DUP OF P-2D)	1/8/90	L	3	2	2	1	1	1	10
P-3D	1/8/90	L	3	2	2	1	1	1	10
P-4D	1/8/90	L	3	2	2	1	1	1	10
P-5D (PUMP BROKEN?)	1/9/90	L	3	2	2	1	1	1	10
P-6D	1/9/90	L	3	2	2	1	1	1	10

= minimum volume needed when full recovery of a well purged dry exceeds 3 hours

APPENDIX C

Sample Container Requirements

used in

the CLP Program

ORGANIC SAMPLE COLLECTION REQUIREMENTS

WATER SAMPLES	REQUIRED VOLUME	CONTAINER TYPE
EXTRACTABLE ANALYSIS (LOW LEVEL)	1 GALLON	4 × 1-LITER AMBER GLASS BOTTLES
EXTRACTABLE ANALYSIS (MEDIUM LEVEL*)	1 GALLON	4 × 32-OZ. WIDE-MOUTH GLASS JARS
VOLATILE ANALYSIS (LOW OR MEDIUM LEVEL*)	80 ML	2 × 40-ML GLASS VIALS

SOIL/SEDIMENT SAMPLES	REQUIRED VOLUME	CONTAINER TYPE
EXTRACTABLE ANALYSIS (LOW OR MEDIUM LEVEL*)	6 OZ.	1 × 8-OZ. WIDE-MOUTH GLASS JAR OR 2 × 4-OZ. WIDE-MOUTH GLASS JARS
VOLATILE ANALYSIS (LOW OR MEDIUM LEVEL*)	240 ML	2 ×120-ML WIDE-MOUTH GLASS VIALS

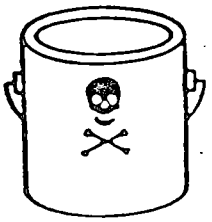
*ALL MEDIUM LEVEL SAMPLES TO BE SEALED IN METAL PAINT CAN FOR SHIPMENT

INORGANIC SAMPLE COLLECTION REQUIREMENTS

WATER SAMPLES	REQUIRED VOLUME	CONTAINER TYPE
METALS ANALYSIS (LOW LEVEL)	1 LITER	1 × 1-LITER POLYETHYLENE BOTTLE
METALS ANALYSIS (MEDIUM LEVEL°)	16 OZ.	1 × 16-OZ. WIDE-MOUTH GLASS JAR
CYANIDE (CN^-) ANALYSIS (LOW LEVEL)	1 LITER	1 × 1-LITER POLYETHYLENE BOTTLE
CYANIDE (CN^-) ANALYSIS (MEDIUM LEVEL°)	16 OZ.	1 × 16-OZ. WIDE-MOUTH GLASS JAR

SOIL/SEDIMENT SAMPLES	REQUIRED VOLUME	CONTAINER TYPE
METALS AND CYANIDE (CN^-) ANALYSIS (LOW OR MEDIUM LEVEL°)	6 OZ.	1 × 8-OZ. WIDE-MOUTH GLASS JAR OR 2 × 4-OZ. WIDE-MOUTH GLASS JARS

°ALL MEDIUM LEVEL SAMPLES TO BE SEALED IN METAL PAINT CAN FOR SHIPMENT

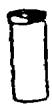


DIOXIN SAMPLE COLLECTION REQUIREMENTS

WATER SAMPLES	REQUIRED VOLUME		CONTAINER TYPE
2,3,7,8-TCDD ANALYSIS (MULTI-CONCENTRATION)	2 LITERS		2 × 1-LITER AMBER GLASS BOTTLES

SOIL/SEDIMENT SAMPLES	REQUIRED VOLUME		CONTAINER TYPE
2,3,7,8-TCDD ANALYSIS (MULTI-CONCENTRATION)	4 OZ.		1 × 4-OZ. WIDE-MOUTH GLASS JAR
			OR
			1 × 8-OZ. WIDE-MOUTH GLASS JAR

HIGH HAZARD SAMPLE COLLECTION REQUIREMENTS

LIQUID OR SOLID SAMPLES	REQUIRED VOLUME		CONTAINER TYPE
ORGANIC AND INORGANIC ANALYSIS	6 OZ.		1 × 8-OZ. WIDE-MOUTH GLASS JAR

*ALL MEDIUM LEVEL SAMPLES TO BE SEALED IN METAL PAINT CAN FOR SHIPMENT

APPENDIX D

Sample Holding Times, Treatment and Preservation

for

Selected Organic and Inorganic Analyses

Preservation Requirements for RAS Analyses

WATER SAMPLES

Parameter	Concentration	Preservation
Volatiles	Low/Medium	Acidify to pH < 2 with HCl. Add 2 drops 1:1 HCl per vial before sample collection. This is generally sufficient to obtain pH < 2, but depends upon the buffering capability of each aquifer and upon the particular eyedropper used. During purging, conduct a pH test on at least one vial at each site for each aquifer. The tested vial must be discarded. If the pH is > 2, additional HCl should be added to sample vials. Another vial should be pH tested to ensure pH is now < 2. Discard the test vial. If the sample is suspected of containing residual chlorine or is to be analyzed for disinfection by-products such as trihalomethanes, other preservation techniques employing reducing agents such as ascorbic acid may be required. Chill collected samples to 4° C. Samples must be filled with zero headspace and checked for air bubbles by inverting and rapping sharply against palm. If a pea-size or larger bubble appears, another sample must be collected. If acidification causes bubbling, collect non-acidified samples and notify the RSCC.
Semivolatiles	Low/Medium	Chill to 4° C
Pesticides/PCBs	Low/Medium	Chill to 4° C
Dissolved Metals	Low/Medium	Filter Sample through 0.45 micron filter immediately after sample collection or with in-line filtration when possible. Acidify to pH $\leq$ 2 with HNO_3 after filtration.
Total Metals	Low/Medium	Includes suspended sediments and particulates. Acidify to pH < 2 with HNO_3.

Preservation Requirements for RAS Analyses

WATER SAMPLES

Parameter	Concentration	Preservation
Cyanides	Low/Medium	Preserve all samples with 2 ml of 10 N NaOH per liter of sample to pH > 12. Chill to 4° C. Treatment for chlorine or other known oxidizing agents may be necessary. Test a drop of the sample with potassium iodide-starch test paper (K-I starch test paper). A blue color indicates the need for treatment. Add ascorbic acid, a few crystals at a time, until a drop of sample produces no color on the indicator paper. Then add an additional 0.6 g of ascorbic acid for each liter of sample volume.

Preservation Requirements for RAS Analyses

SOIL SAMPLES

Parameter	Concentration	Preservation
Organics	Low/Medium	Chill to 4° C
Metals	Low/Medium	None
Cyanide	Low/Medium	Chill to 4° C

Analytical and Contractual Holding Times for RAS Analyses

Matrix:	Water		Soil	
Analysis	Analytical * Holding Times	Contractual** Holding Times	Analytical* Holding Times	Contractual** Holding Times
VOA	14 days	10 days	14 days	10 days
B/N/A	7 days	5 days	14 days	10 days
Pest./PCB	7 days	5 days	14 days	10 days
Mercury	28 days	26 days	28 days	26 days
Cyanide	14 days	12 days	14 days	12 days
Metals	6 months	35 days	6 months	35 days

* The Analytical Holding Time is the amount of time a sample or extract may be held from sample collection to sample extraction and analysis without the results being qualified due to potential chemical degradation, analyte losses, or other changes.

** The Contractual Holding Time is the amount of time a sample or extract may be held from sample receipt at the laboratory to sample extraction and analysis according to the contract with the laboratory. Contractual Holding Times are generally a few days shorter than Analytical Holding Times to allow for sample shipment to the laboratory.

SAMPLE PRESERVATION

Complete and unequivocal preservation of samples, either domestic sewage, industrial wastes, or natural waters, is a practical impossibility. Regardless of the nature of the sample, complete stability for every constituent can never be achieved. At best, preservation techniques can only retard the chemical and biological changes that inevitably continue after the sample is removed from the parent source. The changes that take place in a sample are either chemical or biological. In the former case, certain changes occur in the chemical structure of the constituents that are a function of physical conditions. Metal cations may precipitate as hydroxides or form complexes with other constituents, cations or anions may change valence states under certain reducing or oxidizing conditions; other constituents may dissolve or volatilize with the passage of time. Metal cations may also adsorb onto surfaces (glass, plastic, quartz, etc.), such as, iron and lead. Biological changes taking place in a sample may change the valence of an element or a radical to a different valence. Soluble constituents may be converted to organically bound materials in cell structures, or cell lysis may result in release of cellular material into solution. The well known nitrogen and phosphorus cycles are examples of biological influence on sample composition. Therefore, as a general rule, it is best to analyze the samples as soon as possible after collection. This is especially true when the analyte concentration is expected to be in the low $\mu g/l$ range.

Methods of preservation are relatively limited and are intended generally to (1) retard biological action, (2) retard hydrolysis of chemical compounds and complexes, (3) reduce volatility of constituents, and (4) reduce absorption effects. Preservation methods are generally limited to pH control, chemical addition, refrigeration, and freezing.

The recommended preservative for various constituents is given in Table 1. These choices are based on the accompanying references and on information supplied by various Quality Assurance Coordinators. As more data become available, these recommended holding times will be adjusted to reflect new information. Other information provided in the table is an estimation of the volume of sample required for the analysis, the suggested type of container, and the maximum recommended holding times for samples properly preserved.

TABLE 1

RECOMMENDATION FOR SAMPLING AND PRESERVATION OF SAMPLES ACCORDING TO MEASUREMENT[1]

Measurement	Vol. Req. (ml)	Container[2]	Preservative[3,4]	Holding Time[5]
100 Physical Properties				
Color	50	P,G	Cool, 4°C	48 Hrs.
Conductance	100	P,G	Cool, 4°C	28 Days
Hardness	100	P,G	HNO_3 to pH < 2	6 Mos.
Odor	200	G only	Cool, 4°C	24 Hrs.
pH	25	P,G	None Req.	Analyze Immediately
Residue				
Filterable	100	P,G	Cool, 4°C	7 Days
Non-Filterable	100	P,G	Cool, 4°C	7 Days
Total	100	P,G	Cool, 4°C	7 Days
Volatile	100	P,G	Cool, 4°C	7 Days
Settleable Matter	1000	P,G	Cool, 4°C	48 Hrs.
Temperature	1000	P,G	None Req.	Analyze Immediately
Turbidity	100	P,G	Cool, 4°C	48 Hrs.
200 Metals				
Dissolved	200	P,G	Filter on site HNO_3 to pH < 2	6 Mos.
Suspended	200		Filter on site	6 Mos.[6]
Total	100	P,G	HNO_3 to pH < 2	6 Mos.

TABLE 1 (CONT)

Measurement	Vol. Req. (ml)	Container[2]	Preservative[3,4]	Holding Time[5]
Chromium[+6]	200	P,G	Cool, 4°C	24 Hrs.
Mercury				
Dissolved	100	P,G	Filter HNO_3 to pH < 2	28 Days
Total	100	P,G	HNO_3 to pH < 2	28 Days
300 Inorganics, Non-Metallics				
Acidity	100	P,G	Cool, 4°C	14 Days
Alkalinity	100	P,G	Cool, 4°C	14 Days
Bromide	100	P,G	None Req.	28 Days
Chloride	50	P,G	None Req.	28 Days
Chlorine	200	P,G	None Req.	Analyze Immediately
Cyanides	500	P,G	Cool, 4°C NaOH to pH >12 0.6g ascorbic acid[6]	14 Days[7]
Fluoride	300	P,G	None Req.	28 Days
Iodide	100	P,G	Cool, 4°C	24 Hrs.
Nitrogen				
Ammonia	400	P,G	Cool, 4°C H_2SO_4 to pH < 2	28 Days
Kjeldahl, Total	500	P,G	Cool, 4°C H_2SO_4 to pH < 2	28 Days
Nitrate plus Nitrite	100	P,G	Cool, 4°C H_2SO_4 to pH < 2	28 Days
Nitrate[9]	100	P,G	Cool, 4°C	48 Hrs.
Nitrite	50	P,G	Cool, 4°C	48 Hrs.

TABLE 1 (CONT)

Measurement	Vol. Req. (ml)	Container[2]	Preservative[3,4]	Holding Time[5]
Dissolved Oxygen				
Probe	300	G bottle and top	None Req.	Analyze Immediately
Winkler	300	G bottle and top	Fix on site and store in dark	8 Hours
Phosphorus				
Ortho-phosphate, Dissolved	50	P,G	Filter on site Cool, 4°C	48 Hrs.
Hydrolyzable	50	P,G	Cool, 4°C H_2SO_4 to pH < 2	28 Days
Total	50	P,G	Cool, 4°C H_2SO_4 to pH < 2	28 Days
Total, Dissolved	50	P,G	Filter on site Cool, 4°C H_2SO_4 to pH < 2	24 Hrs.
Silica	50	P only	Cool, 4°C	28 Days
Sulfate	50	P,G	Cool, 4°C	28 Days
Sulfide	500	P,G	Cool, 4°C add 2 ml zinc acetate plus NaOH to pH >9	7 Days
Sulfite	50	P,G	None Req.	Analyze Immediately
400 Organics				
BOD	1000	P,G	Cool, 4°C	48 Hrs.
COD	50	P,G	Cool, 4°C H_2SO_4 to pH < 2	28 Days
Oil & Grease	1000	G only	Cool, 4°C H_2SO_4 to pH < 2	28 Days
Organic carbon	25	P,G	Cool, 4°C H_2SO_4 or HCl to pH < 2	28 Days
Phenolics	500	G only	Cool, 4°C H_2SO_4 to pH <2	28 Days

TABLE 1 (CONT)

Measurement	Vol. Req. (ml)	Container[2]	Preservative[3,4]	Holding Time[5]
MBAS	250	P,G	Cool, 4°C	48 Hrs.
NTA	50	P,G	Cool, 4°C	24 Hrs

1. More specific instructions for preservation and sampling are found with each procedure as detailed in this manual. A general discussion on sampling water and industrial wastewater may be found in ASTM, Part 31, p. 72–82 (1976) Method D-3370.

2. Plastic (P) or Glass (G). For metals, polyethylene with a polypropylene cap (no liner) is preferred.

3. Sample preservation should be performed immediately upon sample collection. For composite samples each aliquot should be preserved at the time of collection. When use of an automated sampler makes it impossible to preserve each aliquot, then samples may be preserved by maintaining at 4°C until compositing and sample splitting is completed

4. When any sample is to be shipped by common carrier or sent through the United States Mails, it must comply with the Department of Transportation Hazardous Materials Regulations (49 CFR Part 172). The person offering such material for transportation is responsible for ensuring such compliance. For the preservation requirements of Table 1, the Office of Hazardous Materials, Materials Transportation Bureau, Department of Transportation has determined that the Hazardous Materials Regulations do not apply to the following materials: Hydrochloric acid (HCl) in water solutions at concentrations of 0.04% by weight or less (pH about 1.96 or greater); Nitric acid (HNO_3) in water solutions at concentrations of 0.15% by weight or less (pH about 1.62 or greater); Sulfuric acid (H_2SO_4) in water solutions at concentrations of 0.35% by weight or less (pH about 1.15 or greater); Sodium hydroxide (NaOH) in water solutions at concentrations of 0.080% by weight or less (pH about 12.30 or less).

5. Samples should be analyzed as soon as possible after collection. The times listed are the maximum times that samples may be held before analysis and still considered valid. Samples may be held for longer periods only if the permittee, or monitoring laboratory, has data on file to show that the specific types of sample under study are stable for the longer time, and has received a variance from the Regional Administrator. Some samples may not be stable for the maximum time period given in the table. A permittee, or monitoring laboratory, is obligated to hold the sample for a shorter time if knowledge exists to show this is necessary to maintain sample stability.

6. Should only be used in the presence of residual chlorine.

7. Maximum holding time is 24 hours when sulfide is present. Optionally, all samples may be tested with lead acetate paper before the pH adjustment in order to determine if sulfide is present. If sulfide is present, it can be removed by the addition of cadmium nitrate powder until a negative spot test is obtained. The sample is filtered and then NaOH is added to pH 12.

8. Samples should be filtered immediately on-site before adding preservative for dissolved metals.

9. For samples from non-chlorinated drinking water supplies conc. H_2SO_4 should be added to lower sample pH to less than 2. The sample should be analyzed before 14 days.

APPENDIX E

Environmental Services Branch

Referral List

ESB REFERRAL LIST
August 1993

ironmental Services Branch (ESB) P-3	(415) 744-1523
oratory Support Section (LSS) P-3-1	(415) 744-1491
ality Assurance Management Section (QAMS) P-3-2	(415) 744-1492

BJECT	CONTACT PRIMARY CONTACT LISTED FIRST	TELEPHONE
ir Methods	J. Whittaker	(702)798-2155
lternate Test Procedures (ATP)	Hedy Ficklin/Rich Bauer	744-1497/1499
sbestos	Kent Kitchingman	744-1492
tomic Absorption (AA)	Hedy Ficklin/Pat Mack	744-1497/(702)798-2117
ioassays/Toxicity Tests	Peter Husby/Clarice Olson/Hedy Ficklin	744-1488/1489/1497
Marine Toxicity Tests:	Amy Wagner/Peter Husby	744-1495/1488
ioassessments/Ecoassessments	Peter Husby/ Stewart Simpson/Amy Wagner	744-1488/1487/1495
ontract Laboratory Program (CLP)		
General Information:	Steve Remaley	744-1527
Scheduling Analyses:	Rich Bauer	744-1499
Special Analytical Services(SAS) Requests	Hedy Ficklin	744-1497
ata Quality Objectives (DQO)	Hedy Ficklin/Kira Lynch	744-1497/1496
Non-SF	Rose Fong/Kira Lynch	744-1534/1496
ata Review/Validation Procedures	Steve Remaley/Hedy Ficklin/Rich Bauer	744-1527/1497/1499
ata Review Project Status	Rich Bauer	744-1499
etection Limits	Steve Remaley	744-1527
ioxin	Jim Johnson/Steve Remaley	744-1494/1527
MR-QA PE Studies	Roseanne Sakamoto	744-1536
MR-QA Toxicity	Amy Wagner	744-1495
MR-QA Follow-up Inspections	Peter Husby	744-1488
rinking Water Methods	Jim Johnson/Rose Fong	744-1494/1534
rinking Water Labs	Pat Mack/Clarice Olson	(702)798-2117/744-1489
nvironmental Monitoring Methods Index (EMMI)	Jim Johnson/Hedy Ficklin	744-1494/1497
ASP Lab	Brenda Bettencourt/Jim Johnson	744-1491/1494
ield Audits/QA	Robbie Hedeen/Kira Lynch	744-1535/1496
ield Sampling Plans (FSPs)	Robbie Hedeen/Hedy Ficklin/Kira Lynch	744-1535/1497/1496
uels Analyses	Hedy Ficklin/Rich Bauer	744-1497/1499
as Chromatography/Mass Spectrometry (GC/MS)	Steve Remaley/Jim Johnson	744-1527/1494
IS	Kathy Baylor/Roseanne Sakamoto	744-1490/1536
lobal Positioning System	Kathy Baylor	744-1490
RS - Site Assessment	Kira Lynch	744-1496
nductively Coupled Plasma (ICP)	Jim Johnson	744-1494
Inorganic Methods	Pat Mack/Hedy Ficklin	(702)798-2117/744-1497
Ion Chromatography (IC)	Jim Johnson/Tina Diebold	744-1494/1528
Laboratory Audits	Steve Remaley	744-1527
Laboratory Certification - Chemistry	Jim Johnson/Pat Mack	744-1494/(702)798-2117
Laboratory Certification - Microbiology	Clarice Olson/Jim Johnson/Pat Mack	744-1489/1494/(702)798-2117
Management System Reviews (MSR)	Kent Kitchingman/Rose Fong	744-1492/1534
Metals	Hedy Ficklin/Pat Mack	744-1497/(702)798-2117
Mobile Lab Services	Brenda Bettencourt/Jim Johnson	744-1491/1494
Microbiology	Pat Mack/Clarice Olson/Hedy Ficklin	(702)798-2117/744-1489/1497
Non-Superfund Analytical Services	Stewart Simpson	744-1487
Organic Methods	Steve Remaley/Jim Johnson/Hedy Ficklin	744-1527/1494/1497
Pesticides	Steve Remaley/Jim Johnson/James Whittaker	744-1527/1494/(702)798-2117
PCBs	Jim Johnson/Steve Remaley	744-1494/1527
Quality Assurance	Kent Kitchingman/Hedy Ficklin/Kira Lynch	744-1492/1497/1496
QA Project Plans (QAPjPs) SF Preparation	Hedy Ficklin/Kira Lynch	744-1497/1496
Non-SF	Rose Fong/Kira Lynch	744-1534/1496
Quick Turnaround Method (QTM)	Hedy Ficklin	744-1497
Radionuclides	Jim Johnson/Steve Remaley	744-1494/1527
RCRA Issues	Rich Bauer/Hedy Ficklin/Stewart Simpson	744-1499/1497/1487
Sample Holding Times/Preservation/Containers	QAMS Staff	744-1523

SUBJECT	CONTACT PRIMARY CONTACT LISTED FIRST	TELEPHONE
• Sampling: Drinking Water	Clarice Olson/Kira Lynch	744-1489/1496
Fish	Stewart Simpson/Peter Husby	744-1487/1488
Groundwater	Robbie Hedeen/Kathy Baylor/Kira Lynch	744-1535/1490/1496
Microbiology/Virology	Clarice Olson	744-1489
NPDES	Peter Husby/Stewart Simpson	744-1488/1487
Soil/Sediment	Stewart Simpson/Kathy Baylor	744-1487/1490
	Kira Lynch/Robbie Hedeen	744-1496/1535
Surface Water	Peter Husby/Stewart Simpson/Kathy Baylor	744-1488/1487/1490
Waste (Solid)	Stewart Simpson	744-1487
• Total Quality Management (TQM)	Kent Kitchingman	744-1492
• Toxicity Charateristic Leaching Procedure (TCLP)	Steve Remaley/Hedy Ficklin/Stewart Simpson/	744-1527/1497/1487
	Rich Bauer	744-1499
• Water Pollution PE Studies (WP)	Rosanne Sakamoto	744-1536
• Water Supply PE Studies (WS)	Rosanne Sakamoto	744-1536

ADDITIONAL REFERENCES:

Region 9 Public Inquiry Response Line	(415) 744-1500	American Samoa EPA	(684) 633-2304
Region 9 Library Reference Desk	(415) 744-1510		
Region 9 RCRA Information Hotline	(415) 744-2074	AZ Dept. of Environmental Quality	(602) 207-2300
		AZ Dept. of Health Services	(602) 542-1000
Methods Information Communication Exchange (MICE)	(703) 821-4789		
RCRA/Superfund Hotline	(800) 424-9346	CA Dept. of Health Services	(916) 445-4171
		CA Air Resources Board	(800) 242-4450
EMSL-CI main receptionist	(513) 569-7301	CA State Water Resources Control Board	(916) 657-2390
EMSL-CI Chemistry Research Div.	(513) 569-7586		
EMSL-CI QA Research Div.	(513) 569-7325	Guam EPA	(671) 646-8863
EMSL-LV main receptionist	(702) 798-2100		
EMSL-LV QA Research Div.	(702) 798-2103	HI Dept. of Health Services (personnel)	(808) 548-6588
		HI Environmental Planning Office	(808) 543-8335
Inspector General's Whistleblower Hotline	(800) 424-4000		
		NV Dept. of Health Services	(702) 687-4740
Government Printing Office (GPO)	(202) 783-3238	NV Division of Environmental Protection	(702) 687-4670
National Technical Information Service (NTIS)	(800) 553-NTIS		
EPA Documents (CERI)	(513) 569-7562	Northern Mariana Islands Env. Quality Division	(670) 234-6984
Federal Register articles (available for fee)	(202) 523-5240		
[illegible]	(800) 238-5255		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, CA 94105

MAY 0 2 1990

MEMORANDUM

SUBJECT: Region 9 Quality Assurance Guidance Documents for Superfund

FROM: Kent Kitchingman, Chief
Quality Assurance Management Section (P-3-2)

TO: Superfund Section Chiefs, RPMs, and RPOs

Attached is the new regional guidance for States and PRPs preparing field sampling plans for Superfund projects. An earlier version of this document, dated October, 1989, is identical to this document except that the October version uses the term "Sampling and Analysis Plan" instead of "Field Sampling Plan". This change was made to be consistent with terminology used by headquarters. If you have any questions about this document, please call Tom Huetteman at 556-5024.

We have also prepared another regional guidance document: USEPA Region 9 SAS Compendium, 9QA-08-89, December, 1989. This has been distributed to Superfund RPOs and is specifically for EPA contractors using the Contract Laboratory Program for sample analyses. EPA contractors will need this document during preparation of a field sampling plan.

The following are the remaining regional guidance documents prepared by this section. If you need a copy of any of these documents, please call Roseanne Sakamoto at 556-5036.

- ✓ Laboratory Documentation Requirements For Data Validation, 9QA-07-09, January, 1990.
- ✓ Preparation of a U.S. EPA Region 9 Sample Plan for EPA-Lead Superfund Projects, 9QA-05-89, April, 1989.
- ✓ US EPA Region 9 Guidance For Preparing Quality Assurance Project Plans For Superfund Remedial Projects, 9QA-03-89, September, 1989.

Attachment

cc: Superfund Branch Chiefs
(w/o attachment)

Preparation of a
U.S. EPA Region 9 Field Sampling Plan
for
Private and State-Lead Superfund Projects

(Document Control No. 9QA-06-89)

April 1990

Quality Assurance Management Section
USEPA Region 9
San Francisco, CA