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U.S. EPA, REGION 6
COMPLIANCE ASSURANCE AND ENFORCEMENT DIVISION
HAZARDOUS WASTE ENFORCEMENT BRANCH
TECHNICAL SECTION

TRANSMISSION DATE: **September 9, 1998**

TO:	Phone #:	FAX #:
Arnold Rosenthal / Michael Donnellan		202-514-8395
Gary O'Dea		505-768-4525
Mark Schmidt		505-768-3629
Anna Marie Ortiz		505-827-1628
Dennis McQuillan		505-827-2965
Baird Swanson		505-884-9254
Charles de Saillan		505-827-4440
Carl Will		505-827-1544
Steve Amter		202-293-0169
FROM: Michael A. Hebert (6EN-HX) EPA	Phone #: 214-665-8315	FAX #: 214-665-7446

Total Number of Pages: 22 If all pages were not received, please contact the sender.

COMMENTS:

Revised On-Site Containment Outline (i.e., 9/8/98 0810).
I tried to catch all the issues discussed during our call on 9/8/98. Most of the revisions pursuant to the 9/8/98 call are in bold, in italics, and underlined. A few revisions are just underlined. I have also added NMED in the appropriate notification sections. I also tried to make Section B of the on-site containment outline similar to Section B of the off-site containment outline which we have already sent out. Any questions, please yell ASAP.

Thanks, Mike Hebert

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GROUND WATER EXTRACTION CORRECTIVE MEASURE-SOURCE CONTAINMENT

The parties are agreed that source areas on-site should be contained, however it is a complex task to discretely define and delineate these source areas. To this extent, the parties are agreed that, based upon the current data and information concerning the site, the above goal of containment of the source areas will be met if the capture zone proposed by Sparton is achieved through implementation of a 50 GPM ground water extraction system. The only additional investigation activity that needs to occur is the installation of a ground water monitoring well between ground water monitoring well 15 and ground water monitoring well cluster 42/43. Since a ground water extraction system similar to the 50 GPM system as proposed by Sparton will be installed regardless of the sampling results from the new monitoring well, it should be possible for Sparton to simultaneously submit for approval an investigation workplan providing for the installation of the additional monitoring well and a Design, Construction, and Operations & Maintenance workplan for the 50 GPM ground water extraction system.

The O&M plan should provide that if the new monitoring well indicates more than 1000 ppb TCE, then the well will be sampled semi-annually for 5 years after which Sparton will submit a report discussing whether the source area containment system needs to be modified.

A. Ground Water Investigation Workplan

The following elements should be included in a Work plan which embodies the August 26, 1998, agreement concerning the installation of an additional on-site monitoring well. The workplan should provide that if the analysis of the samples from the new monitoring well indicates that the TCE concentration is equal to or less than 1000 ppb, then the well will be completed as a piezometer. If the analysis of the samples from the new monitoring well indicates that the TCE concentration is more than 1000 ppb, then the well will be a completed as a monitoring well. The frequency of sampling for the new monitoring well will be semi-annually as stipulated in the revised Ground Water Monitoring Program Plan.

1. Project Management Plan

This can simple serve as an Executive Summary to the Source Containment Investigation Workplan.

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The Project Management Plan includes a discussion of the technical approach, schedules, budget, and an outline of proposed activities necessary to complete the design of the ground water extraction system.

2. Data Collection Quality Assurance Plan

The Data Collection Quality Assurance Plan documents all monitoring procedures: sampling, field measurements, and sample analysis performed during the investigation so as to ensure that all information, data, and resulting decisions are technically sound, statistically valid, and properly documented. This plan includes the following:

a. Data Collection Strategy

The Data Collection Strategy shall includes the following:

(1) Description of the intended uses for the data ***(As per the agreement of the parties during the 8/26/98 settlement conference, the intended use of the data is to investigate whether ground water concentrations indicating possible source areas exists between ground water monitoring well 15 and the ground water monitoring well cluster 42/43)***, and the necessary level of precision and accuracy for these intended uses ***(As per the agreement of the parties during the 8/26/98 settlement conference, the Plaintiff's understand the level of precision and accuracy for these intended uses will be sufficient to determine if the ground water TCE concentration at the new well location is below, at, or above 1000 ppm)***;

(2) Description of methods and procedures to be used to assess the precision, accuracy, and completeness of the measurement data ***(The Plaintiff's anticipate that the standard QAPP, prepared by the laboratory selected by Sparton to this work, will be attached to the Source Containment Investigation Workplan and will be adequate)***; and

(3) Description of the methodology used to assure that the data accurately and precisely represents the characteristics of a

population, parameter variations at a sampling point, and process conditions or environmental conditions. ***(The goal is to determine the ground water TCE concentration in the new well between ground water monitoring well 15 and the ground water monitoring well cluster 42/43 in order to ascertain whether potential source areas exist upgradient from this new well location)*** Examples of factors which shall be considered and discussed include:

(a) Environmental conditions at the time of sampling;
(b) Number of sampling points ***(Pursuant to the agreement between the parties on 8/26/98, one ground water monitoring well will be installed)***;
(c) Representativeness of selected media; and
(d) Representativeness of selected analytical parameters.

b. Sampling

The sampling section shall, at a minimum, discuss the following:

(1) Selecting appropriate sampling locations ***(Pursuant to the agreement between the parties on 8/26/98, one ground water monitoring well will be installed located between ground water monitoring well 15 and the ground water monitoring well cluster 42/43)***, depths ***(Pursuant to the agreement between the parties on 8/26/98, the new monitoring well will be installed within the bottom 30 feet (i.e., approximately 80 to 110 below ground surface) of the top 40 feet (i.e., approximately 70 to 110 below ground surface) of the saturated ground water zone, with a 10 foot screened interval located in the most coarse grained sediments identified during drilling)***, etc.;
(2) Determining a statistically sufficient number of sampling sites ***(Pursuant to the agreement between the parties on 8/26/98, there will be one ground water monitoring well installed)***;
(3) Determining which media are to be sampled (e.g., ground water, etc.) ***(Pursuant to the agreement between the parties on 8/26/98, the media to be sampled will be ground water)***;
(4) Determining which parameters are to be measured and where ***(It is***

Plaintiff's understanding that the Ground Water Monitoring Program Plan will be updated and indicate the parameters that will be measured in the new ground water monitoring well);

(5) Selecting the frequency of sampling and length of sampling period ***(It is Plaintiff's understanding that the Ground Water Monitoring Program Plan will be updated and indicate the frequency of sampling and the length of sampling period for the new ground water monitoring well)***;

(6) Selecting the types of samples and number of samples ***(It is Plaintiff's understanding that the Ground Water Monitoring Program Plan will be updated and indicate the types of samples and number of samples to be obtained from the new ground water monitoring well)***;

(7) Documenting field sampling operations and procedures, including;

It is Plaintiff's understanding that the Ground Water Monitoring Program Plan will be updated and indicate the field sampling operations and procedures that will utilized for the new ground water monitoring well.

(a) Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters, and adsorbing reagents);
(b) Procedures and forms for recording the exact location and specific considerations associated with sample acquisition;
(c) Documentation of specific sample preservation method;
(d) Calibration of field devices;
(e) Collection of replicate samples;
(f) Submission of field blanks, where appropriate;
(g) Construction materials and techniques associated with monitoring wells and piezometers;
(h) Field equipment listing and sample containers;
(i) Sampling order; and
(j) Decontamination procedures.

(8) Selecting appropriate sample containers;
(9) Sample preservation; and
(10) Chain-of-custody, including:

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(a) Standardized field tracking reporting forms to establish sample custody in the field prior to shipment; and
(b) Pre-prepared sample labels containing all information necessary for effective sample tracking.

c. Field Measurements

It is Plaintiff's understanding that the Ground Water Monitoring Program Plan will be updated and indicate the field measurements that will utilized for the new ground water monitoring well.

The Field Measurements section discusses the following:

(1) Selecting appropriate field measurement locations, depths, etc.;
(2) Providing a statistically sufficient number of field measurements;
(3) Measuring all necessary ancillary data;
(4) Determining conditions under which field measurement should be conducted;
(5) Determining which media are to be addressed by appropriate field measurements (e.g., ground water, etc.);
(6) Determining which parameters are to be measured and where;
(7) Selecting the frequency of field measurement and length of field measurements period; and
(8) Documenting field measurement operations and procedures, including:

(a) Procedures and forms for recording raw data, and the exact location, time, and facility-specific considerations associated with the data acquisition;
(b) Calibration of field devices;
(c) Collection of replicate measurements;
(d) Submission of field blanks, where appropriate;
(e) Construction materials and techniques associated with monitoring wells and piezometers used to collect field data;
(f) Field equipment listing;
(g) Order in which field measurements were made; and
(h) Decontamination procedures.

d. Contaminated Material Disposal

All contaminated material generated by ground water extraction activities shall be disposed of in accordance with all Federal and State laws and regulations. ***(The workplan should provide procedures for disposing of contaminated materials generated by the Source Containment Investigation activities)***

e. Sample Analysis

The standard QAPP from Sparton's laboratory should be adequate to satisfy this section and a copy should be attached to the workplan.

The Sample Analysis section specifies the following:

(1) Chain-of-custody procedures, including:

(a) Identification of a responsible party to act as sample custodian at the laboratory facility authorized to sign for incoming field samples, obtain documents of shipment, and verify the data entered onto the sample custody records;
(b) Provision for a laboratory sample custody log consisting of serially numbered standard lab-tracking report sheets; and
(c) Specification of laboratory sample custody procedures for sample handling, storage, and disbursement for analysis.

(2) Sample storage procedures and holding times;
(3) Sample preparation methods;
(4) Analytical procedures, including:

(a) Scope and application of the procedure;
(b) Sample matrix;
(c) Potential interferences;
(d) Precision and accuracy of the methodology;
(e) Method detection limits;
(f) Calibration procedures and frequency;
(g) Data reduction, validation, and reporting;
(h) Internal quality control checks, laboratory performance, and

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systems audits and frequency, including:

1) Method blank(s);
2) Laboratory control sample(s);
3) Calibration check sample(s);
4) Replicate sample(s);
5) Matrix-spiked sample(s);
6) Blind quality control sample(s);
7) Control charts;
8) Surrogate samples;
9) Zero and span gases; and
10) Reagent quality control checks.

(i) Preventive maintenance procedures and schedules;
(j) Corrective action (for laboratory problems); and
(k) Turnaround time.

3. Data Management Plan

The Data Management Plan documents and tracks investigation data and results. This plan identifies and sets up data documentation materials and procedures, project file requirements, and project-related progress reporting procedures and documents. The plan also provides the format to be used to present the raw data and conclusions of the investigation. The plan includes the following:

a. Data Record

It is anticipated that the data records will primarily be comprised of the laboratory records.

The data record includes the following:

(1) Unique sample or field measurement code;
(2) Sampling or field measurement location and sample or measurement type;
(3) Sampling or field measurement raw data;
(4) Laboratory analysis ID number;
(5) Property or component measured; and
(6) Result of analysis (e.g., concentration).

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b. Tabular Displays

The workplan should specify which data Sparton anticipates to be presented in tabular form.

The following data is presented in tabular displays:

(1) Unsorted (raw) data;
(2) Results for each medium, or for each constituent monitored;
(3) Data reduction for statistical analysis;
(4) Sorting of data by potential stratification factors [e.g., location, ground water flow zone (upper, upper lower, etc.)]; and
(5) Summary data.

c. Graphical Displays

The workplan should specify which data Sparton anticipates to be presented in graphical form.

The following data is presented in graphical formats (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transects, three dimensional graphs, etc.):

(1) Display sampling locations and sampling grids;
(2) Contaminant concentrations at each sampling location;
(3) Display average and maxima contaminant concentrations;
(4) Geographical extent of contamination and illustrate changes in concentration in relation to distance from the source and depth;
(5) Indicate features affecting intramedia transport; and
(6) Illustrate the stratigraphy in the area of the ground water contamination.

B. Ground Water Extraction and Treatment Project

The investigation workplan should provide for the submission of a ground water investigation report containing the following elements.

Upon completion of the Source Containment Investigation Workplan, Sparton should prepare

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a Source Containment Investigation Report, and submit workplans for a Design, Construction, and Operations and Maintenance of the Source Containment Ground Water system agreed to by all parties during the 8/26/98 Settlement Conference. The Source Containment Investigation Workplan should state that the Investigation Report and associated workplans will contain the following elements.

1. Ground Water Investigation Report

It is the Plaintiffs understanding that the data in this section listed below will be or has been collected under the Source Containment Investigation Workplan, the Ground Water Monitoring Program Plan, or other previous investigations (i.e., RFI). This data, which will provide critical support for the design of the on-site containment system, should be compiled and set forth in the beginning of the Design workplan.

The Ground Water Investigation Report includes the following:

a. A description, including maps, of the horizontal and vertical extent, including concentration profiles, of the contaminants in the ground water originating from the Facility; ***It is anticipated that the majority of the information will come from ground water quarterly monitoring data.***

b. Based on field data and aquifer tests, develop a hydrogeological conceptual model of the site supported by a representative and accurate description of the hydrogeologic units which are a part of the migration pathways for the contaminant plume, including:

Sparton has previously gathered data with regards to the points below which should be sufficient to support a proposed design. With regards to items 2, 4, 5, and 7, if the on-site containment system does not perform as predicted, then it may be necessary to collect additional information in these areas. The on-site containment workplan need not propose the collection of additional information in these areas. The Corrective Measure Assessment Report described in Section D below should provide that if the on-site containment system does not perform as expected, then collection of additional information related to items 2, 4, 5, and 7 will be considered.

(1) Hydraulic conductivity;
(2) Lithology, grain size, sorting;
(3) Velocity of ground water;

permit(s).

f. The recommended disposal method for the treated ground water which is consistent with the criteria in the FDRTC document for conservation of the ground water resource. ***The workplan can simply note the specific permit(s) that will be applied regarding treatment and disposal of the extracted ground water and attach a copy of the permit(s).***

2. Design Plans and Specifications

Workplans describing Items B2, B3, and B4, should be submitted simultaneously with the source containment investigation workplan. These workplans will describe the details concerning Sparton's 50 GPM ground water extraction proposal. Plaintiffs understand that Sparton has already begun designing the on-site ground water containment system. Under the Final Administrative Order, Sparton is required to obtain approval for its design. It is important that Plaintiffs review and approve the design in order to ensure protection of human health and the environment.

The design package consists of the detailed drawings and specifications needed to construct the corrective measure(s). The Design Plans and Specifications include the following documents:

a. General Site Plans;
b. Process Flow Diagrams;
c. Mechanical Drawings;
d. Electrical Drawings;
e. Piping and Instrumentation Diagrams;
f. Structural Drawings;
g. Excavation and Earthwork Drawings;
h. Site Preparation and Field Work Standards;
I. Construction Drawings;
j. Installation Drawings;
k. Equipment Lists; and
l. Specifications for Equipment and Material.

3. Construction Work plan

Under the Administrative Order Sparton is required to obtain approval for its design. It is

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important that Plantiffs review and approve the design in order to ensure protection of human health and the environment.

The purpose of the Construction Work plan is to document the overall management strategy, construction quality assurance procedures, and schedule for constructing the corrective measure. The Construction Work plan includes the following elements:

a. Project Management: Describe the construction management approach including levels of authority and responsibility (include organization chart).

b. Project Schedule: The project schedule shall specify all significant steps in the process, including the timing for key elements of the bidding process, the timing for initiation and completion of all construction tasks as specified in the Design Plans and Specifications.

c. Waste Management Practices: Describe the wastes generated by the construction of the corrective measure, and how they will be managed.

d. Required Permits: List and describe the permits needed to construct and operate the corrective measure. Indicate on the project schedule when the permit applications will be submitted to the applicable agencies and an estimate of the permit issuance date. ***(Sparton has proposed that the treated ground water from the 50 GPM system will be disposed of in on-site infiltration ponds. Plaintiff's are concerned about Sparton's ability to obtain necessary permits for the proposed method of water disposal (i.e., infiltration ponds). However, there are other disposal methods that are technically viable and for which Sparton should more easily be able to obtain permits. Therefore, permitting problems related to the infiltration ponds should not prevent implementation of the key elements of Sparton's proposal. Prior to submitting the workplan, Sparton should confer with the permitting authorities and determine whether the infiltration ponds can be permitted.)***

e. Quality Assurance Project Plan: The purpose of construction quality assurance is to ensure, with a reasonable degree of certainty, that a completed corrective measure will meet or exceed all design criteria,

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plans, and specifications. Sampling and monitoring activities may also be needed for construction quality assurance/quality control and/or other construction related purposes. To ensure that all information, data, and resulting decisions are technically sound, statistically valid, and properly documented, there will be a Quality Assurance Project Plan (QAPjP) to document all monitoring procedures, sampling, field measurements, and sample analysis performed during these activities.

f. Construction Contingency Procedures:

(1) Changes to the design and/or specifications may be needed during construction to address unforeseen problems encountered in the field. Procedures to address such circumstances, including notification of EPA and NMED, shall be included in the Construction Work plan.

(2) The Construction Work plan shall specify that in the event of a construction emergency (e.g. fire, earthwork failure, etc.), Spartan shall orally notify the EPA and NMED within twenty-four (24) hours of the event, and shall notify the EPA and NMED in writing within seven (7) days of the event. The written notification shall, at a minimum, specify what happened, what response action is being taken and/or is planned, and any potential impacts on human health and/or the environment; and

(3) Procedures to be implemented if unforeseen events prevent corrective measure construction.

g. Cost Estimate

A cost estimate that includes both corrective measure construction and operation and maintenance costs. The purpose of the cost estimate is to assure that Spartan has the financial resources necessary to construct and implement the corrective measure(s).

h. Documentation Requirements

There will be a description of how analytical data and results will be

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evaluated, documented, and managed, consistent with SW-846, 3rd Edition, or as superseded.

i. Appendices, including:

(1) Design Data - Tabulations of significant data used in the design effort;

(2) Equations - List and describe the source of major equations used in the design process;

(3) Sample Calculations - Present and explain at least one example calculation for significant or unique design calculations; and

(4) Laboratory or Field Test Results.

4. Operation and Maintenance Plan

The Final Administrative Order requires the Operations and Maintenance Plan be submitted at the same time as the Design and Construction Workplans. It is critical to ensure that all aspects of the design and construction are considered in developing O&M procedures. In any case, practical concerns would dictate that O&M issues related to a particular design be evaluated at the same time as the design.

The O&M Plan outlines the procedures for performing operations, long term maintenance, and monitoring of the corrective measure. The O&M plan includes the following elements:

a. Project Management: Describe the management approach, including levels of authority and responsibility (include organization chart), during the operation and management phase of the remedy implementation. ***The discussion within the O&M Plan should provide that EPA and NMED will be notified within 30 days of any change by Sparton of the personnel assigned to this matter.***

b. System Description: Describe the ground water extraction, treatment, and disposal systems, and identify and describe significant equipment (e.g., pumps, controllers, piping, wiring, treatment system parts, alarms, etc.).

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c. Start-Up Procedures: Describe system start-up procedures including any operational testing.

d. Operation and Maintenance Procedures: Describe normal operation and maintenance procedures, including:

(1) Description of tasks for operation;

(2) Description of tasks for maintenance;

(3) Description of prescribed treatment or operation conditions; and

(4) Schedule showing frequency of each O&M task.

e. Replacement schedule for equipment and installed components.

f. Waste Management Practices: Describe the wastes generated by operation of the corrective measure and how they will be managed.

g. Quality Assurance Project Plan: Sampling and monitoring activities may be needed for effective operation and maintenance of the corrective measure. To ensure that all information, data, and resulting decisions are technically sound, statistically valid, and properly documented, there should be a Quality Assurance Project Plan (QAPjP) to document all monitoring procedures, sampling, field measurements, and sample analyses performed during these activities. Quality assurance, quality control, and chain-of-custody procedures should be approved by the EPA. These procedures are described in EPA's Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, QAMS-005/80, December 29, 1980, or as superseded by EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA/R-5).

h. Corrective Measure Monitoring: Describe the following:

The O&M plan should provide for monitoring of the new well for contaminant concentrations if the initial contaminant concentrations are above 1000 ppb TCE and also provide for the collection of the data needed to verify that the source areas are within the actual capture zone

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of Sparton's containment system once it has been implemented. The parties are agreed that the ground water monitoring program plan will be expanded to include all routine data collection. Plaintiffs anticipate that this expanded Ground Water Monitoring Program Plan will include the collection of data described in this section. The O&M Plan can simply state that the data collection requirements of this section will be addressed in the expanded Ground Water Monitoring Program Plan.

(1) monitoring objectives;
(2) the types of measurements to be made (e.g., pumping rates, hydraulic heads, contaminant concentrations, ground water chemistry, precipitation, etc.);
(3) measurement locations;
(4) measurement methods, equipment, and procedures;
(5) measurement schedules; and
(6) record-keeping and reporting requirements.

This data and information shall be used to prepare Progress Reports and the Corrective Measure Assessment and Completion Reports.

i. O&M Contingency Procedures:

(1) Procedures to address system breakdowns and operational problems, including a list of redundant and emergency back-up equipment and procedures;

(2) Alternate procedures to be implemented if the corrective measure suffers complete failure. The alternate procedures must be able to prevent release or threatened releases of hazardous wastes and/or hazardous waste constituents which may endanger human health and/or the environment or exceed media cleanup standards;

(3) The O&M Plan shall specify that in the event of a major breakdown and/or complete failure of the corrective measure (includes emergency situations), Sparton shall orally notify the EPA and NMED within twenty-four (24) hours of the event, and shall notify the EPA and NMED in writing within seven (7) days of the event. Written notification shall, at a minimum, specify what happened, what response action is being taken and/or is

planned, and any potential impacts on human health and/or the environment; and

(4) Procedures to be implemented in the event that the corrective measure is experiencing major operational problems, is not performing to design specifications, and/or will not achieve the remediation goals, objectives, or cleanup levels, in the expected time frame. ***(If Sparton uses infiltration ponds to dispose of treated extracted ground water, it is possible that contaminated ground water will migrate and affect monitoring wells 51/59. The workplan must account for if these wells become contaminated, then an additional well will be installed to define the outer boundary of the contaminant plume.)***

j. Data Management and Documentation Requirements:

The O&M Plan shall specify that Sparton collect and maintain the following information:

(1) Progress Report Information;

(2) Monitoring and laboratory data;

(3) Records of operating costs; and

(4) Maintenance and inspection records.

This data and information shall be used to prepare Progress Reports and the Corrective Measure Assessment and Completion Reports.

5. Health and Safety Plan

Sparton has provided a Health and Safety Plan pursuant to Task II of the Final Administrative Order. This Health and Safety Plan addresses monitor and recovery will installations, it does not address all the aspects of the Source Containment Ground Water Corrective Measure. Therefore, a revised Health and Safety Plan which includes the activities associated with the Source Containment Ground Water system should be submitted.

An updated Health and Safety Plan for the Ground Water Extraction Corrective Measure, should be developed as a stand alone document.

6. Commencement of Construction

Upon receipt of written notification from the EPA, Sparton shall commence the construction process and implement the Construction Work plan in accordance with the schedule and provisions contained therein.

C. Construction Completion Report

This report will be developed upon completion of the construction of the source containment system and described within the Source Containment Work plan.

The Construction Completion Report documents how the completed project or component is consistent with the Final Design Plans and Specifications. The Construction Completion Report includes the following elements:

1. Synopsis of the corrective measure, design criteria, and certification that the corrective measure was constructed in accordance with the Final Design Plans and Specifications;

2. Explanation and description of any modifications to the Final Design Plans and Specifications and why these were necessary for the project;

3. Results of any operational testing and/or monitoring, indicating how initial operation of the corrective measure compares to the design criteria;

4. Summary of significant activities that occurred during construction. Include a discussion of problems encountered and how they were addressed;

5. As built drawings; and

6. Schedule indicating when any treatment systems will begin full scale operations.

D. Corrective Measure Assessment Reports

The Design, Construction, and O&M workplan should provide for the submission of

Corrective measure Assessment Report for the Source Containment Corrective Measure. These reports should be submitted at the same intervals as the Off-Site Containment system evaluations.

The Corrective Measure Assessment Report contains an evaluation of the past and projected future effectiveness of the corrective measure in attaining the remedial objective of contaminant plume containment. The evaluation shall follow EPA guidance in evaluating the performance of the ground water extraction system in meeting this objective. The Corrective Measure Assessment Report includes the following elements:

1. Synopsis of the corrective measure;

2. Describe the progress in attaining the remedial objective of contaminant plume containment.

3. Summarize data obtained during the preceding time interval of systems operation and evaluate trends in the system operating conditions indicating how operation of the corrective measure compares to the remedial objective;

4. Summary of work accomplishments (e.g., performance levels achieved, total hours of treatment operation, total treated and/or excavated volumes, nature and volume of wastes generated, etc.);

5. Summary of significant activities that occurred during operations. Include a discussion of problems encountered and how they were addressed;

6. Summary of inspection findings (include copies of key inspection documents in appendices);

7. Summary of total operation and maintenance costs; and

8. An evaluation of implementing post-construction refinements to the ground water extraction system such as, but not limited to:

   - adjusting the pumping rate in some or all of the ground water extraction wells;

   - installing additional extraction wells to achieve containment of the

contaminant plume;

- initiating a pulsed pumping schedule in some or all of the ground water extraction wells to eliminate flow stagnation areas, or otherwise facilitate containment of contaminants in the aquifer;

- refining the treatment and disposal components of the system.

9. An evaluation of implementing additional source control measures to further reduce the remaining source material in the aquifer and soil beneath the facility. Such measures could include the implementation of additional measures in the aquifer where possible NAPL contaminants remain relatively unaffected by ground water extraction. ***(This section should provide for an evaluation of whether source areas are captured by the on-site source containment system. If it is concluded that they are not, additional measures to achieve that goal should be proposed. This section also should provide that if contaminant concentrations above 1000 ppb TCE are initially detected in the new monitoring well, then an evaluation shall be prepared and submitted to EPA for approval addressing whether there is an uncaptured source area upgradient from the new well. If this report concludes that there are additional source areas, then additional source containment measures should be proposed.)***

E. Corrective Measure Completion Report

The completion of the containment corrective measure is dependent upon the system implemented for ground water restoration and therefore, does not necessarily apply to source containment.

The purpose of the Corrective Measure Completion Report is to fully document how the Performance Standards have been satisfied and to justify why the corrective measure and/or monitoring may cease. The Corrective Measure Completion Report shall, at a minimum, include the following elements:

1. Synopsis of the corrective measure;

2. Demonstration that the Performance Standards have been met. Include results of testing and/or monitoring, indicating how operation of the corrective measure compares to the completion criteria;

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3. Summary of work accomplishments (e.g., performance levels achieved, total hours of treatment operation, total treated and/or excavated volumes, nature and volume of wastes generated, etc.);

4. Summary of significant activities that occurred during operations. Include a discussion of problems encountered and how they were addressed;

5. Summary of inspection findings (include copies of key inspection documents in appendices); and

6. Summary of total operation and maintenance costs.