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Part 1 of 2

FROM: Michael T. Donnellan (202) 514-4226
DATE: September 4, 1998
NUMBER OF PAGES (including cover sheet): 20
SUBJECT: Albuquerque v. Sparton Technology, Inc., No CIV 97 0206 (D.N.M.)

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MESSAGE: 09/04/98 Letter from Donnellan to Harris transmitting outlines for the Off-Site and SVE Workplans



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Environment and Natural Resources Division
Environmental Enforcement Section

MTD

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Inadmissible as evidence

4 September 1998

By telefax and first class U.S. mail

James B. Harris

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Re: Albuquerque v. Sparton Technology, Inc., No. CV-97-0206 (D.N.M.)

Dear Jim:

Enclosed please find proposed outlines for the Off-Site Containment and SVE Workplans. These outlines reflect plaintiffs effort to relate the substance of our settlement discussions to the February 1998 Final Administrative Order. In the attached outlines, the text in regular type reflects items specifically required by the Administrative Order. In order to be approved under the Administrative Order, any workplan would need to address these items. The text in ***bold/italic*** type reflects plaintiffs suggestions as to how specific elements of the settlement which we have discussed could fit within the structure of the Administrative Order. If you have any questions regarding these outlines, please feel free to contact me.

Sincerely,

Michael T. Donnellan

c: counsel of record

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**GROUND WATER EXTRACTION CORRECTIVE MEASURE-
OFF-SITE CONTAINMENT (Task V of the Final Administrative Order)**

As set forth in the Final Administrative Order, Section A below addresses all groundwater investigation requirements, not just the investigation requirements regarding off-site containment of the leading edge of the plume. The Work Plan for Installation of Additional Wells and Conducting a Pump Test In the Area of the Leading Edge of the Contaminant Plume ("the PI Workplan") satisfies all of the requirements of Section A below with regard to off-site containment. No additional submissions are required with regard to investigatory requirements to design a system for off-site containment. For other investigation purposes (i.e., restoration and source control), those investigation requirements are to be addressed in the source control and restoration workplans.

A. Ground Water Investigation Workplan**1. Project Management Plan**

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, and the necessary level of precision and accuracy for these intended uses;
- (2) Description of methods and procedures to be used to assess the precision, accuracy, and completeness of the measurement data;

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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. Examples of factors which shall be considered and discussed include:

- (a) Environmental conditions at the time of sampling;
- (b) Number of sampling points;
- (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, depths, etc.;
- (2) Determining a statistically sufficient number of sampling sites;
- (3) Determining which media are to be sampled (e.g., ground water, etc.);
- (4) Determining which parameters are to be measured and where;
- (5) Selecting the frequency of sampling and length of sampling period;
- (6) Selecting the types of samples and number of samples;
- (7) Documenting field sampling operations and procedures, including:
 - (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;

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- (i) Sampling order; and
 - (j) Decontamination procedures.
- (8) Selecting appropriate sample containers;
 - (9) Sample preservation; and
 - (10) Chain-of-custody, including:
 - (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**

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;

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- (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.

e. **Sample Analysis**

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 systems audits and frequency, including:

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- 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

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).

b. Tabular Displays

The following data is presented in tabular displays:

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- (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 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 maximal 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**

It is anticipated that Sparton will submit a workplan that addresses Sections B1, B2, B3, and B4 listed below as soon as possible. Plaintiffs would review these workplans in a timely manner so that the containment system would be able to continue operation after completion of the PI Workplan. Since the PI Workplan data is not yet available, any approval of these workplans would be conditional upon the PI Workplan data being consistent with and supported of the proposed design of the off-site containment system. If the data, once collected, is not consistent with the basis of the design within the workplans, then the design would need to be modified.

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 PI 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 off-site containment system, should be compiled and set forth in***

ATTORNEY-CLIENT PRIVILEGED**Prepared for Counsel****Confidential Settlement Document-Not for Public Release****Prepared in Anticipation of Litigation*****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 off-site containment system does not perform as predicted, then it may be necessary to collect additional information in these areas. The off-site containment workplan need not propose the collection of additional information in these areas. The Corrective Measures Assessment Report described in Section D below should provide that if the off-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;
 - (4) Zones of higher permeability or lower permeability that might direct and restrict the flow of contaminants;
 - (5) Cross sections showing the extent (depth, thickness, lateral extent) of hydrogeologic units which may be part of the migration pathways;
 - (6) Water-level contour and/or potentiometric maps; and
 - (7) Hydrologic cross sections showing vertical gradients.
- c. Definition of the containment area (two-dimensional) and volume (three-dimensional); ***The parties are agreed that the area to be contained will be defined by the area where groundwater is contaminated by levels exceeding MCLs/ WQCC, whichever is lower. It is anticipated that Sparton will define this area using water quality monitoring data.***

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- d. Appropriate data and analyses for the design and implementation of a ground water extraction system, treatment system, and disposal system. This shall include the appropriate field pilot test(s), aquifer test(s), etc., to provide data to determine design parameters and projected effectiveness of the full-scale ground water extraction system, treatment system, and disposal system. The ground water extraction system shall be capable of hydraulically containing the contaminant plume, and reducing contaminant concentrations to comply with the cleanup goals by maximizing contaminant mass removal and minimizing cleanup time. *This section of the CAP describes the underlying purpose for collecting the data listed in other sections. The Plaintiffs understand that the data specified in other sections satisfies the purposes described here, therefore, no specific submission is required with respect to this section. To the extent that this section addresses the purpose of collecting data to design a groundwater extraction system that will maximize contaminant mass removal and minimize cleanup time, the collection of data for that purpose will be addressed in the restoration work plan.*
- e. The necessary contaminant reductions (e.g., volatile organic compounds, chromium, etc.), in the extracted ground water to comply with Federal, State, and local standards prior to disposal; *(The workplan can simply note that the extracted groundwater from the off-site containment system will be treated and disposed of pursuant to a State of New Mexico ground water discharge permit and attach a copy of the permit)* and
- 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 that the extracted groundwater from the off-site containment system will be treated and disposed of pursuant to a State of New Mexico ground water discharge permit and attach a copy of the permit)*

2. Design Plans and Specifications

Plaintiffs understand that Sparton has already begun designing the off-site groundwater 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.

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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 Workplan

Plaintiffs understand that Sparton has already begun construction of the off-site groundwater containment system. Under the 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 purpose of the Construction Workplan is to document the overall management strategy, construction quality assurance procedures, and schedule for constructing the corrective measure. The Construction Workplan 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

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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.
- 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, 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 all appropriate regulatory entities including EPA and NMED, shall be included in the Construction Workplan.
 - (2) The Construction Workplan shall specify that in the event of a construction emergency (e.g. fire, earthwork failure, etc.), Sparton shall orally notify all appropriate regulatory entities including EPA and NMED within twenty-four (24) hours of the event, and shall notify all appropriate regulatory entities including 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.

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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 Sparton 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 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 & 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

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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.).
- 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-

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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 parties are agreed that the groundwater monitoring program plan will be expanded to include all routine data gathering. Plaintiffs anticipate that this expanded Ground Water Program Plan will include the collection of data described in this section. The O&M Plan can simply state that the data gathering 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 all the

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appropriate regulatory authorities including EPA and NMED within twenty-four (24) hours of the event, and shall notify the same parties 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.

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 well installations, it does not address all the aspects of the Off-Site Containment Ground Water Extraction Corrective Measure. Therefore a revised Health and Safety Plan which includes the activities associated with the Off-Site Containment Work plan should be submitted.

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

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

C. Construction Completion Report

This report should be developed upon completion of the construction of the containment system described within the Off-Site Containment Workplan. Therefore, no additional items are required at this time.

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 Workplan For The Evaluation Of the Off-site Containment System Performance, dated July 14, 1998, generally addresses the requirements of this section, except where specifically noted below. The Plaintiffs anticipate that a revised version of this workplan will be submitted at the same time as the Design Workplan, the Construction

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Workplan and the Operations and Maintenance Workplan. The parties are agreed that periodic evaluation reports shall be submitted on the schedule provided in the July 14, 1998 workplan.

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; ***The parties are agreed that the hydraulic data will be the primary data utilized to evaluate the effectiveness of the off-site containment system. The parties are also agreed that chemical data will be collected and evaluated to determine whether it provides useful information in evaluating the effectiveness of the off-site containment system. The workplan should provide for evaluation of both types of data.***
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; ***Since this item will be addressed in the Operations and Maintenance Plan it is not necessary to provide this information again;*** and

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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.

The workplan may also state that the parties are agreed that if the off-site containment system described in the design workplan is able to contain the plume utilizing a pumping rate ranging from 100 to 200 gpm, the parties reasonably anticipate that no more than one additional monitoring well will be required in the leading edge of the contaminant plume.

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 applies to Restoration and Source Control and, therefore, the Corrective Measure Assessment Report for the off-site containment system need not address this item.*

E. Corrective Measure Completion Report

This report will not be submitted until cleanup is completed. Therefore, there need be no submissions at this time.

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;

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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;
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.

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FROM: Michael T. Donnellan (202) 514-4226
DATE: September 4, 1998
NUMBER OF PAGES (including cover sheet): 20
SUBJECT: Albuquerque v. Sparton Technology, Inc., No CIV 97 0206 (D.N.M.)

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MESSAGE: 09/04/98 Letter from Donnellan to Harris transmitting outlines for the Off-Site and SVE Workplans

Part 2 of 2

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SOIL VAPOR EXTRACTION CORRECTIVE MEASURE (Task IV of the Final Administrative Order)

The following activities have been conducted regarding the Vadose Zone Investigation::

- *Sparton submitted a Vadose Investigation Workplan dated May 18, 1998.*
- *Conference call among parties on June 18, 1998*
- *The parties met on July 14, 1998 to discuss the workplan*
- *Plaintiffs provided comments on the plan on July 20, 1998*
- *Conference call among parties on July 28, 1998*
- *Parties discussed issues during the Settlement Conference on July 30, 1998*
- *Sparton provided response to the Plaintiffs July 20, 1998 comments on August 5, 1998*
- *Conference call among parties on August 14, 1998*
- *Conference call among parties on August 19, 1998*
- *Parties discussed issues during the Settlement Conference on August 26, 1998*

Pursuant to the written documents and subsequent discussions, the parties are in general agreement regarding the vadose zone investigation workplan and the design of the soil vapor extraction (SVE) system.

The Plaintiffs expect that Sparton will submit a vadose zone investigation workplan as soon as possible. The Vadose Zone Investigation Workplan will be sufficient to support a design utilizing a 500 cfm blower system and capable of removing soil gas contamination in the deep vadose zone.

The most practical approach would be to submit a Design Workplan, a Construction Workplan, and Operations & Maintenance Plan together with the Vadose Zone Investigation Report for the SVE system after the Vadose Zone Investigation has been completed. The Final Administrative Order calls for submission of these plans and reports within 210 days following approval of the Vadose Zone Investigation Workplan.

A. Vadose Zone Investigation Workplan

The Vadose Zone Investigation Workplan includes the following plans:

1. Project Management Plan

This section can simply serve as an Executive Summary to the Vadose Zone Investigation

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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 soil vapor extraction system.

2. Data Collection Quality Assurance Plan

The 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 addresses the following:

a. Data Collection Strategy

The Data Collection Strategy includes the following:

- (1) Description of the intended uses for the data (*As per Sparton's 8/5/98 Response Comment No. 1, the plaintiffs understand that the intended use of the data is to confirm the estimated limits of soil vapor contamination*), and the necessary level of precision and accuracy for these intended uses (*As per Sparton's 8/5/98 Response Comment No. 10, the Plaintiffs understand the level of precision and accuracy for these intended uses will be detection limit of less than 10 ug/L or less used to define the 10 ppmv limit*);
- (2) Description of methods and procedures to be used to assess the precision, accuracy, and completeness of the measurement data (*The Plaintiffs anticipate that the standard QAPP, prepared by the laboratory selected by Sparton to do this work, will be attached to the Vadose Zone 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 define the 10 ppmv isoconcentration contour. If current locations are not*

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adequate then additional probes will be added as stated on page 8 of Sparton's work plan dated 5/18/98.) Examples of factors to be considered and discussed include:

- (a) Environmental conditions at the time of sampling;
- (b) Number of sampling points; *(The parties agreed to the number of sampling points at the settlement conference on 7/30/98, however Sparton should submit a map with all of the locations identified.)*
- (c) Representativeness of selected media; and
- (d) Representativeness of selected analytical parameters.

b. Sampling

The sampling section discusses the following:

- (1) Selecting appropriate sampling locations, depths, etc.;

Note: By agreement of the parties on August 26, 1998, the workplan need not address "deep vadose zone" or capillary fringe characterization since a robust (500 cfm blower system) SVE system will be installed.

- (2) Determining a statistically sufficient number of sampling sites; *(As per EPA's 7/20/98 Comment No. 3, discussions during the 7/30/98 settlement conference, and Sparton's 8/5/98 Comment No. 3 the parties agreed to a sufficient number of sampling sites. With regard to the data point inside the building, the workplan should provide that the final location will be subject to approval by EPA.)*
- (3) Determining which media are to be sampled (e.g., soil, soil gas, etc.); *(As per Sparton's 8/5/98 Comment No. 4, soil gas will be sampled.)*
- (4) Determining which parameters are to be measured and where *(As stated in the 5/18/98 Workplan, p. 7 and Sparton's 8/5/98 Response, Comment No. 5, Sparton will analyze two samples from each probe location for the volatile parameters using SW-846 Method 8260);*

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- (5) Selecting the frequency of sampling (*Sparton stated in the 8/5/98, Response No. 5 that the frequency will be two samples from each probe location*) and length of sampling period (*The workplan should estimate the length of time it will take to complete the sampling event*);
- (6) Selecting the types of samples and number of samples to be collected; (*The number and types of samples are two soil gas samples from each probe location as stated in the 8/5/98 document comment No. 5. The Workplan should propose an adequate number of QA/QC samples.*)
- (7) Documenting field sampling operations and procedures, including:
 - (a) Procedures and forms for recording the exact location and specific considerations associated with sample acquisition; *If Sparton requests, EPA will provide standard procedures to be utilized during the soil gas sampling. A modified version of forms used during sampling of the AcuVac should be acceptable.*
 - (b) Calibration of field devices; *The workplan should provide the manufacturer's calibration procedures for all sampling equipment utilized during the soil gas sampling.*
 - (c) Collection of replicate samples; *The workplan should propose the collection of replicate samples to verify results.*
 - (d) Construction materials and techniques associated with soil vapor monitoring probes/wells; (*The information provided in the workplan dated 5/18/1998 p. 7, and Sparton's 8/5/98 response, Comment No. 4 adequately describes most of the equipment. Sparton should supplement its submittals by providing additional information regarding the specific equipment to be used with regards to the drive point and the retractable tip.*)

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- (e) Field equipment listing and sample containers (*In the 8/5/98 response to comment No. 4, Sparton proposes to use field equipment which is identical to those used in the CMS. This equipment should be adequate, however both the field equipment and the sample containers to be used should be specified in the Vadose Zone Investigation workplan*); and
 - (f) Decontamination procedures (*Assuming that all equipment to be used, except the drilling rig, will be dedicated, the workplan should specify decontamination procedures for the drilling rig. If other non-dedicated equipment or devices are used decontamination procedures should also be provided*).
- (8) Selecting appropriate sample containers (*Information provided pursuant to item A.2.B.7.(e) should satisfy this requirement*); and
 - (9) Chain-of-custody (*There is a Sampling Plan Procedure in SW-846 which describes chain-of-custody*), including:
 - (a) Standardized field tracking reporting forms to establish sample custody in the field prior to shipment (*Field tracking reporting forms selected should meet sample custody requirements outlined in SW-846*); and
 - (b) Pre-prepared sample labels containing all information necessary for effective sample tracking (*Sample label information is provided in the Sampling Plan Procedure in SW-846*)

c. Field Measurements

The Field Measurements section discusses the following:

- (1) Selecting appropriate field measurement locations, depths, etc. (*Pursuant to our agreement, PID, vacuum and flow measurements will be collected from every 5 foot interval at each agreed upon location*);

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- (2) Providing a statistically sufficient number of field measurements *(Pursuant to EPA's 7/20/98, Comment No. 3, the 7/30/98 Settlement conference, and the Sparton 8/5/98 Response Comment No. 3, the proposed number of sampling points should provide a statistically sufficient number of field measurements);*
- (3) Measuring all necessary ancillary data; *(Pursuant to our agreement, PID, vacuum and flow measurements will be collected from every 5 foot interval at each agreed upon location)*
- (4) Determining conditions under which field measurement should be conducted; *(The workplan should state that if problems occur during sampling, such as excessive vacuums, or apparent clogging of pipe probes, then sampling will cease until the problem is corrected.)*
- (5) Determining which media are to be addressed by appropriate field measurements (e.g., soil, soil gas, etc.); *(The plan can simply state that soil gas is the medium to be measured.)*
- (6) Determining which parameters are to be measured and where; *(The plan should state where vacuum and PID measurements will be taken.)*
- (7) Selecting the frequency of field measurement and length of field measurements period; *(The workplan should provide that vacuum and PID measurements should be continuously obtained during purging. Purging may cease upon stabilization of PID readings and observations that there are no significant fluctuations in vacuum readings. Immediately after purging, samples can be collected. The work plan should also estimate the length of time it will take for the field measurements to be completed.), 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

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associated with the data acquisition; *(The workplan shall specify the procedures for taking the vacuum and PID measurements. If Sparton requests, EPA will provide procedures to satisfy this requirement. The work plan should provide an example of the forms used for documenting the field measurements.*

- (b) Calibration of field devices; *(The work plan should provide the manufacturer's calibration procedures of all sampling equipment used during the collection of field measurements.*
- (c) Collection of replicate measurements; *(The workplan should propose the collection of replicate field measurements to verify results.)*
- (d) Construction materials and techniques associated with soil vapor monitoring wells used to collect field data; *(The Workplan will provide a diagram and description illustrating how the field measurement devices will be connected to the soil vapor probes or vapor monitoring wells.)*
- (e) Field equipment listing; *[The work plan shall provide a listing of all field equipment that will be used. The appropriate PID for this application is an OVM PID (Thermo Environmental Equipment, Inc.). Its design provides improved performance with humid gas streams such as soil gas.]*
- (f) Order in which field measurements were made (*The work plan should specify that the vacuum and PID measurements should be performed simultaneously*); and
- (g) Decontamination *procedures. It is assumed that all equipment will be dedicated. In the event there is non-dedicated equipment, the workplan should identify the equipment and describe the decontamination procedures to be used.*

d. Contaminated Material Disposal

All contaminated material generated by soil vapor investigation activities

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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 Soil Vapor 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 systems audits and frequency, including:
 - 1) Method blank(s);
 - 2) Laboratory control sample(s);

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- 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 shall identify and set 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 the conclusions of the investigation. The plan addresses 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).

b. Tabular Displays

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

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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, soil layer, topography); and
- (5) Summary data.

c. Graphical Displays

The work plan 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 vadose zone contamination.

B. Soil Vapor Extraction Project

Upon completion of the Vadose Zone Investigation, Sparton shall prepare a Vadose Zone Investigation Report, and submit workplans for a Design, Construction, and Operations and Maintenance of the SVE system agreed to by all parties during the 8/26/98 Settlement conference. The Vadose Zone Investigation Workplan should state that the Investigation Report and associated workplans will contain the following elements.

1. Vadose Zone Investigation Report

The Vadose Zone Investigation Report includes the following:

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- a. The location and extent of lithologic units which may control the fate and transport of contaminants in the vadose zone. Based on field data and tests, a representative and accurate description of the subsurface stratigraphy in the vadose zone which is a part of the migration pathways at the Facility, including:
 - (1) Lithology, grain size, sorting;
 - (2) Zones of higher permeability or lower permeability that might direct and restrict the flow of contaminants; and
 - (3) Cross sections showing the extent (depth, thickness, lateral extent) of units which may be part of the migration pathways;
- b. A description of the nature and extent, both horizontally and vertically, of contamination in the vadose zone. The description shall include maps of the horizontal and vertical extent *[Pursuant to the agreement, the vertical extent of the vadose zone will only be delineated to the depth of refusal for the pipe probes, contingent upon implementation of a more robust system]*, including concentration profiles of the contaminants originating from the source area(s) at the Facility in both the soil matrix and soil gas; and
- c. The appropriate data for the design and implementation of a soil vapor extraction system. This shall include a field pilot test to provide data to determine design parameters and projected effectiveness of the full-scale soil vapor extraction system.

2. Design Plans and Specifications

The Design Plans and Specifications for the Soil Vapor Extraction Corrective Measure consist of the detailed drawings and specifications needed to construct the corrective measure(s). The Design Plans and Specifications shall, at a minimum, include the following documents:

- a. General Site Plans;
- b. Process Flow Diagrams;
- c. Mechanical Drawings;
- d. Electrical Drawings;

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- 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 Workplan

The purpose of the Construction Workplan for the Soil Vapor Extraction Corrective Measure is to document the overall management strategy, construction quality assurance procedures, and schedule for constructing the corrective measure. The Construction Workplan includes the following elements:

- a. **Project Management:** Describes the construction management approach including levels of authority and responsibility (include organization chart).
- b. **Project Schedule:** The project schedule specifies 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:** Describes 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. *It is understood that a new or modified permit will be required by the City of Albuquerque, Department of Air Quality.*
- 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. Sparton shall use quality assurance, quality control, and chain-of-custody procedures 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).

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 all appropriate regulatory authorities including EPA and NMED, shall be included in the Construction Workplan.
- (2) The Construction Workplan shall specify that in the event of a construction emergency (e.g. fire, earthwork failure, etc.), Sparton shall orally notify the appropriate regulatory authorities including the EPA and NMED within twenty-four (24) hours of the event, and shall notify the appropriate regulatory authorities including 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

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A cost estimate that includes both corrective measure construction and operation and maintenance costs. The purpose of the cost estimate is to assure that Sparton 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 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 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 phases 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 soil vapor extraction and treatment

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system and identify and describe significant equipment.

- 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 will 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:
 - (1) monitoring objectives;
 - (2) the types of measurements to be made (e.g., vapor pressure,

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- contaminant concentrations, 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 Completion Report.

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 all appropriate regulatory agencies including the EPA and NMED within twenty-four (24) hours of the event, and shall notify all appropriate regulatory agencies including 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.

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- 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 Completion Report.

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 well installations, it does not address all the aspects of the Soil Vapor Extraction Corrective Measure. Therefore, a revised Health and Safety Plan which includes the activities associated with the Soil Vapor Extraction System should be submitted.

6. Commencement of Construction

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

C. Construction Completion Report - Soil Vapor Extraction Project

Upon construction and implementation of the SVE system, a Construction Completion Report will be developed and submitted.

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

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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 Completion Report

It is anticipated that Sparton will continue operating this system until soil gas concentrations are reduced in the monitoring locations described within the approved Operations and Maintenance Plan drop below 10 ppmv for a time period approved by EPA.

The Corrective Measure Completion Report documents how the Performance Standards have been satisfied, justifies why the corrective measure and/or monitoring may cease. The Corrective Measure Completion Report includes 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;
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

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discussion of problems encountered and how they were addressed;

5. Summary of inspection findings (include copies of key inspection documents in appendices);
6. Summary of total operation and maintenance costs; and
7. 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 (e.g., incorporating an air sparging system with the soil vapor extraction system) in the aquifer where possible nonaqueous phase liquid (NAPL) contaminants remain relatively unaffected by ground water extraction.