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December 7, 1996

Ana Marie Ortiz
Assistant General Counsel
State of New Mexico
Environment Department
Harold Runnels Building
1190 St. Francis Drive
P. O. Box 26110
Santa Fe, New Mexico 87502



Re: Proposals for: (1) Aquifer Test/Extraction Demonstration/Additions to Monitoring Network; (2) Vapor Extraction System Pilot Testing; and (3) Expansion of Interim Measures

Dear Ana:

I am pleased to enclose with this letter the above-referenced proposals, subject to the following conditions.

With respect to the proposal to conduct an aquifer test/extraction demonstration/additions to monitoring network, Sparton must have authorization from NMED, EPA, or both to allow long term discharge of recovered and treated groundwater to the Calabacillas Arroyo or feel comfortable before implementing that proposal that it will receive such authorization.

When Jan and I met with you in Santa Fe in October to discuss obtaining discharge plan approval, we left that meeting with the understanding that the state would be unwilling to approve a discharge plan until a final remediation plan had been agreed to by all interested parties. Based on subsequent telephone conversations and letters, including your most recent letter of December 2, 1996, we now understand that NMED is willing to consider approving a discharge plan, in the absence of a completed and approved remediation plan for our facility at Coors Road.

If you will confirm to me in writing that our understanding is correct, Sparton is willing to proceed to develop and submit, hopefully in the next 30 days, a discharge plan. If we are comfortable such an application will be: (1) processed as promptly as possible; (2) considered without reference to whether final agreement has been reached on remediation, by all interested parties; and (3) will result in an authorization that will allow

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us to operate a containment system without final resolution of all remediation issues, we would be prepared to implement our proposal.

Additionally, we are planning to meet with EPA on Monday to discuss whether an NPDES permit is necessary. Any action by us to move forward in seeking an NPDES permit, would be with the understanding that approval of such an application will be expedited. If EPA issues Sparton an NPDES permit to discharge to the arroyo, will we need to obtain approval of a discharge plan, or is the process for obtaining approval of a discharge plan merely simplified?

With respect to the proposal to expand the interim measure, we cannot take any action until we have some place to discharge the greater volume of water generated through that activity. The city of Albuquerque has unequivocally said we cannot put the new volume into the sanitary sewer system. The only economical way for us to handle that water is through a discharge to the Calabacillas Arroyo. To do so we must have either an approved discharge plan, an NPDES permit or both. Without one or both of these we are not in a position to recover any more water. We are willing to put together the necessary applications, if we are comfortable that NMED or EPA or both intend to expeditiously process such applications, will not condition the issuance of any such authorizations on agreement about final remedy selection associated with our Coors Road facility, and support our proposal to discharge to the arroyo.

I also want to make it clear that as requested in your letter of October 17, 1996, all three proposals are subject to the following conditions:

- (1) NMED reserves the right to disapprove the adequacy or accuracy of the results of any tests we conduct.
- (2) It is NMED's position that the horizontal and vertical extent of the plume has yet to be adequately defined.
- (3) That NMED's approval of our proposal shall in no way constitute an approval, expressed or implied, of any remediation or containment system design.
- (4) That NMED does not currently consider the on-site interim pump-and-treat system, even as expanded in our proposal, to necessarily provide on-site groundwater containment.

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- (5) That discretionary field decisions shall be agreed to by NMED and Sparton at the time a decision is needed.

We understand that within seven (7) days after receiving these proposals, we will hear from Rob Pine as to whether they have been approved or disapproved. If disapproved, we will be provided NMED's specific concerns.

Within 90 days from the date Sparton receives NMED's approval of the soil vapor pilot test proposal, we will submit a report.

Setting a more definitive schedule for the other two proposals is a bit problematic, given that they are dependent upon either receiving authorizations to discharge recovered and treated water to the arroyo, or Sparton obtaining sufficient comfort to believe that such authorizations will be received. We intend to use our best efforts to obtain all federal, state and local approvals necessary to implement these proposals, including but not limited to discharge plans, permits and necessary zoning changes, but those approvals are largely out of our control.

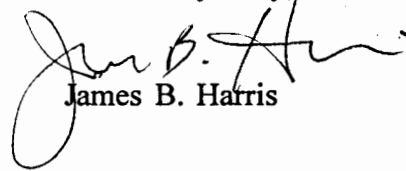
Upon approval of our proposals for the aquifer test/extraction demonstration/additions to monitoring network, and expansion of interim measures, we will provide you a flowchart identifying the authorizations we need, whether they have been sought or the time in which they will be sought, and an estimate of when they might be received. As set forth in our proposals for activities other than soil vapor extraction, we believe the field work required by those proposals can be completed within five (5) months of the date we either have necessary authorizations to discharge recovered and treated water to the arroyo or comfort that they will be issued. A report on the pump test activities could be submitted one month later.

I add that in conjunction with any field work, we will provide NMED with one week prior notice. We will allow you to take split samples. We will provide you a copy of all final analytical data and final deliverable reports.

I have taken the liberty to send, by federal express, a copy of this letter and our proposal to Rob and to Dave Fishel at DOJ. I suggest that we schedule a conference call when Rob is prepared to discuss any comments he may have on the proposals, and at that time we also see if we can reach closure on the discharge issue.

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Yours very truly,



James B. Harris

JBH/eshd

cc: Mark Weidler, NMED Secretary
Rob Pine, NMED
David Fishel, DOJ
R. Jan Appel, Sparton
Pierce Chandler, Black & Veatch

40310 00001 LERA 53980

PROPOSAL

**Aquifer Testing/Extraction Demonstration/ Additions to Monitoring
Network**

**Coors Road Facility
Sparton Technology, Inc.
Albuquerque, New Mexico**

Prepared for:

**Sparton Technology, Inc.
Rio Rancho, New Mexico**

Prepared by:

**Black & Veatch
Dallas, Texas**

in Association With

**Metric Corporation
Albuquerque, New Mexico**

Revised, December 6, 1996

Objectives

The objectives are:

1. To verify aquifer characteristics (through multiple well pump testing) in the vicinity of the leading edge of the plume.
2. To demonstrate/document the ability of a single well to intercept or capture the leading edge of the contaminant plume to prevent further down-gradient migration above MCL.
3. To install additional groundwater monitoring wells and a piezometer to further define plume limits and provide additional pump test data.

Definition of Plume Leading Edge

In the RCRA Facility Investigation (RFI) Report submitted to USEPA on May 21, 1992, and subsequently approved on July 1, 1992, the horizontal and vertical limits of the plume were defined by sampling and analysis through June 1991 using both on- and off-site groundwater monitoring wells. In particular, the leading edge of the plume was defined by a number of non-detect groundwater monitoring wells outside the perimeter of the plume.

Subsequent to the RFI completion, plume movement continued beyond the existing groundwater monitoring system. However, based on historic movement, groundwater gradient, and relatively constant geologic conditions (which are themselves heterogeneous and anisotropic), the limits of the leading edge of the plume were estimated in the May 1996 Corrective Measure Study (CMS) Report. This further definition was continued by five additional groundwater monitoring wells (MW-65 through MW-69) installed around and outside the predicted limits of the plume. Well locations were chosen to provide additional definition of the horizontal and vertical extent of the leading (down-gradient) edge of the plume through non-detection. These and other non-detect wells around the leading edge provide good definition of the plume.

Pump Test Location

Based on the currently defined plume limits and characteristics, a single well located along Bryan Avenue, some 250 feet north of Arrowhead Avenue (see Figure 1) is

proposed for the test well location. This location was developed during the meetings on September 26 and 27, 1996, and represents a developed building lot (Lot 46, Block 29) available for purchase by Sparton. The Paradise Hills area above the leading edge of the plume is currently undergoing significant development including major grade changes, paving, and utility installation. Location of the pump test well on an already developed lot assures that pump testing can continue without interruption. Secondly, placement of the pump test well on a private lot (as compared to the public right-of-way) increases security of the installation and allows above-ground well head completion details. Thirdly, if any pretreatment of produced water is needed, there is ample room for equipment at the well head. Finally, use of a developed lot provides access to both sanitary and storm sewers.

Available Groundwater Monitoring Network

The attached Table 1 is a summary of monitoring points available to verify the performance of a groundwater pump test well installed near the leading edge of the plume.

With respect to the attached summary (see Table 1), there are 22 existing groundwater monitoring wells (including 7 clusters) within 1,500 feet of the proposed recovery well (see Figure 1). These wells include 12 in the upper flow zone (UFZ), five in the upper lower flow zone (ULFZ), four in the lower lower flow zone (LLFZ), and one in the third flow zone (TFZ). There are five down-gradient, five cross-gradient, and 12 up-gradient wells.

The available monitoring network includes all wells that currently define the limits of the leading edge of the plume. The network includes all non-detect monitoring wells outside the plume and detection wells inside the plume. This combination of wells was used to define the plume and is, therefore, capable of showing single-well containment feasibility by demonstrating inward flow (toward the pump test well) across the entire leading edge of the plume. Conversely, the existing groundwater monitoring network is also capable of detecting any deficiency of the proposed pump test well relative to influence over the entire leading edge of the plume. Pump test well performance can be monitored thorough continuing water level observations and water quality sampling and analyses in the groundwater monitoring well network.

Pump Test Well Design

The pump test well will be screened through the entire vertical interval of the plume as defined by installation activities. Temporary casing and sampling will be used to determine the vertical limits of the plume during drilling. Screen depth may be further adjusted downward, as necessary, based on pilot hole logging to ensure screen placement into a transmissive zone.

The pump test casing/screen will be sized to accommodate a pumping rate of up to 200 gpm. Previous calculations have shown that pumping rates of half as much (100 gpm) should provide influence over the entire leading edge of the plume. Actual pumping rate will be a function of the aquifer transmissivity at the pump test location and available drawdown based on the completion depth of the well.

Water from the pump test will be routed to the sanitary sewer adjacent to Lot 46. The existing New Mexico Utilities sanitary sewer can accept up to 200 gpm discharge without difficulty. Due to the prevailing wastewater pretreatment requirements and anticipated quality of the produced groundwater, treatment will not be required for discharge to the sewer. However, if needed, produced water will be treated prior to discharge into the sewer.

Additions to Existing Groundwater-Monitoring Network

An additional groundwater monitoring well, MW-70, clustered with separate piezometer, PZ-2, will be installed in the public right-of-way along Buckeye Street northwest of the pump test well location and existing cluster 10 (MW-60/MW-61). This new piezometer/well cluster would be located as shown on Figure 1.

The new well, MW-70, will be installed as a non-detect well to define the vertical limit of the plume. Temporary casing will be installed during drilling to allow sampling/analysis verification of plume limits prior to well installation. The vertical plume limits at MW-70 will be compared to the vertical plume limits at the previously installed pump test well. Anticipating MW-70 will be completed to a higher excavation than the bottom of the pump test well, the piezometer will be installed deeper to the same approximate bottom elevation as the pump test well. However, if MW-70 extends to approximately the same bottom elevation as the pump test well, then the piezometer would be installed in the uppermost portion of the aquifer. The purpose for the well/piezometer cluster is

to provide (a) vertical definition of the plume, and (b) vertical coverage of that portion of the aquifer penetrated by the pump test well.

A second non-detect monitoring well, MW-71, will be installed at the location of existing well cluster 4 (MW-15/MW-32/MW-41). This monitoring well will utilize temporary casing and sampling to verify non-detect screen placement below the existing cluster screen intervals. This well is intended for confirmation of vertical plume limits in a well-documented transverse flow cross-section up gradient of the proposed test well location. The new wells will be 4 inch schedule 40 PVC with 10-foot screens similar to those previously installed. The new piezometer will be 3/4 inch PVC with a five-foot screen.

Pump Test Procedures

A series of pumping tests will be conducted using the pump test well. The first pump test would be a two to three day test (with a temporary pump) used to determine the required size (pumping rate) for a longer-term containment demonstration test. In the initial test, time-drawdown data would be obtained from a constant-rate test at approximately 100 gpm to evaluate produced drawdown and impact to the closer monitoring wells. The resulting time-drawdown and distance-drawdown data would be analyzed to verify aquifer characteristics near the plume leading edge. The data would also be used to project the edge or limit of the pump test well influence relative to plume capture/containment. The initial pump test would also be used to establish produced water quality by sampling and laboratory analysis on a daily frequency. Flow rate, total pumped quantity, and monitor well levels will be recorded during the pumping test.

There are 22 existing wells and the proposed well piezometer cluster within 1,500 feet of the proposed pump test location. (See Table 1) Sixteen of the wells are within 1,000 feet and nine wells (and the single piezometer) are within 500 feet of the pump test well. Water level readings would be taken in the closest wells (<500 feet as detailed in Table 1) at a frequency of not less than once per hour for the first 24 hours, and three to four times daily for the remainder of the test. These wells include existing MW-48, MW-55, MW-56, MW-58, MW-60, MW-61, MW-67, and new MW-70 and PZ-2. Water levels would be obtained using calibrated electronic water level indicators with manual recording of level and date/time. Wells close to the pump test well (MW-60, MW-61, and the new MW-70 and PZ-2) will have dedicated water level indicators to allow increased reading frequency during the first few hours of the pump test. The more distant wells (>500 feet)

would be read at a reduced frequency, but at least three to four times daily. After pump shutdown, recovery data will be obtained at a similar frequency.

After the initial pump test has been conducted and verification of aquifer parameters obtained, a long-term (approximately one month) pumping test would be conducted using the pump test well and the monitoring network described in Table 1. The well would be pumped at a constant rate anticipated to be in the range of 100 to 200 gpm depending on the results of the initial pump test. Closer monitoring wells (<750 feet horizontal distance) would be read two to four times daily for the first several days, and once daily for the rest of the first week. More distant wells would be read daily for the first week. Thereafter, all well levels would be recorded once per week for the duration of the test. This second pump test would be used to demonstrate the plume area impacted by the pumping and the feasibility of single-well containment near the leading edge of the plume. Produced water would be sampled at approximately weekly intervals during the long-term pump test to provide information on water quality relative to pumping duration.

Contingency

There is at least one possible problem scenario that could be identified during the pump test. The location chosen for the pump test may have atypical or non-representative geology such as an absence of coarser, transmissive material in the saturated zone. Such a condition has been encountered in several monitoring wells.

Pilot hole logging procedures and installation of a temporary pump are two ways to minimize the effect of an unexpected geologic condition. As previously noted, screen length could be extended as a first solution. In the highly unlikely event the geologic condition was vertically extensive (tens of feet), consideration would have to be given to an alternate location.

Schedule

The schedule for implementing the plume leading edge containment is a dual concurrent track. The first track is the process of obtaining the necessary permits for installing and operating the containment well system. The permits could include air quality, well installation, groundwater rights, variance from zoning, public right-of-way use, and discharge to the sanitary sewer and/or storm sewer to the Calabacillas Arroyo.

Applications for permits or authorization are either being prepared or have been submitted.

The second track is the actual installation of the pump test well and additional monitoring wells/piezometers and conducting the pump test. The second track also presumes that track one has been successfully completed. Elements (and schedule estimates) for this second track are as follows:

1. Purchase property for the pump test wellhead (four to six weeks). Note that variance from zoning is required for purchase.
2. Review permits status.
3. Drill and install pump test well (two months).
4. Drill and install additional monitor wells and piezometers (one month).
5. Review permits status.
6. Construct secure area for well head/pump protection.
7. Install discharge pipeline to sanitary sewer.
8. Verify completion of permits.
9. Conduct initial three-day pump test, verify aquifer parameters, and install long-term pumping equipment (one month).
10. Conduct long-term pump test (one month).
11. Evaluate and report installation and test data (one month).
12. Review and approval of pump test report by NMED.

Based on the above estimates, the second track will take at least four months to actually begin test pumping.

SPARTAN WELLS MONITOR WELL LOCATION MAP OF SPARTAN TECHNOLOGY, INC. 2621 COOKS BOULEVARD N.W. DENVER, COLORADO 80202

PROPOSED PUMP TEST WELL LOCATION

- LEGEND**
- UPPER FLOW ZONE WELL
 - UPPER LOWER FLOW ZONE WELL
 - LOWER LOWER FLOW ZONE WELL
 - ▼ THIRD FLOW ZONE WELL
 - ★ PROPOSED NON-DETECT WELL LOCATIONS
 - ▲ PROPOSED PIEZOMETER, PZ-2

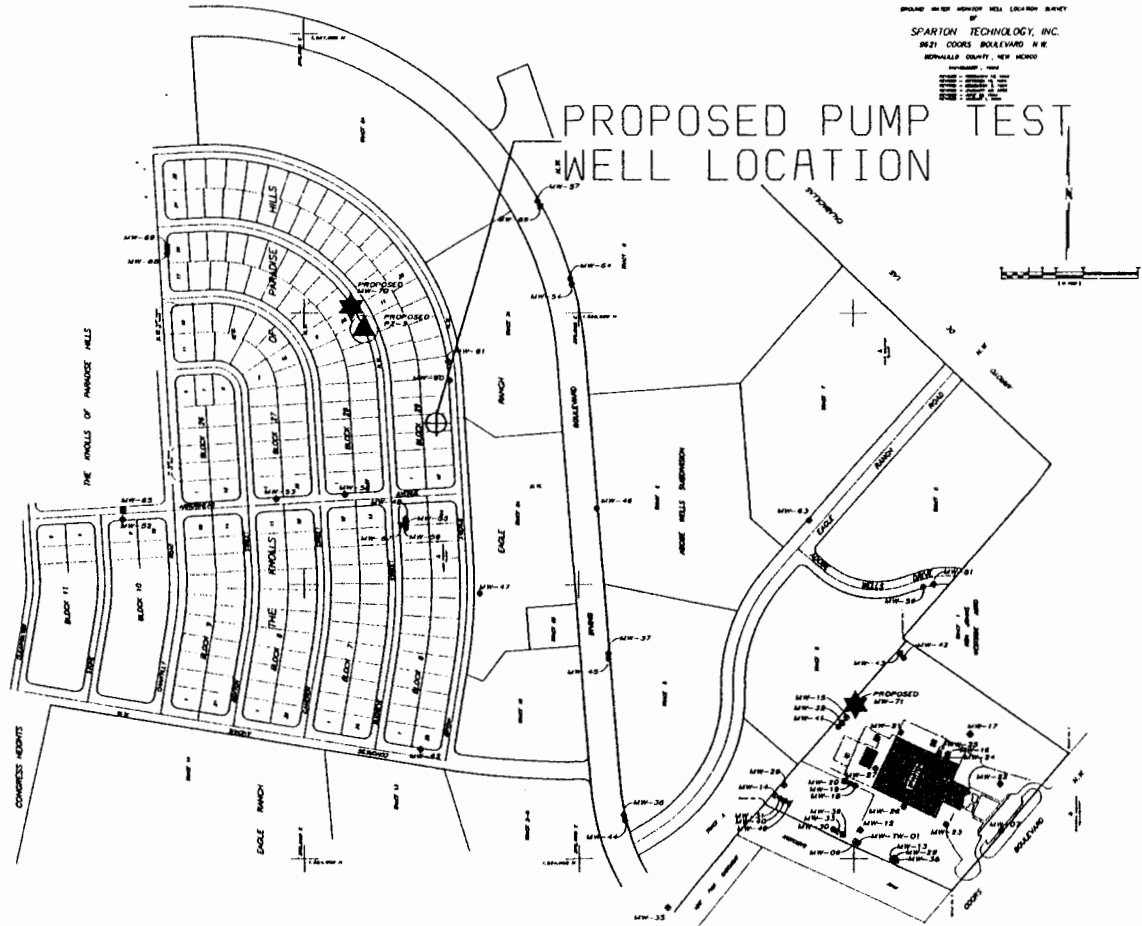


FIGURE 1

RECOVERY WELL AND MONITORING NETWORK

PROJECT NO. 26602



DESIGNED _____
 DETAILED _____
 CHECKED _____
 APPROVED _____
 DATE _____

NO.	BY	DATE	REVISIONS AND RECORD OF ISSUE

SHEET OF

Table 1
Summary of Groundwater Monitoring Wells Within
1500 Feet of Proposed Pump Test Well Location

Monitor Well	Flow Zone	Approx. Radial Distance ft	Gradient Position	Inside Plume*	Recent Contamination History**	Cluster Well
MW 37	UFZ	1,075	Up	Yes	High, Decr	Yes
MW 45	ULFZ	1,075	Up	Yes	Low, Decr	Yes
MW 46	ULFZ	675	Up	Yes	V. High	No
MW 47	UFZ	650	Up	Yes	Low, Decr	No
MW 48	UFZ	375	Up	Yes	High, Decr	Yes
MW 52	UFZ	1,200	Down	No	ND	Yes
MW 53	UFZ	700	Cross	Yes	Low	No
MW 54	UFZ	700	Up	NA	NA	Yes
MW 55	LLFZ	400	Up	Yes	High	Yes
MW 56	ULFZ	400	Up	Yes	High	Yes
MW 57	UFZ	900	Cross	No	ND	Yes
MW 58	UFZ	425	Up	Yes	High	No
MW 60	ULFZ	175	Up	Yes	High	Yes
MW 61	UFZ	225	Up	Yes	V. High, Decr	Yes
MW 62	UFZ	1,200	Up	No	<5 µg/l	No
MW-63	UFZ	1400	Up	No	No	No
MW 64	ULFZ	725	Up	Yes	Low, Incr	Yes
MW 65	LLFZ	1,175	Down	No	<10 µg/l	Yes
MW 66	LLFZ	875	Cross	No	ND	Yes
MW 67	TFZ	400	Up	No	ND	Yes
MW 68	UFZ	1,150	Down	No	ND	Yes
MW 69	LLFZ	1,175	Down	No	ND	Yes
MW-70	UFZ?	350±	Down	No	Proposed Well	Yes
PZ-2	LLFZ?	350±	Down	No?	Proposed Piezometer	Yes

- * Inside 5 µg/l contour
- ** Very high=>1,000 µg/l, high=>100 µg/l, low=<100 µg/l
 ND=no detect, Incr=increasing trend, Decr=decreasing trend

RECEIVED

DEC 09 1996

**NM ENVIRONMENT DEPARTMENT
OFFICE OF THE SECRETARY**

PROPOSAL

**Expansion of Interim Measures (IM)
Coors Road Facility
Sparton Technology, Inc.
Albuquerque, New Mexico**

Prepared for:

**Sparton Technology, Inc.
Rio Rancho, New Mexico**

Prepared by:

**Black & Veatch
Dallas, Texas**

in Association With

**Metric Corporation
Albuquerque, New Mexico**

Revised, December 6, 1996

Objectives

The objectives of this proposal are three-fold:

1. To address high volatile organic constituent (VOC) concentrations in groundwater at the location of groundwater monitoring wells MW-32 and MW-42.
2. To evaluate the cause of erratic VOC detections historically observed during periodic sampling of groundwater monitoring well MW-32.
3. To enhance interim onsite mass removal.

Lower lower flow zone (LLFZ) groundwater monitoring well MW-32 has historically exhibited erratic detections of volatile organic constituents (VOC). Periodically, it exhibits anomalously high concentrations relative to surrounding adjacent wells and also periodically exhibits anomalous constituents. Further, out of 13 cluster well locations, well MW-32 is the bottom well in the only cluster showing an increase in VOC concentration with depth.

The source of the erratic detections is a matter of speculation, but would include completion problems such as a defective grout seal or a cracked well casing allowing impacts of shallow contamination. Sampling procedures have been ruled out as a cause through detailed resampling and multiple split procedures.

One procedure to determine the cause of the erratic behavior would be to pump the well for an extended period and observe the effect on sampled water quality. If well MW-32 does represent a zone or area of higher VOC concentration, the extended pumping from this well would also be a form of source control and containment. It should be noted that MW-32 is also immediately downgradient of the source area. As detailed in the pump test proposal revised December 6, 1996, an additional non-detect monitor well is proposed below MW-32 to define the lower vertical limits of the VOC plume.

Upper lower flow zone (ULFZ) groundwater monitoring well MW-42 has historically exhibited high VOC concentrations and is outside the recovery area of the existing IM system. In addition, well MW-42 is also down gradient of the source area.

Proposed IM Expansion

The current IM system recovers a total of approximately 2 gpm from the upper portion of the aquifer. The treatment capacity of the IM system is 20 gpm. Well installation data for MW-32 and MW-42 indicate that combined systems pumping rates of 15 to 20 gpm could possibly be achieved. Actual production rate would be determined by installing a temporary pump in each well and conducting a limited pumping test to determine production pumping rate and drawdown. A production pump would then be sized and installed. Discharge would be routed to the existing onsite treatment unit. It should be noted that wells MW-32 and MW-42 are located close to the treatment unit -- allowing economical, secure connection. Increasing the recovery rate to 20 gpm is conditioned to the ability to obtain permits to either discharge to the sanitary sewer or, preferably, to discharge to the Calabacillas Arroyo through the existing storm sewer system.

Installation data would be included in a report updating the current onsite groundwater recovery well system. The report would be submitted to NMED for review and approval. Production and impact on water quality would be evaluated on a periodic basis and furnished as a part of the site operation reporting.

Schedule

The current IM system is permitted for a production of 20 gpm. Adding wells MW-32 and MW-42 to the IM system is simply a matter of conducting a limited pumping test for sizing purposes, and then installing the pump, controls, and connecting piping. It is estimated that wells MW-32 and MW-42 could be recovering water within two months of authorization to discharge treated water to the storm sewer entering the Calabacillas Arroyo.

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PROPOSAL

DEC 09 1996

NM ENVIRONMENT DEPARTMENT
OFFICE OF THE SECRETARY

**Vapor Extraction System Pilot Testing
Coors Road Facility
Sparton Technology, Inc.
Albuquerque, New Mexico**

Prepared for:

**Sparton Technology, Inc.
Rio Rancho, New Mexico**

Prepared by:

**Black & Veatch
Dallas, Texas**

in Association With

**Metric Corporation
Albuquerque, New Mexico**

Revised, December 6, 1996

Objective

The following proposal is a discussion of specific details and operating procedures to conduct and analyze a VES pilot test and to define the limits of elevated soil-gas volatile organic constituent (VOC) concentrations (i.e., the "soil vapor cloud") in the unsaturated subsurface at the Sparton facility. This discussion of technical details and definition of level of effort is a logical extension from the existing data base and should provide sufficient information to determine what, if any, additional work will be needed.

Soil-Gas Monitoring System

A number of monitoring points for both subsurface soil-gas characterization and for vapor extraction pilot test/production purposes have been previously proposed (B&V letter of August 12, 1996). The monitoring system included both existing groundwater monitor wells (with exposed screen) and the existing vapor cluster probe (VP-1) as well as new vapor recovery wells installed in and around the source area. Previous studies had identified highest VOC concentrations in the soil gas in the closed sump area. Concentrations dropped off by orders of magnitude with increasing horizontal distance from the sump/pond (source area).

The proposed monitoring system additions are designed to characterize the soil gas VOC concentration with respect to distance/location relative to the closed sump area. In addition, the monitoring points would be useful in evaluating the effective influence of a vapor recovery well centrally located in the closed sump (source) area. The monitoring system is shown on the attached Figure 1 and includes four existing groundwater monitoring wells (MW-17, MW-21, MW-24, MW-25, and, perhaps, MW-16 depending on seasonal water level (fluctuation), existing six-well vapor probe cluster (VP-1) and five new vapor recovery wells (VR-1 through VR-5).

The new vapor recovery wells are designed to function as both monitoring points and as potential vapor extraction/air injection wells. The new central vapor recovery well (VR-1) would be a four-inch well; the remaining new vapor recovery wells (VR-2 through VR-5) would be two-inch wells. Wells would consist of 60 feet of 0.040-inch machine slotted PVC screen surrounded by a #6 to #9 coarse sand filter. The uppermost 10 feet of each well would be a grouted surface seal to minimize air intrusion or bypassing. Vapor recovery wells would be screened to just above the highest seasonal water level observed in nearby groundwater wells. New wells would be installed using hollow-stem auger

drilling procedures. As part of the characterization work, drilling would be monitored using field screening instruments to provide a relative comparison of soil gas VOC as a function of location, depth, and soil type. Completed wells would also be sampled and analyzed using EPA method 8010/8020 for specific VOC presence/concentration.

The proposed monitoring system is expected to confirm the significant dropoff in soil gas VOC concentration with increasing distance from the closed sump area. In addition, it should also define the area where vapor extraction and treatment would be appropriate.

The need for any additional monitoring/characterization data outside the proposed network would be based on a combination of perimeter soil-gas VOC concentrations above 10 ppm/and projected edge (shape and distribution) of the "vapor cloud" extending out beyond the definition interval of the proposed network. The proposed network has maximum interwell horizontal spacings of ± 100 feet in the outer perimeter. Projected vapor cloud edges extending outward less than this interwell spacing should be adequately defined.

Updated Soil-Gas Characterization

Soil-gas data from the additional new wells would be combined with the existing data base to provide a three-dimensional picture of the soil-gas "vapor cloud". This analysis and related data would be presented in the form of an update to the current soil contamination characterization (as presented in the May 6, 1996 Corrective Measure Study (CMS) Report.) Subject to review and approval by NMED, the updated soil-gas characterization would also be used to confirm the application area for vapor extraction and the selection of the pilot test location.

Pilot Test Design

All data obtained to date and the history of the facility indicate that the closed solvent sump is the probable source of VOC observed in the soil gas. Highest soil-gas VOC concentrations occur in the immediate area of the sump with significant VOC concentration decrease observed with increasing horizontal distance from the source area. As a minimum, vapor extraction will be implemented in the sump area. Thus, the sump area is the most logical location for pilot testing.

The pilot test is proposed to define the relationship between VOC concentrations and extraction vacuum and extraction flow rates from a recovery well located directly under the sump area (see Figure 1). Monitoring points (proposed and existing) are located at varying horizontal distances and depths to allow evaluation of effective influence of the centrally located recovery well.

The pilot test is also designed as a prototype demonstration of the planned VES system to show capability for extraction and ability to meet City/County air quality requirements. Further, the pilot test will show probable production rates and estimates of required operation time.

Pilot Test Equipment

For the pilot test, we are proposing AcuVac as the subcontractor to provide necessary equipment. AcuVac is experienced in soil vapor recovery pilot testing in the Albuquerque area and they have demonstrated the ability to successfully conduct meaningful pilot tests and to meet stringent City/County emission requirements. Further, the AcuVac procedure utilizes an environmentally friendly destructive technology to efficiently remove VOC from the extracted soil gas.

The proposed extraction/destruction unit is based around a 300 cubic inch in-line six cylinder internal combustion (I.C.) engine fueled by the extracted soil-gas VOC and supplemental fuel as required. Emissions are controlled by the I.C. process and redundant catalytic converters.

A vacuum blower propelled by the I.C. engine is capable of producing well flow rates of up to 120 cfm and negative pressures of up to 15 inches of mercury. AcuVac-furnished pilot test equipment also includes: a data recording system; magnehelic pressure gauges capable of reading to 0.01 inches of water; soil gas flow measuring devices; real-time field screening/analytical equipment; temperature and barometric measurement; and sampling ports for recovery of influent samples.

Pilot Test Procedure

The pilot test is proposed to be conducted using the central four-inch recovery well (VR-1). The remaining recovery wells (VR-2 through VR-5), UFZ groundwater monitoring wells (MW-17, MW-21, MW-24, and MW-25), and vapor probe cluster

(VP-1) would be used as observation points for the pilot testing (see Figure 1). The pilot testing will be conducted at several different rates of vacuum and flow (up to the maximum capability of the extraction unit) to determine the performance characteristics of the vapor recovery well/adjacent subsurface.

Prior to each individual test, depth to water, temperature and barometric pressure, and magnehelic pressure gauge readings at each monitoring point would be recorded. After the pilot test is started, extraction well vacuum and flow and extraction system operating data (including supplemental fuel flow) will be recorded. Pressure instrumentation at each of the observation wells will be monitored and recorded to determine vacuum communication with the recovery well (demonstration of radius of influence).

The produced vapor stream (influent) will be analyzed (on a real-time basis) using field screening instruments to determine variation in influent VOC concentration. At selected intervals, influent samples will also be obtained for confirmatory laboratory analyses (EPA Method 8010 and 8020). At least one confirmatory sample will be obtained for each extraction rate test. The purpose of the screening/testing will be to determine VOC concentration variation as a function of both pumping rate/vacuum and elapsed pumping duration.

Based on previous experience, the pilot test should require no more than two days of actual vapor extraction. It is anticipated that two to four extraction rates will be tested. Each extraction rate test will nominally take three to four hours. Upon completion of testing, a detailed pilot test report, including all operating and analytical data and recommendations for operating parameters and effective vacuum radius of influence, will be compiled and provided to NMED for their review and approval.

Pilot Test Schedule

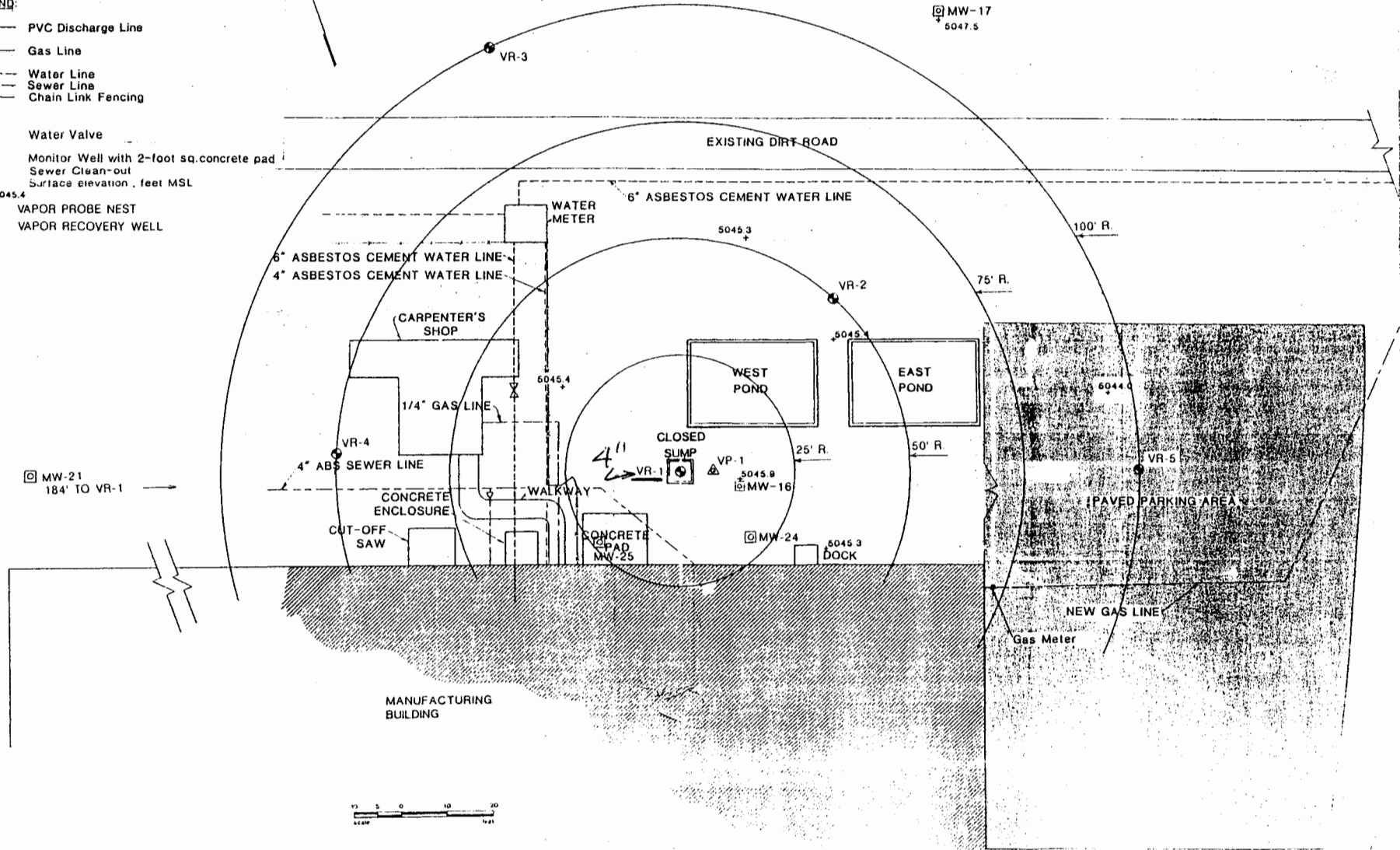
Upon authorization to proceed, it will take from two weeks to over a month to schedule a drilling contractor to install the five vapor recovery wells. Approximately one week will be required to install the wells. Sampling and analytical testing will require several more weeks. Pilot testing can then be arranged in accordance with the subcontractor's schedule. Currently, several weeks are required to mobilize the pilot test equipment; however, once equipment is on site, the actual pilot testing can be conducted in several

days. Interference with the schedule could be caused by the holiday season and possibly weather.

LEGEND:

- PVC Discharge Line
- Gas Line
- Water Line
- Sewer Line
- Chain Link Fencing

- ⊗ Water Valve
- ⊠ Monitor Well with 2-foot sq. concrete pad
- ▽ Sewer Clean-out
- + Surface elevation, feet MSL
- 5045.4
- ⚠ VAPOR PROBE NEST
- ⊕ VAPOR RECOVERY WELL



MAP SOURCE: RCRA POST-CLOSURE PERMIT APPLICATION
 HARDING LAWSON ASSOCIATES, MARCH 1986

SPARTON TECHNOLOGY, INC. COORS ROAD FACILITY VES - PILOT TEST	FIGURE 1	CONTRACT NO. SHEET NO.
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Black & Veatch
 Engineers - Architects
 Dallas, Texas

DESIGNED	_____
DETAILED	_____
CHECKED	_____
APPROVED	_____
DATE	_____

PROJECT NO.

NO.	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CHK.	APP.