

**ENTERED**

S. S. PAPADOPULOS & ASSOCIATES, INC.
ENVIRONMENTAL & WATER RESOURCE CONSULTANTS

S. S. PAPADOPULOS
S. P. LARSON
C. B. ANDREWS

May 24, 2001

United States Environmental Protection Agency (3 copies)
Region VI - Technical Section (6EN-HX)
Compliance Assurance & Enforcement Division
1445 Ross Avenue
Dallas, TX 75202
Attn: Sparton Technology, Inc. Project Coordinator Michael Hebert

Director (1 copy)
Water & Waste Management Division
New Mexico Environment Department
1190 St. Francis Drive, 4th Floor
Santa Fe, NM 87505

Chief (1 copy)
Hazardous & Radioactive Materials Bureau
New Mexico Environment Department
1190 St. Francis Drive, 4th Floor
Santa Fe, NM 87505

Chief (1 copy)
Groundwater Bureau
New Mexico Environment Department
1190 St. Francis Drive, 4th Floor
Santa Fe, NM 87505

Subject: Sparton Technology, Inc. Former Coors Road Plant Remedial Program
Work Plan for Testing and Replacing Monitoring Well MW-71

Gentlemen:

On behalf of Sparton Technology, Inc. (Sparton), S. S. Papadopoulos & Associates, Inc. (SSP&A) is pleased to submit the revised version of the subject Work Plan. The Work Plan incorporates the changes suggested in your May 1, 2001 e-mail to Tony Hurst. Some minor editorial changes have also been made, and a section discussing the schedule has been added. Also, the schedule has been revised to make it subject to the date of approval of this Work Plan, or to the date of reaching agreement on an alternate replacement well location, if this becomes necessary. The Work Plan was prepared by SSP&A in cooperation with Metric Corporation, Inc.

United States Environmental Protection Agency
New Mexico Environment Department
May 24, 2001
Page 2

I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of either the person or persons who manage the system and/or the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I further certify, to the best of my knowledge and belief, that this document is consistent with the applicable requirements of the Consent Decree entered among the New Mexico Environment Department, the U.S. Environmental Protection Agency, Sparton Technology, Inc., and others in connection with Civil Action No. CIV 97 0206 LH/JHG, United States District Court for the District of New Mexico. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions concerning the report, please contact me.

Sincerely,

S. S. PAPANOPULOS & ASSOCIATES, INC.



Stavros S. Papadopoulos, PhD, PE
Founder & Senior Principal

cc: Secretary, Sparton Technology, Inc., w/ 1 copy
Mr. R. Jan Appel, w/1 copy
Mr. James B. Harris, w/1 copy
Mr. Tony Hurst, w/2 copies
Mr. Gary L. Richardson, w/1 copy

SPARTON TECHNOLOGY, INC.
FORMER COORS ROAD PLANT REMEDIAL PROGRAM
WORK PLAN FOR TESTING AND REPLACING
MONITORING WELL MW-71

Prepared by:

S. S. Papadopoulos & Associates, Inc. and Metric Corporation

BACKGROUND

Monitoring well MW-71 is one of two Deep Flow Zone (DFZ) wells that are sampled quarterly by Sparton Technology, Inc. (Sparton) under the terms of the Consent Decree concerning the remedial program associated with Sparton's former Coors Road Plant, in Albuquerque, New Mexico. The well was installed in July 1998 near the MW-60/61 cluster where high concentrations of contaminants had been detected in the Upper Lower Flow Zone (ULFZ). The purpose of installing MW-71 was to determine the vertical extent of contamination in this area, and thus provide data for the design of the off-site containment well. These data were obtained during the installation of the well, and the well was then completed as a 4-inch monitoring well in the DFZ, below a clay layer that was encountered at an elevation of about 4800 ft. This clay layer, referred to as "the 4800-foot clay unit", was previously encountered in well MW-67, and also in the containment well CW-1, and observation wells OB-1, and OB-2 which were installed later.

The water-quality history of well MW-71 is discussed in the 1999 Annual Report on the Sparton remedial program¹. Briefly, when installed, the well was essentially free of contaminants; however, soon after, significant concentrations of TCE were detected in the well.

¹S. S. Papadopoulos & Associates, Inc., 2001, *Sparton Technology, Inc., Coors Road Plant Remedial Program, 1999 Annual Report*, report prepared for Sparton Technology, Inc. in association with Metric Corporation and Pierce L. Chandler, Jr., Original Issue June 1, 2000; Modified Issue February 9, 2001.

This led to investigations that indicated the presence of a leak of contaminated water from the shallower zones of the aquifer through a breach in the 4-inch well casing. The well was purged until relatively clean, and recompleted by placing a 2-inch PVC liner and screen assembly within the 4-inch PVC well. A sand-pack was placed between the 2-inch and 4-inch screens, and the remaining annular space was filled with bentonite cement to land surface. A subsequent packer test indicated that there was no leakage through the 2-inch liner. Samples collected after the recompletion of the well, however, continued to contain contaminant at increasing concentrations that approached 200 ppb of TCE by November 2000. It is apparent that leakage of contaminated groundwater from shallower zones is continuing either through a leak in the annular space between the 2-inch liner and the 4-inch casing, or through a leak in the outer annular space between the drilled hole and the 4-inch casing.

In their review of the original issue of the 1999 Annual Report, the United States Environmental Protection Agency (USEPA) and the New Mexico Environment Department (NMED) expressed concern on the water-quality conditions and completion quality of MW-71. To prevent the continuing leakage through the well, Sparton proposed to plug and abandon the well. The agencies agreed to the abandonment of the well but requested that it be replaced by another DFZ well at the same or at a nearby location.

Sparton has agreed to install a replacement well. To determine whether the replacement well could be installed within the same hole or whether a different location needs to be considered, Sparton is proposing to conduct a purging test and a deviation survey in MW-71.

The purpose of this Workplan is to provide a brief description of the purging test, discuss how the results of the test and of the deviation survey will be used, and how the replacement well will be installed.

PURGING TEST

Well MW-71 will be purged by pumping the well for a period of at least 8 hours per day, using the air-lift method, ensuring compressed air is not injected into the screened interval of the well. At the end of each pumping period, bailer samples will be collected from the well after first removing at least five casing volumes of water using a bailer. The samples will be analyzed to determine the concentration of volatile organic compounds, particularly TCE, 1,1-DCE, and 1,1,1-TCA, by USEPA Method 8260, and of dissolved chromium by USEPA Method 6010. The purged water will be hauled, in a water truck, to the off-site containment system treatment facility. The above outlined purging and sampling will be continued for 10 days.

DEVIATION SURVEY

A deviation survey of MW-71 will be conducted to determine whether the well is straight and vertical. Regardless of the results of the deviation survey, the well will be plugged as discussed below. If the deviation survey indicates that the well is straight and vertical, after plugging, the well will be overdrilled and a replacement monitoring well will be installed within the overdrilled hole. If on the other hand, the well is not straight and vertical so that it can be safely overdrilled, or if overdrilling is not successful, the well will be abandoned. A replacement well will be drilled in a location to be agreed upon between Sparton and USEPA/NMED.

PLUGGING OF MW-71

Well MW-71 will be plugged by perforating the 2-inch PVC casing, the bentonite-cement annulus between the 2-inch and 4-inch casing, the 4-inch PVC casing, and the bentonite-cement annulus between the 4-inch casing and the 7-7/8-inch hole using 1-11/16-inch Link Jet charges with 4 shots per foot at 90 phasing. Four 10-foot intervals will be perforated. These intervals will be centered at approximately 200, 250, 300, and 344 feet below ground level. The 344-foot

interval straddles the 4800-foot clay. Following perforation, the well and annulus will be pressure grouted to 150 psi with 5% bentonite cement.

INSTALLATION OF REPLACEMENT WELL

If the replacement well is to be installed at the same location as MW-71, the well will be overdrilled to 10 feet below the current total depth as a 12-inch or larger diameter hole. All casing, screen, bentonite-cement grout, and aquifer material will be removed from the hole. An 8-inch diameter casing with centralizers at regular intervals will be installed in the hole and cemented in place by injecting 5 % bentonite-cement grout through the casing and up to the surface through the annulus. After the grout has set, a 7-7/8-inch hole will be drilled through the 8-inch casing to an additional depth of 6 to 7 feet. A 4-inch diameter casing with a 5-foot screen will be lowered into the hole, and the well will be completed with sand-pack against the screen and bentonite-cement grout between the 4-inch and 8-inch casing. The well will be developed using standard development procedures.

If the replacement well is to be located in a location other than MW-71, a 12-inch hole will be drilled to a depth a few feet below the bottom of the 4800-foot clay. (During this drilling, the level of the drilling mud in the hole will be maintained near the land surface to preclude the migration of contaminated water from shallow zones to the DFZ.) The procedures discussed above will be used to complete the hole as a double cased well with a 5-foot screen below the 4800-foot clay.

ABANDONMENT MW-71

As discussed above, well MW-71 will be plugged regardless of the results of the deviation survey. Therefore, if the well is not straight and vertical and needs to be abandoned, no further action, except clean-up of the well site, will be necessary. If on the other hand, the

well needs to be abandoned because overdrilling was not successful, it will be abandoned by grouting the overdrilled hole with 5% bentonite cement.

SCHEDULE

A schedule for performing the work described above is attached. The schedule provides for the replacement of MW-71 either by overdrilling the existing well (Alternative I) or by installing a new well at a different location (Alternative II). The schedule is tied to the approval of this Work Plan by USEPA/NMED and, if it becomes necessary, to the agreement on the alternate location for the replacement well. Note that four (4) weeks are allowed for Tasks 9, 10, and 11, that is, obtaining permits from the City of Albuquerque (COA), scheduling a driller, and reaching an agreement with the property owner of the lot to be affected by the well installation. Obtaining permits and scheduling the driller could most probably be accomplished in a shorter period of time; it is expected, however, that reaching an agreement with the property owner will take at least four and possibly more weeks. The agencies will be kept informed, and an extension may have to be requested if any difficulties arise with reaching a quick agreement with the property owner.

SCHEDULE FOR TESTING AND REPLACING MONITORING WELL MW-71

Alternative I - Recomplete MW-71

| Task No. | Work Item | Weeks after Agency Approval of Work Plan | | | | | | | | | | | | | | | | | | | | | | |
|----------|---|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----|-------|----|----|----|----|-------|----|----|----|--|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | |
| | Agency approval of Work Plan | ▲ | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Schedule purging test | | ----- | | | | | | | | | | | | | | | | | | | | | |
| 2 | Mobilization for purging test | | | ----- | | | | | | | | | | | | | | | | | | | | |
| 3 | Conduct purging test | | | | ----- | | | | | | | | | | | | | | | | | | | |
| 4 | Laboratory analysis of samples | | | | | ----- | | | | | | | | | | | | | | | | | | |
| 5 | Data evaluation & analysis | | | | | | ----- | | | | | | | | | | | | | | | | | |
| 6 | Schedule deviation survey, perforation and plugging | | | | | | | ----- | | | | | | | | | | | | | | | | |
| 7 | Conduct deviation survey, perforation and plugging | | | | | | | | ----- | | | | | | | | | | | | | | | |
| 8 | Evaluate deviation survey results | | | | | | | | | ----- | | | | | | | | | | | | | | |
| 9 | Apply for & obtain well permit amendment from COA | | | | | | | | | | ----- | | | | | | | | | | | | | |
| 10 | Reach agreement with property owner | | | | | | | | | | | ----- | | | | | | | | | | | | |
| 11 | Schedule driller | | | | | | | | | | | | ----- | | | | | | | | | | | |
| 12 | Overdrill MW-71 and install replacement well | | | | | | | | | | | | | | ----- | | | | | | | | | |
| 13 | Prepare purging, plugging, and completion report | | | | | | | | | | | | | | | | | | | ----- | | | | |

Alternative II - Move to a New Location

| Task No. | Work Item | Weeks after Agreement on Well Location | | | | | | | | | | | | | | | | | | | | | | |
|----------|---|--|-------|-------|-------|---|---|---|---|---|---|----|--|--|--|--|--|--|--|--|-------|-------|--|--|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | | | | | | | | | | |
| 1 - 8 | Tasks 1 through 8 of Alternative I | Same schedule as in Alternative I | | | | | | | | | | | | | | | | | | | | | | |
| | Agreement on well location | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Apply for & obtain replacement well permit from COA | | ----- | | | | | | | | | | | | | | | | | | | | | |
| 10 | Reach agreement with property owner | | | ----- | | | | | | | | | | | | | | | | | | | | |
| 11 | Schedule driller | | | | ----- | | | | | | | | | | | | | | | | | | | |
| 12 | Install replacement well | | | | | | | | | | | | | | | | | | | | ----- | | | |
| 13 | Prepare purging, plugging, and completion report | | | | | | | | | | | | | | | | | | | | | ----- | | |