SPARTON

SPARTON CORPORATION

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HAZARDOUS WASTE
PROGRAM

November 14, 1994

Mr. Ronald A. Kern
RCRA Technical Compliance Program Manager
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
525 Camino de los Marquez
Santa Fe, NM 87502

VIII

Dear Ron:

Following up our telephone conversation today, enclosed are copies of the Groundwater Monitoring Program, the Alternative Groundwater Monitoring Program and letters of correspondence between NMED and Sparton Technology, Inc. regarding changes to the AGMP.

As discussed, this material was given to me to pass on to you last week, but I neglected to do so. If you have any questions, please feel free to contact John Wakefield or Richard Mico at (505) 892-5300.

Respectfully,

R. Jan Appel
Vice President and
General Counsel

RJA:jc

Enclosures

cc: P. Chandler
R. Mico
G. Richardson
J. Wakefield

Sparton Corporation ☐ 2400 East Ganson Street ☐ Jackson, MI 49202 ☐ (517) 787-8600 ☐ FAX (517) 787-8046

ATTACHMENT 5

GROUNDWATER MONITORING PROGRAM
SPARTON SOUTHWEST, INC.
ALBUQUERQUE, NEW MEXICO

June 29, 1983

A Report Prepared For:

Sparton Corporation
2400 East Ganson Street
Jackson, Michigan 49202

GROUNDWATER MONITORING PROGRAM
SPARTON SOUTHWEST, INC.
9261 COORS ROAD, NORTHWEST
ALBUQUERQUE, NEW MEXICO 87114

HLA Job No. 6310,004.12

Prepared By:

Thomas S. Burger
Senior Environmental Specialist

James B. McCutchan
Senior Engineer

Harding Lawson Associates
6300 Westpark Drive, Suite #100
Houston, Texas 77057
(713) 789-8050

June 29, 1983

SPARTON SOUTHWEST, INC.

GROUNDWATER MONITORING PROGRAM

Introduction

Sparton Southwest, Inc. (Sparton) has developed this groundwater monitoring program to provide early detection of seepage from the Coors Road Facility surface impoundments in Albuquerque, New Mexico. The program has been designed to conform with the requirements of the New Mexico Hazardous Waste Management Regulations[13], and of the Code of Federal Regulations[6].

Groundwater monitoring wells will be periodically sampled for analysis of selected indicator parameters. Initial background levels will be compared to subsequent measurements to determine if there has been a significant change in value for any parameter(s). Such changes would be evaluated to determine if they were actually different, or were caused by variations inherent to the sampling and analytical methods. This evaluation would employ the use of statistical methods.

If a determination is ever made that the facility may be contaminating groundwater, a groundwater monitoring program review will be performed which meets the requirements of 40 CFR 265.93(c)(2). If this review continues to suggest the presence of contamination, a more comprehensive groundwater quality assessment program will be implemented which meets the requirements of 40 CFR 265.93(d).

Location and Installation of Groundwater Monitoring Wells

Four monitoring wells have been installed at the Coors Road Facility surface impoundments. These wells collect groundwater from the Rio Grande River alluvium, which is under water table conditions. Attachment C presents well installation details and depicts the well locations.

Facility expansion, well performance or other considerations may occasionally require one or more monitoring wells to be decommissioned and replaced. Approval for such changes will be sought from the U.S. EPA Administrator, Region VI (EPA), and from the New Mexico Environmental Improvement Division, Hazardous Waste Section (EID) on a case-by-case basis. Monitoring wells to be decommissioned will be properly plugged and sealed. Any new monitoring wells will be screened into the same monitoring zone (or other zones, if deemed appropriate by Sparton, EPA, and EID).

Sample Collection

Samples will be collected by site environmental personnel. Prior to sampling, the static water level will be measured. Then the well will be purged of three to five casing volumes of water. After recharge, normally two to four hours with these wells, groundwater

samples will be collected by means of a downwell bladder pump (QED Well Wizard, Model No. 1100). Each well will be provided a dedicated pump in order to eliminate cross-contamination of the wells. Sampling records will be entered in a log and will include the well number, static water level, date, time, and the name of the person sampling. Records will also indicate the suite of parameters tested, preservatives used and analytical laboratory(ies) used.

Groundwater to be tested for metals will be passed through a 0.45 micron membrane filter prior to being combined with the acid preservative. Other samples will be filtered by the analytical laboratory as needed.

Sample Preservation and Containers

Sample containers will be prepared by the analytical laboratory designated to receive the samples. Containers will be washed according to methods presented in the EPA Handbook for Analytical Quality Control in Water and Wastewater Laboratories, Section 4.6[11]. Bottles for bacteriological studies will be presterilized.

Chemical preservatives will be added to containers by the analytical laboratory according to the guidelines of 40 CFR 136[1]. The sample containers should be completely filled so as to minimize

unnecessary exposure to entrapped air. Immediately after labeling, the samples will be cooled by packing with ice in insulated coolers. They will be delivered to the analytical laboratory within twenty-four hours of collection.

Labeling and Chain of Custody

At the time of collection, each sample shall be labeled with the well number, the date and the sampler's initials. The samples will be handled by as few people as possible. Generally, the sampler will maintain personal, physical possession of the samples until delivery to the analytical laboratory. In this case, a laboratory receipt will serve as evidence of adequate control. If any transfers of custody must be made prior to delivery, a Chain of Custody document will be used. The Chain of Custody procedures to be used and a representative document are presented in Attachment 1.

Laboratory Procedures and Methods

Upon receipt, the sample for coliforms is to be submitted promptly for bacteriological analysis. All analytical methods will conform to the procedures approved by the U.S. Environmental Protection Agency (EPA)[3,5,7,8,9], or as otherwise referenced in

40 CFR 136[1]. Summaries of analytical methods initially selected for this program, together with detection limits and reference citations are given in Methodology, Parameters to be Monitored, Tables I, II, and III.

Indicator Monitoring Program

A. Parameters to be Measured

The following groups of parameters will be measured according to the schedules indicated:

1. Parameters characterizing the suitability of the groundwater as a drinking water supply [6] will be measured quarterly during the first year of this program. The values measured will be compared to the National Primary Drinking Water Standards[4].

2. Parameters used as indicators of groundwater contamination[6] will be measured quarterly during the first year of this program and then semi-annually through the active life of the facility and continuing through the postclosure period. Four replicate measurements of each parameter will be made for each sample.

   Indicator parameters will be measured quarterly for the first year of service of any new monitoring wells.

3. Parameters established for groundwater quality[6] will be measured quarterly during the first year of this program, and annually thereafter through the active life of the facility and continuing through the post-closure period. These data may be used to establish the initial background levels for use in the event that a Groundwater Quality Assessment Program must be implemented.

4. On an annual basis, Sparton will review the groundwater monitoring program with respect to any new wastes being managed, to determine if additional parameters should be included in the program.

B. Evaluation of Data

1. Statistical Evaluations

Cochran's Approximation to the Behrens Fisher Student's t-test (Attachment 2)[10] will be used to determine the statistical significance of changes in the values of parameters used as indicators of groundwater contamination as compared to the initial background levels established during the first year. All measurements made during the first year will be used to calculate the initial background arithmetic mean and the initial background variance for each well, for each parameter. For subsequent samples (i.e., after the first year), the arithmetic mean and the variance will be calculated from the four replicate measurements made of each parameter for each well.

The above modification of the Student's t-test involves the calculation of a t-statistic for each parameter for each well. This t-statistic is then compared to calculated values of t_c which are weighted for sample sizes and variances (See Attachment 2). If the calculated value of t exceeds the single-tailed calculated value of t_c (or the double-tailed calculated value of t_c in the case of pH) at the 0.01 level of significance, then there is a statistically significant difference betwen the two arithmetic means.

If no significant differences are found in the four parameters used as indicators, and in the absence of other evidence to the contrary, the groundwater will be evaluated as not contaminated. The occurrence of a statistically significant increase in a parametric value (or pH decrease) will indicate a possible problem which will be evaluated in a review of the groundwater monitoring program.

2. Groundwater Elevations

The static water level measurements recorded on each sampling occasion will be evaluated annually to detect any possible changes in the direction of the hydraulic gradient. If there are any such changes, the locations of existing monitoring wells will be studied to determine if any additional wells would be needed to comply with the requirements[6] for one well to be hydraulically upgradient from the site and at least three wells downgradient.

The static water levels will be derived from measurements of the depth to water from the top of each well. Depth to water will be subtracted from the surveyed elevation of the well top. The surveyed elevations of the monitoring wells are as follows:

Well Number	Elevation at Top of Casing (ft.)
MW-1	5,047.84
MW-2	5,050.26
MW-3	5,047.22
MW-4	5,047.61
P-1	5,050.45

Monitoring Review

Should the Indicator Monitoring Program indicate a possible groundwater contamination problem, a Monitoring Review shall be conducted as rapidly as possible to ascertain the need for a Groundwater Quality Assessment Program. The Monitoring Review shall consist of two parts:

A. Program and Analytical Review:

In conjunction with additional analytical work described below, the Groundwater Monitoring Program shall be reviewed. In particular, other results for the particular well(s) of interest will be compared with similar results from other wells in the monitoring system in order to detect any trends. The spatial and depth distribution of the wells must be considered in relationship to the indicated groundwater zone(s) of potential contamination, groundwater flow rates and flow directions, and the locations of possible sources of contamination. Historical data may need to be considered. Additional statistical procedures may need to be used to check or further clarify the apparent discrepancy. The methodologies and quality assurance program of the analytical laboratory should be carefully reviewed.

B. Analytical Check

Affected monitoring wells will be resampled to determine if the discrepancy is due to sampling or laboratory errors.

1. Additional Samples

Additional groundwater samples will be obtained from all potentially involved monitoring wells. The samples will be split into two replicate subsamples, which will be analyzed independently by two qualified laboratories utilizing the same analytical procedure. One of the subsamples may be sent to the same analytical laboratory that produced the results which are being evaluated. Four replicate measurements of the parameter(s) in question will be performed on all such subsamples. Chain of Custody documents will accompany both subsamples.

2. Evaluation of Data

The subsample analytical results will be evaluated to determine if the originally detected parametric increase (or pH decrease) actually reflected a change in the groundwater quality, or was simply the result of sampling or laboratory errors. To do this, the arithmetic mean and variance will be calculated for each set of four replicate measurements made of each parameter for each subsample. Cochran's Approximation to the Behrens Fisher Student's t-test[10] will be used to determine if there is a statistically significant difference between values obtained from either laboratory and the initial background concentration(s) for the parameter(s) in question.

If the conclusion of the Monitoring Review is that the Facility is not adversely affecting groundwater quality, Sparton will resume its normal Groundwater Monitoring Program. If the conclusion of the Monitoring Review is that hazardous waste or hazardous waste constituents may be entering groundwater from the facility, then a Groundwater Quality Assessment, as outlined below, will be initiated.

3. The following describes action to be taken for various potential outcomes of the Analytical Check.

a. Parametric Increase Confirmed for Upgradient Well

If the results from both laboratories reflect a statistically significant parametric increase (or pH decrease) in water from the upgradient well, EPA and EID will be notified, and the Groundwater Monitoring Program shall be resumed.

b. Parametric Increase Confirmed for Downgradient Well(s)

If the results from both laboratories reflect a significant increase (or pH decrease) in water from any of the downgradient wells, a Groundwater Quality Assessment shall be promptly initiated.

c. Neither Laboratory Confirms Parametric Increase

If there is no statistically significant increase (or pH decrease) found for any given parameter by either of the laboratories, the groundwater may be considered as not contaminated. The Groundwater Monitoring Program shall be resumed in this case, after notification of EPA and EID.

d. Split Decision

If only one laboratory has generated results significantly different from the initial background level, a Groundwater Quality Assessment Program shall be promptly initiated. In conjunction with this response, additional groundwater samples may be evaluated.

4. Monitoring Review Reporting

The results of a Monitoring Review will be forwarded within seven (7) days of its completion to the following agencies:

a. Director, Air & Waste Management Division
U.S.EPA (6AW-He)
1201 Elm Street
First International Building
Dallas, Texas 75270

b. Hazardous Waste Section
New Mexico Environmental Improvement Division
725 St. Michael's Drive
Crown Building
Santa Fe, New Mexico 87504-0968

Groundwater Quality Assessment

A. Introduction

If the Monitoring Review concludes that hazardous waste constituents may be entering groundwater, Sparton will have a qualified hydrogeologist or geotechnical engineer prepare, as soon as practicable, a Groundwater Quality Assessment Plan which will specify:

1. The number, location and depth of any new wells
2. Frequency of sampling and sampling methods.
3. Parameters chosen and analytical methods to be employed.
4. Evaluation procedures, including any use of previously gathered groundwater quality information.

This plan will be designed to provide, at a minimum:

1. Whether hazardous waste or hazardous waste constituents have, in fact, entered the groundwater.

2. The rate and extent of migration of hazardous waste or hazardous waste constituents in the groundwater.

3. The concentrations of hazardous waste or hazardous waste constituents in the groundwater.

4. An evaluation of the data generated by the assessment.

5. A prediction of the environmental and economic consequences of the groundwater contamination, if such exists.

The Groundwater Quality Assessment will be developed as a phased succession of study tasks, each one of which will depend on data generated by the previous task. The first set of determinations will be made as soon as technically feasible, and the results will be reported to EPA and EID within 15 days of completion. If it is determined that hazardous waste or hazardous waste constituents have entered the groundwater and that this condition represents a significant impediment to the beneficial use of the groundwater, then the Groundwater Quality Assessment Program will continue on a quarterly basis with reports to be submitted on an annual basis, until final closure of the facility.

B. Confirmation of Contamination

Groundwater samples from the monitoring well(s) of interest will be analyzed to determine if, in fact, the groundwater contains specific hazardous wastes or hazardous waste constituents attributable to wastes managed in the surface impoundments. The search for hazardous waste-related contaminants will be directed by the indicator parameters in question.

Interest in pH and conductance will focus the study on specific anions and cations. Elevated total organic carbon levels will lead to a generalized consideration of hydrocarbon based wastes, whereas elevated total organic halogen levels will direct attention to halogenated aliphatic and aromatic compounds.

If no hazardous wastes or hazardous waste constituents are found in the groundwater, Sparton may resume the Indicator Monitoring Program following notification of EPA and EID. Sparton may also initiate a study of geochemical effects on native groundwater to determine if natural causes may be responsible for the Indicator Program discrepancy(ies).

C. Groundwater Hydraulic Characterization

If it is determined that hazardous waste contaminants have entered the groundwater, the rate of movement and extent of contamination will be determined. Additional piezometers will be installed to more accurately determine the water table and the hydraulic gradient, if needed.

D. Plume Definition

An initial attempt will be made to define the waste plume using geophysical and related methods. Methods which will be employed will be determined based on analytical results. Methods most likely to be

considered include borehole tracer dilution, electrical resistivity, electromagnetic conductivity, and borehole logging for specific conductance, temperature and specific ions.

The probable source of the contamination will be located as nearly as possible. Monitoring wells will then be installed hydraulically downgradient from the source, so that the linear extent of contamination can be approximated by hydrogeological interpretation.

If the data gathered seem amenable to groundwater modeling, a model will be selected to predict the rate and extent of contaminant migration. At least two monitoring wells will be installed to confirm the predicted lateral extent of the contaminant plume.

Once the areal extent of the plume has been estimated, a cluster of wells screened at varying depths (or a stacked sampler in a single well) may be installed near the center of the plume. Analytical results from this well (or wells) can be used to estimate the vertical extent of contamination.

Empirical methods or modeling will be used to make predictions of the rate of contaminant migration and of changes in concentrations at specific wells. Samples will be taken at specified frequencies from key wells to test these predictions.

E. Down-plume Detection Monitoring

Based on predictions of the rate of contaminant migration, a monitoring well will be placed downgradient of the plume to detect its arrival.

F. Assessment Program Parameters

Parameters to be monitored during the Groundwater Quality Assessment may be one or more of the waste constituents. Alternatively, an indicator parameter may be selected which migrates at the same rate as the waste constituents, and can be detected at the limits of the plume. The ideal monitoring parameter would have a strong concentration gradient across the plume and would be expected to persist as long as the most persistent of the waste constituents detected. More than one parameter may be required.

G. Laboratory Analytical Methods

U.S. EPA approved laboratory analytical methods will be employed which have the sensitivity and precision to accurately measure the selected parameter(s) at all significant concentrations expected to be encountered in the field. The procedure should be rapid and reasonably economical. Ideally, the procedure will be suitable for field use.

H. Sampling Methods

Sampling methods will be selected which allow collection of representative groundwater and which do not significantly alter the concentration of the parameter(s) chosen for analysis. Samples will be filtered and preserved in the field, as needed.

I. Evaluation of Groundwater Quality Assessment Data

Evaluation of data generated by the Groundwater Quality Assessment will be used to predict when, if ever, contamination would reach any environmentally sensitive target. The next step will be to assess the potential environmental and economic consequences of the groundwater contamination, if such exists. Some questions to be addressed include the following:

1. Is the contaminated groundwater part of a drinking water quality aquifer, and if so, is the aquifer productive enough to allow economically feasible withdrawal?

2. Are there existing or planned water production wells in the path of the contaminant plume?

3. Are there other environmental resources in the path which may be harmed?

4. Are the contaminants susceptible to biodegradation or physical/chemical attenuation by soils. If so, what will be the effects of this on contaminant concentrations with respect to time and distance?

5. To what extent will the concentration of contaminants be reduced by the dilution effects of mechanical dispersion and other subsurface phenomena?

6. What is the probability that contaminants will reach any potential environmental target in sufficient concentration to cause a public health concern, impede the beneficial use of groundwater, or otherwise cause harm?

7. If environmental impairment were to occur, what would be the environmental and economic consequences of it?

Record Keeping and Reporting

A. Quarterly Reports

During the first year, the values of parameters measured to establish the suitability of groundwater for drinking will be reported, within 15 days of the completion of each quarterly analysis, to the following two agencies:

1. Director, Air & Waste Management Division
   U.S. EPA (6AW-He)
   1201 Elm Street
   First International Building
   Dallas, Texas 75270

2. Hazardous Waste Section
   New Mexico Environmental Improvement Division
   725 St. Michael's Drive
   Crown Building
   Santa Fe, New Mexico 87504-0968

This report will separately identify for each monitoring well, any parameters whose values have been found to exceed the limits specified in the National Interim Primary Drinking Water Standards [4] (See Table IV).

B. Annual Reports Under the Indicator Monitoring Program

The values of parameters used as indicators of groundwater contamination, together with the evaluations of these values, will be included in an annual report to the following two agencies:

1. Director, Air & Waste Management Division
   U.S. EPA (6AW-He)
   1201 Elm Street
   First International Building
   Dallas, Texas 75270

2. Hazardous Waste Section
   New Mexico Environmental Improvement Division
   725 St. Michael's Drive
   Crown Building
   Santa Fe, New Mexico 87504-0968

This report will separately identify any significant differences from the background levels established during the first year. It will also include the results of the annual evaluation of groundwater elevations.

C. Annual Reports Under the Groundwater Quality Assessment Program:

The Facility Annual Report will be adjusted to include the results, obtained under a Groundwater Quality Assessment Program. This report will include, but not be limited to, calculations (or measurements) of the extent of any detected groundwater contamination and the rate of transport of hazardous wastes or hazardous waste constituents in the groundwater during the reporting period.

D. Record Keeping:

Records of all analyses, together with evaluations, performed under the Groundwater Monitoring Program will be maintained during the entire active life of the facility and during the post closure period, according to the provisions of 40 CFR 265.118. These records will be available for inspection by authorized representatives of EPA and EID.

TABLE I

METHODOLOGY, PARAMETERS TO BE MONITORED

Parameters Characterizing the Suitability of the Groundwater as a Drinking Water Supply				
PARAMETER	UNITS	DETECTION LIMITS *	METHOD	METHODOLOGY REFERENCE **
Arsenic	mg/l	0.01	Furnace AA	3 - Method 206. 2
Barium	mg/l	0.1	ICP	9 - Method 200.7
Cadmium	mg/l	0.001	Furnace AA	3 - Method 213.2
Chromium	mg/l	0.001	Furnace AA	3 - Method 218.2
Fluoride	mg/l	0.01	Specific Electrode	3 - Method 340.2
Lead	mg/l	0.001	Furnace AA	3 - Method 239.2
Mercury	mg/l	0.0004	Flameless AA	3 - Method 245.1
Nitrate (as N)	mg/l	0.1	Spectrophotometric	3 - Method 352.1
Selenium	mg/l	0.01	Furnace AA	3 - Method 270.2
Silver	mg/l	0.01	Flame AA	3 - Method 272.2
Endrin	mg/l	0.0002	GC	1 - Method 608
Lindane	mg/l	0.004	GC	1 - Method 608
Methoxychlor	mg/l	0.1	GC	1 - Method 608
Toxaphene	mg/l	0.005	GC	1 - Method 608
2,4-D	mg/l	0.1	GC	12 - Method 115
2,4,5-TP(Silvex)	mg/l	0.01	GC	12 - Method 115
Total Radium	pCi/l	1	Counter	9 - Method 900.1
Gross Alpha	pCi/l	2	Counter	5 - Method 703
Gross Beta	pCi/l	3	Counter	5 - Method 703
Coliform Bacteria	No./100ml	1	Membrane Filter	5 - Method 909A

* As reported by CEP Laboratory, Santa Fe, N.M.

** See Reference Section at end of report

TABLE II

METHODOLOGY, PARAMETERS TO BE MONITORED

Parameters Used As Indicators of Groundwater Contamination				
PARAMETER	UNITS	DETECTION LIMITS *	METHOD	METHODOLOGY REFERENCE **
pH	pH units	1	Electrode	3 - Method 150.1
Specific Conductance	umhos/cm	1	Wheatstone Bridge	3 - Method 120.1
TOC	mg/l	1	Chemical Oxidation Infrared Detector	7 - Method 9020
TOX	ug Cl/l	5	Dohrman TOX	8 - Method 450.1

* As reported by CEP Laboratory, Santa Fe, N.M.

** See Reference Section at end of report

TABLE III

METHODOLOGY, PARAMETERS TO BE MONITORED

Required Parameters Establishing Groundwater Quality				
PARAMETER	UNITS	* DETECTION LIMITS	METHOD	**METHODOLOGY REFERENCE
Chloride	mg/l	0.5	Potentiometric	5 - Method 407.C
Iron	mg/l	0.01	ICP	9 - Method 200.7
Manganese	mg/l	0.001	ICP	9 - Method 200.7
Phenolics	mg/l	0.001	Distillation, Colorimetric	3 - Method 420.1
Sodium	mg/l	0.1	Flame AA	3 - Method 273.1
Sulfate	mg/l	5.0	Gravimetric	3 - Method 375.3

* As reported by CEP Laboratory, Santa Fe, N.M.

** See Reference Section at end of report

TABLE IV

EPA INTERIM PRIMARY DRINKING WATER STANDARDS

Parameter	Maximum Level (mg/l)
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chromium	0.05
Fluoride	2.4
Lead	0.05
Mercury	0.002
Nitrate (as N)	10.0
Selenium	0.01
Silver	0.05
Endrin	0.0002
Lindane	0.004
Methoxychlor	0.1
Toxaphene	0.005
2,4-D	0.1
2,4,5-TP (Silvex)	0.01
Radium	5 pCi/l
Gross Alpha	15 pCi/l
Gross Beta	4 millirem/yr (normally equivalent to 50 pCi/l)
Coliform Bacteria	1/100 ml

REFERENCES

1. Guidelines for Establishing Test Procedures for the Analysis of Pollutants, 40 CFR, Part 136; FR44, p. 69464 et. seq., December 3, 1979; as corrected in 44FR, p.75028, et. seq., December 18, 1979.

2. Procedures Manual for Groundwater Monitoring at Solid Waste Disposal Facilities, EPA-530/SW-611, August, 1977.

3. Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, March, 1979.

4. National Interim Primary Drinking Water Regulations, EPA-570/9-76-003, September, 1976.

5. Standard Methods for the Examination of Water and Wastewater, 15th Edition, American Public Health Association, 1980.

6. Groundwater Monitoring, Sampling and Analysis, 40 CFR, Part 265, Subpart F, revised as of July 1, 1982.

7. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, U.S. EPA, SW-846, Second Edition A82.

8. "Proposed Test Method for Organic Halides in Water by Carbon Adsorption Microcoulometry", ASTM, 1982, Part 31, page 1497.

9. "Inductively Coupled Plasma - Atomic Emission Spectrometric Method for Trace Element Analysis of Water and Wastes", Environmental Monitoring and Support Laboratory; Cincinnati, Ohio.

10. 40 CFR, Part 264, Appendix IV, as amended in FR 47, P. 32367, July 26, 1982.

11. Handbook for Analytical Quality Control in Water and Wastewater Laboratories, March, 1979, EPA-600/4-79-019.

12. Methods for Benzidine Chlorinated Organic Compounds, Pentachlorophenol and Pesticides in Water and Wastewater, U.S.EPA Interim Document, September 1978.

13. New Mexico Hazardous Waste Regulations, Part II, 206,C,1.

ATTACHMENTS

Attachment A - Chain of Custody Procedures

Attachment B - Cochran's Approximation to the Behrens Fisher Student's t-Test, 47 FR 32367, July 26, 1982,

Attachment C - Monitoring Well Installation Report
Sparton Southwest, Inc.
Coors Road Facility

ATTACHMENT A
to
ATTACHMENT 5

Chain-of-Custody Procedures

Chain of Custody Procedures

A. Custodianship

A custodian will maintain custody and control of each sample under his care until it is relinquished, analyzed, or disposed. Normal security measures, such as locked containers, evidence tape, or personal, physical possession will be utilized by the custodian.

The person actually collecting the sample becomes the first custodian. His duties include sealing the sample container with evidence tape, or locking the sample containers, if he will not maintain continuous personal, physical possession.

If the sample is to be split into subsamples, or if anyone else will have possession of the samples prior to laboratory delivery, the first custodian will also initiate Chain of Custody documentation. If the sample collector personally delivers the samples to the laboratory, he will obtain an itemized and dated receipt from an authorized laboratory representative in lieu of the Chain of Custody documents.

As the sample moves from the initial custodian through the Chain of Custody, subsequent custodians will sign when receiving the sample, and upon relinquishing same.

NOTE: Custodians will handle each sample in their possession in such a manner so as to be able to testify that it was continuously under their control, and not subject to any tampering.

B. Documentation

1. Chain of Custody Document Contents

a. Program Name: "INDICATOR MONITORING PROGRAM," "MONITORING REVIEW or "GROUNDWATER QUALITY ASSESSMENT"

b. Facility name and location:

Sparton Southwest, Inc.
9621 Coors Road, NW
Albuquerque, New Mexico 87103

c. For each sample:

(1) Monitoring well number

(2) Date and time of collection

(3) Number of sample containers

d. Name of sample collector

e. Special security features used, such as locked containers or evidence tape.

2. Multiple Samples

A single Chain of Custody document may be used for more than one sample, provided that all requirements specified in Item B.1 are met. If multiple samples are identified in one document, they normally will be packaged together and the package sealed with evidence tape.

3. Acceptance/Release Format

Each transfer of possession of a sample will be recorded on the document with the following items:

a. Signature of person relinquishing sample control

b. Signature of person receiving sample control

c. Date and time of transfer

d. Stipulation that the sample has/has not been visibly tampered with

e. Remarks should include any exception and deviations from normal routine involved with the sample.

SPARTON SOUTHWEST

CHAIN OF CUSTODY RECORD

SHIPPER

Company Name
Street/P.O. Box
City, State Zip Code

SAMPLING LOCATION

Site Name
Street or Other Description
City, State Zip Code
Site I.D. No.

SAMPLE COLLECTOR

Name	Telephone No.
Company	
Street/P.O. Box	
City, State Zip Code	

LIST OF SAMPLES

COLLECTOR'S SAMPLE NO.	DATE COLLECTED	TIME	SAMPLE SOURCE	NO. OF CONTAINERS	REMARKS

CHAIN OF POSSESSION

SIGN TO ACCEPT CUSTODY	COMPANY	DATE	TIME	SIGN TO RELINQUISH CUSTODY	REMARKS
(1)					
(2)					
(3)					
(4)					
(5)					
(6)					

ATTACHMENT 12

ALTERNATIVE GROUNDWATER MONITORING PROGRAM DOCUMENTATION

SPARTON
TECHNOLOGY, INC.

4901 Rockaway Blvd., SE
Rio Rancho, New Mexico 87124
P.O. Box 1784
Albuquerque, New Mexico 87103
Phone (505) 892-5300
TWX 910-989-1657

RECEIVED
APR 1 1985
HLA - HOUSTON

March 29, 1985

State of New Mexico
Environmental Improvement Division
725 St. Michael's Drive
Santa Fe, New Mexico 87501

Attention: Ms. Maxine Goad
Mr. Peter Pache

Dear Ms. Goad and Mr. Pache:

This is our March Progress Report, as requested by the Environmental Improvement Division (EID). The information contained in this letter is current as of March 28, 1985.

Our consultant, Harding-Lawson Associates (HLA), published its report, "Hydrogeologic Characterization and Remedial Investigation, Sparton Technology, Inc.," on March 13, 1985. Five copies of this report were mailed to EID. In their report, HLA has recommended a program of eight soil borings to support the examination of vadose zone contamination, which was agreed to in our meeting with the EID on November 26, 1984. HLA has also recommended additional water quality studies in some of the new monitoring wells to better assess the vertical distribution of ground-water contamination. We are advised by our consultant that, upon completion of these two additional inquiries, we should have sufficient information to begin the detailed design of our ground-water remedial program. We will establish a schedule for these two studies prior to our meeting with EID, which is scheduled for April 9, 1985.

At mid-March we received a copy of the National Water Well Association's (NWWA) report about our ground-water monitoring program. We have reviewed that report and found a number of erroneous conclusions or observations. In addition, a number of questions raised in the report have been answered during subsequent investigations at the site. We will be sending our more detailed impressions of the NWWA investigation and report in a separate letter.

We collected our sixth quarterly ground-water monitoring samples on March 11 and 12, 1985. The time of collection was postponed from early February at the request of Ms. Ann Claassen of the EID Hazardous

Waste Management Section. Prior to sample collection, HLA's Tom Burger verbally reviewed our alternative ground-water monitoring program (AGMP) with Ms. Claassen on March 6, 1985. At that time, Ms. Claassen agreed that we should collect samples and analyze for the appropriate AGMP parameters, which we subsequently accomplished. A copy of the AGMP is attached to this letter (see Attachment 1). We believe that the attached AGMP meets the intent of the regulatory requirement to submit a specific plan.

This completes our progress report. If you have any questions, please contact HLA's Tom Burger at (713) 789-8050.

Sincerely,

SPARTON TECHNOLOGY, INC.

R. D. Mico

Richard D. Mico
Vice President and General Manager

cc: Mr. Blair Thompson - Sparton Corporation
Mr. Cleoves Martinez - Sparton Technology, Inc.
Mr. Tom Burger - HLA

RDM:mds
Attachment

ALTERNATIVE GROUND-WATER MONITORING PROGRAM

Sparton Technology, Inc. (Sparton) has reason to believe ground-water contamination exists at its Coors Road facility in Albuquerque, New Mexico. Therefore, an Alternative Ground-Water Monitoring Program (AGMP) will be completed as provided in the New Mexico Hazardous Waste Management Regulations 206.C.1.1.a.(4).

The frequency of sample collection, analytical parameters, and monitoring wells to be sampled are consistent with Sparton's commitment to the EID, as expressed in Sparton's letter to Mr. Steven Asher on July 24, 1984. Two modifications have been made. Nickel has been added to the list of annual parameters. MW-5 has been substituted for MW-1 as the upgradient well. The reason for this substitution is that MW-1 has gone dry at least once in the past, and therefore may not provide a reliable continuous record of upgradient ground-water quality.

The AGMP consists of the following:

1. Monitoring wells 1, 4, 5, 6, 8, 9, 10, and 11 will be sampled quarterly.

2. Quarterly parameters will include:

   pH
   total organic carbon
   trichloroethylene (Method 624)
   specific conductance
   total organic halogen
   1, 1-dichloroethylene (Method 624)

3. In addition, annual parameters will include:

   chloride
   nitrate (as N)
   sodium
   boron
   chromium (trivalent and hexavalent)
   volatile organic carbon scan (Method 624)
   sulfate
   Kjeldahl nitrogen
   manganese
   nickel

   3rd quarter

4. The depths of the monitoring wells (together with other well construction details) have previously been supplied to EID in reports prepared by Harding-Lawson Associates (HLA), Sparton's consultant. The sampling and analytical methods are presented in Appendix C of HLA's March 13, 1985 report, "Hydrogeologic Characterization and Remedial Investigation, Sparton Technology, Inc."

5. Previous investigations, and the reports thereof, are considered by Sparton to be an integral part of the AGMP. Evaluation procedures employed in those past investigations are contained within the respective reports. Sparton remains committed to any schedule of implementation contained in those reports.

6. Sparton has already implemented its long-term ground-water monitoring strategy. The concentrations of hazardous waste constituents in the ground water have already been determined.

7. Sparton intends to assess the rate and extent of migration of hazardous waste constituents in the ground water by a combination of two methods. Historical data from on-site monitoring will be evaluated in an empirical approach. Ground-water modeling will also be used to evaluate the rate and extent of migration of hazardous waste constituents as well as other parameters of concern. The most notable other parameters of concern include a number of volatile organic constituents which will be evaluated by a combination of three techniques, including evaluation of historical on-site data, ground-water modeling, and soil-gas testing.

   Additional information, including an assessment of the vertical distribution of contaminants and an assessment of vadose zone contamination, will be obtained in the next site investigation.

8. Sparton will continue to make determinations of ground-water quality according to the schedule indicated above until final closure of the facility and until completion of the anticipated ground-water remedial program. Sparton will continue to comply with the record-keeping and reporting requirements specified in the regulations.

SPARTON
TECHNOLOGY, INC.

4901 Rockaway Blvd., SE
Rio Rancho, New Mexico 87124
P.O. Box 1784
Albuquerque, New Mexico 87103
Phone (505) 892-5300
TWX 910-989-1657

Bob Cordova

July 31, 1986

State of New Mexico
Environmental Improvement Division
Hazardous Waste Section and Groundwater Section
Harold Reynolds Building
1190 St. Francis Drive
Post Office Box 968
Santa Fe, New Mexico 87504-0968

Attention: Mr. Ronald Conrad and Mr. Peter Pache

Gentlemen:

This is our July Progress Report, as requested by the Environmental Improvement Division (EID). The information contained in this letter is current as of July 30, 1986. Our consultant, Harding Lawson Associates (HLA), has prepared recommendations for additional monitoring wells to be installed at the Coors Road facility, together with other recommendations concerning changes in the alternative groundwater monitoring plan. Many of these changes have been previously discussed with EID's Alice Barr. If your staff are able to review and approve the attached recommendations in time, we are prepared to begin installation of the new wells on August 6, 1986. These recommendations are included as Enclosure (1).

Quarterly groundwater sampling was accomplished this past month. Analytical results of these samples will be forwarded to EID upon receipt from the laboratory.

This completes our progress report. If you have any questions, please contact HLA's Tom Burger at (713) 789-8050.

Sincerely,

SPARTON TECHNOLOGY, INC.

R D Mico

Richard D. Mico
Vice President and General Manager

cc: Mr. Blair Thompson
Mr. Jon DeWitt
Mr. Gary Richardson
Mr. Thomas Burger
Mr. Cleoves Martinez

Harding Lawson Associates

Enclosure (1)

July 10, 1986

6310,029.12

Mr. Richard D. Mico
Sparton Technology, Inc.
4901 Rockaway Boulevard, S.W.
Rio Rancho, New Mexico 87103

Re: Recommended Monitoring Well Locations

Dear Mr. Mico:

Attached is a diagram of the proposed new monitoring well locations as we previously discussed. Pending your approval, we suggest that these recommendations be forwared to EID for their review. Presented below is a summary of the rational basis for our recommendations for a revised ground-water monitoring network.

Recent investigations have led to a better understanding of the direction of ground-water flow at the Coors Road Plant. Ground water is flowing in a more westerly direction than previously understood. A revised ground-water monitoring network should take this into consideration. Ground-water monitoring results from the vertical profiling investigation are strongly suggestive that ground water is contaminated at depths of up to 75 feet below the water table. However, the data is inconclusive as to the extent of contamination due to the design characteristics of the monitoring wells used in that investigation. Therefore, we recommend that two monitoring wells be installed to evaluate and monitor ground-water quality at depth. We recommend that Sparton's alternative ground-water monitoring program be modified to include the following wells:

MW6 ?

- MW5 shall continue as the upgradient monitoring well.
- MW8 and MW9 will continue to be used in the shallow flow zone monitoring network.

- MW14, MW15, and MW16 will be used to monitor the shallow flow zone. The inflatible packers which are in place at approximately 4,970 feet msl shall be left in place. Dedicated sampling pumps, similar to those in current use at the site, will be installed above the packers to monitor the shallow ground water.

- The existing wells MW16 and MW18 will be added to the shallow zone monitoring network.

- MW21, MW22, and MW23 will be new shallow flow zone monitoring wells (see Plate 1).

- MW11 will continue to be used to monitor the lower flow zone.

- MW19 and MW20 are proposed to be added at this time to monitor the lower flow zone.

Based on current information, we believe the above ground-water monitoring network will provide adequate ground-water quality monitoring data at the Coors Road facility.

Very truly yours,

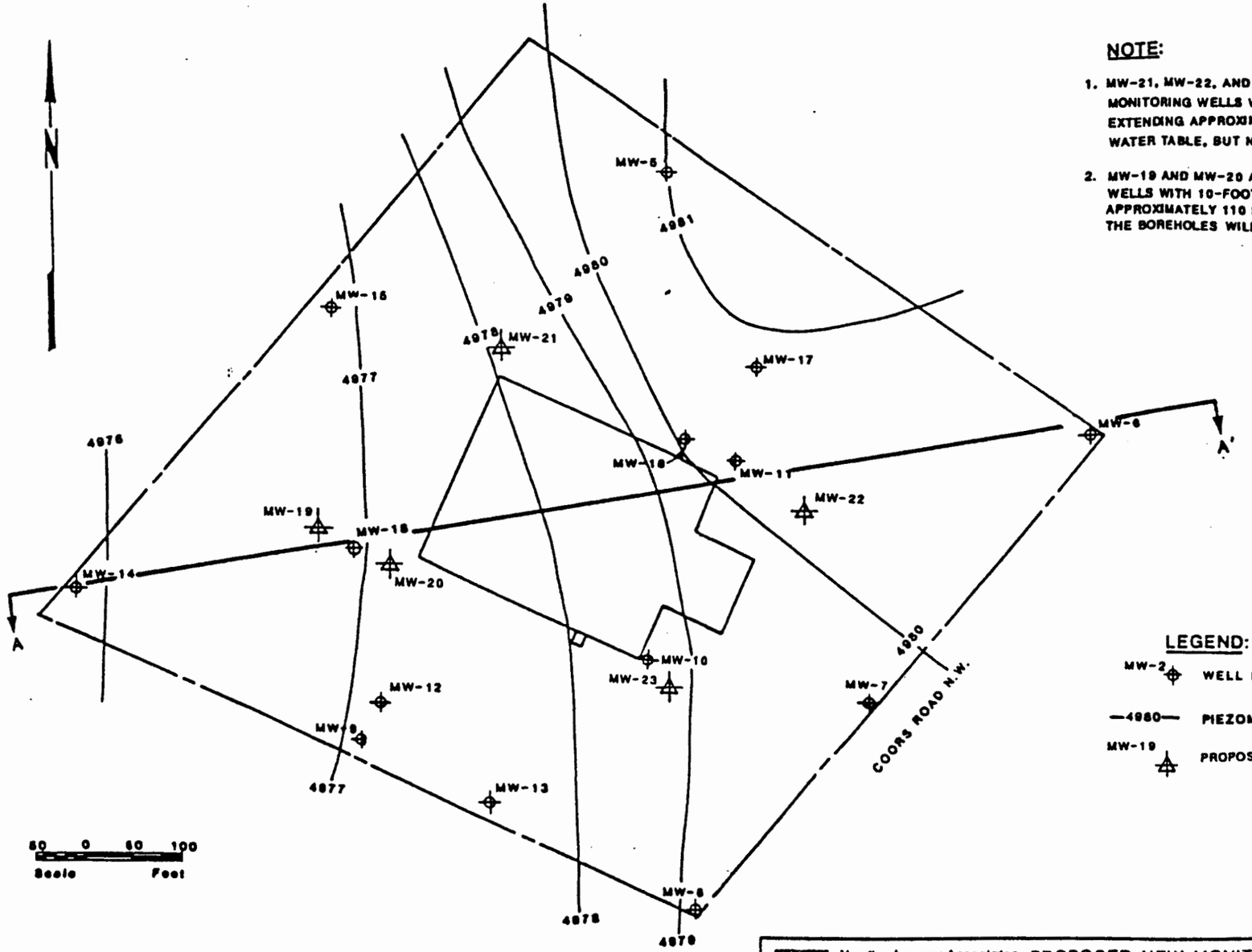
HARDING LAWSON ASSOCIATES

Thomas S. Burger

Thomas S. Burger
Associate Environmental Scientist

TSB:sve

Attachment: as stated



NOTE:

1. MW-21, MW-22, AND MW-23 ARE TO BE SHALLOW MONITORING WELLS WITH 10-FOOT SCREENS EXTENDING APPROXIMATELY 8 FEET BELOW THE WATER TABLE, BUT NOT INTO THE AQUITARD.
2. MW-19 AND MW-20 ARE TO BE DEEPER MONITORING WELLS WITH 10-FOOT SCREENS CENTERED AT APPROXIMATELY 110 FEET AND 140 FEET, RESPECTIVELY. THE BOREHOLES WILL BE SEALED ABOVE THE SCREENS.

LEGEND:

MW-2 WELL LOCATION

—4980— PIEZOMETRIC SURFACE CONTOUR

MW-19 PROPOSED WELL LOCATION

REFERENCE: SPARTON TECH. INC. SURVEY BY DENNEY-GROSS & ASSOC., INC., DATED 10/6/84

Harding Lawson Associates
Engineers Geologists & Geophysicists

PROPOSED NEW MONITORING WELL LOCATIONS
Sparton Technology, Inc.
Albuquerque, New Mexico

PLATE 1

Drawn	Job Number	Approved	Date	Revised	Date
EB	6310,016.12	SDP	7/8/86	EB	7/10/86

SPARTON

SPARTON TECHNOLOGY

January 11, 1989

Mr. Boyd Hamilton
Program Manager
Hazardous Waste Division
Environmental Improvement Division
P.o. Box 968
Santa Fe, NM 87503

Dear Mr. Hamilton:

The ground-water monitoring program at our Coors Road Plant in Albuquerque, New Mexico is being impacted by other programs at that facility. Two of the wells in our monitoring program (MW-18 and MW-23) have been incorporated into our ground-water recovery program. As a result, they no longer contain pumps which are suitable for collecting ground-water samples. We are requesting that we be allowed to stop monitoring those wells beginning with our first quarter 1989 monitoring effort.

Additionally, our Consent Order with EPA requires us to plug monitor wells MW-6, MW-8 and MW-11. We expect to have those wells plugged by the time of our second quarter 1989 monitoring effort. We are requesting that we be allowed to stop monitoring those wells after the first quarter 1989.

We have discussed these matters with Suzanne-Moore-Mayne of your staff, and she has agreed that our requests are acceptable. We would appreciate your written approval of these changes to our current Alternative Ground-Water Monitoring Plan.

If you have any questions, please contact Gary Richardson at (505) 828-2801 or myself.

Sincerely,

SPARTON TECHNOLOGY, INC.

Richard D. Mico
Vice President and General Manager

cc: Mr. Blair Thompson
Mr. Jon DeWitt
Mr. Jay Mabrey
Mr. Gary Richardson
Mr. Ven Samala

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

1190 St. Francis Drive
Santa Fe, New Mexico 87503

GARREY CARRUTHERS
Governor

CARLA L. MUTH
Secretary

MICHAEL J. BURKHART
Deputy Secretary

RECEIVED
FEB -9 1989

February 8, 1989

Richard D. Mico, Vice President
Sparton Technology, Inc.
P.O. Box 1784
Albuquerque, NM 87103

RE: NMD083212332

Dear Mr. Mico:

EID concurs with your request to discontinue monitor wells MW-6, MW-8, MW-11, MW-18, MW-23 from the Alternative Ground-Water Monitoring Plan.

In view of your pending Post Closure Care Permit, any loss of data coverage that may be caused by the deletion of these five wells from the monitoring system, will be remedied within that document.

If you have any questions, please call Suzanne Moore-Mayne at 827-0170.

Sincerely,

Boyd Hamilton
Program Manager
Hazardous Waste Division

copies to: Mr. B. Thompson
Mr. J. DeWitt
Mr. J. Mabrey
Mr. G. Richardson
Mr. V. Samala

SPARTON

SPARTON TECHNOLOGY

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

March 8, 1993

Mr. Edward L. Horst
RCRA Program Manager
HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU
New Mexico Environment Department
P.O. Box 26110
525 Camino de los Marquez
Santa Fe, New Mexico 87502

Dear Mr. Horst:

Sparton Technology, Inc. is writing to request a change in the analytical methods used for volatile organics analysis. The Alternate Ground Water Monitoring Program, (AGWMP), does not specify an analytical method for our quarterly requirement to report trichloroethene and 1,1-dichloroethene concentrations to NMED. Method 8240 has been used to quantify these parameters. Switching to Method 8010 would lower detection limits five fold (1ug/l to 0.2 ug/l) and save approximately $2,500 annually in analysis fees. Method 8010 is the recommended method for analyzing these two parameters as outlined in EPA Report SW-846. We will continue to use Method 8240 for the third quarter annual parameters list, Appendix IX Volatiles as specified in the AGWMP.

If you have any questions please contact John Wakefield or myself at (505) 892-5300. Thank you for your attention to this matter.

Sincerely,
SPARTON TECHNOLOGY, INC.

Richard D. Mico
Vice President and General Manager

cc: Mr. J. Appel
Mr. P. Chandler
Mr. G. Richardson
Mr. J. Wakefield

State of New Mexico
ENVIRONMENT DEPARTMENT
Harold Runnels Building
1190 St. Francis Drive, P.O. Box 26110
Santa Fe, New Mexico 87502
(505) 827-2850

BRUCE KING
GOVERNOR

JUDITH M. ESPINOSA
SECRETARY

RON CURRY
DEPUTY SECRETARY

cc: Jan Appel
Gary Richardson
Pierce Chandler
John Wakefield

March 31, 1993

Mr. Richard D. Mico
Vice President and General Manager
Sparton Technology, Inc.
4901 Rockaway Blvd., SE
Rio Rancho, New Mexico 87124

RECEIVED
APR-2 1993
RICHARD D. MICO

Dear Mr. Mico:

The Hazardous and Radioactive Materials Bureau (HRMB) is in receipt of your letter dated March 8, 1993, requesting a change in the method used for analysis of volatile organic compounds in groundwater from monitoring wells. Specifically, Sparton is requesting to change from Method 8240 to Method 8010 for quantitative analysis of Trichloroethene (TCE) and 1,1-Dichloroethene (DCE) in groundwater samples required as part of the quarterly assessment monitoring program.

HRMB recognizes that the Practical Quantitation Limits (PQL) for TCE and DCE are lower in Method 8010 than in Method 8240. Furthermore, HRMB is aware that both Methods 8010 and 8240 are suggested methods (EPA Laboratory Manual SW-846) for analysis of TCE and DCE in groundwater samples.

Our technical staff has reviewed your request and finds it acceptable. As acknowledged in your letter, this approval applies only to requirements for your quarterly assessment monitoring program, not for your annual groundwater monitoring program.

If there are any questions or comments, please contact Ronald Kern at (505) 827- 4313.

Sincerely,

Edward L. Horst, RCRA Program Manager
Hazardous and Radioactive Materials Bureau

ELH:rk

cc: Edward Horst, HRMB
Ronald Kern, HRMB
File