ENTERED

Environmental
Resources
Management

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(281) 579-8999
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ERM®

January 28, 2000

Mr. Carl Will
New Mexico Environment Department
2044 Galisteo
Santa Fe, New Mexico 87502 W.O. #555-002

Subject: Responses to Agency Comments from January 21, 2000

Dear Mr. Will:

On January 21, 2000, you spoke with Mr. Paul Indeglia regarding the information submitted by Environmental Resources Management (ERM) to the New Mexico Environment Department (NMED) on behalf of Sparton Technologies, Inc. (Sparton) and their Coors Road Facility in Albuquerque, New Mexico. The purpose of the discussion was to identify items for which additional information or explanation would be useful to bring closure to the financial assurance element of the site remediation program.

Listed below are the thirteen (13) items identified in the phone call, followed by the corresponding response.

ERM is confident that this additional documentation will provide NMED and the United States Environmental Protection Agency (USEPA) with the necessary bases for making a determination of adequacy on the financial assurance.

Comment #1: You indicated that you would like to see a bid for the installation of the on-site containment system.

Response #1: There are four main elements for the on-site containment system: a 120-foot well, a 50-gpm pump, a 50-gpm air stripper, and the infiltration ponds. The costs are outlined in Attachment 1. The installation of the well, including development and disposal of cuttings and purge water is $18,000, as quoted by Rodgers and Co. The pump, with controllers and installed, will be $8,000.00, as quoted by the Grundfos Pumps Corporation. The air stripper will cost $30,000.00, as quoted by EPG. The piping for the infiltration ponds are estimated to cost $10,000.00, based on the Environmental Restoration: Assemblies Cost Book. These costs are represented in Attachment 1. These costs are less than what is shown on the cost table.

Comment #2: You indicated that you would like to see specifications and a bid for the modification to the SVE system.

Response #2: Product specification and a written quote of $3,441.00 for a Roots 200-cfm blower for the air stripper are included as Attachment 2. It is estimated that installation will be $550.00, including wiring. This cost is less than what is shown on the cost table.

Comment #3: You indicated that you would like to see cost information for the permits, including the renewal of the RCRA permit, the permits for this year's activities, the ground water discharge permit, and the air permit.

Response #3: The cost for developing documentation for permits is included in the project management section of the cost tables.

The air permit is in place. There is no additional work that needs to be done for the air permit.

The modification for the discharge permit has been prepared and was submitted on December 7, 1999 for review by the agency. There is a fee of $50.00 for filing and a flat fee of $1,380.00. The flat fee is reduced by 50% to $690.00 because the application is for a permit modification and because future applications will be for permit renewals. Therefore, the total permit renewal fee is $740.00. The permit must be renewed every five (5) years. The total for the discharge permit for the 30-year period is $4,440.00. Appropriate sections of the State of New Mexico Water Quality Control Commission Regulation are included as Attachment 3. The cost of $4,440.00 for the discharge permit is less than the contingency of $7,000.00 ($350.00 per year over 20 years) for the line item.

Sparton is meeting with the State on Monday February 7, 2000 to discuss the requirements for future State RCRA permits. Should the State decide permitting is required, there will be a one-time fee of $12,000.00, plus an annual cost of up to $4,700.00, totaling $153,000.00 for the duration of the remediation program. Resolution of this issue is expected shortly.

Comment #4: You indicated that you would like to see cost information for the periodic abandonment of wells due to the fluctuation of the ground water table.

Response #4: There are two issues addressed in this comment: the cost for the abandonment of the wells and the costs for the replacement wells.

There is a $600,000.00 allotment for equipment and the operation and maintenance of the system (budgeted as $1,000.00 per month for 30 years for the on-site source containment and $1,000.00 per month for 20 years for the off-site containment system). This cost includes the periodic replacement of wells. We have provided a quote from Rodgers & Co., a drilling company in Albuquerque for a 90-foot, 2-inch well and a 200-foot, 4-inch well, corresponding to two representative wells that may need replacement if as the ground water elevation recedes (Attachment 4). The estimates for the 2-inch and 4-inch wells are $3,728.00 and $14,812.00, respectively. It is assumed that one in four wells (sixteen of the sixty-three wells) will need to be replaced due to the fluctuation of the ground water elevation and half of the sixteen wells to be replaced will be shallow, the total replacement cost for these wells is $148,320.00. There are adequate funds allocated in the cost tables to the replace several wells at each depth.

Regarding the abandonment of the wells, we have provided a quote from Rodgers & Co. for the to plugging and abandonment of all the wells associated with the remediation system (Attachment 5). The estimate for the abandonment of the wells is $75,600.00.

Comment #5: You indicated the preparation of a Health and Safety Plan may be required under the Work Plan.

Response #5: Page 13 of the Consent Decree (Attachment 6) discusses the issue of a Health and Safety Plan and the process for submission and review. Page 13 of the "Work Plan for the Off-Site Containment System", prepared by S. S. Papadopulos & Associates (Attachment 7), indicates that there is no need for a Health and Safety Plan in regard to the Air Stripper and Infiltration Gallery. On page 15 of the same document, in regard to the Operation and Maintenance Plan, the Work Plan states "A revised Health and Safety Plan will also be submitted for review and approval." ERM contacted Stavros Papadopolus and Gary Richardson of Metric to find out if the revised Health and Safety Plan has been completed. Both individuals indicated that the Health and Safety Plan has been prepared and they are waiting for the Consent Decree to become effective until they submit it to the EPA and the State of New Mexico for review. This is consistent with the dicta of the Consent Decree. Thus the cost has been incurred already and does not need to be included in the financial assurance cost tables.

Comment #6: You indicated that you would like to see drilling costs for Well 72, as indicated in the Work Plan.

Response #6: Well 72 has already been installed and there is no need for a future cost line item for the installation of this well.

Comment #7: You indicated that you would like to see cost information for the sampling of Well 72 and the report that may possibly be produced.

Response #7: Well 72 has already been installed and the sampling of the well has been accounted for in the development of the cost tables. The cost for producing a report for the sampling of Well 72 is included in the existing cost tables.

Comment #8: You indicated that you would like to see additional information on the specific activities to be undertaken for the on-site and off-site monitoring.

Response #8: The monitoring program has already been approved as part of the Consent Decree. We have reviewed the monitoring plan and based the estimates on the activities in the plan.

Comment #9: You indicated that you would like additional detailed information outlining what activities will be conducted in the on-site and off-site monitoring. You indicated you would like to see additional information that will enable you to assess how we arrived at the cost listed on the cost table for the on-site and off-site monitoring. (Upon further clarification, you indicated you would like to know whether the cost of monitoring equipment is it built into the hourly rate or needing to be listed separately.)

Response #9: The activities involved in the on-site and off-site monitoring (the actual sampling event) will require a water-level indicator, a combined ph/Conductivity/ Temperature meter, disposable bailers, and latex gloves. These items are built into the hourly rate.

However, these costs are well within the total annual contingency of $2,325.00 for the Materials and Services Expenditures element of this line item, as indicated by the following commercial prices. A water-level indicator costs $179.50, which can be used for the 30-year project period, resulting in an annual cost of $5.98. A combined ph/Conductivity/ Temperature meter costs $445.00, which can be used for the 30-year project period, resulting in an annual cost of $14.83. A pack of 24 disposable bailers is $99.50, resulting in an annual cost of $344.10. A box of 100 disposable latex gloves costs $7.50, which will be adequate for the 83 annual sampling locations. The total annual

cost of the sampling equipment is $372.42. (See pricing lists in Attachment 10.)

The hourly cost for the technician is derived from the New Mexico Underground Storage Tank Program Cost Reimbursement Guidelines (Attachment 11) and placed at $45.00 per hour. There is an effective contingency of $1,275.00, or approximately 11%, associated with the monitoring labor

The time required to sample a well (an average of 3 hours) includes the travel time to and from the location, the actual recording of measurements, the collection of the sample, the proper storage of the samples, decontamination of the sampling equipment, and the completion of appropriate documentation (field book entries and chain-of-custody forms). ERM has developed this time based on 20 years of experience conducting environmental sampling.

Comment #10: You indicated that you would like additional information as to how long the SVE system will operate.

Response #10: The modification to the SVE system is the addition of one 200-cfm blower (see Attachment 2). According the "Vadose Zone Investigation and Implementation Workplan" (Attachment 12) the SVE system is only to operate for one year. The bases for the operation for the SVE system for a one-year period are several studies outlined in the "Vadose Zone Investigation and Implementation Workplan". One such study is the soil vapor extraction test conducted on-site in February 1997 and the subsequent tests conducted after the system had been off for a period of time, allowing for the soil vapor to achieve equilibrium. These tests depict the effectiveness of the current system and are exemplified by the influent sampling conducted on August 5, 1998 that showed a drop in constituent concentration of over 2 orders of magnitude with a corresponding TCE removal of approximately 290 pounds (see page 3 of "Vadose Zone Investigation and Implementation Workplan"). This sampling also demonstrated that the target goals for the SVE system have already been achieved.

Comment #11: You indicated that you would like to see additional information on the maintenance of these infiltration galleries and the associated costs.

Response #11: The assumption that the infiltration galleries were to operate properly for a period of only four (4) years was based on another infiltration gallery in the Albuquerque area (Van Waters and Rogers). At the time of the original

discussion between Sparton and the Agency, the Van Waters and Rogers system had only been operating for 4 years, thus the designers of the Sparton system could only say with confidence that it was good for four (4) years. Currently, the system is still operating, and at six (6) years of age, it continues to operate consistent with design expectations.

Upon further development of the Van Waters and Rogers system, it was discovered that the addition of Aqua Mag, a polymer that keeps carbonates and other salts in solution and prevents the precipitation of scaling compounds in the distribution system and the receiving soils in the infiltration galleries, maintains the system performance adequately to meet design expectations. In coordination with the agency, it was agreed that Aqua Mag would be used at the Sparton system. This is documented in the Discharge Approval Plan (Attachment 13).

Mr. Daniel A. Yamashiro, ERM's remediation expert with nearly twenty years of remediation system design (Attachment 14), has evaluated the influent water data, the local geological conditions, and the performance history of Aqua Mag to assess the capacity of the infiltration galleries. Mr. Yamashiro has concluded that the galleries' usefulness will extend beyond a 20-year life under the current design and with proper maintenance of the air stripper, including periodic repacking of the units. As a result of this expectation, there is no need to include a cost for the maintenance of the infiltration galleries beyond that which is included in the existing cost tables.

Comment #12: You indicated that you would like to see cost information on the maintenance of the infiltration ponds.

Response #12: The activities included for the maintenance of the infiltration ponds is the harvesting of the clogging layer. It is estimated that once every two and a half years, maintenance personnel will be required to remove the crust that may form. This crust may cause a reduction of the infiltration rate. The removal of the clogging layer will require the time of two individuals for a two-week period (or 14 days). At the rate of $45.00 per hour for two field technicians, $6,000.00 has been allocated for this task for each occurrence, or $2,400.00 annually. A contingency of two additional days has been included in the $6,000.00 figure. The costs are covered adequately within the line-item for O&M - Labor listed under the Source Containment section in the O&M Expenditures portion of the cost table. Please refer to the December 31, 1999 letter to Mr. Mike Hebert (Attachment 15).

Comment #13: You indicated that you would like to see the addition of costs associated with the closure of the system. Specifically, you indicated there would need to be costs for the following: back filling of the infiltration ponds and infiltration galleries, soil sampling for the sediments in the infiltration galleries, and dismantling of structures.

Response #13: Closure activities for the infiltration ponds will require the grading of the 18" berms. The cost for this activity will require a front-end loader for a maximum of two days and will not exceed $2,000.00. There is a line item of $360,000.00 in operation and maintenance costs for the 30-year operating period for the on-site source containment system. Additionally, there is $36,000.00 allocated for contingency. It is believed that there is adequate cost for this activity within the existing O&M budget.

The air stripper at the facility has been operating as designed since its installation and the water quality data is well below drinking water standards. The stripper is designed to yield water of this quality for its life. Therefore, there should be no reasonable justification for the requirement of soil sampling of the infiltration ponds at closure. Additionally, there is no requirement in the Discharge Plan Approval, dated June 26, 1998 (Attachment 13) requiring post-closure sampling of the infiltration galleries. Should analytical data elucidate a need for such sampling, future modifications to the "Work Plan" can be made.

Closure activities for the infiltration galleries will require, as put forth in the Operation Plan (Attachment E to the "Work Plan") (Attachment 16), that all structures be removed, and that the perforated pipes in the infiltration gallery be excavated. There will be no back-filling required since the galleries currently exist at grade (the galleries are sub-surface). The activities will require the trenching and removal of the pipes. The acquisition of a truck to trench and remove the pipes will not exceed $2,000.00. It is anticipated that the pipe will be recycled at no cost. Because the closure cost was expected to be small it was not explicitly included in the cost tables and is easily covered by the O&M budget included in the cost tables. The O&M line item included $240,000.00 for a 20-year periods for the off-site remediation system. Additionally, there is $24,000.00 included as contingency. This is considered to be adequate for O&M activities.

ERM anticipates that this will satisfy the request for information by the State of New Mexico Environment Department regarding the financial assurance of Sparton Technologies' remediation system. If there are further comments, please direct them to me at (281) 600-1218 or to the attention of Mr. Mark Cheesman at (281) 600-1064. Thank you.

Sincerely,

Environmental Resources Management

Richard C. Bost, P.E. CGWP
Principal

RCB/clc
Attachments

cc: Mike Hebert, United State Environmental Protection Agency (Dallas)
Tony Hurst, Rio Grande Utility Company (Albuquerque)
Jim Harris, Thompson & Knight (Dallas)
Mark Cheesman, Environmental Resources Management (Houston)

Cost Estimate Source Containment System

Attachment 1

January 28, 2000

W.O. #555-002

Environmental Resources Management
16300 Katy Freeway, Suite 300
Houston, Texas 77094-1611
(281) 600-1000

BS283555-PAI

Attachment 1
Cost Estimate

Source Containment System

Sparton Technology, Inc.
Coors Road Facility

Item	Cost	Source
Containment Well 6" x 120' w/ 60' screen	$ 18,000	Rodgers & Co., Inc. - Verbal Estimate, includes waste disposal
Submersible Pump and Controller and Installation 60 gpm @ 250'	$ 8,000	Verbal Estimate from Grundfos Pumps Corporation
50 gpm Air Stripper 6 tray	$ 30,000	EPG written quote (attached)
Pond Piping 2" x 2,000'	$ 10,000	Environmental restoration: Assemblies Cost Book (1996), ECHOS

4-Inch Submersibles

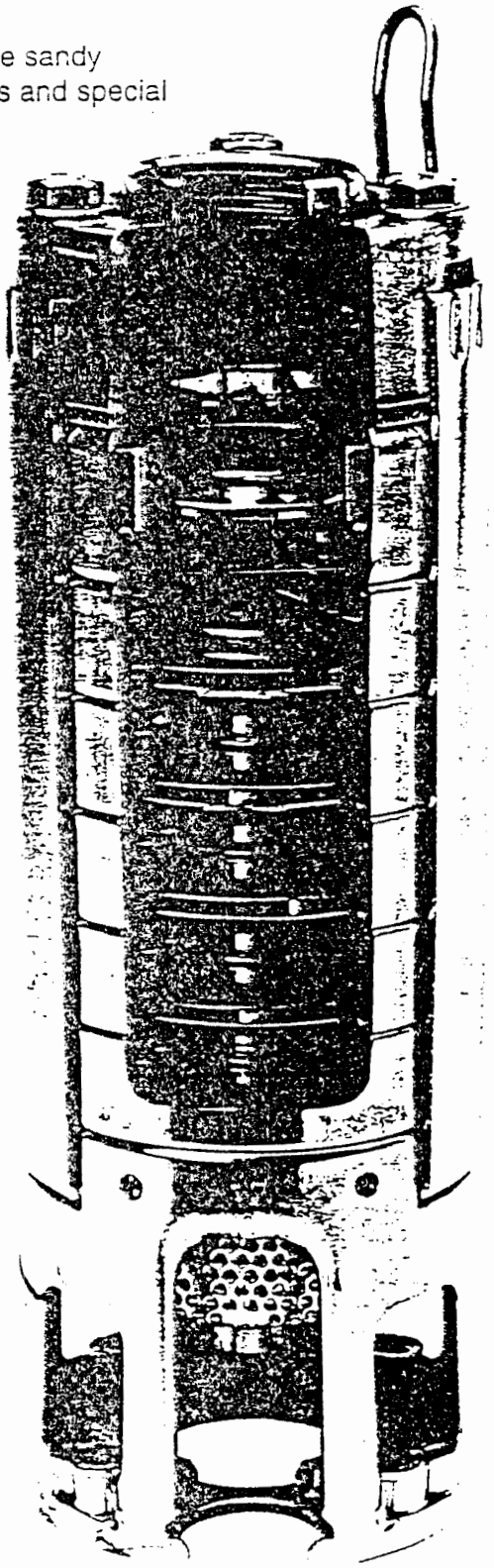
Grundfos' 4" submersibles feature corrosion-resistant stainless steel construction and are designed to provide years of trouble free performance.

With built-in sand bearing protection, the 4" submersible can handle the sandy conditions often found in domestic wells. Built-in, jam-free check valves and special upthrust protection guarantee smooth running, fail-safe operation. A user friendly cable guard aids in ease of installation.

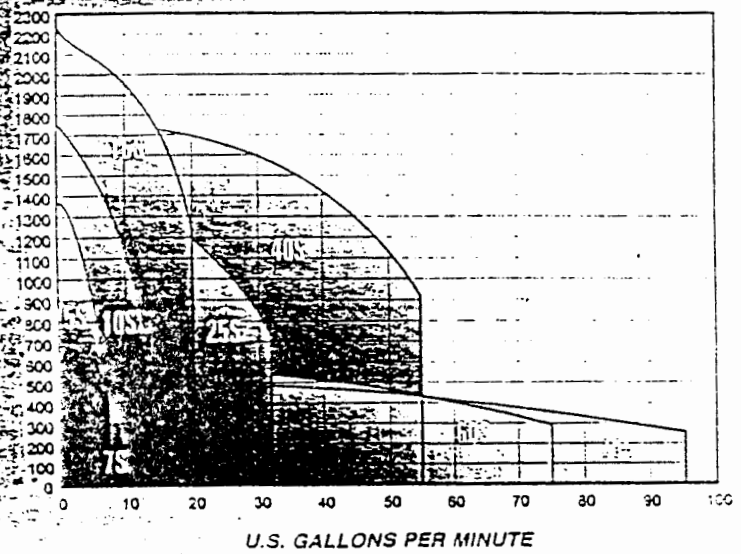
Grundfos 4" submersibles are also available with a rugged Franklin® submersible motor. Manufactured also of stainless steel, the two units together result in a quality pumping unit built to last.

New Radial Thrust Top Bearing handles sand and increases pump life.

The Redi-Flo4, constructed of stainless steel and virgin Teflon® is designed for environmental monitoring and clean-up operations.



Performance



60S Easy Selection Chart

60 GPM

SELECTION CHARTS

(Ratings are in GALLONS PER HOUR-GPH)

FLOW RANGE
(40 TO 75 GPM)

PUMP OUTLET
2" NPT

DEPTH TO PUMPING WATER LEVEL (LIFT) IN FEET

PUMP MODEL	HP	PSI	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	340	400	460	520	600	700	800	900	1000	11
60S20-4	2	20	4305	3870	2315	760	380																				
		30	3515	2895	1345																						
		40	1825																								
		50	1075																								
		60																									
SHUT-OFF PSI:			46	37	29	20	11	3																			
60S30-5	3	0				4485	4005	3530	2060																		
		20	4665	4375	3830	3285	1645																				
		30	4560	3860	2835	1800	900																				
		40	3625	2995	1500																						
		50	2425	1165	585																						
		60	1320																								
SHUT-OFF PSI:			60	51	42	34	25	16	8																		
60S50-7	5	0					4650	4430	4105	3785	3130	2480															
		20			4580	4345	3995	3665	2900	2150	1075																
		30		4560	4275	3990	3470	2950	1475																		
		40	4505	4280	3675	3490	2630	1765	885																		
		50	4180	3875	3285	2695	1350																				
		60	3740	3320	2320	1320	660																				
SHUT-OFF PSI:			88	80	71	62	54	45	36	28	19	10															
60S50-9	5	0							4490	4300	4040	3780	3335	2890	1965	1040											
		20					4430	4230	3965	3680	3180	2690	1650	610	305												
		30			4590	4410	4175	3940	3565	3190	2440	1685	840														
		40		4570	4365	4160	3860	3665	3015	2460	1230																
		50	4530	4350	4100	3850	3440	3025	2180	1330	665																
		60	4300	4085	3780	3440	2825	2205	1105																		
SHUT-OFF PSI:			115	106	98	89	81	72	63	55	46	37	29	20	11	3											
60S75-13 *60S75-13	7 1/2	0									4640	4525	4395	4240	4065	3890	3640	3000	1290								
		20							4610	4485	4340	4195	4010	3825	3560	3300	2875	1735									
		30						4595	4460	4325	4160	3995	3770	3550	3200	2860	2290	860									
		40					4570	4445	4295	4145	3950	3780	3475	3195	2735	2275	1500	360									
		50				4555	4415	4280	4105	3935	3700	3460	3085	2725	2100	1480	740										
		60			4530	4400	4245	4090	3890	3685	3380	3080	2585	2085	1245	405											
SHUT-OFF PSI:		*			152	143	134	126	117	108	100	91	82	74	65	56	48	30	4								
*60S100-18 60S100-18	10	0													4590	4500	4400	4185	3785	3155	2150						
		20											4565	4475	4370	4270	4150	3880	3350	2400	850						
		30										4555	4455	4360	4250	4135	4000	3695	3055	1890							
		40									4540	4445	4340	4235	4110	3990	3835	3480	2700	1240							
		50								4525	4425	4325	4210	4100	3960	3820	3640	3215	2250	600							
		60							4510	4415	4305	4200	4070	3945	3785	3630	3410	2890	1700								
SHUT-OFF PSI:									186	177	169	160	152	143	134	126	117	100	74	46	22						

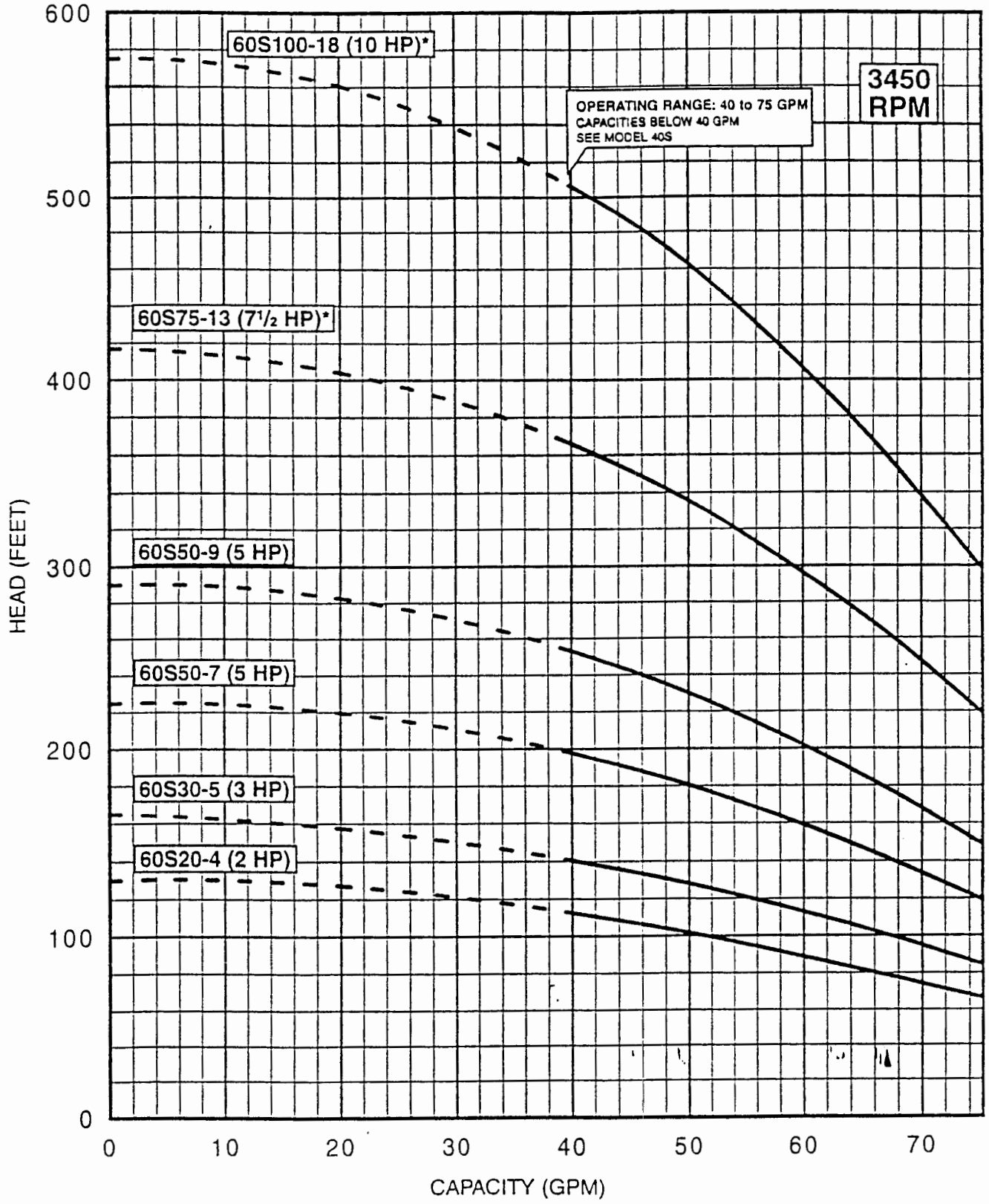
* 6" Motor

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

GRUNDFOS

Model 60S 60 GPM Performance Curve

FLOW RANGE: 40 -75 GPM OUTLET SIZE: 2 " NPT NOMINAL DIA. 4



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
4" MOTOR STANDARD
* Also available with 6" motor.

Performance conforms to ISO 2548 Annex
@ 5 ft. min. submergence.

GRUNDFOS

DIMENSIONS AND WEIGHTS

MODEL NO.	FIG.	HP	MOTOR SIZE	DISCH. SIZE	DIMENSIONS IN INCHES A	B	C	D	E	APPROX. SHIP WT.
60S20-4	A	2	4"	2" NPT	32.6	15.1	17.5	3.8	3.9	39
60S30-5	A	3	4"	2" NPT	40.7	20.6	20.1	3.8	3.9	64
60S50-7	A	5	4"	2" NPT	48.8	23.6	25.2	3.8	3.9	75
60S50-9	A	5	4"	2" NPT	53.9	23.6	30.3	3.8	3.9	80
60S75-13*	A	7 1/2	4"	2" NPT	70.1	29.6	40.5	3.8	3.9	105
60S100-18*	A	10	4"	2" NPT	97.3	43.9	53.4	3.8	3.9	160

NOTES: All models suitable for use in 4" wells, unless otherwise noted.
Weights include pump end with motor in lbs.
* Also available with 6" motor.

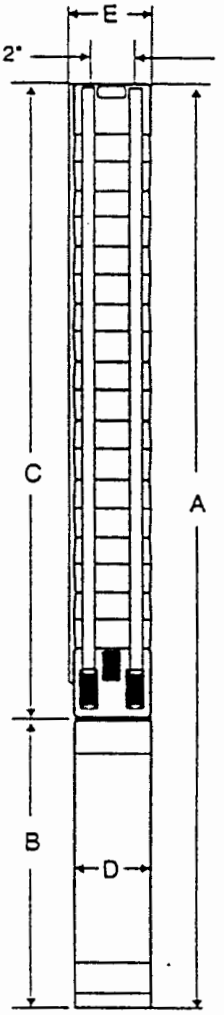


Fig. A

MATERIALS OF CONSTRUCTION

COMPONENT	CYLINDRICAL SHAFT (4-18 Stgs.)
Check Valve Housing	304 Stainless Steel
Check Valve	304 Stainless Steel
Diffuser Chamber	304 Stainless Steel
Impeller	304 Stainless Steel
Suction Interconnector	304 Stainless Steel
Inlet Screen	304 Stainless Steel
Pump Shaft	431 Stainless Steel
Straps	304 Stainless Steel
Cable Guard	304 Stainless Steel
Priming Inducer	304 Stainless Steel
Coupling	316/431 Stainless Steel**
Check Valve Seat	NBR/316 Stainless Steel
Top Bearing	NBR/316 Stainless Steel
Impeller Seal Ring	NBR/316 Stainless Steel
Intermediate Bearings	NBR/316 Stainless Steel
Shaft Washer	LCP (Vectra®)
Split Cone	304 Stainless Steel
Split Cone Nut	304 Stainless Steel
Coupling Key	Not Required**

NOTES: Specifications are subject to change without notice.
Vectra ® is a registered trademark of Hoechast Calanese Corporation.
** If using 6" non-standard motors, refer to 329/416 Stainless Steel for coupling and 302/304 for the coupling key.

GRUNDFOS
GRUNDFOS PUMPS CORPORATION • 3131 N. Business Park Avenue • Fresno, CA • 93727
Customer Service Centers: Allentown, PA • Fresno, CA
Phone (800) 333-1366 • FAX (800) 333-1363
Canada: Oakville, Ontario • Mexico: Apodaca, N.L.

LSP-TL-1060 Rev. 12/98
PRINTED IN USA

EPG Companies Inc.

Manufacturer of Industrial and Environmental Solutions

– Fax Transmittal –

To:	Gary Richardson
Company:	METRIC Corp.
Fax Number:	505-828-2803
Date:	March 19, 1999
Total Pages: *(including this page)*	4
From:	Jim Bailey
Subject:	**Air Stripper**

Message:

See chemistry data for the STAT 180.

Budgetary pricing for the 5-tray unit with 7½ HP, 460 V, 3Ø, TEFC blower is $25,000 to $26,500 delivered.

Budgetary pricing for the 6-tray unit with 7½ HP, 460 V, 3Ø, TEFC blower is $27,000 to $28,500 delivered.

Let me know if I can be of further assistance. It's been a pleasure working with you.

Enjoy your weekend,

Jim

P.O. Box 427, Rogers, MN 55374
19900 County Road 81, Maple Grove, MN 55311
Phone: 612-424-2613 • 800-443-7426 • Fax: 612-493-4812

Pumps - Sensors - UL Controls - Tanks - Air Strippers - Blowers - Thermal Oxidizers - Process Equipment

EPG Companies
19900 County Road 81
Maple Grove, MN 55311
612-424-2613
Fax: 612-493-4812

03/19/99
11:13:12

----------STAT 180----------
VERSION 3.1

WATER FLOW RATE: 75.0 gpm
AIR FLOW RATE: 650.0 cfm
WATER TEMPERATURE: 63.0 F
AIR-TO-WATER RATIO: 65:1

Influent Conc. for TRICHLOROETHENE 5000.0 ppb

NO OF TRAY	REMOVAL EFF %	EFF CONC ppb	OFF-GAS CONC ug/l	AIR EMISSION lb/d
1	82.55326	872.3372	63.5025	3.7165
2	96.85737	157.1316	74.5057	4.3605
3	99.43073	28.4636	76.4852	4.4764
4	99.89677	5.1613	76.8437	4.4973
5	99.98128	0.9361	76.9087	4.5011
6	99.99660	0.1698	76.9205	4.5018

Influent Conc. for 1,1-DICHLOROETHENE 500.0 ppb

NO OF TRAY	REMOVAL EFF %	EFF CONC ppb	OFF-GAS CONC ug/l	AIR EMISSION lb/d
1	89.72993	51.3503	6.9023	0.4040
2	98.93453	5.3274	7.6103	0.4454
3	99.88935	0.5533	7.6838	0.4497
4	99.98851	0.0575	7.6914	0.4501
5	99.99881	0.0060	7.6922	0.4502
6	99.99988	0.0006	7.6923	0.4502

Influent Conc. for 1,1,1-TRICHLOROETHANE 500.0 ppb

NO OF TRAY	REMOVAL EFF %	EFF CONC ppb	OFF-GAS CONC ug/l	AIR EMISSION lb/d
1	84.61496	76.9252	6.5088	0.3809
2	97.57983	12.1008	7.5061	0.4393
3	99.61798	1.9101	7.6629	0.4485
4	99.93966	0.3017	7.6877	0.4499
5	99.99047	0.0476	7.6916	0.4502
6	99.99849	0.0075	7.6922	0.4502

Influent Conc. for METHYLENE CHLORIDE 500.0 ppb

NO OF TRAY	REMOVAL EFF %	EFF CONC ppb	OFF-GAS CONC ug/l	AIR EMISSION lb/d
1	64.03217	179.8391	4.9256	0.2883
2	85.85435	70.7283	6.6042	0.3865
3	94.25372	28.7314	7.2503	0.4243
4	97.63581	11.8210	7.5104	0.4396
5	99.02225	4.8888	7.6171	0.4458
6	99.59477	2.0261	7.6611	0.4484

EPG Companies
19900 County Road 81
Maple Grove, MN 55311
612-424-2613
Fax: 612-493-4812

03/19/99
11:13:12

----------STAT 180----------
VERSION 3.1

WATER FLOW RATE: 75.0 gpm
AIR FLOW RATE: 650.0 cfm
WATER TEMPERATURE: 63.0 F
AIR-TO-WATER RATIO: 65:1

Influent Conc. for TOTAL VOCs 6500.0 ppb

NO OF TRAY	REMOVAL EFF %	EFF CONC ppb	OFF-GAS CONC ug/l	AIR EMISSION lb/d
1	81.83920	1180.4519	81.8392	4.7897
2	96.22634	245.2880	96.2263	5.6317
3	99.08218	59.6584	99.0822	5.7989
4	99.73321	17.3414	99.7332	5.8370
5	99.90956	5.8784	99.9096	5.8473
6	99.96609	2.2041	99.9661	5.8506

Assembly	Description	Unit	Unit Cost by Safety Level A	B	C	D	E
	Capital Costs						
19 04 0602	550 Gal Steel Sump, Above-Ground w/Support & Fittings	EA	1,653.67	1,427.28	1,329.33	1,110.45	1,030.85
19 04 0603	1,000 Gal Steel Sump, Above-Ground w/Support & Fittings	EA	2,136.93	1,852.15	1,728.51	1,453.14	1,353.28
19 04 0604	1,500 Gal Steel Sump, Above-Ground w/Support & Fittings	EA	2,719.50	2,363.51	2,208.97	1,864.77	1,739.93
19 04 0605	2,000 Gal Steel Sump, Above-Ground w/Support & Fittings	EA	3,336.87	2,887.13	2,679.51	2,243.92	2,093.88
19 04 0606	5,000 Gal Steel Sump, Above-Ground w/Support & Fittings	EA	5,861.34	5,288.95	5,024.70	4,470.31	4,279.36
19 04 0621	550 Gal Horizontal Plastic Sump w/4" NPT Connection	EA	2,762.67	2,655.20	2,608.56	2,504.64	2,466.95
19 04 0622	1,000 Gal Horizontal Plastic Sump w/4" NPT Connection	EA	3,541.44	3,399.05	3,337.22	3,199.54	3,149.60
19 04 0623	2,000 Gal Horizontal Plastic Sump w/6" NPT Connection	EA	4,802.44	4,624.44	4,547.16	4,375.07	4,312.66
19 04 0624	4,000 Gal Horizontal Plastic Sump w/6" NPT Connection	EA	6,325.76	6,114.81	6,023.23	5,819.25	5,745.28
19 04 0625	6,000 Gal Horizontal Plastic Sump w/6" NPT Connection	EA	8,102.32	7,817.55	7,693.91	7,418.54	7,318.67
19 04 0626	8,000 Gal Horizontal Plastic Sump w/6" NPT Connection	EA	9,547.81	9,191.82	9,037.27	8,693.07	8,568.25
19 04 0627	10,000 Gal Horizontal Plastic Sump w/6" NPT Connection	EA	11,116.11	10,666.38	10,458.75	10,023.16	9,873.12
19 04 0628	12,000 Gal Horizontal Plastic Sump w/6" NPT Connection	EA	13,639.25	13,066.87	12,802.63	12,248.24	12,057.28
19 04 0629	15,000 Gal Horizontal Plastic Sump w/6" NPT Connection	EA	18,282.37	17,652.74	17,362.06	16,752.26	16,542.20
19 04 0631	20,000 Gal Horizontal Plastic Sump w/6" NPT Connection	EA	23,461.50	22,761.92	22,438.95	21,761.37	21,527.97
19 04 0632	25,000 Gal Horizontal Plastic Sump w/6" NPT Connection	EA	37,687.65	36,788.18	36,372.93	35,501.75	35,201.66
19 04 0633	30,000 Gal Horizontal Plastic Sump w/6" NPT Connection	EA	56,132.03	55,082.63	54,598.18	53,581.81	53,231.72
19 04 0634	40,000 Gal Horizontal Plastic Sump w/6" NPT Connection	EA	70,053.07	68,479.00	67,752.31	66,227.75	65,702.62
19 04 0635	48,000 Gal Horizontal Plastic Sump w/6" NPT Connection	EA	78,951.02	76,852.25	75,883.34	73,850.59	73,150.41
19 07 0120	1-1/4", 60 PSI, Polyethylene Pipe	LF	4.79	3.97	3.57	2.77	2.48
19 07 0121	1-1/2", 60 PSI, Polyethylene Pipe	LF	4.93	4.10	3.71	2.90	2.63
19 07 0122	2", 60 PSI, Polyethylene Pipe	LF	5.65	4.72	4.29	3.40	3.10
19 07 0123	3" Polyethylene 40' Joints, 60 PSI	LF	8.26	7.17	6.64	5.57	5.19
19 07 0124	4" Polyethylene 40' Joints, 60 PSI	LF	14.66	12.36	11.12	8.87	8.21
19 07 0125	6" Polyethylene 40' Joints, 60 PSI	LF	20.05	17.54	16.23	13.79	13.05
19 07 0126	8" Polyethylene 40' Joints, 60 PSI	LF	29.56	26.55	24.95	22.04	21.16
20 06 0101	3-9 Lb Magnesium Anodes, Cathodic Protection Point	EA	1,528.20	1,220.86	1,077.52	779.78	678.15
20 06 0102	3-17 Lb Magnesium Anodes, Cathodic Protection Point	EA	1,977.90	1,593.33	1,411.78	1,039.08	913.27
20 06 0103	3-32 Lb Magnesium Anodes, Cathodic Protection Point	EA	2,491.79	2,035.50	1,818.46	1,376.17	1,227.90

Cost Estimate - Blower

Attachment 2

January 28, 2000

W.O. #555-002

Environmental Resources Management
16300 Katy Freeway, Suite 300
Houston, Texas 77094-1611
(281) 600-1000

BS283555-PAI

ROOTS

COMPANY: SPARTAN TECH FAX:
ATTN.: PIERCE CHANDLER FAX:
REFERENCE: 2-99 QUOTE

PERFORMANCE

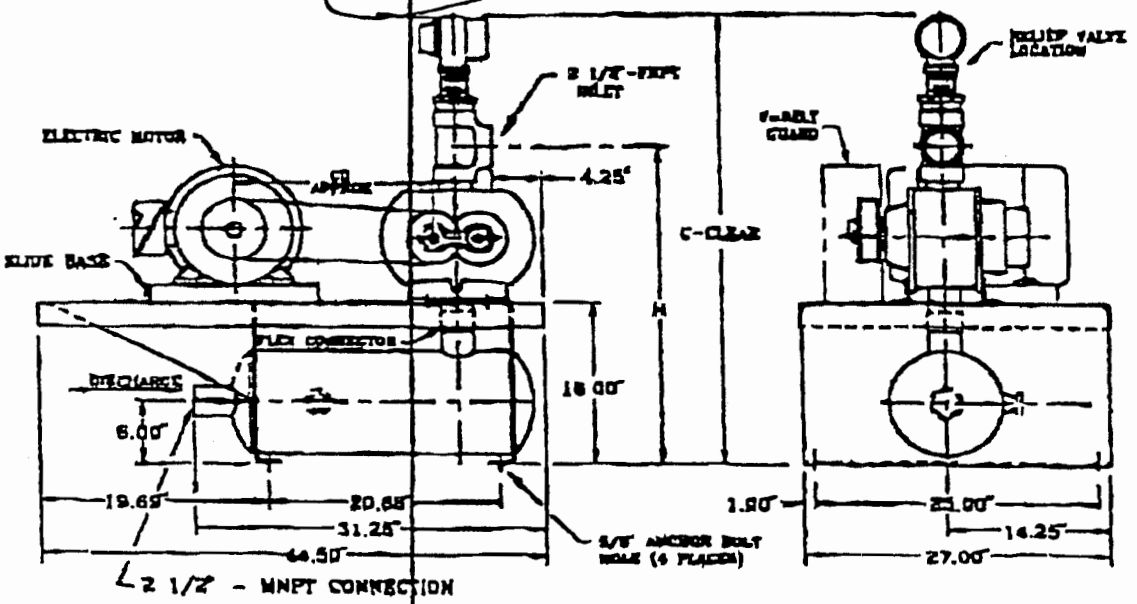
BAROMETER (PSIA)	Inlet Vacuum 3" Hg	DISCHARGE PRESSURE (PSIA)	14.63
INLET PRESSURE (PSIA)	13.96	DISCHARGE TEMP. (°F)	93
INLET TEMPERATURE (°F)	68	BLOWER SPEED (RPM)	2274
INLET FLOW (ACFM)	200	BLOWER BRAKE HP	2.2

BILL OF MATERIALS - 2 1/2V PACKAGE

■ ITEMS SUPPLIED IN PACKAGE

■ BLOWER: 36 URAI
■ MOTOR: FRAME ___ HP 3 RPM 1750 MFG ___ VOLT 230-460/3/60
■ INLET FILTER 2½" ☐ INLET FILTER/SILENCER ___
☐ INLET SILENCER ___ ■ DISCHARGE SILENCER 2 1/2"
■ CHECK VALVE: Techno-Check 5002 Cast A
☐ BUTTERFLY VALVE: PDC
☐ TEMP. GAUGE: Ashcroft : 50-550°F RANGE
☐ TEMP. SWITCH: 0-425°F RANGE NEMA 4 ( ) NEMA 7 ( )
■ VACUUM GAUGE: NIKA ; 30-0 HG VAC. RANGE
☐ VACUUM SWITCH: 30-0 HG RANGE NEMA 4 ( ) NEMA 7 ( )
■ RELIEF VALVE: 2"-215V

ROOTSPAK STANDARD ARRANGEMENT



MODEL	BLWR	C	CD	H	APPROX. NET WT. (LBS.)
36-2.5	36 URAI	40.25	18.00	28.61	375
45-2.5	45 URAI	42.00	18.00	30.39	390
53-2.5	53 URAI	43.25	18.00	31.61	415

NOTES:
1. ALL DIMENSIONS ARE IN INCHES
2. PACKAGES MAY NOT BE EXACTLY AS SHOWN.
3. APPROX. WEIGHTS DO NOT INCLUDE MOTOR.
4. ALL INSTRUMENTS MOUNTED IN BISCH SILENCER

PROPOSAL

PACKAGE PRICE AS SHOWN: $3,441.00 F.A. QTY: 1
F.O.B. Grand Prairie, TX FREIGHT COLLECT
DELIVERY: 2-3 WEEKS A.R.O.
TERMS OF PAYMENT: NET 30 DAYS
OPTIONAL PRICING:

PRICES ARE FIRM THRU DELIVERY & ARE SUBJECT TO ROOTS STANDARD TERMS AND CONDITIONS

Cost Estimate – Replacement Wells

Attachment 4

January 28, 2000

W.O. #555-002

Environmental Resources Management
16300 Katy Freeway, Suite 300
Houston, Texas 77094-1611
(281) 600-1000

BS283555-PAI

RODGERS ENVIRONMENTAL SERVICES INC.

January 26, 2000

Paul Indeglia
ERMSW Houston
Fax: 281-579-8988

Re: Price to auger drill wells at Sparton facility site.

Dear Paul:

We are pleased to furnish you with the following cost proposal:

2"Auger drilled wells (can not penetrate static water level by more than 20')

Item	Description	Qty	Each	Total
1.	Mobilization/Demobilization	1	$250.00	$250.00
2.	Auger drill and complete borings into 2" PVC wells up to 150' w/ 20' of high screen	90'	$22.50	$2,025.00
3.	Containerize drill cuttings and development water in DOT 17-H drums	6	$53.50	$321.00
4.	Development with air pump per hour	8	$64.00	$512.00
5.	Disposal of non contaminated drill cuttings per drum	4	$20.00	$80.00
6.	Disposal of development water per drum	2	$200.00	$400.00
7.	Flush Grade well completion ea.	1	$140.00	$140.00
			Total	$3,728.00

4" mud rotary drilled holes (can penetrate static water level to any desired depth)

1.	Mobilization/Demobilization	1	$1,200.00	$1,200.00
2	Drill 7 7/8" hole per ft.	220'	$15.00	$3,300.00
3.	Complete hole into 4" PVC well with 20' of screen, 30' of gravel pack and cement grout to surface per ft.	220'	$34.00	$7,480.00
4.	Disposal of 6000 gal. of non contaminated drilling fluid	1	$980.00	$980.00
5.	Disposal of 3000 gal. of development waste water	1	$980.00	$980.00
6.	Disposal of drill cuttings per drum	11	$20.00	$220.00
7.	Development by jetting and pumping per hour	8	$64.00	$512.00
8.	Flush grade well completion ea.	1	$140.00	$140.00
			Total	$14,812.00

Note:
Any traffic control required charged at Time and Materials.
Decon of all downhole tools included in above prices.
Prices do not include any applicable gross receipt tax.

If you have any questions please call.

Sincerely,

Brad Knowlton

Cost Estimate – Plugging and Abandonment of Sparton Wells at Coors Road Facility

Attachment 5

January 28, 2000
W.O. #555-002

Environmental Resources Management
16300 Katy Freeway, Suite 300
Houston, Texas 77094-1611
(281) 600-1000

BS283555-PAI

RODGERS ENVIRONMENTAL SERVICES INC.

December 22, 1999

Paul Indeglia
ERMSW Houston
Fax: 281-579-8988

Re: Abandonment of wells at Spartan Technology's site in Albuquerque NM.

Dear Paul:

We are pleased to furnish you with the following cost proposal:

1. Abandonment of 63 wells by grouting and removal of above ground casing $1,200.00 ea. Total estimated cost not including bond, or any applicable gross receipt tax: $75,600.00

If you have any questions please call me at (505)877-1030.

Sincerely,

Brad Knowlton

Cost Estimate - Field Sampling Equipment

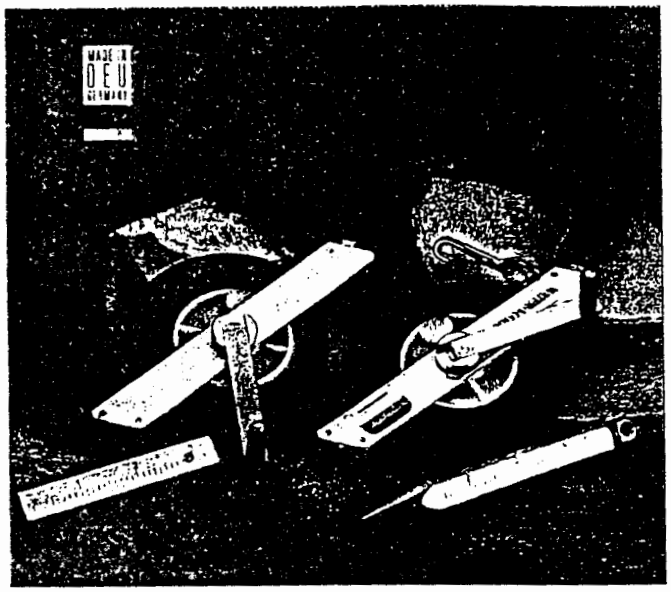
Attachment 10

January 28, 2000

W.O. #555-002

Environmental Resources Management
16300 Katy Freeway, Suite 300
Houston, Texas 77094-1611
(281) 600-1000

BS283555-PAI



WATER*MARK

Carbon Steel and Stainless Steel Chalk Tapes

These handy tapes can be used to measure all types of distance lengths including depth of standing water. Attach weight onto swivel hook and lower tape. Chalk the tape as it descends (you can use a sock filled with chalk). When the tape is reeled in, check for the spot where chalk has washed off. This shows actual depth or water level.

Quality construction with wood handles, brass frame, and tape with etched markings. Order weight separately. ***Note:*** *Carbon steel tapes require the 400g brass weight; stainless steel tapes require the 450g stainless steel weight. Weights make up the first foot of the tape graduations and cannot be interchanged between carbon steel and stainless steel.*

Carbon Steel Tapes with Clips

NOTE: *These tapes are shipped with the tape **not** run through the guide rollers to prevent bent or broken tapes during shipping. Simply unwind the tape from the reel and thread the other end through the rollers.*

89394 Measures to 100' (ft., 10ths, 100ths) on one side, 30m (mm, cm, m) on other side (2.5 lbs.) **$82.75**
89395 100'/30m Tape Refill (1.5 lbs.) **$44.25**
89396 Measures to 165' (ft., 10ths, 100ths) on one side, 50m (mm, cm, m) on other side (3.5 lbs.) **$91.00**
89397 165'/50m Tape Refill (2.25 lbs.) **$66.00**
89398 400g Brass Weight (15 oz.) **$31.50**

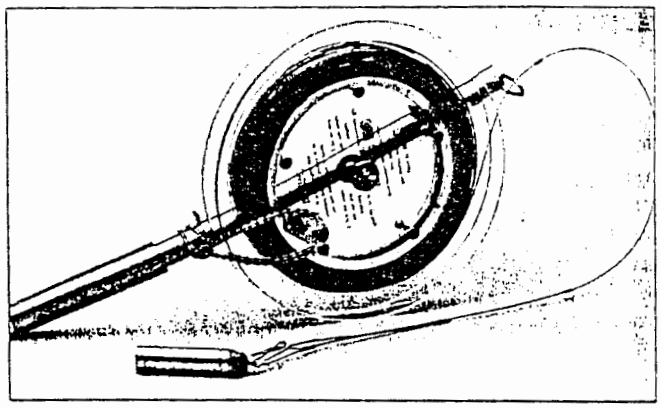
Stainless Steel Tapes with Screws

89399 Measures to 100' (ft., 10ths, 100ths) on one side, 30m (mm, cm, m) on other side. (2.5 lbs.) **$109.00**
89400 100'/30m Tape Refill (1.5 lbs.) **$67.25**
89401 Measures to 165' (ft., 10ths, 100ths) on one side, 50m (mm, cm, m) on other side (3.5 lbs.) **$126.50**
89402 165'/50m Tape Refill (2.5 lbs.) **$104.00**
89403 450g Stainless Steel Weight (14 oz.) **$52.95**

Ultra Fine Marking Chalk

Use for chalking well measuring tapes. 8 oz. Squeeze bottle.

57061 Red **57062** White
57063 Blue **57064** Yellow
(10 oz.) 1-11 **$1.25** 12+ **$1.00**



Cam-Line Measuring Tape

This nylon-coated, stainless steel, wind-resistant cable is designed for determining the depth of water in wells quickly, in one operation. It features a fast rewind which rewinds in approximately 75 seconds and measuring grommets which are stamped on the line at 1' intervals. It can also be used by surveyors in the field where trees, crops, or high weeds are a hinderance. Available in English or metric. The total length for the English Model is 300' and the total length for the Metric Model is 100m. Each tape comes complete with handle and weight.

39125 300' (3.5 lbs.) **$179.50**
39122 300' Refill (14 oz.) **$115.00**
39127 100m (3.5 lbs.) **$179.50**
39123 Replacement Weight (6 oz.) **$9.60**
39124 Replacement Reel – does not include handle (1.5 lbs.) **$53.50**

A Kolor Kut Water Finding Paste

No more guesswork! This golden brown colored paste turns a brilliant red upon contact with water giving you an accurate water gauge that is easily visible even under adverse lighting conditions. You can also use it to successfully gauge all petroleums and by-products for water content plus sulphuric acid, nitric acid, hydrochloric acid, ammonia, soap solutions, salt and other chloride solutions. 3 oz. Tube.

76561 (4 oz.) **$3.50**

B Kolor Kut Gasoline Gauging Paste

A most effective top level indicator, this light pink paste turns to a contrast of red upon contact with gasoline, naphtha, kerosene, gas oil, crude oil, jet fuels, and various chemicals. 2-1/4 oz. Plastic Jar.

76562 (4 oz.) **$3.50**

ATER MARK® Dome-End 36" Disposable Polyethylene Bailers

r dc designed ends avoid hang-ups when lowering or retrieving bailers! Made of inert polyethylene, e inexpensive, disposable bailers are pre-cleaned using a standard cleaning method of washing in Liquinox™ atory detergent and then rinsing with de-ionized water helping you eliminate cross contamination of es and time-consuming clean-up in the field. Available in your choice of three sizes: 3/4", 1-5/8", or 3" O.D. bailer measures 36" long and has a friction fit nozzle for easy removal of sample.

e **Check Valve Bailer** – has polyethylene retainer to retain the ball when emptying the bailer from the top. has a slide-in slotted nozzle for easy sample removal.

3 3/4" O.D. Small Dia. w/300 ml capacity and 1/2" PVC Ball, Case of 24 (4.5 lbs.) 1-2 **$110.50** 3+ **$99.50**
5 1-5/8" O.D. with 1 liter capacity and 3/4" PVC Ball, Case of 24 (8 lbs.) 1-2 **$121.95** 3+ **$106.90**
0 3" O.D. Purging with 1-1/2 gal. capacity and 1" PVC Ball, Case of 9 (9 lbs.) 1-2 **$73.25** 3+ **$67.50**

e **Weighted Check Valve Bailer** – allows easier sample extraction from varying well depths. Has poly- ene retainer on top with weight, bottom polyethylene retainer, and slotted nozzle for easy sample removal.

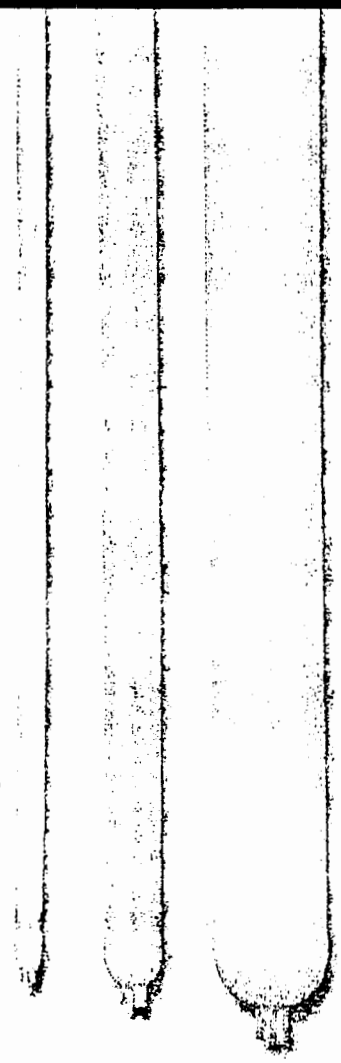
29 3/4" O.D. Small Dia. Bailers w/300 ml capacity & 1/2" PVC Ball, Case of 24 (5 lbs.) 1-2 **$145.75** 3+ **$131.25**
16 1-5/8" O.D. Bailers with 1 liter capacity and 3/4" PVC Ball, Case of 24 (11.5 lbs.) 1-2 **$162.50** 3+ **$146.25**
31 3" O.D. Purging Bailers with 1-1/2 gal. capacity and 1" PVC Ball, Case of 9 (13.5 lbs.) 1-2 **$92.00** 3+ **$84.75**

Sampler – adapter for bailer that allows transfer to VOA vials without loss of VOC's. Provides a controlled le flow. Polyethylene construction. For use with 1-5/8" O.D. bailers only.

7 Case of 24 (13 oz.) **$20.00**

ethylene Disposable Free Product Sampler - This sampler's unique design allows all of the product pre- to be captured unlike square-end free product collectors in which most of the product present is displaced o the water forming a meniscus under the product. For use with the 1-5/8" O.D. polyethylene bailers only.

2 Case of 24 (1.75 lbs.) 1-2 **$68.90** 3+ **$63.50**



TER•MARK® Dome-End Disposable Teflon® Bailers

domed-designed ends avoid hang-ups when lowering or retrieving bailers! Highly recommended for use you are sampling high concentrations of contaminates that could cause permanent damage to more nsive bailers. Designed for taking single samples, these inexpensive, disposable Teflon® bailers are pre- ed using a standard cleaning method of washing in Liquinox™ laboratory detergent and then rinsing with niz ter. They also help you eliminate cross contamination of samples and time-consuming clean-up field. Both the 12" and 36" bailers have a 1/2" check ball and a 1-5/8" O.D. allowing them to be used in wells or larger. Optional VOC Removal Device allows you to remove samples with the lowest possible amount tation.

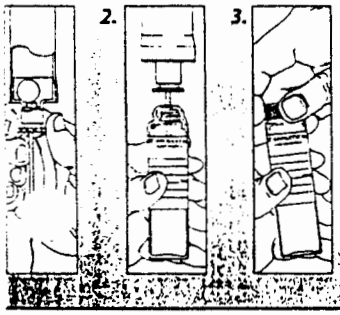
1 12" Bailer, Case of 12 (2.5 lbs.) 1-2 **$129.95** 3+ **$123.50**
2 36" Bailer, Case of 12 (5 lbs.) 1-2 **$209.50** 3+ **$189.90**
3 Optional VOC Removal Device, Case of 12 (6 oz.) **$15.00**

TER•MARK® Special Clean Bailers

se bailers are the same as the Teflon® and Polyethylene Bailers above except they are precleaned by the fol- g special procedures. First, all components are thoroughly washed with Liquinox™ laboratory detergent insed with de-ionized water. Second, they are rinsed with 10% Nitric Acid solution and again rinsed thor- ly with de-ionized water. Third, they are rinsed in Isopropanol and dried in a closed room. Then, after dry- e parts are assembled, individually sealed in 2 mil thick polyethylene bags, and packed in natural corrugated s. Bailers have a 1-5/8" O.D.

1 Special Clean Weighted Polyethylene Bailer, Case of 24 (10.5 lbs.) 1 Case **$189.90** 2+ **$176.50**
2 Special Clean Polyethylene VOC Removal Device, Case of 24 (12 oz.) **$22.00**
3 12" Special Clean Teflon® Bailer, Case of 12 (2 lbs.) **$134.95**
4 36" Special Clean Teflon® Bailer, Case of 12 (5 lbs.) **$229.00**
5 Special Clean Teflon® VOC Removal Device, Case of 12 (1 lb.) **$27.25**


Free Product Sampler



VOC Removal Device Operation

The technique used to fill a VOC vial is an important source of variance in VOC analysis. The more the sample stream is agitated or exposed to the air during the transfer of sample from the bailer to the vial, the lower the concentration detected in the vial will be. The following technique gives reproducible and quantitative transfer of dissolved VOC's.

1.) Hold or suspend the full bailer vertically and slowly insert the VOC Removal Device into the bottom valve until the sample begins to flow from the discharge tube;
2.) Lift a clean VOC vial around the discharge tube and hold the vial in that position while counting the seconds until it starts to overflow. Continue to hold the vial in the overflow position for an equal number of seconds to obtain one full, unagitated sample volume;
3.) Slowly withdraw the vial from around the discharge tube and close the vial tightly with the Teflon-lined screw cap. Invert the vial and rap it sharply several times against your knuckles to check for entrapped air.

A Disposable Thin Wall 5 mil Latex Gloves

USDA accepted. Unsterilized and powdered, for use in labs, food processing, chemical ants, anywhere protection and dexterity are important. White, 9-1/2" long.

77083 Medium, 100 gloves per box (2 lbs.)	1-9 Boxes $8.95	10+ Boxes $7.50
77084 Large, 100 gloves per box (2 lbs.)	1-9 Boxes $8.95	10+ Boxes $7.50

B North® Nitrile (NBR) 11 mil Latex Gloves (Unlined)

Superior to neoprene and natural rubber industrial gloves. Use these gloves with almost all chemicals except ketones and related chemicals. Resistant to animal fats and fatty acids. Tear-, puncture- and abrasion-resistant. Remain flexible. 12" Long.

	1-11 pr.	12-35 pr.	36+ pr.
94069 Small (2 oz.)	$2.70	$2.45	$2.20
94070 Medium (3 oz.)	$2.70	$2.45	$2.20
94073 Large (3 oz.)	$3.25	$3.05	$2.75

C Surety® Supreme Flock-lined, 22 mil Nitrile Gloves

Provides excellent resistance to many solvents while also providing puncture and abrasion resistance. Great for use in plant maintenance, painting, laboratories, chemical handling and clean-up, plus many other uses. Made of heavy-weight, 22 mil thick nitrile and features a raised diamond palm pattern for extra grip when wet. 17"L with straight cuff. Green.

94072 Medium – Size 8 (5 oz.)	1-11 $8.50	12+ $7.40
94047 Large – Size 9 (6 oz.)	1-11 $8.50	12+ $7.40
94048 X-Large – Size 10 (6 oz.)	1-11 $8.50	12+ $7.40

D Maxi-Guard™ Flock-Lined, 16 mil Nitrile Gloves

Used in chemical plants, labs, industrial waste clean-up, food processing, and many other uses. Features a diamond palm pattern for excellent grip. 12-3/4"L. Green.

94074 Medium – Size 8 (3 oz.)	1-11 $1.95	12+ $1.50
94049 Large – Size 9 (3 oz.)	1-11 $1.95	12+ $1.50
94050 X-Large – Size 10 (3 oz.)	1-11 $1.95	12+ $1.50

E Flock-Lined, 18 mil Latex Gloves

Made of medium weight latex, these general purpose liquidproof gloves are designed for waste disposal, labwork, plant maintenance, painting, and many other uses. 12"L gloves are flexible and flock-lined for comfort plus they feature a rolled cuff and a diamond palm pattern for extra grip when wet. Yellow.

94071 Medium – Size 8, Box of 12 pairs (1.75 lbs.)	1-11 Boxes $8.75	12+ Boxes $7.60
94045 Large – Size 9, Box of 12 pairs (1.75 lbs.)	1-11 Boxes $8.75	12+ Boxes $7.60
94046 X-Large – Size 10, Box of 12 pairs (2 lb..)	1-11 Boxes $8.75	12+ Boxes $7.60

F PVC Gloves

These tough gloves are ideal to use when handling oils, acids, caustics, planting solutions, or miscellaneous chemicals. They're flock lined and flexible for maximum comfort.

94068 (7 oz.)	1-11 $3.35	12-23 $3.05	24+ $2.75

G Wells Lamont® Black PVC-Coated Gloves

These PVC-coated gloves combine superior abrasion resistance with grip and flexibility. Features include full coating and a knit wrist for comfort, a smooth grip, and a two-piece interlocking lining for durability.

90926 Large (8 oz.)	1-11 $1.95	12+ $1.75

H Wells Lamont SureGard™ Rubber-Coated Gloves

Natural rubber coating flexes and stretches resisting cuts, snags, and abrasions. Crinkle finish allows handling of sharp-edged materials, as well as hard-to-handle objects. Perfect for safe handling of wet or dry materials. Resists a wide range of chemicals. Gloves feature pre-curved style and an elastic strap at wrist back for improved fit. Base material is 100% cotton.

90925 Large (8 oz.)	1-11 $5.25	12+ $4.35

I Wells Lamont® Cut-Tec® Cut-Resistant Glove

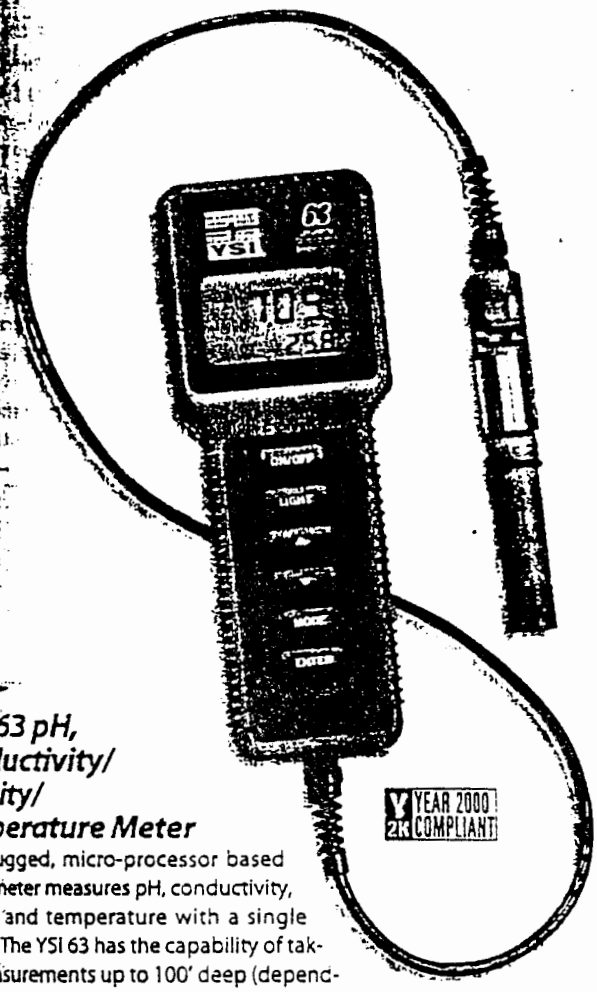
Looking for our best cut-resistant glove? Here it is! Employing a revolutionary core containment system, Cut-Tec® gloves encapsulate stainless steel wire in strong, fiberglass yarn, creating superior hand protection against nicks and cuts associated with handling saw blades, knives, and other sharp objects. Each glove is sold individually. ***Note:** Gloves resist cuts, but will not resist direct punctures.*

90912 Medium; sold individually (3 oz.) $12.50
90913 Large; sold individually (4 oz.) $12.50

J Wells Lamont® Kevlar® Gloves

These gloves, made of the same unique Kevlar® material found in chainsaw chaps, provide superior cut resistance and are especially useful when handling sharp objects such as knives, saws, or barrels with sharp inner edges. ***Note:** Gloves will resist cuts and abrasions, but will not resist direct punctures.*

90919 Medium (3 oz.)	1-11 $6.30	12+ $5.25
90904 Large (3 oz.)	1-11 $6.30	12+ $5.25



YSI® 63 pH, Conductivity/ Salinity/ Temperature Meter

The rugged, micro-processor based digital meter measures pH, conductivity, salinity and temperature with a single probe. The YSI 63 has the capability of taking measurements up to 100' deep (depending on the cable length). Other features include a user-replaceable low maintenance pH sensor, push-button calibration, simultaneous display of pH and conductivity or salinity and temperature, automatic temperature compensation for conductivity readings, autoranging, data storage for 50 sets of readings with on-screen recall, and a waterproof case (rated to IP65). Additionally, the micro-processor performs a self-diagnostic routine each time the instrument is turned on providing useful information about the function of the instrument and probe. A transport chamber built into the instrument case, provides a convenient place for storage of the probe when transporting the system. Available with cable lengths of 10', 50', or 100'.

Accuracy: *pH*, ±0.1 pH unit within ±10°C of calibration temperature or ±0.2 pH unit within ±20°C of calibration temperature; *Conductivity*, ±1.5% FS; *Salinity*, ±2%, or ±0.1 ppt; *Temperature*, ±0.1°C ±1 LSD. **Range:** *pH*, 0 to 14; *Conductivity*, 0 to 499.9 µS/cm, 0 to 4999 µS/cm, 0 to 49.99 mS/cm, 0 to 200.0 mS/cm; *Salinity*, 0 to 80 ppt; *Temperature*, 0 to 75°C. **Resolution:** *pH*, 0.01 unit; *Conductivity*, 0.1 µS/cm, 1.0 µS/cm, 0.01 mS/cm, 0.1 mS/cm; *Salinity*, 0.1 ppt; *Temperature*, 0.1°C. **Battery:** 6 "AA" cell alkaline batteries. **Battery life:** 100 hours continuous use. **Dimensions (approx.):** 9.5"H x 2.2"Thick x 3.5"W.

76400	YSI® 63 with 10' cable (3 lbs.)	$1,225.00
76401	YSI® 63 with 50' cable (4 lbs.)	$1,305.00
76402	YSI® 63 with 100' cable (5 lbs.)	$1,405.00
76126	One Pint pH 4.01 Buffer Solution (1.5 lbs.)	$6.95
76104	One Pint pH 7.01 Buffer Solution (1.5 lbs.)	$6.95
76127	One Pint pH 10.01 Buffer Solution (1.5 lbs.)	$6.95
76233	Hand-held Carrying Case (1.75 lbs.)	$49.95

NEW Oakton® pH/CON 10 pH/Conductivity/°C Meter

The convenience of three meters in one! The pH/CON 10 reads pH from 0 to 14, autoranging conductivity over four ranges up to 19.99 mS, and temperature in °C. Switch between conductivity and pH readings with a single button press. Includes a versatile multi-sensor probe that reads pH, conductivity, and temperature – so you never need to change probes when you switch measurement modes. Other features include a HOLD function to freeze your reading until you can log it, a READY indicator that lets you know when your reading is stable, and a battery-conserving automatic shutoff function. All functions are accessible from the water-resistant membrane keypad.

Range: *pH*, 0.00 to 14.00 pH; *conductivity*, 0 to 19.99 µS, 0 to 199.9 µS, 0 to 1999 µS, and 0 to 19.99 mS; *temperature*, 0.0°C to 100.0°C. **Resolution:** *pH*, 0.01 pH; *conductivity*, 0.01 µS, 0.1 µS, 1 µS, and 0.01 mS; *temperature*, 0.1°C. **Accuracy:** *pH*, ±0.01 pH; *conductivity*, ±1% full scale or ± 1 digit; *temperature*, ±0.5°C. **Calibration:** *pH*, up to three points (pH 4.01, 7.00, 10.00); *conductivity*, up to four points (one point per range); *temperature*, offset in 0.1°C increments. **Power:** four 1.5 V "AAA" batteries (included). **Dimensions:** 7.5"L x 3.5"W x 1.75"H.

76300	(1 lb.)	$445.00
76301	Replacement Probe (6 oz.)	$139.00
76389	Carrying Case (2 oz.)	$28.00

Other YSI Dissolved Oxygen Meters and pH/mV/ Temperature Meters can be found on pages 234 through 236

Excerpt from New Mexico Underground Storage Tank Program Cost Reimbursement Guidance Regarding Reimbursement Costs

Attachment 11

January 25, 2000
W.O. #555-002

Environmental Resources Management
16300 Katy Freeway, Suite 300
Houston, Texas 77094-1611
(281) 600-1000

BS283555-PAI

Professional Profile
Daniel A. Yamashiro
Attachment 14

January 28, 2000
W.O. #555-002

Environmental Resources Management
16300 Katy Freeway, Suite 300
Houston, Texas 77094-1611
(281) 600-1000

Daniel A. Yamashiro

Fields of Competence

Chlorinated solvents and petroleum hydrocarbon remediation
Environmental site assessments
Soil and ground water remediation
In-situ and above-ground bioremediation
Design of ground water pump and treat, sparge and vapor extraction systems

Experience Summary

Supervised, managed, and participated in assessments and remediation projects in both the United States and Europe for 15 years. Directly involved with on-site restoration of ground water and soil utilizing integrated environmental equipment systems. Past manager on projects involving above-ground and in-situ bioremediation. Conducted hydrogeologic studies for semiconductor, petroleum, mining companies, and local and state governments. Managed projects concerning human health risk assessments. Evaluated sites for Phase I and Phase II real estate transfer assessments. Project management experience ranges from sampling underground storage tank (UST) pits to designing and supervising the installation of complex integrated remediation systems. Managed one of the largest UST petroleum-related clean-up projects (greater than two million gallons lost) in Arizona. The above work involved PCE, TCE, DCA, acetone, methylene chloride, petroleum and other VOC impacted soil and ground water.

Credentials

B.S. Geology, California State University
M.S. Geology, California State University

Key Projects

Developed a remedial plan and executive design for the clean up of PCE, TCA and BTEX for a pharmaceutical company in London, England. The plan required installation of a reactive barrier utilizing in-situ packed columns of zero-valence iron and activated carbon.

Developed a remedial strategy for the clean up of ground water impacted by PCE and TCE and the implementation of that plan for an appliance manufacturer in Varese, Italy. The plan required the containment of plume migration using a ground water pumping system.

Assessed, designed, installed and operated a dual-phase vacuum extraction system at a telecommunications facility in Harlow, England. Identified a DNAPL PCE and TCE plume confined within a sand lens bounded by clay covering an area about 360 square yards. The design involved developing a hydrological containment system to recover dissolved hydrocarbons, reduce further diffusion of DNAPL and dewater the sand lens. Once dewatering occurred, ganglia and DNAPL recovery was enhanced by soil vapor extraction which increased the rate of remediation.

Investigated and designed an enhanced soil vapor extraction system utilizing a ground water pump and treat system integrated with soil vapor extraction (VES) at an abandoned laundry facility in Gelsenkirchen, Germany. The system was designed to provide hydrogeologic containment and recovered dissolved phase PCE, TCE impacting approximately a five-acre area.

Conducted PCE site investigation at two locations at a semiconductor manufacturing plant in Phoenix, Arizona. The PCE loss was related to a pipeline break and employees dumping waste PCE. The investigation required drilling through cobble conglomerate and reactive soil sampling to a depth of 120 feet. Field work required level C PPE. The horizontal and lateral extent was identified at both locations. The project evolved to the design, installation and operation of a VES system. Both locations achieved state clean-up levels within 1.5 years.

Completed a borehole flow analysis to assess the impact of formational convection across the length of a well bore. The assessment evaluated the likelihood of dissolve-phase PCE to be carried to deeper aquifer horizons by well bore flow via a 250-foot monitoring well and estimated the entry horizon for that PCE.

Key Projects (continued)

Prepared a financial risk estimate for the Defense Estate Organization of the Ministry of Defense (UK). The estimate was prepared using proba analyses to assess the remediation cost of 30 locations at a former Royal Air Force base. The cost estimate was developed using military RMS (root mean squared) specifications and associated probabilities of occurrence. The estimate also incorporated a qualitative assessment of risk triggers, potential impact, likelihood of occurrence, response actions and their effect on cost.

Prepared a financial risk estimate for a U.S. multinational company to assess probable cost of remediation for seven locations based on limited assessment data. A cost range was developed based on probabilistic analysis incorporating a monte-carlo simulation of remediation parameters, site conditions, probability of occurrence and the cost associated with an event occurring. From the financial risk estimate, priorities for remediation were developed and an implementation strategy prepared.

Evaluated remedial options for the cleanup and site development of a gas works facility in London, England. The remedial plan involved installation of a bentonite containment wall around the property, removal of "hot-spots" in the vicinity of the proposed building location, working with building engineers to develop passive venting of potential build-up of subsurface gasses, and a new surface water collection system to reduce infiltration within the containment area. Chemicals of concern were PAHs, phenols, sulfates, and liqueurs.

Designed and implemented a pilot remediation program to biologically degrade gasoline and PAHs in soil in Gothenburg, Sweden. The pilot program involved conducting a bioassay to first determine the presence and population of hydrocarbon-degrading bacteria and the design of an operating test plant to determine parameters to optimize bacteria growth and hydrocarbon degradation.

Assessed and developed conceptual remedial program for an inactive refinery awaiting decommissioning and redevelopment as housing and a shopping area in northeast Italy. The assessment identified widespread (30 acres) dissolved hydrocarbons across the site and localized occurrences of product on ground water. Depth to water was 3.5 feet. Product plumes ranged from gasoline to crude oil.

Responsible for assessment, design, installation, and operation of a large-scale biosparging project at a petroleum terminal in Sicily, Italy. The project involved an 11-acre area impacted by adsorbed hydrocarbons. The system was designed around existing facilities and used 45 monitor wells, 52 bioventing wells and 63 biosparging wells. Stratigraphic heterogeneities were also a determining factor in the overall layout.

Designed and installed a trench and sump system to act as a barrier of product migration to an adjacent harbor for a refinery in Sicily, Italy. The project needed to overcome tidal fluctuation, pump system corrosion from brackish water, and a varied

geology and hydrocarbon mix. All work and system installation had to be around existing facilities.

Letter from ERM to US EPA
Dated December 31, 1999
Attachment 15

January 28, 2000
W.O. #555-002

Environmental Resources Management
16300 Katy Freeway, Suite 300
Houston, Texas 77094-1611
(281) 600-1000

BS283555-PAI

December 31, 1999

Mr. Mike Hebert
U.S. Environmental Protection Agency
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202 W.O. #555-002

Subject: Sparton Technologies Cost Assurance

Dear Mr. Hebert:

Pursuant to our conference call of December 1, 1999 among you, Carl Will of the New Mexico Environment Department, Tony Hurst representing Sparton Technologies, and me, the following are responses to comments made during the call.

Comment: You indicated the estimate should reflect costs of utilizing a third-party contractor.

Response: The figures do reflect the contracting of a third-party firm to undertake the work. We have revised the format to reflect a unit rate and the number of hours associated with each activity.

Comment: You indicated that the cost estimate should be in current annual dollars.

Response: We have provided two cases to the agency: one in which the figures are not discounted and the other in which discounting is used. The terminology "current annual costs" can be interpreted based on economic precedents in discounted terms. Indeed, agency guidance does not indicate that discounting is not allowed and references economic texts for cost estimating procedures that provide for discounting. While some may be interpreting RCRA differently from Superfund, in the past these two programs were considered equivalent in terms of their costing procedures. In fact, RCRA corrective action originally referenced Superfund guidance documents prior to the more recent issuance of RCRA corrective action guidance.

Comment: You questioned whether there was a cost contingency included in the specific line items.

Response: Each item reflected a contingency of about 10%. The respective line item contingencies have been identified in separate columns on the attached tables.

Comment: You asked whether the basis utilized for the budgeting of abandonment of the wells was consistent with New Mexico guidance. You requested that we include either an independent contractor bid or the regulations from New Mexico and Texas to elucidate the consistency between requirements.

Response: We have attached the well plugging and abandonment regulations for both New Mexico and Texas. The well abandonment costs listed in the Sparton closure cost tables were based on per foot unit rates for the LUST program in Texas because there were no comparable LUST program rates for plugging and abandonment in New Mexico guidance. After reviewing the available documentation from the NMED, conferring with Gary Richardson of Metric, and speaking with Jerry Shebner of the NMED - UST program, it was determined that there are no cost reimbursement limitations placed on tasks, specifically plugging and abandonment of wells, by the State of New Mexico. Rather than to continue estimating based on state guidelines, we have obtained a quote from Rodgers Environmental Services, an independent drilling contractor located in Albuquerque, New Mexico. The quote is attached and, even with a 10% contingency, the quote is less than the figure included in the November 17, 1999 Sparton closure cost tables. Therefore, no change has been made to the closure abandonment cost estimate included in the attached tables.

Comment: During our conversation, you inquired whether costs were included for maintenance and closure of the infiltration ponds.

Response: The cost for maintenance of the infiltration ponds is included. It is assumed that periodically (once every two and a half years), the pond bottoms will be tilled to break up a crust that may form and reduce infiltration over time. No estimate has been included for closure of the ponds because the ponds are intended to receive water that has been treated to drinking water standards. Accordingly, we do not consider there to be a reasonable likelihood that the ponds will trigger closure regulations.

Comment: A question was raised whether there was adequate budget for data analysis and periodic reporting.

Response: In the December 1, 1999 call, we explained there was adequate time allocated for data tabulation, data analysis, and reporting and that time allocated for these activities is contained in several separate line items (e.g. progress reporting, aquifer modeling, QA/QC and data analysis).

To clarify the cost tables, the line item previously entitled "Data Tabulation, Eng., Mgnt." has been broken out on the attached budget into four distinct tasks:

- Management;
- Data Tabulation;
- Monthly Reporting; and
- Annual Reporting.

To further explain how we estimated the costs for data management and reporting, we envisioned two groups of tasks would be performed for each report: technical and administrative. The technical requirements will be fulfilled under the "Evaluation, Analysis, & Recommendation" section, while the administrative tasks of compiling the data and text and assuring the information is presented to the proper individuals and agencies is shown in the "Project Management" section.

The labor rates and levels of effort presented under "Evaluation, Analysis, & Recommendation" are appropriate for evaluating performance in progress reports, assessing effectiveness via aquifer modeling and documenting the results in annual reports.

In addressing the issue of assigning a rate for the personnel required to complete the administrative tasks under "Project Management", we note that Mr. Tony Hurst is currently a third-party contractor. The budgeted rate for this position is below the "not to exceed" figure listed in the New Mexico guidance for the state UST program. His performance to date illuminates Sparton's ability to utilize third-party contractors for successful completion of the reporting tasks.

Comment: We were asked to indicate unit rates and compare them with New Mexico guidance.

Response: The format of the cost tables has been modified to reflect more clearly the unit rates of each item. Based on ERM's experience and a review of the New Mexico guidance, the rates used in this estimate are comparable to New Mexico's guidance. Also attached is a table comparing applicable New Mexico unit rates with Texas unit rates as described in their respective LUST cost guidelines.

Comment: Attention was drawn to the adequacy of the amount budget for the 5-year Report.

Response: Prior to this submittal, there was intended to be a 5-Year Report produced every five (5) years throughout the 30-year project period. After reviewing

the recently prepared Consent Decree, revisiting the "Work Plan for the Assessment of Aquifer Restoration", and consulting with S.S. Papadopulos, who prepared the "Work Plan", the 5-Year Report has been re-categorized as "Analysis of Additional Modeling Information." The analysis will be a one-time event occurring in the fifth year of the program estimated to cost $15,000.

We are anxious to receive agency approval for the cost basis for preparing of the financial assurance portion of the remediation program. The format of the budget has been revised as per your suggestion. We anticipate these revisions will address fully your concerns regarding the cost basis for financial assurance.

We anticipate you will require a week to review the enclosed information. We would like to meet with you next week in Albuquerque (January 6 or 7, 2000), or the following week (on January 13, 2000). Space can be made available at the office of Sparton's local counsel for a 9:00 a.m. meeting. Please call me upon receipt of this letter to discuss your availability. If I am not immediately available, please speak with either Mr. Paul Indeglia or Ms. Jan Rodriguez.

We appreciate your attention in this matter and look forward to hearing from you soon.

Sincerely,

Environmental Resources Management

Richard C. Bost, P.E., CGWP
Principal

RCB/jbr
Enclosures

cc: James Harris, Thompson & Knight (Dallas)
Tony Hurst (Albuquerque)
R. Jan Appel, Sparton Corporation (Jackson, MI)
Mark W. Cheesman, Environmental Resources Management (Houston)
Paul A. Indeglia, Environmental Resources Management (Houston)

Operation Plan
Attachment 16

January 28, 2000
W.O. #555-002

Environmental Resources Management
16300 Katy Freeway, Suite 300
Houston, Texas 77094-1611
(281) 600-1000

BS283555-PAI

ATTACHMENT E

OPERATION PLAN

ATTACHMENT E

OPERATIONAL PLAN

The leading edge plume containment system (see FIGURE 2) consists of 1) one or more containment wells producing up to 600 gpm (864,000 gpd) of groundwater, 2) an airstripper to remove VOC's from the water, 3) a pipeline leading from the well and airstripper location to the infiltration gallery, and 4) one or more infiltration galleries located either in the dedicated park area located on the north bank of the Calabacillas Arroyo (Alternate 1), within the Calabacillas Arroyo Channel (Alternate 2), or beneath the floodwater detention pond site located south of Congress Avenue.

The containment well will consist of at least a 6 inch diameter steel cased well. The depth to water at the well site is about 200 feet. The well is planned to have about 100 feet of wire wound stainless steel screen extending from the water table to 100 feet below the water table. The well will be operated at a rate sufficient to produce a capture zone as wide as the contaminant plume (see FIGURE 2).

The airstripper, which will be located at the well head, will be sized to treat the flow from the well to achieve the WQCC standards for the VOC's identified in the application. Additionally, the groundwater will be treated at the well head with "Aqua Mag" to inhibit precipitation of calcium carbonate and other scaling compounds in the pipeline and infiltration gallery. "Aqua Mag" is a product of Kjell which is located in Janesville, Wisconsin. The product consists of 30% ortho phosphate and 70% poly phosphate.

The treated groundwater will be conveyed from the well head through an underground 6" plastic (PVC or PE) pipeline along public rights-of-way to the infiltration gallery site (see FIGURE 2).

Three alternative infiltration gallery sites are being considered as shown on FIGURE 2. The final gallery location will be based on Sparton's ability to gain access to one of the sites. In either case, the infiltration gallery was sized for 200 gpm based on the

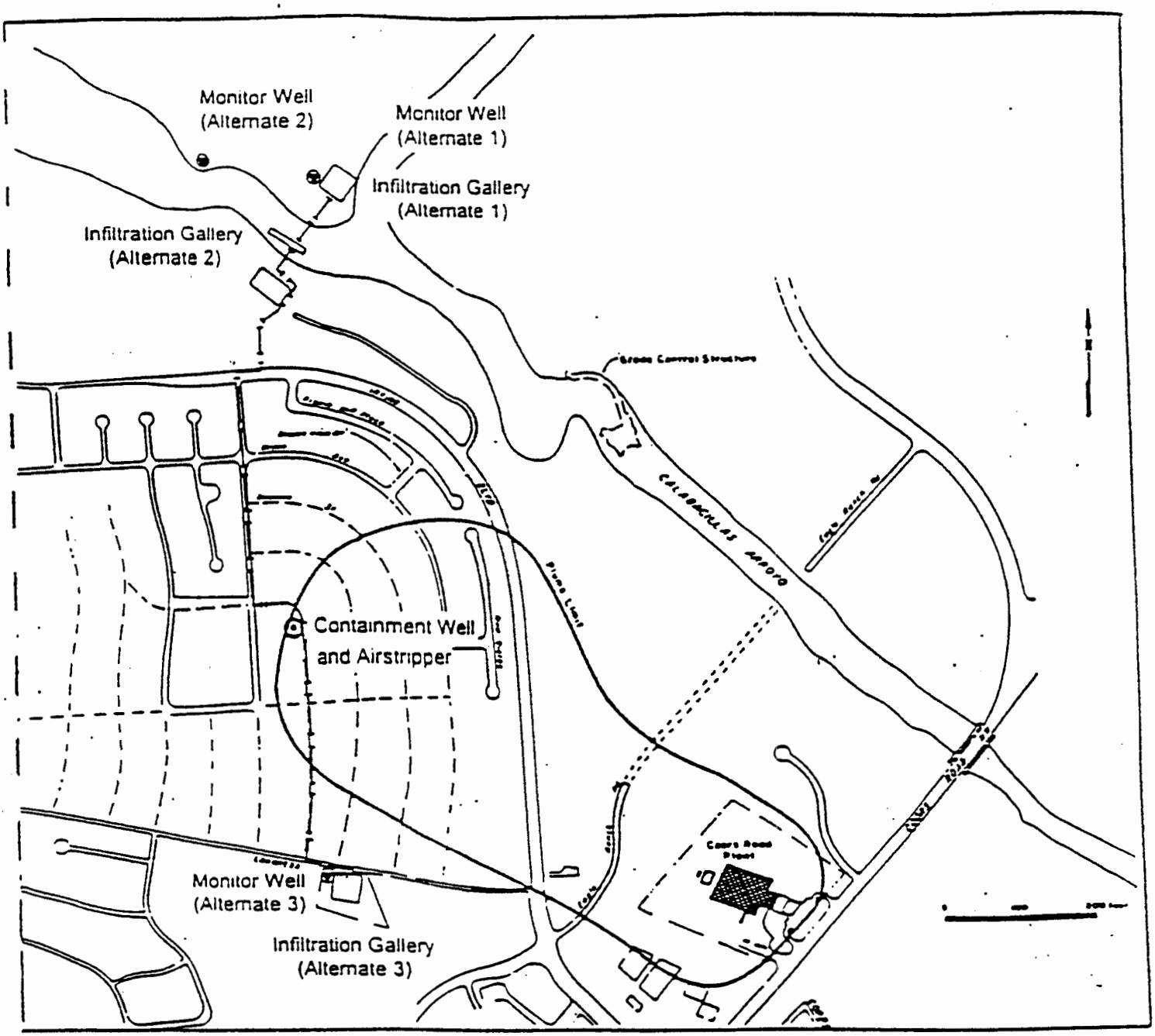


FIGURE 2

PLUME CONTAINMENT SYSTEM

experience at the Van Waters and Rogers (VWR) remediation site located in Albuquerque's South Valley. The VWR system is believed to be sized as follows:

Size = 12' x 225' = 0.052 Ac

Capacity = 120 gpm

The system for Sparton was sized by adjusting the VWR system for the ratios of vertical hydraulic conductivity and capacity for the two sites as follows:

$$0.062 \text{ Ac} \times \frac{2472 \text{ ft/yr}}{814 \text{ ft/yr}} \times \frac{200 \text{ gpm}}{120 \text{ gpm}} = 0.3 \text{ Ac}$$

Alternate 1 is located in an undeveloped park site on the north bank of Calabacillas Arroyo (see FIGURE 2). If the infiltration gallery is constructed at this site, it will be recessed below the arroyo bottom elevation , as shown in FIGURE 3, to prevent the possibility of water seeping out of the arroyo bank. Details of Alternate 1 design are presented in FIGURE 4.

Alternate 2 is located in the bottom of the Calabacillas Arroyo (see FIGURE 2). If the infiltration gallery is located at this site, it will be placed deep enough to prevent scour in the arroyo channel from exposing it (see FIGURE 3). A scour analysis was conducted to estimate the total long term degradation plus local scour depth such that the infiltration gallery can be placed deep enough to prevent the gallery from being destroyed during its useful life, which is assumed to be 4 years. Two primary references were used in determining a reasonable depth to bury the proposed infiltration gallery to be built in the Calabacillas Arroyo bottom. The two cited references are as follows:

Mussetter Engineering, Inc. December 1996. Draft Report Calabacillas Arroyo Prudent Line Study and Related Work. Prepared for AMAFCA.

Mussetter, K. A., Lagasse, P. F., Harvey, M. D. November 1994, Sediment and Erosion

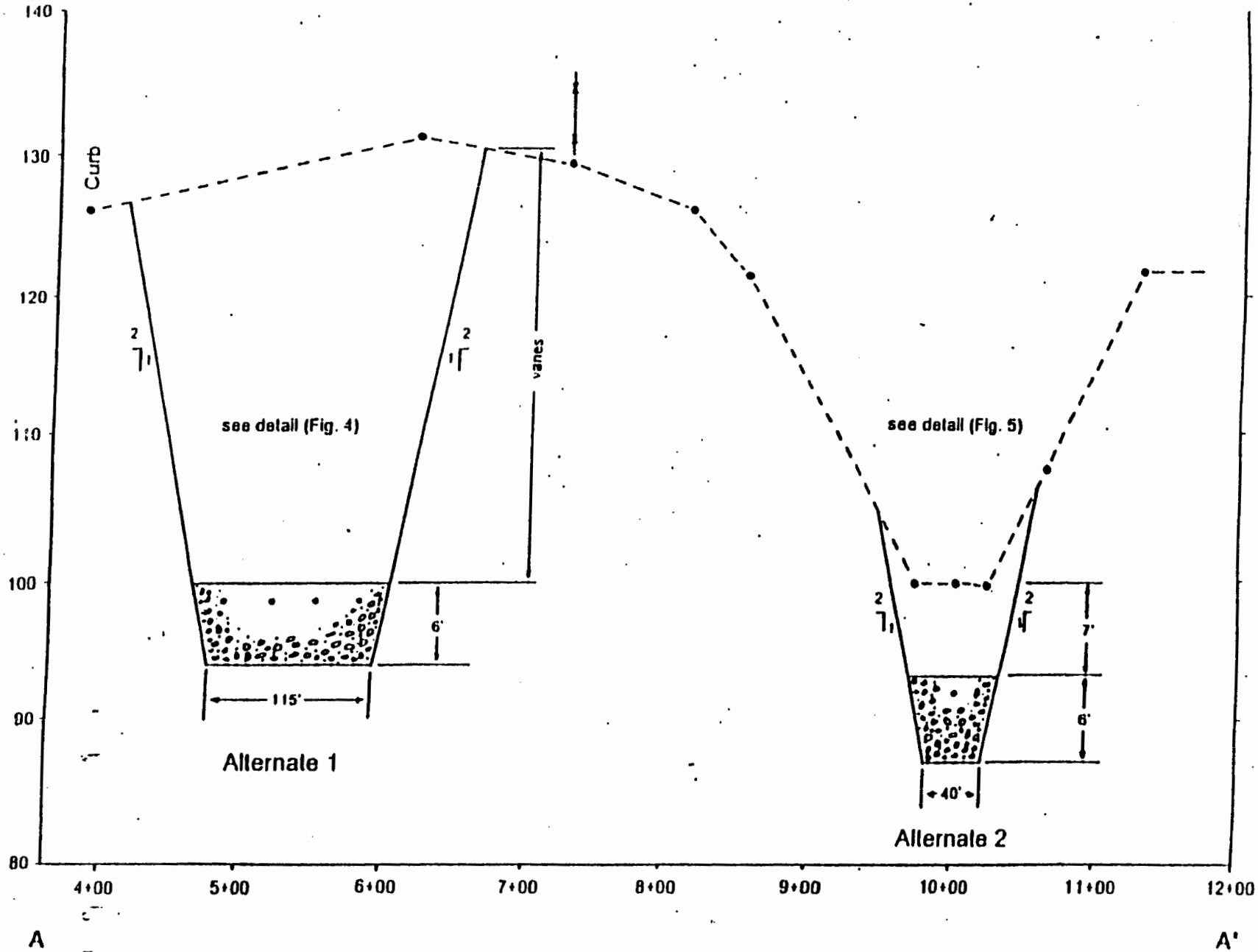


FIGURE 3

CROSS SECTION A-A'

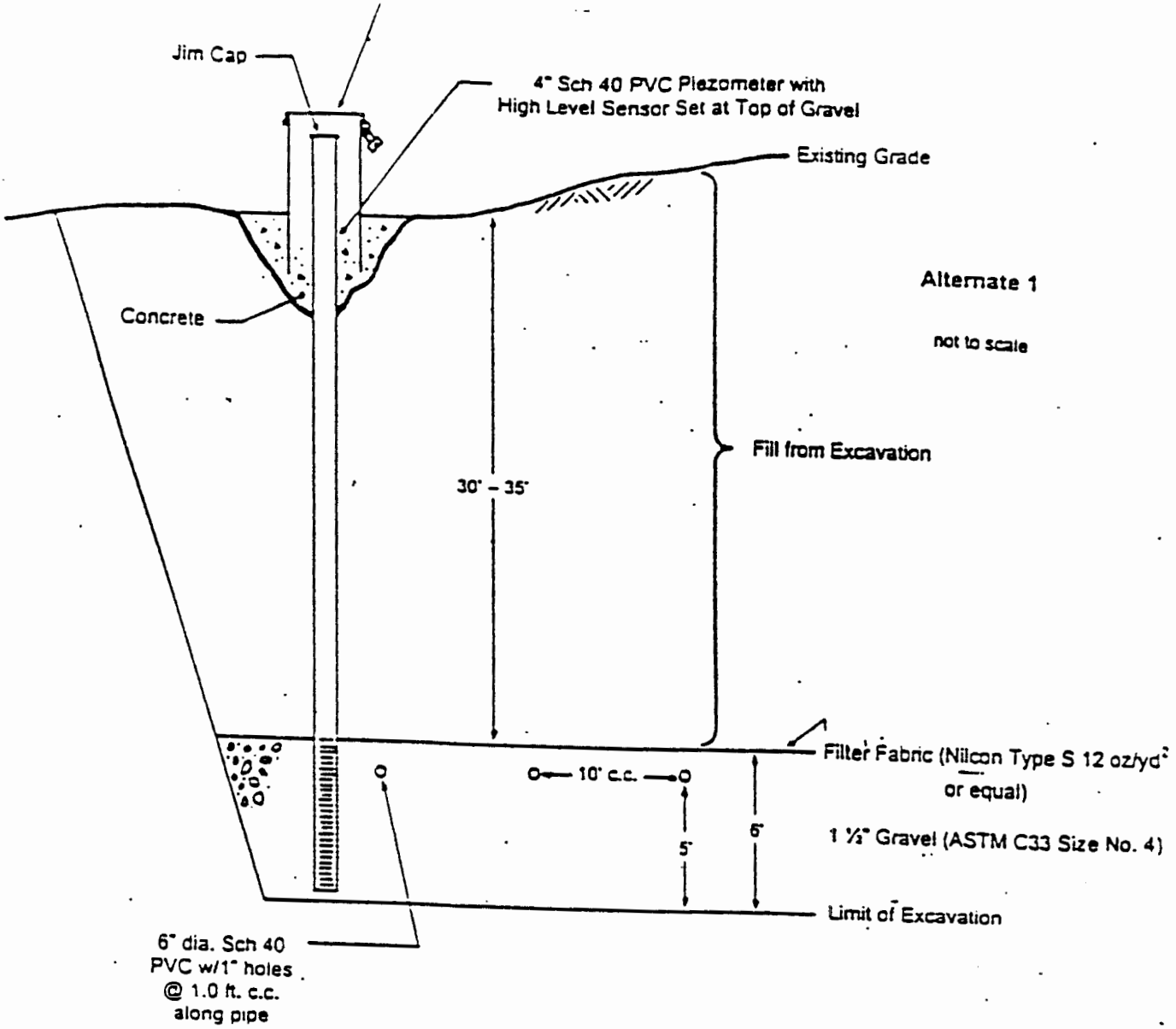


FIGURE 4

ALTERNATE 1
INFILTRATION GALLERY DETAILS

Design guide. Prepared for AMAFCA.

The Mussetter, December 1996 report provides design flows, hydraulic variables and maximum long term degradation values for the arroyo reaches. The maximum degradation was assumed to occur at the upstream end reach. The scour at a particular station was assumed to vary linearly with distance.

Equation 3.90 from Mussetter et al, November 1994, allows calculation of local scour as follows:

$$\frac{y_s}{y_1} = \underbrace{(0.73 \cos\theta)}_{\text{Flood Wall Scour}} + \underbrace{(0.14\pi Fr^2)\cos\theta}_{\text{Antidune Scour}} + \underbrace{4\,Fr^{0.33}\sin\theta}_{\text{Impingement Scour}}$$

TABLE 1 shows scour calculations for Station 68+00. The calculations indicate that 7.0 feet of cover will protect the infiltration gallery from the expected scour with a significant safety factor. Each time the gallery is rebuilt, it will be constructed to a total depth of 13.0 feet below the arroyo bottom that exists at the time of reconstruction. This will result in the gallery being constructed at lower and lower elevations as time passes if the arroyo bed is continuing to degrade. Details of the Alternate 2 design are presented in FIGURE 5.

Alternate 3 is located beneath the bottom of the floodwater detention pond located south of Congress Avenue (see FIGURE 2). If the infiltration gallery is constructed at this site, it will be buried 5.0 feet below the pond bottom to minimize infiltration of storm water into the infiltration gallery. Details of Alternate 3 are presented in FIGURE 6.

All three alternates are equipped with a piezometer to monitor the water level within the gravel such that maintenance can be scheduled if the gallery is clogging.

It is believed that the life of the infiltration gallery will be limited by clogging of the infiltration interface, and clogging rate is proportional to infiltrated volume per unit area.

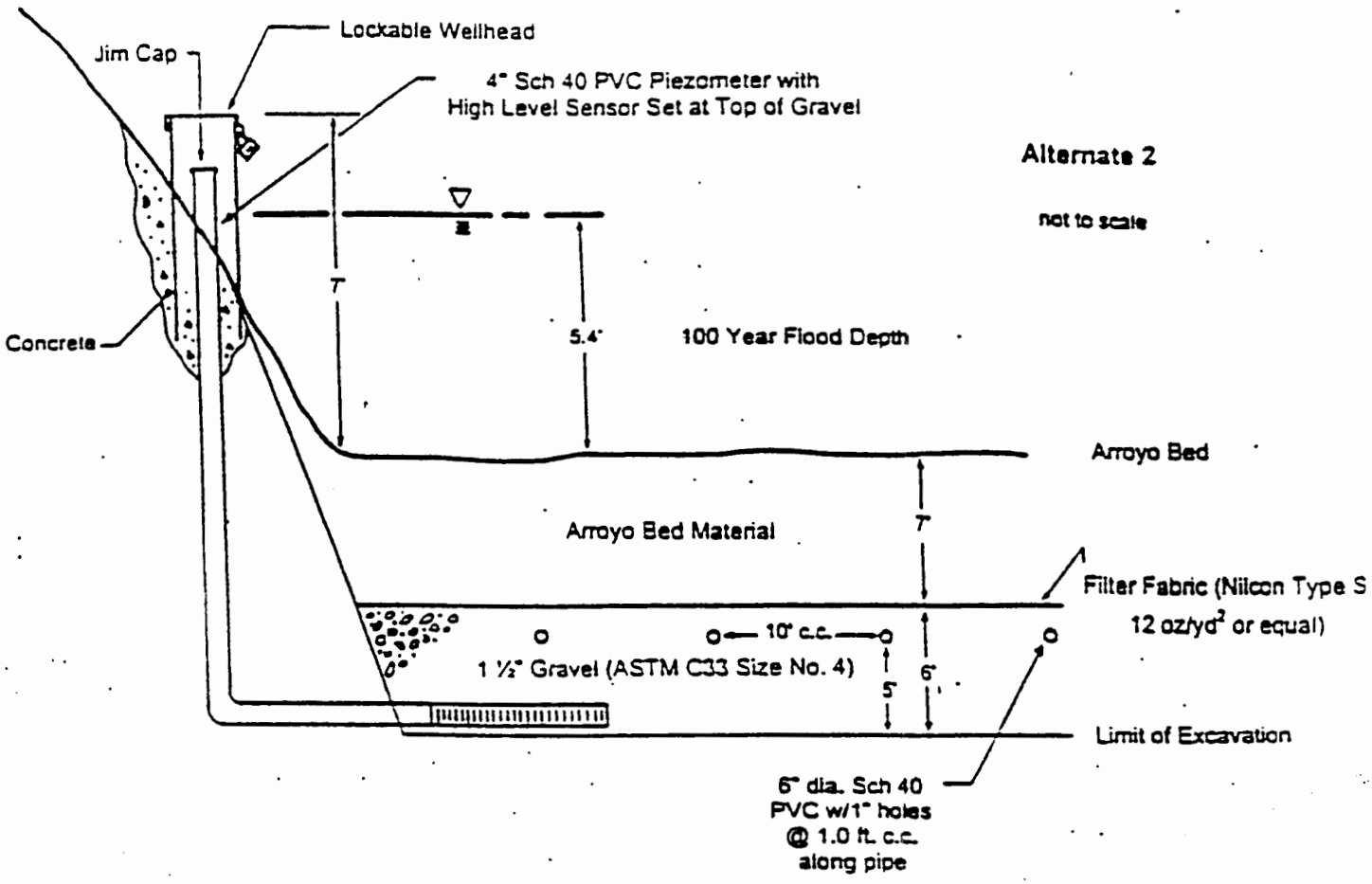


FIGURE 5

ALTERNATE 2
INFILTRATION GALLERY DETAILS

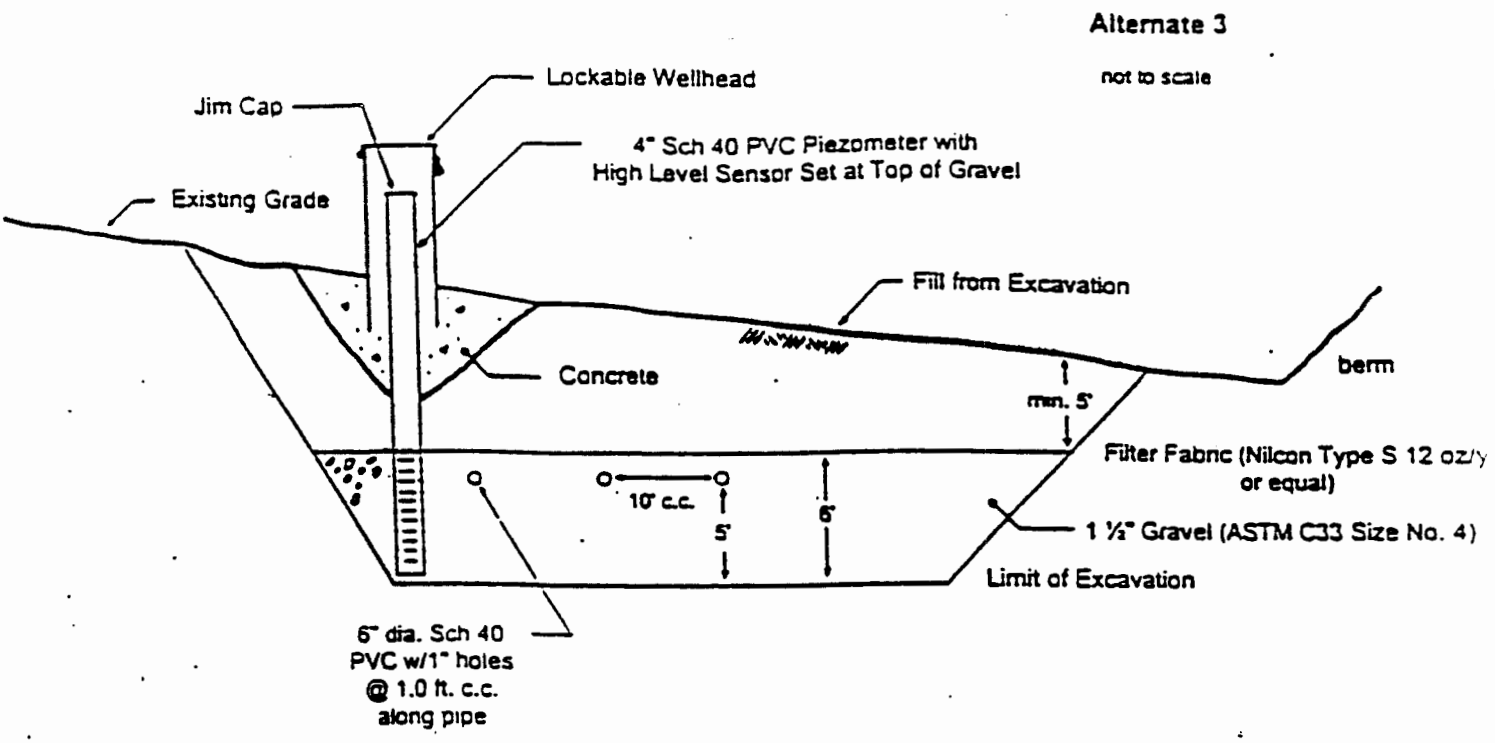


FIGURE 6

ALTERNATE 3
INFILTRATION GALLERY DETAILS

The water will be pretreated with "Aqua Mag", as is the case at the VWR site. The predicted lifespan for the Sparton Coors Road infiltration gallery is calculated as follows:

VWR Wetted Area (120 gpm)

$= 12' \times 225' + 6(2)(12+225)$

$= 5544\ ft^2$

VWR Wetted Area (200 gpm)

$= 5544 \times \frac{200}{120}$

$= 9240\ ft^2$

Sparton Wetted Area (200 gpm)

$= 0.3 \times 43{,}560 + 6(4)[\sqrt{0.3(43{,}560)}]$

$= 15{,}811\ ft^2$

$$\text{Life Sparton Site} = \frac{\text{Area Sparton (200 gpm)}}{\text{Area VWR (200 gpm)}} \times \text{Life VWR Site}$$

$$= \frac{15{,}811}{9{,}240} \times 2.5\ yr. = 4.2\ yr.$$

Use 4.0 yr.

When the infiltration gallery clogs, the system will be shut down and the infiltration gallery will be excavated and reconstructed at the same location.

Groundwater extraction combined with airstripper treatment is considered a best demonstrated available technology for volatile organic constituents (VOC) such as TCE and TCA. Further, 9 ½ years of successful experience with the current on-site system, consisting of groundwater extraction and airstripper treatment system confirms the applicability of the technology to the Sparton site. The success provides the basis for the plan to utilize airstripper treatment technology in the offsite plume leading edge vicinity. The containment well (FIGURE 2) planned near the plume leading edge will be screened to the deeper of: (1) deepest contamination detected at well cluster #9 (MW-48, 55, 56, and 67) or (2) the elevation at which less than 50 ppb TCE is first detected in new MW-70 to provide effective vertical capture. In addition, previous pumping tests and a number of recent studies/investigations show that a single well should have a