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WORK PLAN ADDENDUM TO THE PERCHED WATER REMOVAL ACTIONS FEED MATERIALS PRODUCTION CENTER RECOVERY WELL INSTALLATION AND SYSTEM WATER SAMPLING SUPPORT

06/00/91

ASI/WEMCO DOE-FN
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PLAN

ADVANCED SCIENCES INCORPORATED/INTERNATIONAL TECHNOLOGY
WORK PLAN ADDENDUM TO THE PERCHED WATER REMOVAL ACTIONS
FEED MATERIALS PRODUCTION CENTER
RECOVERY WELL INSTALLATION AND SYSTEM WATER SAMPLING SUPPORT

WESTINGHOUSE MATERIALS COMPANY OF OHIO

Prepared by:

Advanced Sciences Incorporated/International Technology (ASI/IT)

for the

Department of Energy

under contract

No. DE-AC05-860R216959 (602:91-019)

June 1991

1.0 INTRODUCTION

This addendum has been prepared in order to support the Department of Energy (DOE) and Westinghouse Materials Company of Ohio (WMCO) in Perched Water Removal Actions at the Feed Materials Production Center (FMPC). Additionally, this addendum outlines field operations and support activities related to the well installation and sampling to be performed by Advanced Sciences, Inc./International Technology Corporation (ASI/IT) and WMCO.

2.0 WELL INSTALLATION, SAMPLE COLLECTION, SHIPPING, AND ANALYTICAL REQUIREMENTS

In order to support the removal and treatment of perched groundwater, ASI/IT will install seven 4-inch and one 6-inch recovery wells at locations specified by WMCO. These locations are shown on Parsons' drawing 93X-5900-G-00023, Revision A. Well installation procedures and specifications will be as outlined in the Remedial Investigation/Feasibility Study (RI/FS) Work Plan Addendum, "Production and Additional Suspect Areas Work Plan," dated October 4, 1989, Section 2.0, unless specifically altered in this addendum.

Water samples submitted for RI/FS laboratory analysis will be documented, packaged, and shipped in accordance with the FMPC RI/FS Work Plan, Volume V, Sections 6.4, 6.8, and 7.0 dated March, 1988. Samples will be collected at locations specified by WMCO. The RI/FS Quality Assurance Project Plan (QAPP) does not specify protocols for the collection of samples from water treatment systems. Therefore, the samples may be used only as supplemental information in the RI/FS. The samples will be collected in accordance with the Removal Action Work Plan.

ASI/IT support will consist of recovery well installation and development and groundwater sample collection, shipment, and analysis. ASI/IT will collect samples until notified that WMCO personnel will collect the samples. Once the WMCO personnel assume the collection activities, ASI/IT support will be limited to the shipment and analysis of groundwater samples.

Water analyses will be performed to evaluate the potential presence of Hazardous Substance List (HSL), tributyl phosphate, and radiological constituents. The full HSL, tributyl phosphate, and full radiological analyses will be performed at the approved RI/FS contract laboratories.

The full radiological and full HSL analyses will be as defined in Revision 1 of the RI/FS Work Plan Addendum, "Production and Additional Suspect Areas Work Plan," Table 3-2, page 3-6. A copy of this table is attached to this addendum.

The detection limits for all HSL and radiological analyses will be those stated in the FMPC RI/FS Work Plan Volume V, Section 4.0, Table 4-1 through 4-3. Any variance from the RI/FS detection limits will require written approval by the DOE.

The recovery well installation for perched water removal actions will be supported by the following field efforts:

- The ASI/IT team, as requested by WMCO, will examine the proposed well locations to insure that sufficient lateral and vertical clearance is available to install the wells at the specified locations. Preliminary locations will be marked and surveyed.

- Well locations that deviate from those specified on Parsons' drawing due to a physical obstruction, will be approved in writing by the WMCO project manager before well installation.

- Seven 4-inch and one 6-inch recovery wells will be installed and developed at WMCO specified locations. Table 1 shows WMCO and RI/FS designators, approximate total depths, and screen intervals for the eight well locations.

TABLE 1
DESCRIPTION OF ADDITIONAL RECOVERY WELLS

WMCO Well Designator*	RI/FS Well Designator	Well Diameter	Approximate Total Depth (ft.)	Screen Interval**
RA-1	1779	4	20	7-20
RA-2	1780	4	20	7-20
RA-3	1781	4	20	7-20
RA-4	1782	4	20	7-20
RB-1	1783	4	16	9-16
RB-2	1784	4	16	9-16
RC-1	1785	6	20	8-20
1324A***	1786	4	10	2-10

* Parsons' drawing number 93X-5900-G-00023, Revision A

** Screen intervals estimated from existing borings.
Screens will be set over sand/silt zones found in field.

*** 1324A to be installed as near as possible to 1324.

- All of the wells, except 1780 and 1786, will be installed with protective covers that have a rise of 2.0 to 2.5 feet from ground surface. Wells 1780 and 1786 will have a flush mount installation.

- All of the wells will be characterized after well development with full HSL and full radiological sample collection and analysis. Wells 1779, 1780, 1781, 1782, 1783, 1784, and 1785 will be characterized additionally with Tributyl Phosphate sample collection and analysis.

- Samples from all drummed materials resulting from well installation will be collected and undergo TCLP analysis and total uranium analysis. These analyses will be completed in order to characterize the cuttings for disposal.

- TCLP and total uranium analyses will be completed at laboratories designated by WMCO.

- Collection, shipment, and analysis of groundwater samples will be performed by ASI/IT. The estimated numbers of samples are:

  - Full HSL Parameters 67
  - Full Radiological Parameters 67
  - Tributyl Phosphate 59

  These samples will be collected, shipped, and analyzed over the first year of operation. The number of samples collected is subject to change by WMCO.

- The locations for sample collection are detailed on Parsons' drawing 93X-5900-F-00017, Revision 0. Sample collection will occur at the inlet and outlet locations of the treatment system at sample location numbers 5 and 10 on Parsons' drawing. The samples will be collected each time the batch treatment system is operated in the first year unless notified of change by WMCO. These samples will be analyzed for full HSL, full radiological, and Tributyl Phosphate.

- All wells used in the perched water removal action will be sampled and characterized annually. Analyses will include full HSL and full radiological for all wells with the Plant 2/3 and plant 8 wells including analysis for Tributyl Phosphate.

3.0 RESPONSIBILITIES

ASI/IT personnel will be responsible for the following duties relative to the FMPC recovery well installation for perched water removal actions:

- Develop this addendum and the associated Configuration Control Board (CCB) package

- Develop a health and safety plan addendum that addresses the needs of well installation and water sampling

- Survey, drill, install, and develop eight recovery wells per RI/FS specifications, as outlined in this addendum

- Coordinate collection, shipment, and analysis of samples for full HSL, full radiological, and tributyl phosphate parameters

- ASI/IT will collect samples until notified that WMCO personnel will collect the samples

- Provide sample bottles as required

- Coordinate with the RI/FS contract laboratory concerning full HSL, full radiological, and tributyl phosphate sample receipt and tracking

- Ship to and have analyzed at the RI/FS contract laboratory the groundwater samples for full HSL, full radiological, and tributyl phosphate parameters

WMCO personnel will be responsible for the following duties concerning recovery well installation and associated water sampling for perched water removal actions:

- Insure that a contact is designated and available to resolve any WMCO correctable hindrances to ASI/IT in accomplishing the field work associated with this Work Plan
- Insure that all well locations are clearly marked and identified
- Provide ASI/IT with completed Penetration Permits, ERA Subsurface Hazard Assessment, and any other site required permits deemed necessary by the WMCO project engineer. These permits are to be provided to ASI/IT prior to initiation of well installation
- Provide sampling schedules to ASI/IT well in advance of water sampling events. This is necessary for ASI/IT to provide the required support for this task
- Collect the water samples for analysis after notifying ASI/IT
- Evaluate the results of the sampling program.

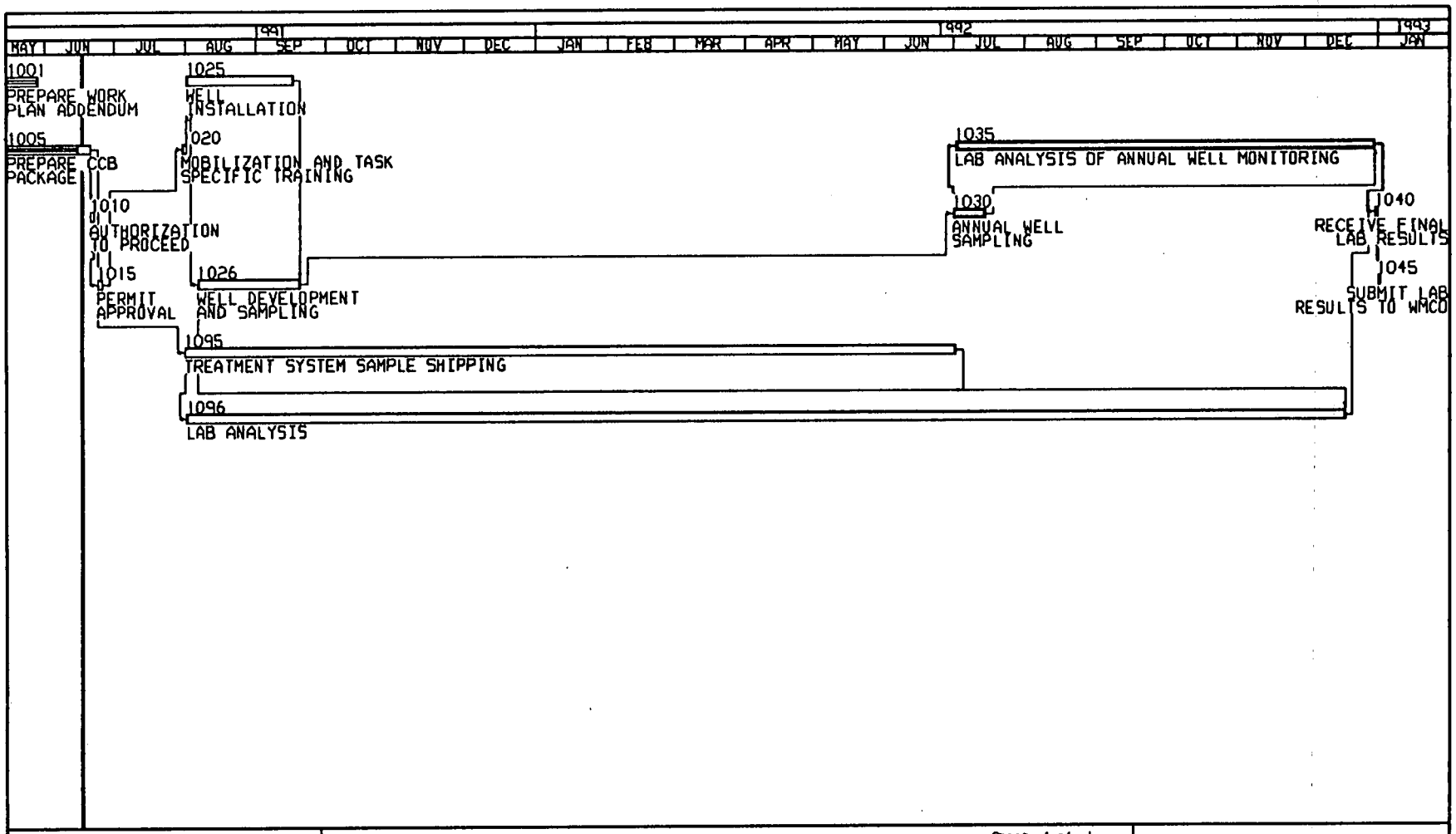
TABLE 3-2
ANALYTICAL PARAMETERS

ANALC'L GROUP	ANALYTICAL PARAMETERS	VOLUME, CONTAINER	PRESERVATION
WATER	HSL		
	• HSL Organics		
	- Volatiles	2-40 ml vial (with teflon septum cap)	Cool 4° C
	• Semivolaties	4 liter, amber glass (with teflon-lined cap)	Cool 4° C
	• HSL Inorganics		
	- Metals (plus Molybdenm)	2-1 liter, plastic	HNO_3, pH<2 filtered
	- Mercury	500 ml, glass	HNO_3, pH<2
	- Cyanide	1 liter, plastic	Cool 4° C NaOH, pH>12
	Full HSL is the above and:		
	• HSL Pesticides/PCB	4 liter, amber glass (with teflon-lined cap)	Cool 4° C None
	HSL+ is all the above and:		
	• Organophosphorus Pesticides		
	• Dioxin, Furans		
SOIL	Same as for Water	500 ml, glass wide-mouth jar with teflon lid liner	None
WATER	Full Radiological		
	• Total Uranium	4 liter plastic	HNO_3, pH<2
	• Isotopic Uranium		
	• Isotopic Plutonium		
	• Radium-226		
	• Radium-228		
	• Neptunium-237		
	• Total Thorium		
	• Isotopic Thorium		
	• Technetium-99		
	• Cesium-137		
	• Strontium-90		
	• Ruthenium-106		
SOIL	Same as Water	500 ml, glass or plastic container	None

RECOVERY WELL INSTALLATION AND SYSTEM WATER SAMPLING SUPPORT

SCHEDULE

SECTION II



Activity Bar/Early Dates
Critical Activity
Progress Bar

Primavera Systems, Inc. 1984-1990

ASI/IT
PERCHED WATER REMOVAL ACTION
WELL INSTALLATION AND WATER SAMPLING

Sheet 1 of 1

Project Start: 15MAY91
Project Finish: 1JAN93

Data Date: 17JUN91
Plot Date: 17JUN91

Date	Revision	Checked	Approved

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RECOVERY WELL INSTALLATION AND SYSTEM WATER SAMPLING SUPPORT

COST ACCOUNT PLAN

SECTION III

COST ACCOUNT PLAN

CONTRACT NUMBER: 602
WBS TASK: 27.95
FISCAL YEAR: 1991

TITLE: FMPC REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
TASK TITLE: PERCHED WATER REMOVAL ACTION
CONTRACT NUMBER: DE-AC05-86OR21659

CLIENT: DOE
PROJECT DIRECTOR: J. D. WOOD
TASK LEADER: D. HARMEL

LABOR DESCRIPTION	COST ELEMENT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	HOURS	$
ASI ONSITE:															
Project Director	A01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Manager	A03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senior Eng./Sci.	A04	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senior Eng./Sci.	A05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Engineer/Scientist	A06	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Junior Eng./Sci.	A08	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senior Technician	A010	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Secretary	A011	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLIENT ONSITE:															
Project Director	C01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Manager	C03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senior Eng./Sci.	C04	0	0	0	0	0	0	0	0	0	0	33	15	48	1,091
Senior Eng./Sci.	C05	0	0	0	0	0	0	0	80	80	0	0	0	160	3,076
Engineer/Scientist	C06	0	0	0	0	0	0	0	30	0	0	0	0	30	505
Junior Eng./Sci.	C08	0	0	0	0	0	0	0	0	0	0	440	200	640	6,874
Senior Technician	C010	0	0	0	0	0	0	0	0	0	0	280	200	480	5,779
Secretary	C011	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL LABOR HOURS		0	0	0	0	0	0	0	110	80	0	753	415	1358	17,325
Labor Dollars		0	0	0	0	0	0	0	2,043	1,538	0	8,847	4,897		17,325
Fringe OH at 32.00%		0	0	0	0	0	0	0	654	492	0	2,831	1,567		5,544
ASI Onsite OH at 67.00%		0	0	0	0	0	0	0	0	0	0	0	0		0
Client Onsite OH at 32.00%		0	0	0	0	0	0	0	863	650	0	3,737	2,068		7,318
TOTAL LABOR COSTS		0	0	0	0	0	0	0	3,560	2,680	0	15,415	8,532		30,187
ODC TOTAL (Page 2)		0	0	0	0	0	0	0	3,009	2,806	0	42,082	24,628		72,525
TOTAL COSTS		0	0	0	0	0	0	0	6,569	5,486	0	57,497	33,160		102,712
G&A AT 11.00%		0	0	0	0	0	0	0	723	603	0	6,325	3,648		11,299
FEE AT 5.45%		0	0	0	0	0	0	0	397	332	0	3,478	2,006		6,213
TOTAL COSTS AND FEE		0	0	0	0	0	0	0	7,689	6,421	0	67,300	38,814		120,224

MS #	MILESTONE DESCRIPTION	DUE DATE

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COST ACCOUNT PLAN

WBS TASK: 27.95
FISCAL YEAR: 1991

TASK TITLE: PERCHED WATER REMOVAL ACTION
CONTRACT NUMBER: DE-AC05-86OR21659

OTHER DIRECT COST DESCRIPTION	COST ELEMENT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	$
Data Processing/Statis.	DPS	0	0	0	0	0	0	0	0	0	0	0	0	0
Field Office	FLD	0	0	0	0	0	0	0	0	0	0	0	0	0
Expend. Field Supplies	ESF	0	0	0	0	0	0	0	0	0	0	0	0	0
IT Engineering Services	ITC	0	0	0	0	0	0	0	3009	2806	0	669	1333	7817
IT Analytical Services	LAB	0	0	0	0	0	0	0	0	0	0	0	0	0
Penn Drill	MWD	0	0	0	0	0	0	0	0	0	0	41413	23295	64708
Onsite Support	OSS	0	0	0	0	0	0	0	0	0	0	0	0	0
Special Testing/Equip.	XST	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Subcontractors	SUB	0	0	0	0	0	0	0	0	0	0	0	0	0
Travel	TRA	0	0	0	0	0	0	0	0	0	0	0	0	0
Employee Relocation	EMR	0	0	0	0	0	0	0	0	0	0	0	0	0
														0
														0
														0
														0
														0
TOTAL OTHER DIRECT COSTS		0	0	0	0	0	0	0	3009	2806	0	42082	24628	72525

TASK DESCRIPTION:

COST ACCOUNT PLAN

CONTRACT NUMBER: 602
WBS TASK: 27.95
FISCAL YEAR: 1992

TITLE: FMPC REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
TASK TITLE: PERCHED WATER REMOVAL ACTION
CONTRACT NUMBER: DE-AC05-86OR21659

CLIENT: DOE
PROJECT DIRECTOR: J. D. WOOD
TASK LEADER: D. HARMEL

LABOR DESCRIPTION	COST ELEMENT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	HOURS	$
ASI ONSITE:															
Project Director	A01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Manager	A03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senior Eng./Sci.	A04	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senior Eng./Sci.	A05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Engineer/Scientist	A06	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Junior Eng./Sci.	A08	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senior Technician	A010	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Secretary	A011	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLIENT ONSITE:															
Project Director	C01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Manager	C03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senior Eng./Sci.	C04	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senior Eng./Sci.	C05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Engineer/Scientist	C06	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Junior Eng./Sci.	C08	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senior Technician	C010	40	40	40	40	40	40	40	40	40	240	0	0	600	7,528
Secretary	C011	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL LABOR HOURS		40	40	40	40	40	40	40	40	40	240	0	0	600	7,528
Labor Dollars		502	502	502	502	502	502	502	502	502	3,010	0	0		7,528
Fringe OH at 38.00%		191	191	191	191	191	191	191	191	191	1,144	0	0		2,863
ASI Onsite OH at 61.00%		0	0	0	0	0	0	0	0	0	0	0	0		0
Client Onsite OH at 33.00%		229	229	229	229	229	229	229	229	229	1,371	0	0		3,432
TOTAL LABOR COSTS		922	922	922	922	922	922	922	922	922	5,525	0	0		13,823
ODC TOTAL (Page 2)		27,058	27,058	27,058	27,058	27,058	27,058	27,058	27,058	27,058	29,294	26,542	26,542		325,903
TOTAL COSTS		27,980	27,980	27,980	27,980	27,980	27,980	27,980	27,980	27,980	34,819	26,542	26,542		339,726
G&A AT 12.10%		3,386	3,386	3,386	3,386	3,386	3,386	3,386	3,386	3,386	4,213	3,212	3,212		41,111
FEE AT 5.45%		1,709	1,709	1,709	1,709	1,709	1,709	1,709	1,709	1,709	2,127	1,622	1,622		20,752
TOTAL COSTS AND FEE		33,075	33,075	33,075	33,075	33,075	33,075	33,075	33,075	33,075	41,159	31,376	31,376		401,589

MS #	MILESTONE DESCRIPTION	DUE DATE

COST ACCOUNT PLAN

WBS TASK: 27.95
FISCAL YEAR: 1992

TASK TITLE: PERCHED WATER REMOVAL ACTION
CONTRACT NUMBER: DE-AC05-86OR21659

OTHER DIRECT COST DESCRIPTION	COST ELEMENT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	$
Data Processing/Statis.	DPS	0	0	0	0	0	0	0	0	0	0	0	0	0
Field Office	FLD	0	0	0	0	0	0	0	0	0	0	0	0	0
Expend. Field Supplies	ESF	0	0	0	0	0	0	0	0	0	0	0	0	0
IT Engineering Services	ITC	516	516	516	516	516	516	516	516	516	2752	0	0	7396
IT Analytical Services	LAB	26542	26542	26542	26542	26542	26542	26542	26542	26542	26542	26542	26542	318507
Penn Drill	MWD	0	0	0	0	0	0	0	0	0	0	0	0	0
Onsite Support	OSS	0	0	0	0	0	0	0	0	0	0	0	0	0
Special Testing/Equip.	XST	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Subcontractors	SUB	0	0	0	0	0	0	0	0	0	0	0	0	0
Travel	TRA	0	0	0	0	0	0	0	0	0	0	0	0	0
Employee Relocation	EMR	0	0	0	0	0	0	0	0	0	0	0	0	0
														0
														0
														0
														0
														0
TOTAL OTHER DIRECT COSTS		27058	27058	27058	27058	27058	27058	27058	27058	27058	29294	26542	26542	325903

TASK DESCRIPTION:

TASK TITLE: PERCHED WATER REMOVAL ACTION
CONTRACT NUMBER: DE-AC05-86OR21659

ADVANCED SCIENCES, INCORPORATED
WBS TASK: 27.95
Summarized Estimate of Direct Costs:

	FY91 Total	FY92 Total	Task Total
Direct Labor Hours	1,358	600	1,958
Direct Labor	17,325	7,528	24,853
Overhead	12,862	6,295	19,157
Total Direct Labor Costs	30,187	13,823	44,010
Other Direct Costs			
Data Processing/Statis.	0	0	0
Field Office	0	0	0
Expend. Field Supplies	0	0	0
IT Engineering Services	7,817	7,396	15,213
IT Analytical Services	0	318,507	318,507
Penn Drill	64,708	0	64,708
Onsite Support	0	0	0
Special Testing/Equip.	0	0	0
Other Subcontractors	0	0	0
Travel	0	0	0
Employee Relocation	0	0	0
Total Other Direct Costs	72,525	325,903	398,428
General & Administration	11,299	41,111	52,410
Total Contract Costs	114,011	380,837	494,848
Fee	6,213	20,752	26,965
Total Contract Value	120,224	401,589	521,813

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Task No. 03.07.20 - Perched Water Removal Action
Summary of Estimated Total Direct Cost by Month - FY91

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Labor Hours		0	0	0	0	0	0	0	55	50	0	20	40	165
Direct Labor		$0	$0	$0	$0	$0	$0	$0	$1,077	$1,004	$0	$239	$477	$2,797
Overhead	125.00%	$0	$0	$0	$0	$0	$0	$0	$1,346	$1,255	$0	$299	$596	$3,496
Total Labor Cost		$0	$0	$0	$0	$0	$0	$0	$2,423	$2,259	$0	$538	$1,073	$6,293
Other Direct Costs														
Total Travel Costs		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other ODC		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total ODC's		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Direct Costs		$0	$0	$0	$0	$0	$0	$0	$2,423	$2,259	$0	$538	$1,073	$6,293
General & Admin	15.00%	$0	$0	$0	$0	$0	$0	$0	$363	$339	$0	$81	$161	$944
Subtotal		$0	$0	$0	$0	$0	$0	$0	$2,786	$2,598	$0	$619	$1,234	$7,237
Fee	8.00%	$0	$0	$0	$0	$0	$0	$0	$223	$208	$0	$50	$99	$580
Total		$0	$0	$0	$0	$0	$0	$0	$3,009	$2,806	$0	$669	$1,333	$7,817
IT Laboratory		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
IT Equipment		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
IT Materials		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
FY90 Total IT		$0	$0	$0	$0	$0	$0	$0	$3,009	$2,806	$0	$669	$1,333	$7,817

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IT Corporation - FMPC RI/FS (Contract No. 866A21602-02) - CAPS

Task No. 03.07.20 - Perched Water Removal Action
Summary of Estimated Total Direct Cost by Month - FY92

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Labor Hours		15	15	15	15	15	15	15	15	15	80	0	0	215
Direct Labor		$185	$185	$185	$185	$185	$185	$185	$185	$185	$985	$0	$0	$2,650
Overhead	125.00%	$231	$231	$231	$231	$231	$231	$231	$231	$231	$1,231	$0	$0	$3,310
Total Labor Cost		$416	$416	$416	$416	$416	$416	$416	$416	$416	$2,216	$0	$0	$5,960
Other Direct Costs														
Total Travel Costs		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other ODC		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total ODC's		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Direct Costs		$416	$416	$416	$416	$416	$416	$416	$416	$416	$2,216	$0	$0	$5,960
General & Admin	15.00%	$62	$62	$62	$62	$62	$62	$62	$62	$62	$332	$0	$0	$890
Subtotal		$478	$478	$478	$478	$478	$478	$478	$478	$478	$2,548	$0	$0	$6,850
Fee	8.00%	$38	$38	$38	$38	$38	$38	$38	$38	$38	$204	$0	$0	$546
Total		$516	$516	$516	$516	$516	$516	$516	$516	$516	$2,752	$0	$0	$7,396
IT Laboratory		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
IT Equipment		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
IT Materials		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
FY91 Total IT		$516	$516	$516	$516	$516	$516	$516	$516	$516	$2,752	$0	$0	$7,396

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IT Corporation - FMPC RI/FS (Contract No. 866A21602-02) - CAPS

Task No. 03.07.20 - Perched Water Removal Action
Estimate of Hours by Month - FY91 (October, 1990 to September, 1991)

Position Title	E-/N-Grade	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Proj. Director	E-13													0
Proj. Mgr. III	E-12													0
Proj. Mgr. II	E-11													0
Proj. Manager I	E-10													0
Staff Consult	E-09													0
Managing Eng/Sc	E-08													0
Eng/Sci V	E-07								50	50				100
Eng/Sci IV	E-06													0
Eng/Sci III	E-05													0
Eng/Sci II	E-04								5					5
Eng/Sci I	E-03													0
Asst Eng/Sci	E-02													0
Sec/Tech IV	N-12											20	40	60
Sec/Tech III	N-11													0
Sec/Tech II	N-09													0
Sec/Tech I	N-08													0
Clerical	N-06													0
FY91 Labor Hours		0	0	0	0	0	0	0	55	50	0	20	40	165

15-Jun-91

IT Corporation - FMPC RI/FS (Contract No. 866A21602-02) - CAPS

Task No. 03.07.20 - Perched Water Removal Action
Estimate of Hours by Month - FY92 (October, 1991 to September, 1992)

Position Title	E-/N-Grade	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Proj. Director	E-13													0
Site Manager	E-12													0
Sen Staff Cons	E-11													0
Proj. Manager	E-10													0
Staff Consult	E-09													0
Senior Eng/Sci	E-08													0
H & S Coord	E-07													0
Proj Eng/Sci	E-06													0
QA Officer	E-05													0
Asst Prj Eng	E-04													0
Eng/Sci	E-03													0
Asst Eng/Sci	E-02													0
Sen Technician	N-12	15	15	15	15	15	15	15	15	15	80			215
Sen Draftsman	N-11													0
Technician	N-09													0
Draftsman	N-08													0
Clerical	N-06													0
FY92 Labor Hours		15	15	15	15	15	15	15	15	15	80	0	0	215

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15-Jun-91

Task No. 03.07.20 - Perched Water Removal Action
Direct Labor Cost Calculation

Position Title	E-/N-Grade	August 1990 Hourly Rate	Escalation % = FY91 Escal. Hourly Rate	Total FY91 Hours	0.442% Total FY91 Direct Labor	Escalation % = FY92 Escalated Hourly Rate	Total FY92 Hours	3.6500% Total FY92 Direct Labor	Escalation % = FY93 Escalated Hourly Rate	Total FY93 Hours	5.725% Total FY93 Direct Labor	Total Task Direct Labor
Proj. Director	E-13	42.5770	$42.7650	0	$0	$44.1311	0	$0	$46.6576	0	$0	$0
Site Manager	E-12	36.0507	$36.2099	0	$0	$37.3666	0	$0	$39.5058	0	$0	$0
Sen Staff Cons	E-11	31.2184	$31.3563	0	$0	$32.3579	0	$0	$34.2104	0	$0	$0
Proj. Manager	E-10	27.0916	$27.2113	0	$0	$28.0804	0	$0	$29.6880	0	$0	$0
Staff Consult	E-09	23.3751	$23.4783	0	$0	$24.2283	0	$0	$25.6154	0	$0	$0
Senior Eng/Sci	E-08	22.3475	$22.4462	0	$0	$23.1632	0	$0	$24.4893	0	$0	$0
H & S Coord	E-07	19.9914	$20.0797	100	$2,008	$20.7211	0	$0	$21.9074	0	$0	$2,008
Proj Eng/Sci	E-06	18.1646	$18.2448	0	$0	$18.8276	0	$0	$19.9055	0	$0	$0
QA Officer	E-05	16.5270	$16.6000	0	$0	$17.1302	0	$0	$18.1109	0	$0	$0
Asst Prj Eng	E-04	14.6086	$14.6731	5	$73	$15.1418	0	$0	$16.0087	0	$0	$73
Eng/Sci	E-03	12.9842	$13.0415	0	$0	$13.4581	0	$0	$14.2286	0	$0	$0
Asst Eng/Sci	E-02	11.5926	$11.6438	0	$0	$12.0157	0	$0	$12.7036	0	$0	$0
Sen Technician	N-12	11.8737	$11.9261	60	$716	$12.3071	215	$2,646	$13.0117	0	$0	$3,362
Sen Draftsman	N-11	11.1292	$11.1784	0	$0	$11.5354	0	$0	$12.1958	0	$0	$0
Technician	N-09	10.5911	$10.6379	0	$0	$10.9777	0	$0	$11.6062	0	$0	$0
Draftsman	N-08	9.9108	$9.9546	0	$0	$10.2725	0	$0	$10.8606	0	$0	$0
Clerical	N-06	8.5433	$8.5810	0	$0	$8.8551	0	$0	$9.3621	0	$0	$0
Total			FY90	165	$2,797	FY91	215	$2,646	FY92	0	$0	$5,443
			Rounding Adjust		$0	Rounding Adjust		$4	Rounding Adjust		$0	$4
Total Estimated Direct Labor					$2,797			$2,650			$0	$5,447

Task No. 03.07.20 - Perched Water Removal Action
Estimate of Other Direct Costs - FY91

Travel From	To	# of Trips	Air-fare	Length of Stay (Nights)	Per day: Per Diem	Per day: Rental Car	Per day: Hotel	Per day: Misc.*	TOTALS: Airfare	TOTALS: Per Diem	TOTALS: Rental Car	TOTALS: Misc.	TOTALS: Hotel
Pittsburgh	Cincinnati	0	$303	3	$26	$42	$50	$0	$0	$0	$0	$0	$0
Pittsburgh	Cincinnati	0	$303	5	$26	$42	$50	$0	$0	$0	$0	$0	$0
Cincinnati	Pittsburgh	0	$303	3	$26	$42	$60	$0	$0	$0	$0	$0	$0
Pittsburgh	Knoxville	0	$330	3	$26	$42	$49	$0	$0	$0	$0	$0	$0
Albuquerque	Knoxville	0	$892	3	$26	$42	$49	$0	$0	$0	$0	$0	$0
Knoxville	Cincinnati	0	$476	2	$26	$42	$50	$0	$0	$0	$0	$0	$0
Pittsburgh	Albuquerque	0	$768	3	$26	$42	$59	$0	$0	$0	$0	$0	$0
								Travel Subtotals	$0	$0	$0	$0	$0
								TDY Subtotal	$0	$0			

TDY	# of People	Travel Allow.	Total # of Mos.	TDY Amt Per Mo.							
Total # of Mos. = All TDY	0	$300	0	$1,200	Travel Totals	$0	$0	$0	$0	$0

* Miscellaneous Costs =
$18.00 Mileage
$6.00 Parking

Total Travel Costs	$0
Relocation	$0
Special Equipment	$0
On-Site Support	$0
Other Purchased Service	$0
Data Management	$0
Health & Safety Eqiup.	$0
Total Other Direct Costs	$0
IT Laboratory	$0
IT Equipment	$0 Computer and WP Equipment
IT Materials	$0
Total Other IT	$0

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For each itemized cost provide written documentation confirming estimate, i.e., prior invoice, catalog price list, written vendor quote.
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Task No. 03.07.20 - Perched Water Removal Action
Estimate of Other Direct Costs - FY92

Travel From	To	# of Trips	Air-fare	Length of Stay (Nights)	Per day: Per Diem	Per day: Rental Car	Per day: Hotel	Per day: Misc.*	TOTALS: Airfare	TOTALS: Per Diem	TOTALS: Rental Car	TOTALS: Misc.	TOTALS: Hotel
Pittsburgh	Cincinnati	0	$303	3	$26	$42	$50	$0	$0	$0	$0	$0	$0
Pittsburgh	Cincinnati	0	$303	5	$26	$42	$50	$0	$0	$0	$0	$0	$0
Cincinnati	Pittsburgh	0	$303	3	$26	$42	$60	$0	$0	$0	$0	$0	$0
Pittsburgh	Knoxville	0	$330	3	$26	$42	$49	$0	$0	$0	$0	$0	$0
Albuquerque	Knoxville	0	$892	3	$26	$42	$49	$0	$0	$0	$0	$0	$0
Knoxville	Cincinnati	0	$496	5	$26	$42	$50	$0	$0	$0	$0	$0	$0
Pittsburgh	Albuquerque	0	$768	3	$26	$42	$59	$0	$0	$0	$0	$0	$0
								Travel Subtotals	$0	$0	$0	$0	$0
								TDY Subtotal	$0	$0			
								Travel Totals	$0	$0	$0	$0	$0

TDY	# of People	Travel Allow.	Total # of Mos.	TDY Amt Per Mo.
Total # of Mos. = All TDY	0	$300	0	$1,200

* Miscellaneous Costs =
$18.00 Mileage
$6.00 Parking

Total Travel Costs	$0
Relocation	$0
Special Equipment	$0
On-Site Support	$0
Other Purchased Service	$0
Data Management	$0
Health & Safety	$0
Total Other Direct Costs	$0
IT Laboratory	$0
IT Equipment	$0 Computer and WP Equipment
IT Materials	$0
Total Other IT	$0

<----------
For each itemized cost provide written documentation confirming estimate, i.e., prior invoice, catalog price list, written vendor quote.
<----------

15-Jun-91

Task No. 03.07.20 - Perched Water Removal Action
Estimate of Direct Costs

		FY91 Total	FY92 Total	FY93 Total	TASK TOTAL
Direct Labor Hours		165	215	0	380
Direct Labor		$2,797	$2,650	$0	$5,447
Overhead	125.00%	$3,496	$3,310	$0	$6,806
Total Labor Cost		$6,293	$5,960	$0	$12,253
Other Direct Costs					
Total Travel Costs		$0	$0	$0	$0
Relocation		$0	$0	$0	$0
Special Equipment		$0	$0	$0	$0
On-Site Support		$0	$0	$0	$0
Other Purchased Service		$0	$0	$0	$0
Data Management		$0	$0	$0	$0
Health & Safety		$0	$0	$0	$0
Total ODC's		$0	$0	$0	$0
Total Direct Costs		$6,293	$5,960	$0	$12,253
General & Adm	15.00%	$944	$890	$0	$1,834
Subtotal		$7,237	$6,850	$0	$14,087
Fee	8.00%	$580	$546	$0	$1,126
Total		$7,817	$7,396	$0	$15,213
IT Laboratory		$0	$0	$0	$0
IT Equipment		$0	$0	$0	$0
IT Materials		$0	$0	$0	$0
Total IT		$7,817	$7,396	$0	$15,213
Rounding Errors		$0	$0	$0	$0

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66117

May 28, 1991

Advanced Sciences, Inc.
107-F Jefferson Avenue
Oak Ridge, TN 37830

Attention: Mr. James Ransone

Dear Jim:

Enclosed please find our estimate for additional stainless steel monitoring wells at the FMPC based on the following assumptions:

1. 7 - 4" SSTL wells, 10 to 20 feet
2. 1 - 6" SSTL well, 20 feet

ITEM	SUPPLIES/SERVICES	QTY.	UNIT	PRICE	AMOUNT
1a	Mob/Demob - Rig	0	EACH	$ 15000.00	
1b	Mob/Demob - Truck, Dozer	0	EACH	$ 3000.00	
2*	Drill & Sample-Cable Tool	0	L.F.	$ 45.00	
2a*	Drill & Sample-Cable Tool	142	L.F.	$ 50.00	$ 7100.00
3.	Training	10	PER/HR	$ 45.00	$ 450.00
4.	Standby Time	0	HR	$ 100.00	
4a*	Standby time/drilling rig and crew	75	HR	$ 110.00	$ 8250.00
5.	Site Clearing	0	HR	$ 100.00	
5a	Site Clearing	0	HR	$ 110.00	
6.	Shelby Tubes	0	EA	$ 80.00	
7.*	Permeability Testing	0	EA	$ 110.00	

8.	Sample Jars	0	CASE	$ 12.00	
9.*	Well Const. Labor/Equip.	0	HR	$ 110.00	
9a*	Well Const. Labor/Equip	80	HR	$ 120.00	$ 9600.00
10.	Well Casing, 4" SSTL	0	L.F.	$ 24.00	
10a	Well Casing, 4" SSTL	56	L.F.	$ 30.00	$ 1680.00
10b	Well Casing, PVC (2")	0	L.F.	$ 1.60	
10c	Well Casing, PVC (4")	0	L.F.	$ 2.88	
10d	Well Casing, 2" SSTL	0	L.F.	$ 23.47	
10e	Well Casing, 6" SSTL	2	L.F.	$ 80.40	$ 160.80
11.	Well Screen, 4" SSTL	0	L.F.	$ 45.00	
11a	Well Screen, 4" SSTL	86	L.F.	$ 47.55	$ 4089.30
11b	Well Screen, PVC (2")	0	L.F.	$ 3.00	
11c	Well Screen, PVC (4")	0	L.F.	$ 7.76	
11d	Well Screen, 2" SSTL	0	L.F.	$ 38.59	
11e	Well Screen, 6" SSTL	8	L.F.	$ 102.00	$ 816.00
12	Top/Bottom Caps, 4" SSTL	0	EACH	$ 45.00	
12a	Top/Bottom Caps, 2" PVC	0	EACH	$ 22.05	
12b	Top/Bottom Caps, 4" PVC	0	EACH	$ 32.20	
12c	Top/Bottom Caps, 2" SSTL	0	EACH	$ 103.50	
12d	Top/Bottom Caps, 6" SSTL	2	EACH	$ 96.00	$ 192.00
13.	Sand or Gravel Pack	0	CU.YD.	$ 125.00	
13a	Sand or Gravel Pack	100	BAGS	$ 5.75	$ 575.00
14.	Bentonite Pellets	25	BKT	$ 35.00	$ 1875.00
15.	Volclay Grout	0	LBS	$ 0.15	
15a	Volclay Grout	500	LBS	$ 0.40	$ 200.00
16.	Locking Caps, (10")	8	EA	$ 150.00	$ 1200.00
16a	Locking Caps (4")	0	EA	$ 104.62	

17.	Steel Guard Posts	0	EA	$ 10.00	
18*	Borehole Sealing	0	L.F.	$ 15.00	
19*	Well Development	0	HR	$ 110.00	
19a*	Well Development	80	HR	$ 120.00	$ 9600.00
20*	Personnel Decontamination	0	HR	$ 100.00	
20a*	Personnel Decontamination	48	HR	$ 110.00	$ 5280.00
21*	Equipment Decontamination	0	HR	$ 110.00	
21a*	Equipment Decontamination	48	HR	$ 115.00	$ 5520.00
22.	Portable Steam Generator	12	DAY	$ 10.00	$ 120.00
23.	Water Truck	12	DAY	$ 20.00	$ 240.00
24.	Drum Handling	20	EA	$ 20.00	$ 400.00
25.	Site Restoration	8	EA	$ 200.00	$ 1600.00
26.	Per Diem	0	PER/DAY	$ 45.00	
26a	Per Diem	96	PER/DAY	$ 50.00	$ 4800.00
27.	Support Vehicles	48	DAY	$ 20.00	$ 960.00
28.	Mob/Demob-Auger	0	EA	$6000.00	
29*	Drill & Sample-Auger	0	HR	$ 125.00	
				TOTAL:	$ 64708.10

For each item number marked by an asterisk, the applicable unit price will be increased by the following percentages when work is performed in situations calling for protection higher than that required for Level D:

Level C	15 Percent
Level B	30 Percent

If you have any questions or desire additional information, please contact us. As always, it is a pleasure doing business with you.

Very truly yours,

PENNSYLVANIA DRILLING COMPANY

William D. Lutz

William D. Lutz,
Chief Estimator

RECOVERY WELL INSTALLATION AND SYSTEM WATER SAMPLING SUPPORT

DRAWING NUMBER 93X5900G00023

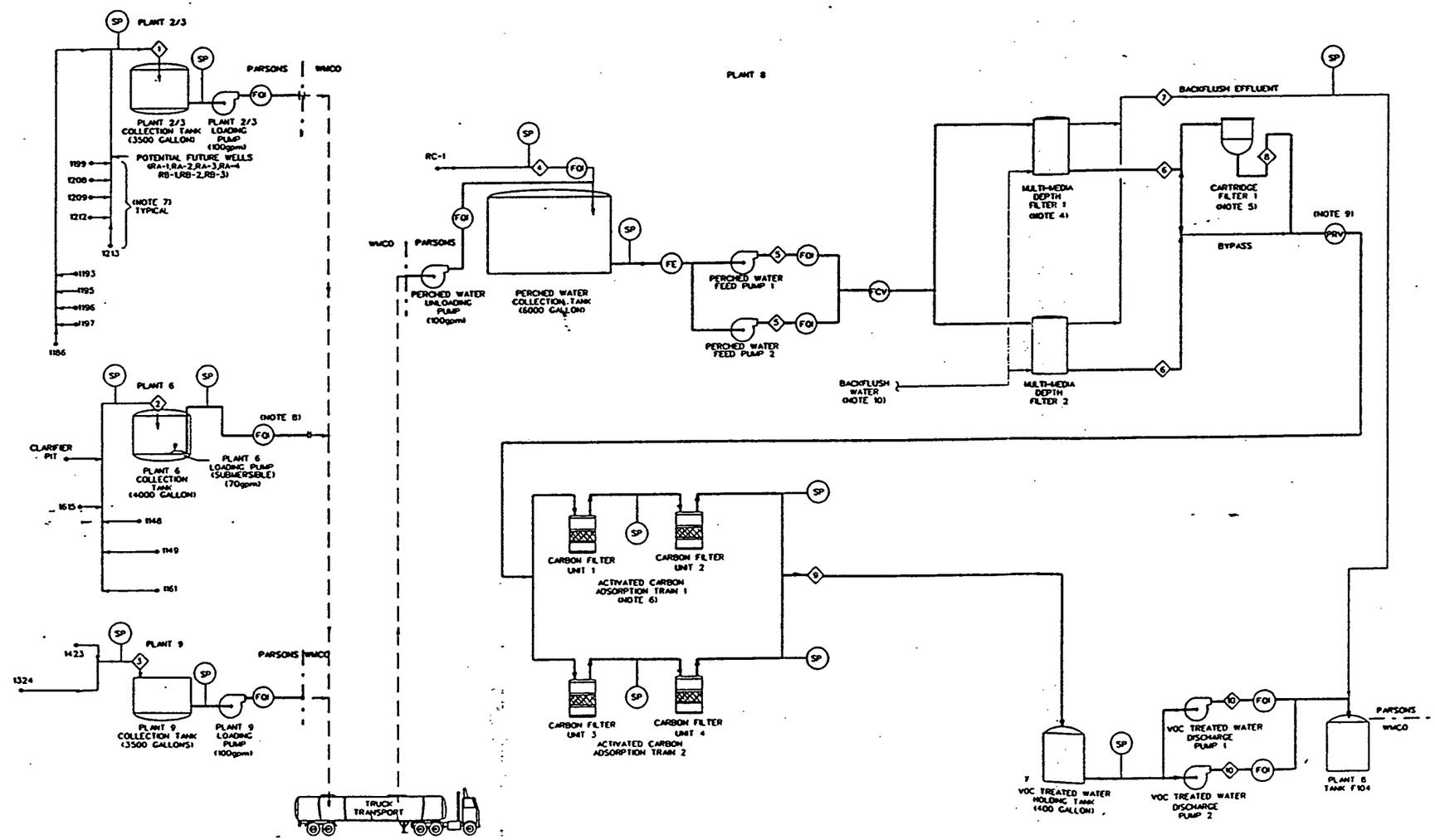
RECOVERY WELL INSTALLATION AND SYSTEM WATER SAMPLING SUPPORT

DRAWING NUMBER 93X5900F00017

STREAM NUMBER	1	2	3	4	5	6	7	8	9	10
STREAM NAME	PLANT 2/3	PLANT 6	PLANT 9	PLANT 8	TOTAL PERCHED WATER	DEPTH FILTER EFFLUENT	DEPTH FILTER BACKFLUSH	CARTRIDGE FILTER EFFLUENT	CARBON ADSORP. EFFLUENT	DISCHARGE PUMP EFFLUENT
FLOW-DESIGN (GPM)					10	10	25	10	10	10
FLOW-DESIGN (GPD) (NOTE 3)					4,800	4,800		4,800	4,800	4800
FLOW-AVE (GPD)	3,300	83	30	1,000.0	4,413	4,413	375 (NOTE 11)	4,413	4,413	4,413
PRESSURE (PSIG)					65	RANGE 50-62		RANGE 25-61	RANGE 3-5	17
CONTAMINANT (NOTE 1) (ug/L)							0.0			
TRICHLOROETHENE	0.1	2,430.0	8,040.0	0.3	101.0	101.0	0.0	101.0	1.0	1.0
1,1-DICHLOROETHENE	2.3	107.0	52.7	0.7	4.2	4.2	0.0	4.2	0.04	0.04
1,2-DICHLOROETHENE	0.0	28.5	8.7	0.0	0.6	0.6	0.0	0.6	0.01	0.01
1,1-DICHLOROETHANE	0.0	0.0	120.0	0.0	0.8	0.8	0.0	0.8	0.01	0.01
1,1,1-TRICLOROETHENE	0.0	0.0	133.0	0.0	0.9	0.9	0.0	0.9	0.01	0.01
TETRACLOROETHENE	0.1	86.6	233.0	2.8	4.0	4.0	0.0	4.0	0.04	0.04
TRIBUTYLPHOSPHATE	109.0	0.0	0.0	0.0	81.6	81.6	0.0	81.6	0.82	0.82
KEROSENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALUMINUM (Al)	501.0	16,000.0	5,920.0	632.0	859.0	859.0	0.0	859.0	859.0	859.0
CADMIUM (Cd)	9.2	141.0	29.5	12.4	12.5	12.5	0.0	12.5	12.5	12.5
CHROMIUM (Cr)	142.0	4,010.0	1,480.0	182.0	233.0	233.0	0.0	233.0	233.0	233.0
SILVER (Ag)	57.6	1,700.0	558.0	73.5	94.0	94.0	0.0	94.0	94.0	94.0
IRON (Fe)	72.9	1090.0	410.0	75.3	94.8	94.8	0.0	94.8	94.8	94.8
MANGANESE (Mn)	491.0	4,240.0	1050.0	447.0	555.0	555.0	0.0	555.0	555.0	555.0
URANIUM (U)	20,400.0	436,000.0	241,000.0	19,000.0	29,400.0	29,400.0	0.0	29,400.0	29,400.0	29,400.0
THORIUM (Th)	22.4	29.6	55.3	37.7	26.3	26.3	0.0	26.3	26.3	26.3
TOTAL SUSPENDED SOLIDS (TSS)	61,000.0	51,500.0	1,740,000.0	61,000.0	72,200.0	14,400.0	680,000.0	720.0	720.0	720.0
OIL & GREASE	0.0	4,400.0 (NOTE 2)	9,000.0	0.0	117.0	117.0	0.0	117.0	1.2	1.2

NOTES

1. DATA WERE OBTAINED FROM "SELECTED SAMPLE RESULTS FOR THE PERCHED WATER BORINGS" (WMCO, 1990) "FMPC WASTE WATER OVERVIEW" (WMCO, 1990) AND HAZARDOUS SUBSTANCES LIST DATA FROM INTERNATIONAL TECHNOLOGY (IT) CORP. ANALYSES. PERCHED WATER PH RANGES FROM 6 TO 7, CONDUCTIVITY RANGES FROM 0.2 TO 1.7 MICROMHOS PER CUBIC CENTIMETER.
2. AVERAGES OF WELL CONCENTRATIONS WERE ASSUMED FOR PLANT 6 WELLS WITH NO DATA.
3. THE DESIGN FLOW PER DAY IS BASED ON 8 HOURS OPERATION.
4. DEPTH FILTERS ARE TWO 100 PERCENT CAPACITY UNITS. IN THE ABSENCE OF TEST DATA, EFFICIENCY FOR REMOVAL OF TOTAL SUSPENDED SOLIDS (TSS) IS ASSUMED AT 80 PERCENT.
5. CARTRIDGE FILTER EFFICIENCY FOR REMOVAL OF TSS IS ASSUMED AT 95 PERCENT
6. GRANULAR ACTIVATED CARBON ADSORPTION UNITS ARE TWO 50 PERCENT CAPACITY TRAINS (CONSISTING OF ONE LEAD UNIT AND ONE LAG UNIT), WITH AN ASSUMED 99 PERCENT EFFICIENCY FOR REMOVAL OF VOLATILE ORGANIC COMPOUNDS (VOC'S).
7. NUMBERS INDICATE WELL BORINGS. EACH WELL HAS ITS OWN PUMP (NOT SHOWN).
8. PLANT 6 WELLS, HOLDING TANK AND PUMP BY WMCO.
9. PRESSURE REDUCING VALVE WILL REDUCE PRESSURE TO ≤ 7.5 PSIG WHICH IS MAXIMUM ALLOWABLE FOR ACTIVATED CARBON ADSORPTION UNITS.
10. BACKFLUSH SUPPLY WATER MINIMUM PRESSURE IS 40 PSIG.
11. BACKWASH VOLUME IS BASED ON AN ASSUMED ONE (1) BACKWASH PER DAY AT 375 GALLONS PER BACKWASH. THE BACKWASH CYCLE INCLUDES A RINSE OF 100 GALLONS (4 MINUTES AT 25 GPM) WHICH DISCHARGES THROUGH THE PROCESS LINE. THE RINSE IS NOT INCLUDED IN THE PROCESS FLOW.



SYMBOLS

- SP — SAMPLE POINT
- FCV — FLOW CONTROL VALVE
- PRV — PRESSURE REDUCING VALVE
- FQI — FLOW INDICATOR/TOTALIZER
- FE — FLOW ELEMENT
- PARSONS / WMCO — DESIGN INTERFACE

REV. NO.	REVISION DESCRIPTION	DRAWN	APPROVED	DATE
0	ISSUED FOR CONSTRUCTION			

UNITED STATES
DEPARTMENT OF ENERGY
FEED MATERIALS PRODUCTION CENTER

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - OWS, T MAN, INC. - ENGINEERING SCIENCE, INC
CINCINNATI, OHIO

PROJECT NAME
FMPC ERA
OPERABLE UNIT 3

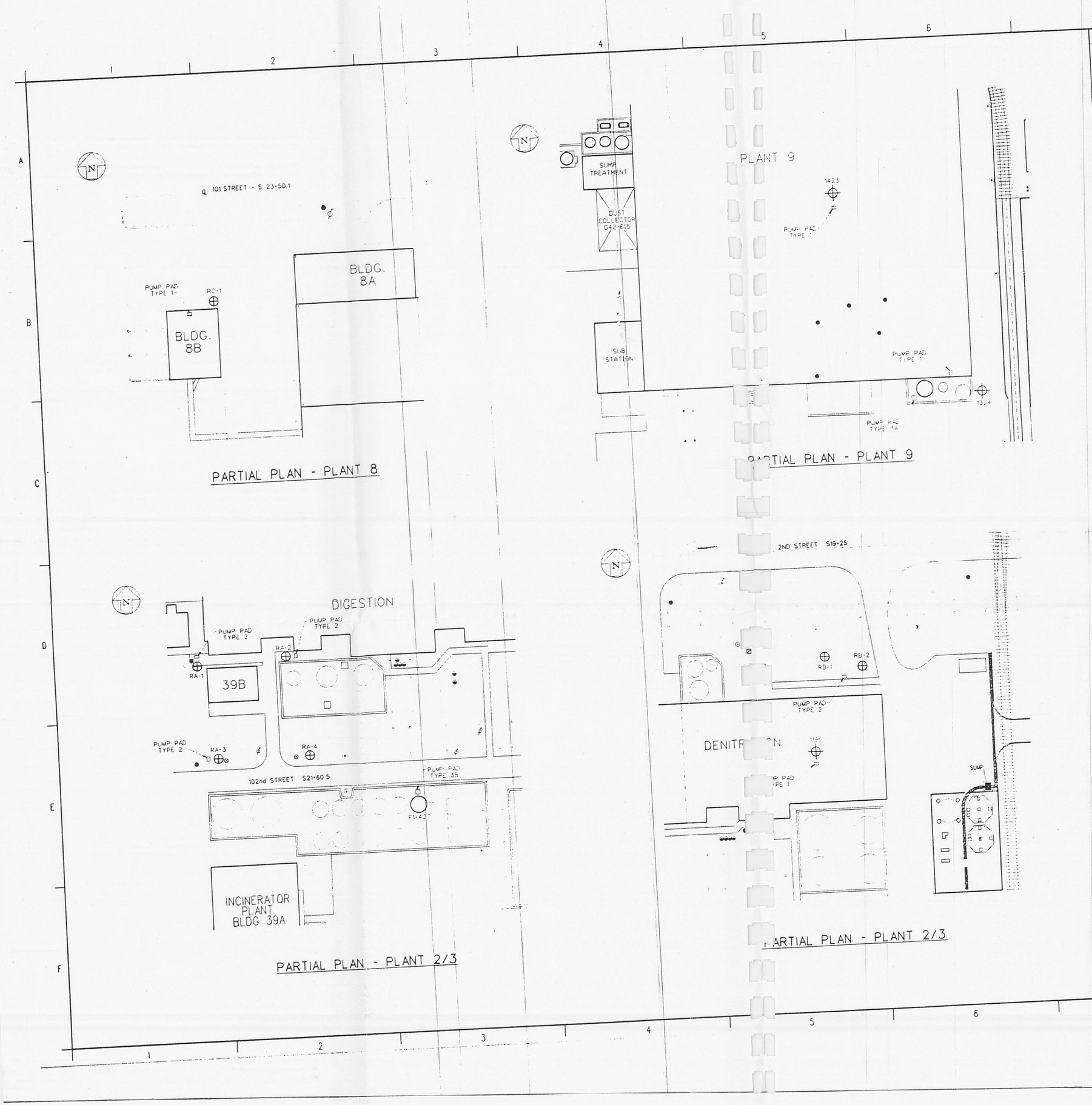
DRAWING TITLE
PROCESS FLOW DIAGRAM
PERCHED WATER REMOVAL ACTIONS
PLANTS 2/3, 6, 8, & 9

DRAWN BY	DATE	DESIGNED BY	DATE	CHECKED BY	DATE
R.D. PROSKI	2-6-91				

PLANT/BLDG NO.	FLOOR	SCALE	QUAD
2/3,6,8 & 9		NONE	4

DOE PROJECT NO	OPER. CONTR. PROJ. NO	DRAWING NO	SHEET NO	REV. NO
BY D.O.E. LATER	WBS 1.2.1.3.2 00-90701	93X5900F00017	F001	0

000029



NOTES

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1. THIS DRAWING PREPARED USING EXISTING CAD DRAWING NO. 75C00017, 75C00018 & 75C00019
2. LOCATE THE PROPOSED NEW RECOVERY WELL & NEW PUMP PAD IN THE VICINITY OF LOCATIONS AS SHOWN. ACTUAL LOCATIONS TO BE FIELD DETERMINED AND DOCUMENTED ON AS BUILT DRAWINGS.
3. FOR TYPE OF PUMP FOUNDATION PAD REFER TO DWG NO. 93X5900G00024

LEGEND

- POST INDICATOR VALVE (P.I.V.)
- FIRE HYDRANT (F.H.)
- MANHOLE (MH)
- CATCH BASIN (CB)
- LIGHT POLE
- PIPE SUPPORT
- ELECTRICAL MANHOLE
- TELEPHONE MANHOLE
- STREET WASHERS
- VALVE BOX
- PROPOSED NEW RECOVERY WELL
- EXISTING WELL TO BE USED AS RECOVERY WELL
- NEW PUMP PAD

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A.E.	OPERATOR	DOE
A	ISSUED FOR APPROVAL			

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FEED MATERIALS PRODUCTION CENTER

PARSONS
THE RALPH M. PARSONS CO - CHAS T MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

FMPC ERA
OU3, PERCHED WATER REMOVAL ACTION

LOCATION OF WELLS AND PUMP PADS
PLANTS 2/3, 8 & 9 EXTRACTION

DRAWN BY	DATE		DATE	CHECKED BY	DATE
D THOMPSON	4/1/91	[signature]	5/4/91	C HERTZ	4/9/91

PLANT 2/3, 8 & 9

SUBMITTED FOR APPROVAL	APPROVAL RECOMMENDED	DRAWING NO.

SUBPROJECT NO.	CODE IDENTIFICATION NO.	DRAWING NO.	SHEET NO.	REV. NO.
BY D.O.E. LATER	WBS 1.2.1.3.2.2.30 00-90701	93X5900G00023	G0001	A

000027