STAR

ENCLOSURE 2

ADVANCED NUCLEAR FUELS CORPORATION

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REGULATORY COMPLIANCE

April 6, 1990
CWM:90:048

bc: RG Frain
JW Fredericks
WE Stavig
File/LB

Department of Energy
Attn: Mr. R. D. Izatt, Director
Richland Operations Office
Environmental Restoration Division
P. O. Box 550
Richland, WA 99352

Dear Mr. Izatt:

GROUNDWATER DATA

This is in response to your letter of March 20, 1990 to Mr. R. G. Frain on the subject of groundwater data. Mr. Frain has asked me to reply for him.

Enclosed is a listing (Well Nos. 1-7, 9, 11-16 and 19-21) of monitoring well data for the past five years from 1985 through 1989 which has been collected as required by the ANF Department of Ecology Waste Discharge Permit No. 3919. Earlier data are available if necessary. Similar information was submitted earlier this year to C. Cline of the Washington State Department of Ecology and M. Olascaga of Westinghouse Hanford Company. The chemical analysis data is from Advanced Nuclear Fuels Corporation (ANF) laboratory, and the radiochemical data is supplied by U.S. Testing. The monitoring wells from which those samples were drawn are of two types. Most are constructed of 6-in steel pipe with four ⅜" x 2" slots per foot starting 2-ft above the water level and extending to 5-ft below the water level. A few are constructed of 4-in plastic pipe with a 3-ft section of slotted well screen beginning 12-ft below grade, and a second 3-ft section beginning 10-ft below the bottom of the first screened section. Sketches of these two well types are enclosed. Well logs and soil testing data are not available other than some descriptive material in XN-JUB-82-86 discussed below.

In 1982, ANF contracted J-U-B Engineers, Inc., to conduct a groundwater study in the lagoon area and a copy of their report is enclosed. Copies of the report were distributed at the time of the study to the Nuclear Regulatory Commission (NRC) and the Department of Ecology, Yakima Regional Office; the findings were discussed with the Department of Energy and Pacific Northwest Laboratory representatives at a meeting conducted by Jack Rhodes (formerly with Department of Energy) also in 1982. Our current lagoon system is as described in and in concurrence with WAC 173-303-650(3). ANF continues to operate the lagoons and their monitoring systems within the requirements of the NRC License No. SNM-1227 and the Department of Ecology Waste Discharge Permit No. 3919, including the submittal of required reports.

ANF is not a party to the Hanford Federal Facility Agreement and Consent Order, nor a party to the Remedial Investigation Study at the Operable Unit 1100-ER-1. ANF has already conducted an investigation into the aquifer underlying its property with the assistance of an outside engineering firm as described in the J-U-B Report. The findings and conclusions were documented and discussed with the affected parties, including regulatory agencies, and appropriate corrective action has been taken, including an ongoing monitoring program. We therefore, see no need for the extensive program outlined in your memo. However, in a spirit of cooperation and assistance already evidenced by the information enclosed and previously transmitted to others involved, we propose a plan of action which is outlined below.

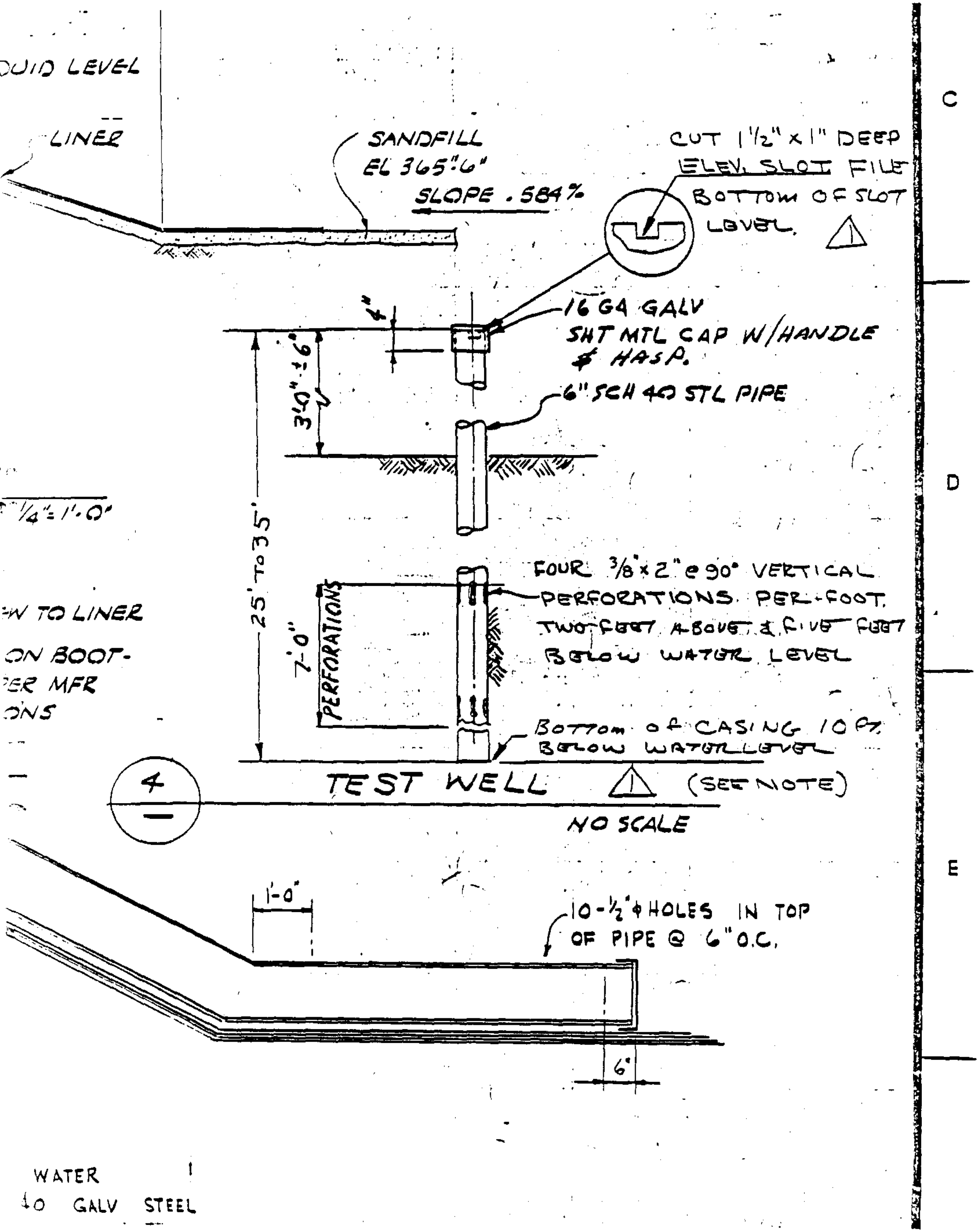
ANF will measure the water levels in its active well system on a mutually agreed upon schedule and furnish to the Department of Energy the necessary results in exchange for the results from water level measurements from the Department of Energy well system. We would furnish well coordinate data at that time. We would also collect samples from those wells which monitor the aquifer immediately prior to exiting ANF property and have them analyzed for those constituents for which you have concern in exchange for analyses of samples from your system. In this regard, ANF wells numbered 14, 15 and 16 would be used to furnish the samples. As can be seen from the J-U-B Report and sample results over the past five years, these three wells describe the aquifer as it exits ANF property. For your information, Wells 8, 17 and 18 are not active monitoring wells and were not constructed for that purpose. We would intend that the samples be analyzed by a disinterested party and suggest the Pacific Northwest Environmental Laboratory in Redmond, Washington as being well qualified for this work. Incorporating the data from your site would allow ANF to extend the J-U-B study and the data from our site should allow completion of your study. Mr. R. K. Stewart and I briefly discussed a somewhat similar approach during a recent phone conversation.

Very truly yours,

C. W. Malody

CWM:jrs

Enclosures
As Stated



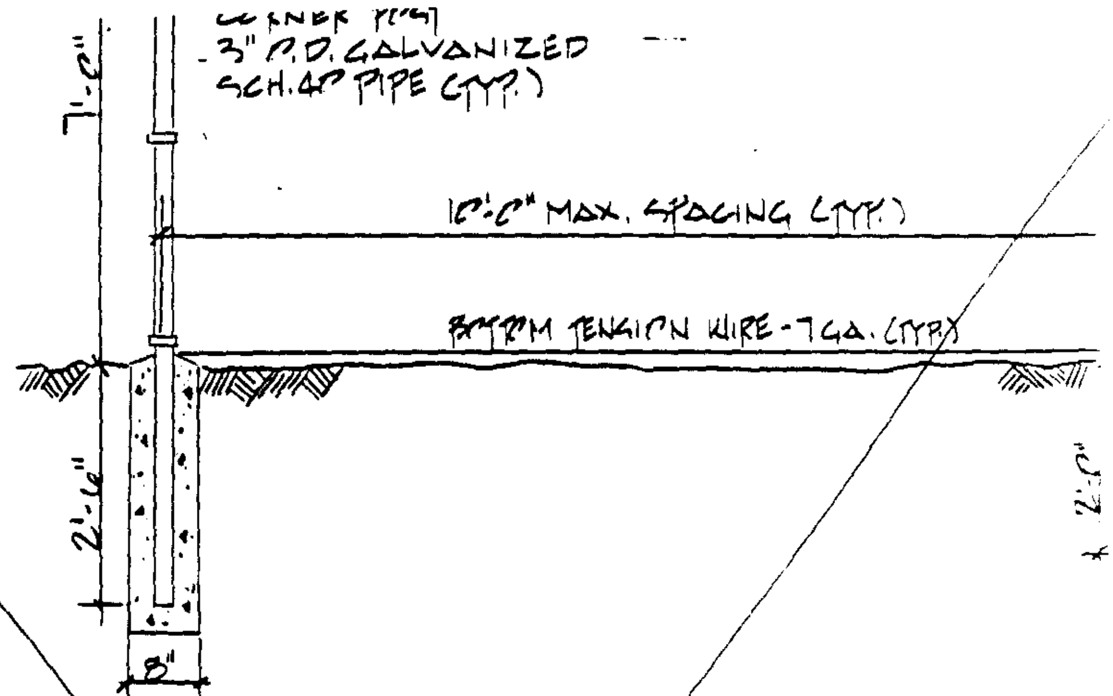
QUID LEVEL
LINER
SANDFILL
EL 365'-6"
SLOPE .584%
CUT 1½" x 1" DEEP
ELEV. SLOT FILE
BOTTOM OF SLOT
LEVEL
C
4"
16 GA GALV
SHT MTL CAP W/HANDLE
& HASP.
3'-0" ± 6"
6" SCH 40 STL PIPE
D
¼" = 1'-0"
25' TO 35'
FOUR ⅜" x 2" @ 90° VERTICAL
PERFORATIONS PER FOOT.
TWO FEET ABOVE & FIVE FEET
BELOW WATER LEVEL
W TO LINER
ON BOOT-
ER MFR
ONS
7'-0"
PERFORATIONS
BOTTOM OF CASING 10 FT.
BELOW WATER LEVEL
4
TEST WELL
(SEE NOTE)
NO SCALE
E
1'-0"
10-½" ϕ HOLES IN TOP
OF PIPE @ 6" O.C.
6"
WATER
10 GALV STEEL

INGS SHALL BE
EMPORARY CONSTRUCTION

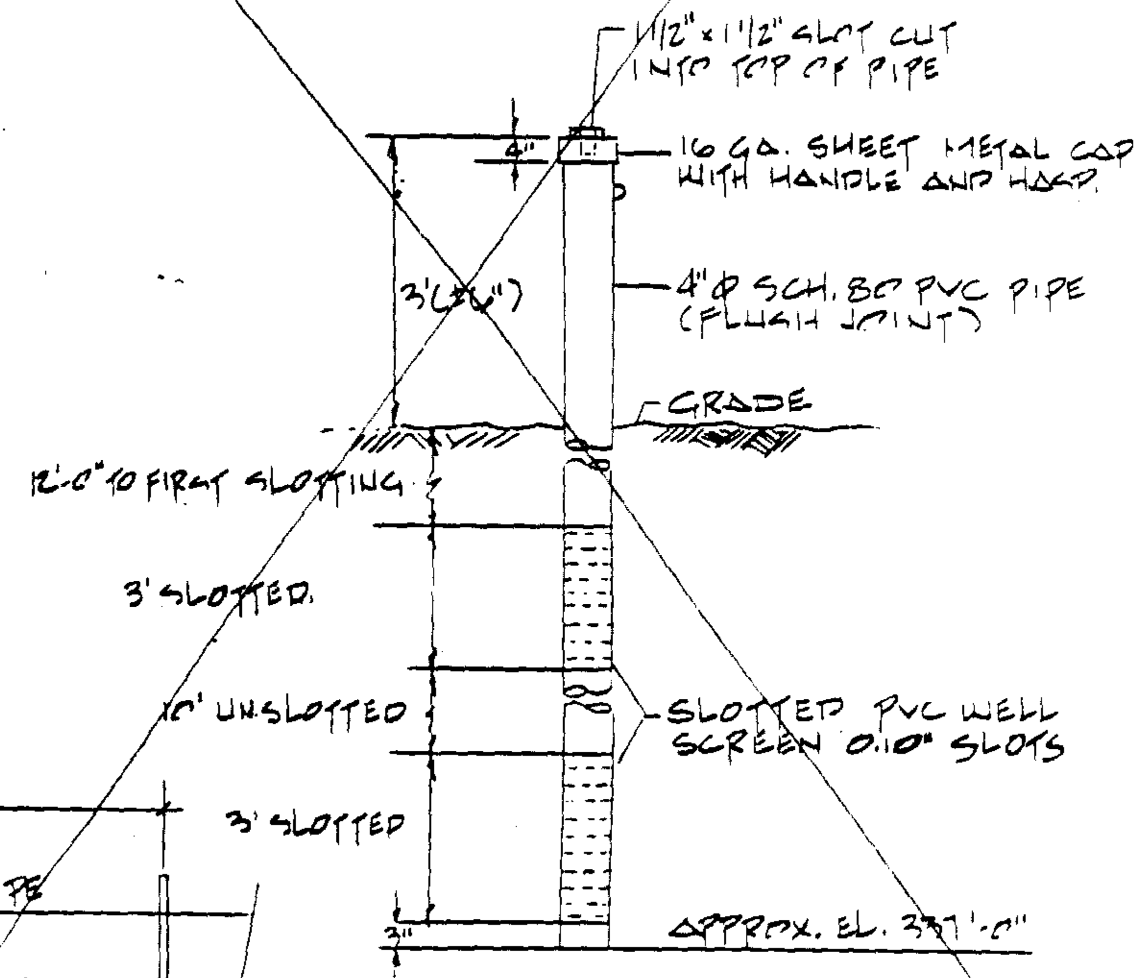
EMPORARY CONSTRUCTION
OUTH PERIMETER AND
FENCE SHALL BE
EXISTING PERIMETER

E GALVANIZED STEEL,
WIRE IN A 2 INCH
AND SIMILAR TO THE

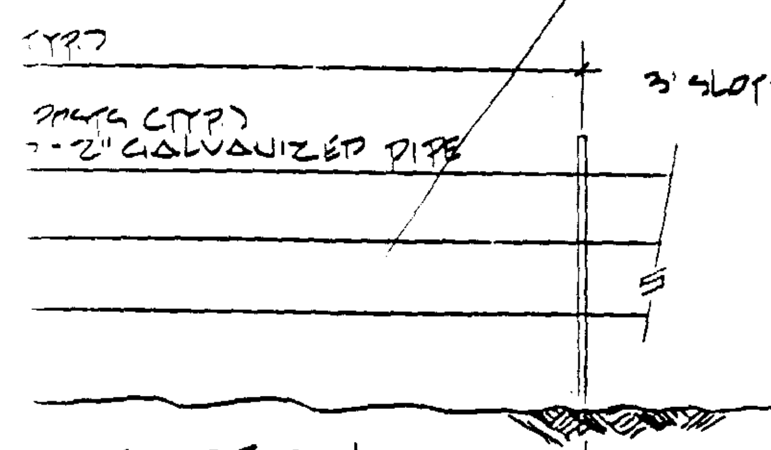
ED WIRE SHALL BE
GALVANIZED STEEL
UM BARBS SPACED ON
RMING TO THE
ION ARMS TO
STAND A 250 POUND



PERIMETER FENCE DETAIL
N.T.S.



TEST WELL DETAIL
NTS



ICE DETAIL.

ADVANCED NUCLEAR FUELS CORPORATION

MONITORING WELL DATA

1985 - 1989

WELL #1					
Yr/Qtr	Alpha (pCi/L)	Beta (pCi/L)	F (ppm)	NO_3 (ppm)	NH_3 (ppm)
85/1	11.1	55.6	4.0	71	90
85/2	12.1	29.2	2.0		
85/3	8.0	18.0	2.9	64	
85/4	42.4	30.4	6.2		
86/1	22.1	17.4	3.0	46	20
86/2	19.1	24.8	2.6		
86/3	12.8	15.8	3.0	42	19
86/4	52.6	23.2	5.0		
87/1					
87/2	19.6	33.3	2.0	51	52
87/3	15.7	19.1	3.0	25	35
87/4	75.4	92.4	6.0	39	
88/1	49.4	39.0	5.0	52	64
88/2	15.4	30.0	3.0		
88/3	5.8	14.5	1.8	54	36
88/4	10.5	17.6	47.0		
89/1	12.9	14.1	3.4	46	62
89/2	5.0	9.9	60.0		
89/3	13.4	11.3	1.5	38	44
89/4	22.1	14.2	4.2		

WELL #2					
Yr/Qtr	Alpha (pCi/L)	Beta (pCi/L)	F (ppm)	NO_3 (ppm)	NH_3 (ppm)
85/1	91.1	70.1	7.5	57	823
85/2	281.0	87.3	4.0		
85/3	98.3	50.3	8.4	69	
85/4	86.2	30.4	5.2		
86/1	22.1	17.4	3.0	38	38
86/2	38.5	27.3	5.8		
86/3	58.6	33.7	8.0	43	34
86/4	34.8	30.1	4.0		
87/1					
87/2	44.6	45.8	6.4	44	35
87/3	35.3	34.7	6.0	37	43
87/4	29.4	37.6	5.0		12
88/1	31.3	65.0	7.0	24	24
88/2	19.6	47.2	5.0		
88/3	27.1	52.5	4.9	57	3
88/4	45.8	43.9	4.7		
89/1	22.2	17.4	12.9	62	42
89/2	11.5	10.1	6.0		
89/3	13.7	10.8	4.0	60	3.9
89/4	7.9	11.5	5.2		

WELL #3			
Yr/Qtr	Alpha (pCi/L)	Beta (pCi/L)	F (ppm)
85/1	19.8	48.5	0.80
85/2	44.1	24.5	1.50
85/3	9.2	22.4	0.50
85/4	6.6	28.2	0.48
86/1	3.8	17.2	0.4
86/2	8.3	27.3	0.5
86/3	6.1	41.6	0.5
86/4	2.6	14.7	0.5
87/1			
87/2	2.8	27.2	0.5
87/3	2.3	19.1	0.4
87/4	4.7	26.6	0.8
88/1	1.0	23.0	0.2
88/2	2.9	23.5	0.4
88/3	3.3	24.1	1.0
88/4	1.7	20.0	1.6
89/1	3.8	8.6	0.4
89/2	1.8	10.7	0.4
89/3	2.5	9.9	0.4
89/4	2.3	9.2	0.5

WELL #4

Yr/Qtr	Alpha (pCi/L)	Beta (pCi/L)	F (ppm)
85/1	6.9	29.1	0.7
85/2	9.9	33.1	2.0
85/3	7.6	19.5	0.5
85/4	3.9	19.8	0.5
86/1	4.2	18.9	0.4
86/2	7.3	19.4	0.4
86/3	4.8	41.8	1.0
86/4	2.3	13.8	0.5
87/1			
87/2	1.9	19.0	0.6
87/3	2.39	22.0	0.3
87/4	2.2	18.4	0.5
88/1	2.6	12.9	0.4
88/2	1.7	18.2	0.3
88/3	2.7	13.2	1.7
88/4	1.8	17.1	0.5
89/1	2.8	6.0	0.4
89/2	1.2	6.8	0.4
89/3	2.3	10.3	0.4
89/4	2.7	7.9	0.4

WELL #5			
Yr/Qtr	Alpha (pCi/L)	Beta (pCi/L)	F (ppm)
85/1	7.8	38.9	0.4
85/2	1.4	10.7	0.5
85/3	0.2	10.4	0.3
85/4	0.03	8.8	0.2
86/1	1.6	7.4	0.2
86/2	0.23	6.5	0.2
86/3	1.69	8.9	0.7
86/4	0.05	7.3	0.4
87/1			
87/2	0.03	5.5	0.7
87/3	0.38	6.4	0.3
87/4	0.68	7.2	0.3
88/1	1.1	23.2	0.3
88/2	1.8	5.3	0.2
88/3	0.47	6.0	0.3
88/4	1.4	6.6	0.5
89/1	2.1	8.5	0.4
89/2	0.9	3.2	0.3
89/3	0.9	5.9	0.3
89/4	0.6	6.2	0.3

WELL #6			
Yr/Qtr	Alpha (pCi/L)	Beta (pCi/L)	F (ppm)
85/1	8.8	23.1	0.8
85/2	6.7	14.6	1.3
85/3	0.1	11.0	0.5
85/4	5.4	14.3	0.3
86/1	2.5	12.0	0.2
86/2	2.5	8.1	0.2
86/3	2.4	11.5	0.3
86/4	2.2	11.3	0.3
87/1			
87/2	1.0	9.6	0.4
87/3	0.6	6.3	0.3
87/4	1.98	20.3	0.3
88/1	0.9	14.3	0.3
88/2	1.6	10.0	0.3
88/3	2.2	10.3	0.3
88/4	1.2	9.6	0.5
89/1	1.4	5.7	0.3
89/2	2.7	3.7	6.3
89/3	1.4	5.7	0.3
89/4	1.2	5.7	0.4

WELL #7			
Yr/Qtr	Alpha (pCi/L)	Beta (pCi/L)	F (ppm)
85/1	3.2	5.0	0.7
85/2	3.9	5.9	0.7
85/3	2.0	7.0	0.3
85/4	2.0	5.3	0.3
86/1	0.8	4.7	0.3
86/2	0.9	5.0	0.2
86/3	0.3	5.9	0.2
86/4	0.8	4.6	0.4
87/1			
87/2	1.0	2.7	0.3
87/3	0.7	5.3	0.2
87/4	1.0	4.7	0.4
88/1	1.3	3.9	0.2
88/2	1.0	3.7	0.2
88/3	1.0	7.5	0.2
88/4	1.3	4.3	0.4
89/1	1.3	6.7	0.2
89/2	0.7	1.3	1.1
89/3	1.4	5.7	0.2
89/4	1.0	5.0	0.3

WELL #9					
Yr/Qtr	Alpha (pCi/L)	Beta (pCi/L)	F (ppm)	NO_3 (ppm)	NH_3 (ppm)
85/1	17.4	73.8		94	84
85/2					
85/3	69.4	36.3		75	14
85/4					
86/1	80.2	39.7		59	92
86/2					
86/3	49.5	44.7	1.0	86	70
86/4					
87/1					
87/2					
87/3	84.1	56.2	8.0	77	105
87/4					
88/1	192.0	128.0		42	23
88/2					
88/3	54.3	44.3		62	45
88/4					
89/1	87.8	32.6	6.9	20	24
89/2					
89/3	45.4	18.9	7.5	83	39
89/4					

WELL #11			
Yr/Qtr	Alpha (pCi/L)	Beta (pCi/L)	F (ppm)
85/1	3.9	9.0	1.0
85/2	4.6	9.1	0.6
85/3	0.1	6.6	0.3
85/4	2.7	3.9	0.3
86/1	0.3	5.1	0.3
86/2	0.2	4.9	0.2
86/3	2.5	6.9	0.3
86/4	1.4	5.0	0.3
87/1			
87/2	3.7	10.5	1.4
87/3	0.8	10.1	0.4
87/4	1.6	7.4	0.5
88/1	2.4	6.5	1.6
88/2	0.7	12.1	0.3
88/3	1.6	5.5	0.3
88/4	1.1	11.3	0.6
89/1	5.1	10.1	0.3
89/2	1.0	5.5	0.4
89/3	3.1	5.0	0.4
89/4	1.7	5.5	0.4

WELL #12			
Yr/Qtr	Alpha (pCi/L)	Beta (pCi/L)	F (ppm)
85/1	0.2	7.3	1.0
85/2	2.6	6.7	1.0
85/3	3.7	4.0	0.3
85/4	1.0	6.7	0.2
86/1	2.6	4.8	0.2
86/2	4.5	6.7	0.3
86/3	3.25	6.16	0.4
86/4	0.2	6.7	0.3
87/1			
87/2	2.2	8.7	0.2
87/3	1.3	5.8	0.6
87/4	1.2	6.3	0.4
88/1	0.4	8.1	0.4
88/2	0.3	6.4	0.3
88/3	1.0	1.9	0.3
88/4	1.3	4.9	0.7
89/1	2.1	7.6	0.5
89/2	0.2	3.9	0.3
89/3	2.5	3.4	0.3
89/4	2.5	7.8	0.3

WELL #13					
Yr/Qtr	Alpha (pCi/L)	Beta (pCi/L)	F (ppm)	NO_3 (ppm)	NH_3 (ppm)
85/1	4.3	6.9	1.0	10.2	0.7
85/2	3.0	5.6	0.3		
85/3	1.6	3.5	0.3	5.6	
85/4	1.8	6.6	0.3		
86/1	1.1	4.0	0.3	5.6	1.4
86/2	2.4	4.2	0.3		
86/3	1.4	4.92	0.4	3.4	1.9
86/4					
87/1					
87/2	0.6	3.8	0.5		
87/3	1.2	5.1	0.2		
87/4	1.7	6.4	0.5		
88/1	0.44	6.8	0.3		
88/2	0.0	3.2	0.3		
88/3	1.5	4.9	0.2		
88/4	2.3	3.8	0.5		
89/1	1.6	6.6	0.4		
89/2	2.7	6.4	0.4		
89/3	1.5	3.9	0.3		
89/4	2.1	5.4	0.3		

WELL #14					
Yr/Qtr	Alpha (pCi/L)	Beta (pCi/L)	F (ppm)	NO_3 (ppm)	NH_3 (ppm)
85/1	68.0	25.0		46	38
85/2					
85/3	55.0	23.0		49	
85/4					
86/1	59.0	29.8		52	9
86/2					
86/3	65.0	27.9	6.0	49	9
86/4					
87/1					
87/2					
87/3	2.4	35.7		64	44
87/4					
88/1	72.8	53.2		42	26
88/2					
88/3	33.0	27.4	2.7	47	17
88/4	23.2	28.5	4.3		
89/1	19.8	19.6	3.1	57	2
89/2					
89/3	17.8	11.8	3.7	64	9
89/4					

WELL #15					
Yr/Qtr	Alpha (pCi/L)	Beta (pCi/L)	F (ppm)	NO_3 (ppm)	NH_3 (ppm)
85/1	82.0	80.0		85	100
85/2					
85/3	29.0	34.0		49	
85/4					
86/1	71.0	46.2		56	73
86/2					
86/3	46.3	49.1	13.0	34	101
86/4					
87/1					
87/2					
87/3				59	97
87/4					
88/1	94.7	123.0		59	93
88/2					
88/3	59.9	63.2	8.0	38	28
88/4	64.1	55.9	7.8		
89/1	64.7	26.1	7.6	64	65
89/2					
89/3	71.4	17.7	8.3	64	93
89/4					

WELL #16					
Yr/Qtr	Alpha (pCi/L)	Beta (pCi/L)	F (ppm)	NO_3 (ppm)	NH_3 (ppm)
85/1	4.9	20.0		2	44
85/2					
85/3	0.9	11.5		1	
85/4					
86/1	0.8	13.7		1	22
86/2					
86/3	0.8	10.4	9.0	1	34
86/4					
87/1					
87/2					
87/3	0.9	8.48		2	166
87/4					
88/1	0.3	7.1		1	24
88/2					
88/3	0.1	10.6	2.3	2	15
88/4	1.8	9.0	5.0		
89/1	0.5	9.1	4.4	6	20
89/2					
89/3	0.6	5.0	4.0	3	7
89/4					

WELL #19			
Yr/Qtr	Alpha (pCi/L)	Beta (pCi/L)	F (ppm)
85/1	4.9	9.3	1.5
85/2	4.1	19.1	2.0
85/3	4.5	19.0	0.2
85/4	4.0	11.5	0.2
86/1	1.2	5.3	0.3
86/2	2.2	8.2	0.3
86/3	2.2	13.6	0.4
86/4	1.5	7.2	0.4
87/1			
87/2	3.6	5.8	0.4
87/3	1.2	10.7	0.3
87/4	1.7	9.2	0.3
88/1	1.8	11.6	0.3
88/2	3.1	6.1	0.2
88/3	2.5	9.7	0.3
88/4	1.4	12.9	0.4
89/1	2.9	5.5	0.2
89/2	5.9	10.5	0.3
89/3	1.9	6.3	0.3
89/4	3.4	5.4	0.3

WELL #20			
Yr/Qtr	Alpha (pCi/L)	Beta (pCi/L)	F (ppm)
85/1	3.8	11.0	1.0
85/2	2.4	19.0	0.7
85/3	2.8	8.9	0.3
85/4	3.1	4.1	0.3
86/1	1.7	6.2	0.3
86/2	3.8	9.9	0.2
86/3	1.7	8.4	0.5
86/4	2.8	5.3	0.3
87/1			
87/2	1.1	7.9	0.4
87/3	2.1	7.9	0.4
87/4	1.9	8.1	0.3
88/1	2.7	6.6	0.3
88/2	2.0	5.2	0.3
88/3	0.7	7.2	0.2
88/4	0.9	6.8	0.6
89/1	1.9	5.3	0.5
89/2	1.0	2.1	0.4
89/3	1.5	7.0	0.3
89/4	1.6	4.8	0.4

WELL #21			
Yr/Qtr	Alpha (pCi/L)	Beta (pCi/L)	F (ppm)
85/1	4.1	17.1	0.5
85/2	2.5	24.0	0.8
85/3	2.6	4.0	0.3
85/4	3.5	4.0	0.3
86/1	2.1	3.7	0.2
86/2	2.4	7.6	0.3
86/3	1.3	6.6	0.6
86/4	1.4	5.6	0.3
87/1			
87/2	2.2	5.5	0.3
87/3	2.4	5.3	0.4
87/4	1.9	4.9	0.3
88/1	1.5	6.5	0.3
88/2	2.7	7.5	0.2
88/3	1.6	2.2	0.3
88/4	1.7	5.3	0.9
89/1	6.6	12.4	0.5
89/2	2.7	2.7	0.4
89/3	3.7	6.4	0.3
89/4	3.1	5.2	0.4