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Department of Energy
Ohio Field Office
Fernald Area Office
P. O. Box 538705
Cincinnati, Ohio 45253-8705
(513) 648-3155

22 MAR 2002

Mr. James A. Saric, Remedial Project Manager
United States Environmental Protection Agency
Region V, SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 606090

DOE-0382-02

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
401 East 5th Street
Dayton, Ohio 45402-2911

Ms. Val Orr
Division of Drinking and Ground Waters – UIC Unit
Ohio Environmental Protection Agency
P.O. Box 1049
Columbus, OH 43216-1049

Dear Mr. Saric, Mr. Schneider and Ms. Orr:

JANUARY 2002 MONTHLY RE-INJECTION OPERATING REPORT

This letter submits the subject report for your review and approval.

This monthly report is being submitted to the United States Environmental Protection Agency and Ohio Environmental Protection Agency Office of Federal Facilities Oversight in accordance with the Re-Injection Demonstration Test Plan. The monthly report is also being submitted to the Ohio Environmental Protection Agency Division of Drinking and Ground Waters Unit of Underground Injection Control (UIC) in accordance with their guidelines.

If you have any questions or concerns regarding this report, please contact Robert Janke at (513) 648-3124.

Sincerely,

Johnny W. Reising
Fernald Remedial Action
Project Manager

FEMP:R.J. Janke

Enclosure: As Stated

cc w/enclosure:
R. J. Janke, OH/FEMP
G. Jablonowski, USEPA-V, SRF-5J
T. Schneider, OEPA-Dayton (three copies of enclosure)
F. Bell, ATSDR
F. Hodge, Tetra Tech
M. Shupe, HSI GeoTrans
R. Vandegrift, ODH
D. Brettschneider, Fluor Fernald, Inc./MS52-5
K. Broberg, Fluor Fernald, Inc./MS52-5
W. Hertel, Fluor Fernald, Inc./MS52-5
M. Jewett, Fluor Fernald, Inc./MS52-2
C. Smyser, Fluor Fernald, Inc./MS52-5
R. White, Fluor Fernald, Inc./MS52-5
AR Coordinator, Fluor Fernald, Inc./MS78

cc w/o enclosure:
N. Hallein, EM-31/CLOV
A. Tanner, OH/FEMP
D. Carr, Fluor Fernald, Inc./MS2
T. Hagen, Fluor Fernald, Inc./MS65-2
S. Hinnefeld, Fluor Fernald, Inc./MS31
L. Tipton, Fluor Fernald, Inc./MS41
T. Walsh, Fluor Fernald, Inc./MS65-2
ECDC, Fluor Fernald, Inc./MS52-7

MONTHLY RE-INJECTION OPERATING REPORT JANUARY 2002

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OVERVIEW

On September 2, 1999, DOE completed one year of active groundwater re-injection as part of a field-scale demonstration. A report detailing the demonstration was issued to the U.S. EPA and Ohio EPA on May 30, 2000.

Re-injection at Fernald is exempted under 40 CFR 300.400(e)(1) from requiring a permit, as it is a CERCLA action. In accordance with Ohio EPA Guidelines (OEPA 1997), DOE will prepare monthly operating reports that include:

I. An analysis of the injectate
II. The volume and rate of re-injection
III. A description of any well maintenance and rehabilitation procedures conducted.

DOE submits the monthly re-injection operating reports to the U.S. EPA, Ohio EPA Office of Federal Facilities Oversight, and the Division of Ohio EPA Drinking and Ground Waters – Underground Injection Control Unit. This report covers re-injection operations from January 1, 2002 to February 1, 2002.

Routine monitoring of the aquifer in the re-injection area is conducted as part of the groundwater remedy performance monitoring program specified in Fernald's Integrated Environmental Monitoring Plan. Results of the Integrated Environmental Monitoring Plan are reported quarterly and are available for viewing on the Fernald Website, www.fernald.gov.

ANALYSIS OF THE INJECTATE

Groundwater extracted from the Great Miami Aquifer is treated for uranium removal and is then re-injected into the Great Miami Aquifer. The groundwater is treated in the FEMP Advanced Waste Water Treatment (AWWT) Expansion Facility. The effluent from the AWWT Expansion Facility is sampled monthly for the parameters listed in Table 2-1 of the Re-Injection Demonstration Test Plan, Revision 0.

Monthly injectate grab sampling focuses on the groundwater final remediation level (FRL) constituents that have had an exceedance of their FRL in the region of the aquifer from which the groundwater is being pumped. The monthly injectate grab samples are sent to an off-site laboratory for analysis. In addition to the monthly grab sample, 24 hour composite samples are collected and analyzed at the on-site laboratory for total uranium. The 24 hour composite sampler samples the combined effluent from the active treatment trains comprising the facility. The daily composite results are used by plant

management for making process control decisions. They provide a daily evaluation of the quality of the water that is re-injected into the aquifer. Composite daily total uranium results from the AWWT Expansion Facility effluent for days when re-injection occurred are shown in Figure 1.

The monthly grab sample was collected on January 15, 2002. Results are provided in Table 1. These results indicate that no FRLs were exceeded. The total uranium concentration measured in the monthly grab sample was 3.11 micrograms per liter (µg/L). The total uranium concentration of the daily composite sample also collected on January 15, 2002 was 4.6 µg/L.

VOLUME AND RATE OF RE-INJECTION

The design re-injection set point for each of the re-injection wells is 200 gallons per minute (gpm). The combined design re-injection rate for all five wells is 1000 gpm. Figure 2 illustrates the location of the five re-injection wells; Tables 2 through 6 summarize the current calendar year's operational data by month. The tables also provide averages by year for the calendar years 1998, 1999, 2000, and 2001. Re-Injection Well 8 is 8 inches in diameter. Re-Injection Well 9 is 12 inches in diameter. The other re-injection wells are all 16 inches in diameter.

In February 2000, a new injection rate strategy was initiated to help compensate for well downtimes due to maintenance, electrical outages, etc. Re-injection rate set points may be temporarily increased to 220 gpm toward the end of a month and decreased to the 200 gpm rate at the start of a new month. The ability to increase re-injection rates is dependent upon the condition of the wells, availability of higher than average groundwater treatment capacity, and lower than normal uranium concentrations in the site effluent. This strategy for adjusting re-injection rate set points may continue in future months, depending on the variables noted above.

Figure 3 illustrates the water level rise in each of the operating re-injection wells from January 1, 2002 to February 1, 2002, as recorded by the operators at the AWWT Expansion Facility Distributed Control System (DCS). Water levels are recorded three times each day. Water levels inside the re-injection wells are monitored as an indicator of plugging within the wells. Given a constant re-injection rate, as a well becomes plugged, the water level in the well rises to compensate for the greater pressure needed to move the same volume of water through a smaller opening.

While it is not the intent of this report to discuss operational issues, the following information is provided to aid in the interpretation of Figures 1 and 3.

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SUMMARY OF SYSTEM OUTAGES FOR THE REPORTING PERIOD

For the month of January 2002, re-injection took place at a reduced rate due to the following outages:

- Re-Injection Well 8 has been shut down since December 25, 2001 after reaching its high-level alarm point. Additional rehabilitation of IW-8 is not economically viable due to the short operating time after the last treatment; therefore plans are being initiated for the replacement of IW-8.

- All re-injection wells were shut down at 13:55 on January 4, 2002 when train 2 of the ion exchange system was restarted after its regeneration. Wells were restarted at 9:15 on January 6, 2002.

SUMMARY OF WELL MAINTENANCE FOR THE REPORTING PERIOD

- The U.S. Department of Energy (DOE) intends to use existing control platforms to replace Re-Injection Wells 8 and 9 and to install a new re-injection well. The three wells will be located in gaps between existing Re-Injection Wells 8 and 9, 9 and 10, and 10 and 11 to address stagnant zones. A Project Specific Plan (PSP) for the installation of replacement re-injection wells along the southern property boundary is being prepared and is scheduled to be submitted for review in March 2002.

NOTIFICATION OF SIGNIFICANT REDUCTION IN RE-INJECTION EFFICIENCY

The re-injection wells have been subject to increased residual plugging that had effectively stopped re-injection at Re-Injection Well 8. The cessation of re-injection in this well, plus the decision to reduce the setpoint on Re-Injection Well 9 to 150 gpm (instead of 200 gpm) to salvage run time of well, resulted in an overall well field reduction to 75 percent of the design rate at the end of the reporting period, resulting in a re-injection rate of 750 gpm.

More information, including information beyond the temporal scope of this report (e.g., more recent than January 2002), will be presented in the weekly site conference calls as it becomes available.

TABLE 1

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ANALYSIS OF INJECTATE
Sample Collected January 15, 2002

Constituents[a]	Result[b]	Groundwater FRL[d]	Detection Limit	Constituent Type[f]	Basis for FRL[g]
General Chemistry		**mg/L**			
Nitrate	0.36	11.0		MP	B
Inorganics		**mg/L**			
Antimony	0.00058 B[c]	0.006		N	A
Arsenic	0.00090 B	0.05		N	A
Barium	0.051 B	2.0		N	A
Beryllium	U	0.004	0.000020	N	A
Cadmium	U	0.014	0.00008	N	B
Chromium, total	0.00027 B	0.022[e]		MP	R
Cobalt	U	0.17	0.00015	N	R
Lead	U	0.015	0.00055	N	A
Manganese	0.0013 B	0.9		N	B
Mercury	U	0.002	0.00010	MP	A
Nickel	0.00045 B	0.1		N	A
Selenium	U	0.05	0.00090	N	A
Silver	U	0.05	0.00018	N	R
Vanadium	U	0.038	0.00018	N	R
Zinc	U	0.021	0.00010	N	B
Radionuclides		**pCi/L**			
Neptunium-237	U	1.0	-0.0108	MP	R*
Radium-226	0.376	20.0		N	A
Strontium-90	U	8.0	0.0676	MP	A
Thorium-228	U	4.0	0.0355	N	R*
Thorium-232	U	1.2	-0.00639	N	R*
		µg/L			
Uranium, total	3.11	30.0		MP	A
Organics		**µg/L**			
Bis(2-ethylhexyl)phthalate	0.7 J[c]	6.0		N	A
Carbon disulfide	U	5.5	1.0	N	A
1, 1-Dichloroethene	U	7.0	1.0	N	A
1, 2-Dichloroethane	U	5.0	1.0	MP	A
Trichloroethene	U	5.0	1.0	N	A

[a]Constituents taken from Table 2-1 of Re-Injection Demonstration Test Plan. Constituents are those previously detected in aquifer zones 2 and 4 at concentrations above their FRL.

[b]If a duplicate sample was analyzed, then the highest concentration between the regular sample and duplicate sample is reported.
U = Nondetect

[c]B = Lab qualifier. Reported result is greater than the instrument detection level but less than the contract required detection limit.
J = Lab qualifier. Reported result is positively detected but is estimated; the result is still usable for making decisions.

[d]From Table 9-4 in OU5 ROD.

[e]FRL is for hexavalent chromium.

[f]Constituent types from Appendix A of IEMP. MP indicates that the constituent has been identified as being able to migrate to the aquifer. N indicates that the constituent has been identified as not being able to migrate to the aquifer.

[g]A - Applicable or relevant and appropriate requirement based (MCL, PMCL, etc.).
B - Based on 95th percentile background concentrations.
R - Risk-based
R* - Risk-based radionuclide cleanup levels include constituent specific 95th percentile background concentration.

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TABLE 2

RE-INJECTION WELL 22107 (IW-8)
OPERATIONAL SUMMARY SHEET
JANUARY 2002

Reference Elevation (feet AMSL) - 539.92 (top of casing)
Northing Coordinate ('83) - 476196.22
Easting Coordinate ('83) - 1347978.25

Hours in reporting period[a] = 744.00
Hours not injecting[b] = 744.00
Hours injecting[c] = 0.00
Operational percent[d] = 0.0

Target Injection Rate = 0[g] gpm

Monthly Measurements		
Month	Million Gallons Injected[e,f]	Average Operating Injection Rate (gpm)[h]
1998	7.04	207
1999	7.21	199
2000	4.26	149
2001	3.88	148
1/02	0.00	0

[a]First operational shift reading on January 1, 2002 to first operational shift reading on February 1, 2002.
[b]Downtime as noted in the text.
[c]Hours in reporting period - Hours not injecting
[d](Hours injecting/Hours in reporting period) x 100
[e]Average for calendar years 1998, 1999, 2000, and 2001 (for months when well was operating)
[f]Summation of daily totalizer differences
[g]As of December 25, 2001, this well has been offline; the target re-injection rate is now 0 gpm.
[h]Gallons Injected/(Hours Injecting x 60)

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TABLE 3

RE-INJECTION WELL 22108 (IW-9)
OPERATIONAL SUMMARY SHEET
JANUARY 2002

Reference Elevation (feet AMSL) - 578.025 (top of casing)
Northing Coordinate ('83) - 476255.74
Easting Coordinate ('83) - 1348384.49

Hours in reporting period[a] = 746.82
Hours not injecting[b] = 24.00
Hours injecting[c] = 722.82
Operational percent[d] = 96.8

Target Injection Rate = 150[g] gpm

	Monthly Measurements	
Month	Million Gallons Injected[e,f]	Average Operating Injection Rate (gpm)[h]
1998	7.67	204
1999	6.64	188
2000	4.29	164
2001	2.14	167
1/02	6.16	142

[a]First operational shift reading on January 1, 2002 to first operational shift reading on February 1, 2002.
[b]Downtime as noted in the text.
[c]Hours in reporting period - Hours not injecting
[d](Hours injecting/Hours in reporting period) x 100
[e]Average for calendar years 1998, 1999, 2000, and 2001 (for months when well was operating)
[f]Summation of daily totalizer differences
[g]For January 2002, the target re-injection rate was 150 gpm.
[h]Gallons Injected/(Hours Injecting x 60)

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TABLE 4

RE-INJECTION WELL 22109 (IW-10)
OPERATIONAL SUMMARY SHEET
JANUARY 2002

Reference Elevation (feet AMSL) - 576.92 (top of casing)
Northing Coordinate ('83) - 476175.65
Easting Coordinate ('83) - 1348860.53

Hours in reporting period[a] = 746.82
Hours not injecting[b] = 24.00
Hours injecting[c] = 722.82
Operational percent[d] = 96.8

Target Injection Rate = 200 gpm

Monthly Measurements		
Month	Million Gallons Injected[e,f]	Average Operating Injection Rate (gpm)[g]
1998	7.66	204
1999	7.07	196
2000	3.96	149
2001	5.27	200
1/02	8.38	193

[a]First operational shift reading on January 1, 2002 to first operational shift reading on February 1, 2002.
[b]Downtime as noted in the text.
[c]Hours in reporting period - Hours not injecting
[d](Hours injecting/Hours in reporting period) x 100
[e]Average for calendar years 1998, 1999, 2000, and 2001 (for months when well was operating)
[f]Summation of daily totalizer differences
[g]Gallons Injected/(Hours Injecting x 60)

TABLE 5

RE-INJECTION WELL 22240 (IW-11)
OPERATIONAL SUMMARY SHEET
JANUARY 2002

Reference Elevation (feet AMSL) - 577.14 (top of casing)
Northing Coordinate ('83) - 476422.82
Easting Coordinate ('83) - 1349386.92

Hours in reporting period[a] = 744.82
Hours not injecting[b] = 48.00
Hours injecting[c] = 696.82
Operational percent[d] = 93.6

Target Injection Rate = 200 gpm

Monthly Measurements		
Month	Million Gallons Injected[e,f]	Average Operating Injection Rate (gpm)[g]
1998	7.72	206
1999	7.61	199
2000	6.38	196
2001	5.93	199
1/02	8.32	199

[a]First operational shift reading on January 1, 2002 to first operational shift reading on February 1, 2002.
[b]Downtime as noted in the text.
[c]Hours in reporting period - Hours not injecting
[d](Hours injecting/Hours in reporting period) x 100
[e]Average for calendar years 1998, 1999, 2000, and 2001 (for months when well was operating)
[f]Summation of daily totalizer differences
[g]Gallons Injected/(Hours Injecting x 60)

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TABLE 6

RE-INJECTION WELL 22111 (IW-12)
OPERATIONAL SUMMARY SHEET
JANUARY 2002

Reference Elevation (feet AMSL) - 583.01 (top of casing)
Northing Coordinate ('83) - 476518.64
Easting Coordinate ('83) - 1350105.39

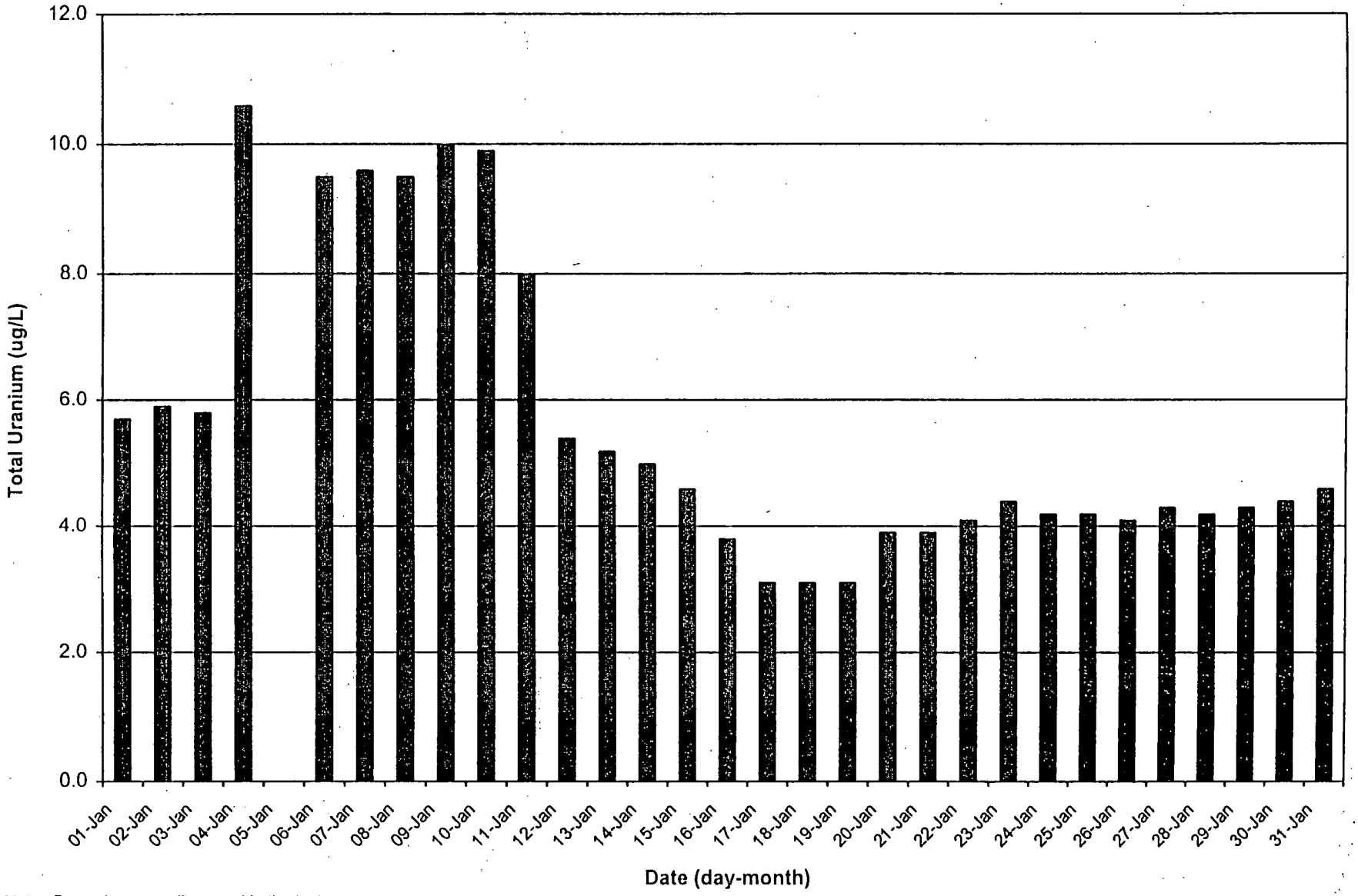
Hours in reporting period[a] = 744.82
Hours not injecting[b] = 48.00
Hours injecting[c] = 696.82
Operational percent[d] = 93.6

Target Injection Rate = 200 gpm

Monthly Measurements		
Month	Million Gallons Injected[e,f]	Average Operating Injection Rate (gpm)[g]
1998	7.63	206
1999	7.55	198
2000	6.05	180
2001	4.65	177
1/02	8.20	196

[a]First operational shift reading on January 1, 2002 to first operational shift reading on February 1, 2002.
[b]Downtime as noted in the text.
[c]Hours in reporting period - Hours not injecting
[d](Hours injecting/Hours in reporting period) x 100
[e]Average for calendar years 1998, 1999, 2000, and 2001 (for months when well was operating)
[f]Summation of daily totalizer differences
[g]Gallons Injected/(Hours Injecting x 60)
[h]For most of October 2001, the target re-injection rate was 150 gpm.

Figure 1
AWWT Expansion 1800 System Effluent Total Uranium Concentration (µg/L)
on Days when Re-Injection Occurred



Note: Down times are discussed in the text.

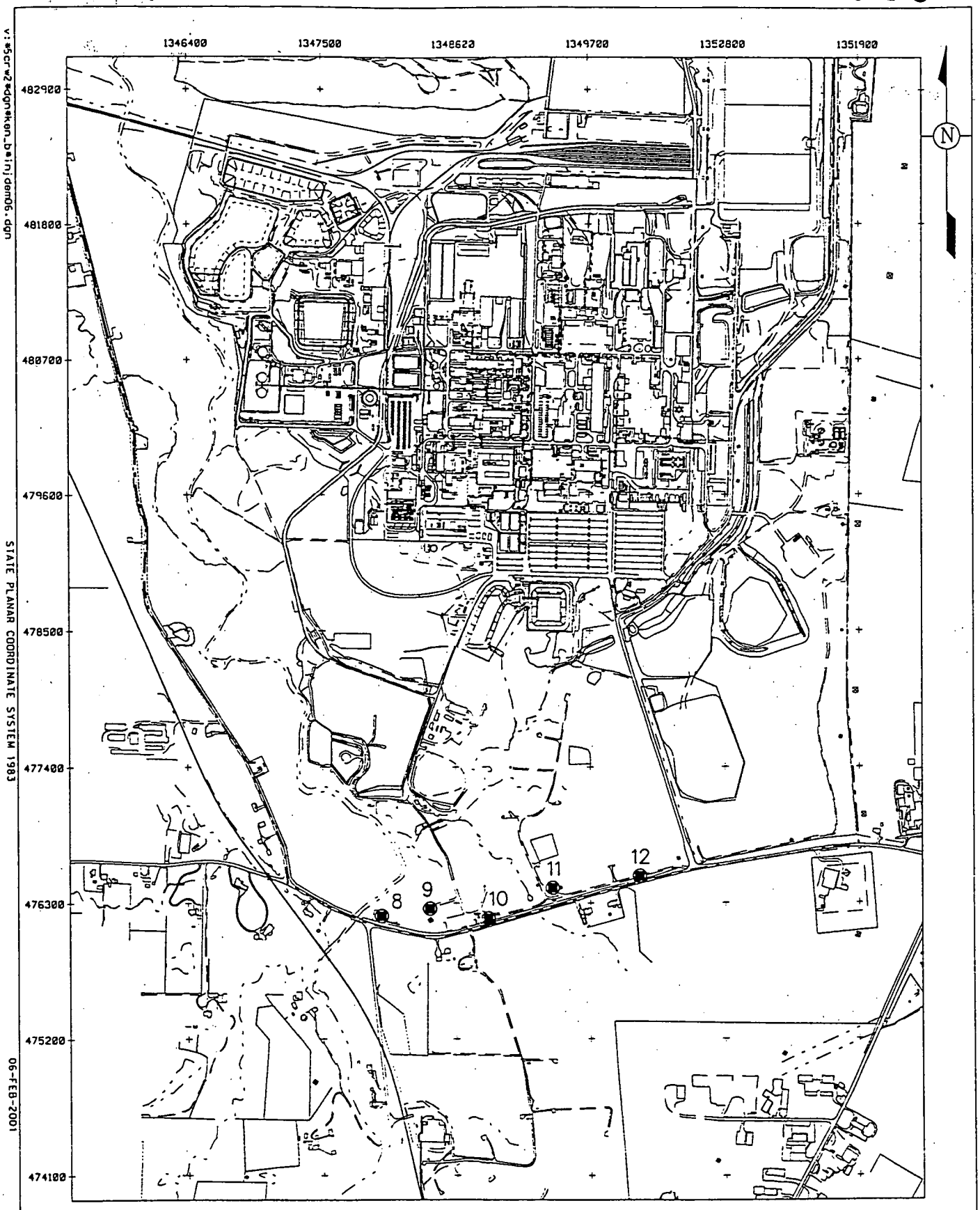
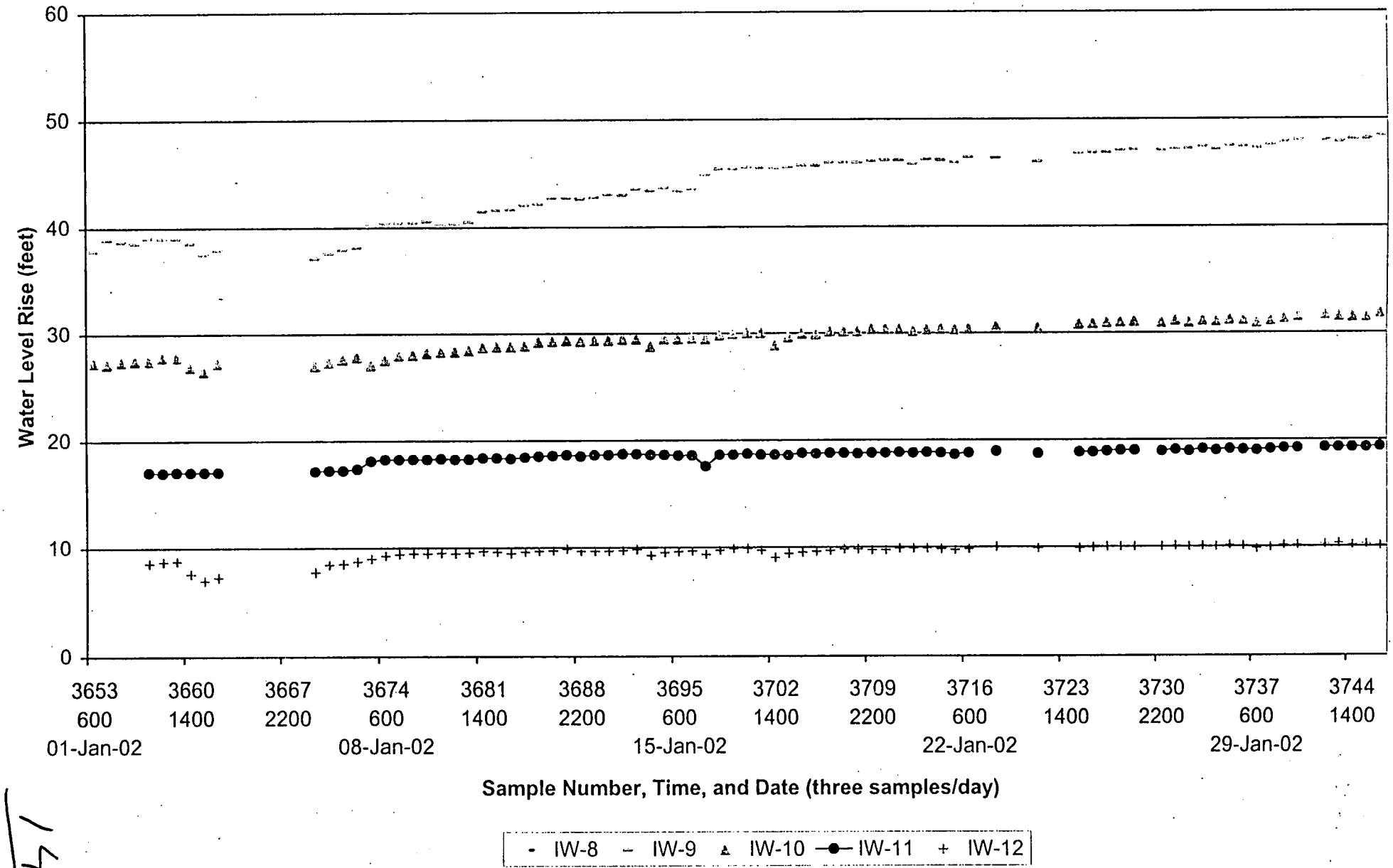


FIGURE 2. LOCATION OF RE-INJECTION WELLS

Figure 3
Re-Injection Wells, Water Level Rise
First Shift on January 1, 2002 (Sample Number 3653) to First Shift on February 1, 2002
(Sample Number 3746)



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