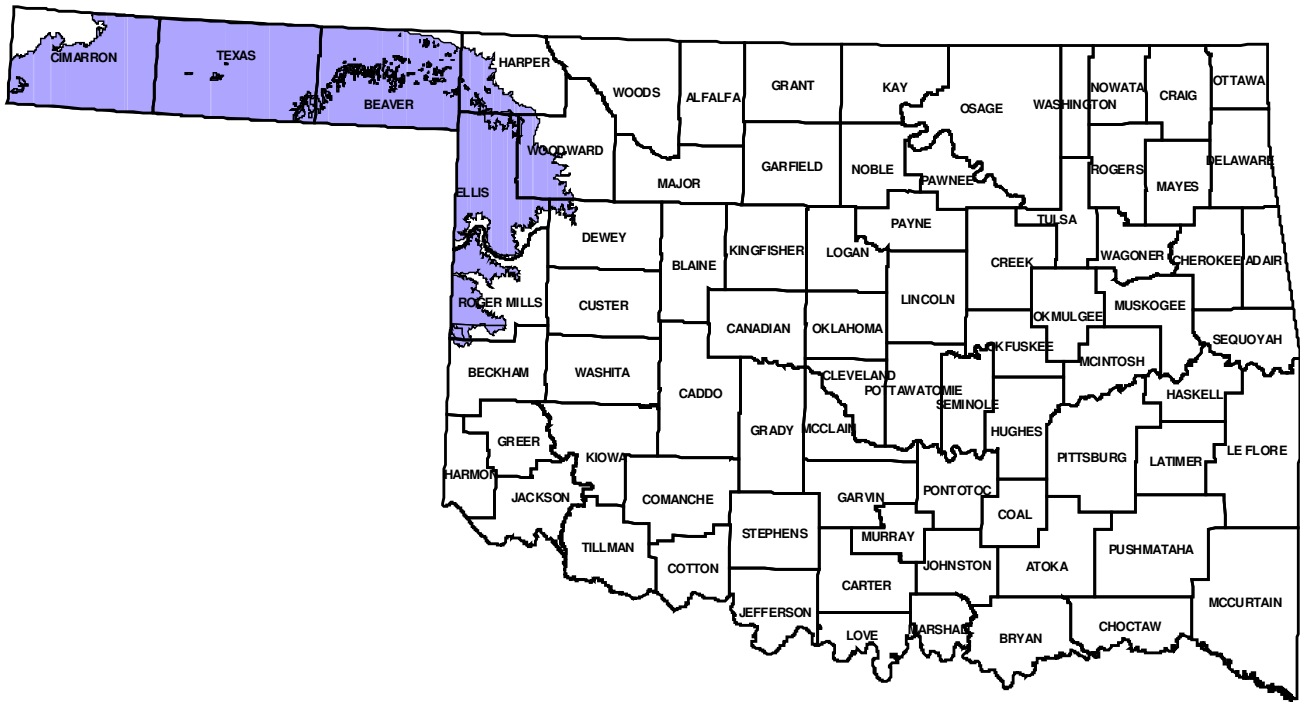


# High Plains Water Monitoring Project

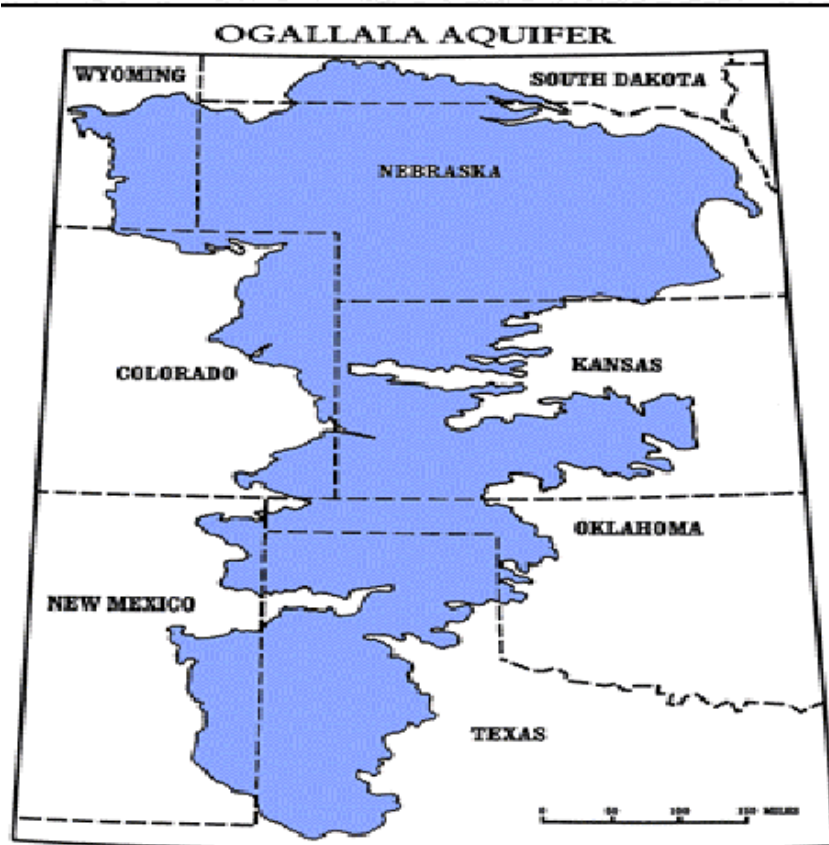


Oklahoma Department of Agriculture, Food, and Forestry  
Plant Industry and Consumers Services  
October 2002

# High Plains Water Monitoring Project

## Introduction

Groundwater is an important natural resource of Oklahoma. There are twenty-one major groundwater basins in the state and approximately 150 minor basins. The major basins are the primary source of community drinking water and are estimated to hold over 320 million acre-feet of fresh water.



The High Plains Aquifer (Ogallala Aquifer) is one of the major aquifers that underlies about 7,100 square miles of northwestern Oklahoma as well as parts of Colorado, Kansas, Nebraska, New Mexico, South Dakota, Texas and Wyoming (Fig. 1).

The High Plains Aquifer is the primary source of water to an important agricultural region. Most water is withdrawn from the aquifer for irrigation of wheat and other grain crops, with the remainder used for livestock, municipal, and domestic needs (Andrews, Osborn and Luckey, 2000).

Figure 1. The High Plains or Ogallala Aquifer.

Historically, water from the precipitation was thought to take hundreds or thousands of years to reach the water table because the depth of the water table is greater than 100 feet over most of the aquifer and the low permeability beds in the Ogallala would impede downward flow (Andrews, Osborn and Luckey, 2000).

Based on information from the United States Geological Survey and Oklahoma Water Resources Board there are areas of the High Plains Aquifer that have recharge rates from precipitation of less than 50 years (Fig. 2)

## High Plains Aquifer in Oklahoma with High Recharge Areas

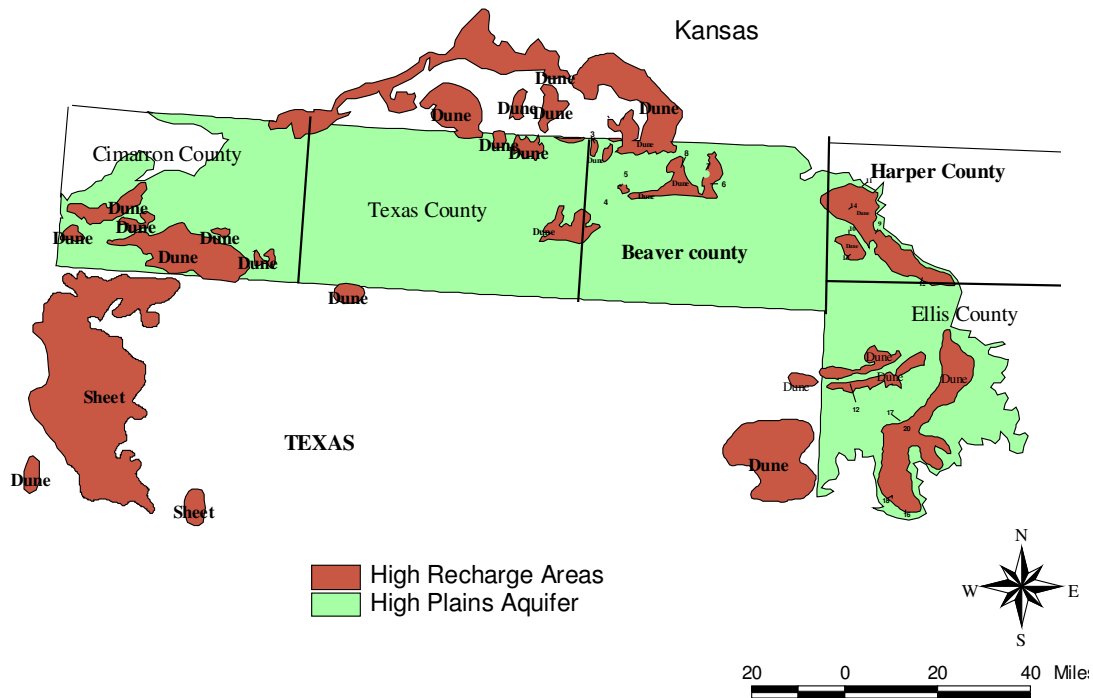


Figure 2. High Plains Aquifer and rapid recharge areas in Oklahoma.

### Objectives of the Project

To locate and sample 20 water wells in the agricultural areas of the High Plains (Ogallala) Aquifer of Oklahoma on a monthly basis from March to November for the presence of atrazine, simazine, alachlor, metolochlor. Additionally, the samples will have an organochloride and an organophosphorus scan run.

Each well will have a well data sheet completed prior to sampling.

A total of 180 samples (plus spikes, blanks and duplicates) will be taken.

There will be no regulatory action taken on any wells that are positive for any of the above pesticides. PICS will work with the landowner to determine the source of any pesticide detected.

### Methodology

The Oklahoma Water Resources Board (OWRB) was contacted to get specific information on the location of the rapid recharge areas of the High Plains Aquifer, any wells they were monitoring in the rapid recharge areas (Fig.2).

After looking at the type of wells they were monitoring, which was mostly irrigation wells, it was decided that we would need wells that are in use during the sampling period. The OWRB provided a list of all private wells in Beaver, Ellis and Harper Counties.

With the use ArcView GIS program, a geographic information system program, we were able to locate a number of wells that fit our requirements. The final selection process was to call the individuals on the list and ask for their cooperation.

After the 20 wells were selected two Agricultural Resource inspectors made personal contact and took the water samples. A Trimble GeoExplorer GPS unit was used to record the location of each well for use in mapping their location.

### High Plains (Ogallala) Aquifer and Rapid Recharge Areas of Northwestern Oklahoma

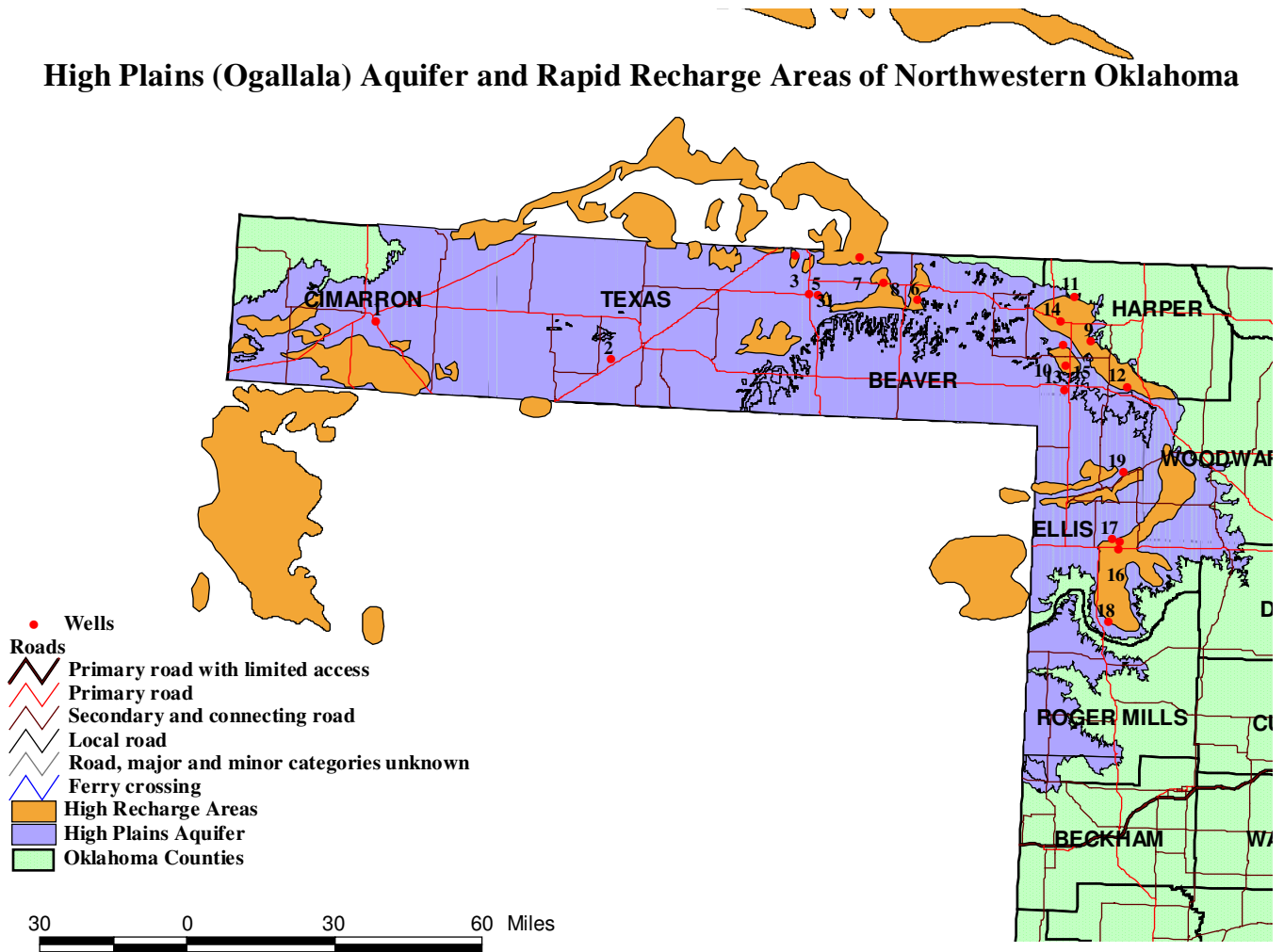


Figure 3. Map of High Plains Aquifer, Rapid Recharge Areas and Selected Wells.

The water wells are located in Cimarron (1), Texas (1), Beaver (6), Harper (7) and Ellis (5) counties (Fig. 3). See Appendix 1 for county maps of well locations.

Sampling protocol is outlined below.

## Water Well Sampling Protocol for Pesticides

Once the well has been located and the well information form filled out, take a sample of the well water.

**Form:** PICS-2 Complete while purging the well.

**Type Sample:** Pollution (P)

**Amount:** Two 1 qt amber jars, [Four (4) 1-qt amber jars if taking a duplicate samples].

One 1 qt amber jars for doing an OC/OP scan

**Pesticides:**

OP/OC scan and

Atrazine, Simazine

Metolochlor, Alachlor

**Purge Well:** 15 minutes

**Handling Samples**

Samples will be stored in ice chest with “polar pack” type coolant until shipped or delivered to lab. **Do Not Ice**

**Quality Control:**

**Duplicate Samples** is an extra jar of water taken at the same time the sample is taken. It will have a separate sample number from the sample. Ten percent (10%) of the total number of wells (5). As directed by project administrator.

**Field Blanks-** A field blank is an amber quart jar of de-ionized water taken to the well, opened while sampling the well and closed when complete. The field blank is returned to the lab with the other samples. Five (5) field blanks will be done each sampling quarter. This will be ten percent of the wells.

**Spike Samples-** A spiked sample is an amber quart jar with a specific amount of a known pesticide that is taken to the field and filled with water from the well and returned with the samples to the lab.

**Chain of Custody:**

**Shipped or Mailed Samples**

If the samples are mailed to the lab they are to be placed in plastic bags and sealed with EPA tape. Mail in Styrofoam mailers.

**Delivered Samples**

Samples delivered to the lab will be taken to the pesticide section and logged in.

The following form was used to collect information about each well.

### PESTICIDE SPECIFIC MONITORING PLAN -- WELL DATA

Well Number

*(To be assigned by office)*

Date

\_\_\_\_\_

\*County \_\_\_\_\_ \*User \_\_\_\_\_

**Address**  
\*Legal \_\_\_\_\_ Section \_\_\_\_\_ Township \_\_\_\_\_ Range \_\_\_\_\_

\*1. Is there an agricultural impact within 1/2 mile of the well?  Yes  No

\*2. Which of the following best describe the topographic setting at the well head?  
 Hilltop  Hillside  Flat Valley  Plateau  Hillside  
 Depression Other \_\_\_\_\_

\*3. Which of the following best describe the predominant soil condition in the area within 300 ft. of the well?

Loamy  Sandy Loam  Clay  Clay/Loam   
Sandy/Silty Other \_\_\_\_\_

4. Nearby water bodies (streams/lakes): \_\_\_\_\_

\*5 Well near pesticide area:  None  Adjacent  1/4 mile   
1/2 mile

\*6 Is irrigation used within one-half mile of the well?  Yes  No

7. What irrigation methods are used?

Spray: ( Center Pivot  Handline,  Traveling Gun, Other) \_\_\_\_\_

Flood: ( Furrow,  Ditch  Trickle)

Drip:

Subsurface:  Other: \_\_\_\_\_

8. What are the sources of irrigation water?

Ground water  Surface water  Canal  Spring

Other: \_\_\_\_\_

9. Are the above irrigation systems being used for chemigation?  Yes  No

\*10. What crops are produced?  None

Crop	Within 300 ft.	
A. Small Grain	<input type="checkbox"/>	Other _____
B. Sorghum	<input type="checkbox"/>	Other _____
C. Cotton	<input type="checkbox"/>	
D. Soybeans	<input type="checkbox"/>	
E. Peanuts	<input type="checkbox"/>	
F. Corn	<input type="checkbox"/>	

11. List all other agricultural impacts within one mile of the well and their distance from the well. (i.e. fertilizer/pesticide storage, mixing/loading site, feed lot etc.)

12.          Comments: \_\_\_\_\_

### Well Information

\*13. Well depth surface to water \_\_\_\_\_ ft.; Surface to well bottom \_\_\_\_\_ ft

\*14. Primary use:  Domestic;  Stock;  Irrigation;  Municipal;  RWD  
 Other: \_\_\_\_\_

\*15. Water well casing:  Steel  plastic  Other

\*16. Depth of casing \_\_\_\_\_ ft.

17. Date well drilled \_\_\_\_\_

18. How many screens are in the casing? \_\_\_\_\_

19. What is the length of the screens? \_\_\_\_\_

20. What is the total distance from the ground surface to the top of the highest screen? \_\_\_\_\_ Ft.

21. Is the well closed at the surface, so that water or other liquids cannot enter it from ground level?

22.          Well in or near:  Floodplain;  Upland

23. Comments: \_\_\_\_\_

\* Critical information, try to get this information.

Summary information on the wells is provided in Table 1.

<b>Table 1 Summary of Well Information</b>							
Condition	Number of Wells		Percent (Based on 20 well)		Condition	Number of Wells	Percent (Based on 20 well)
<b>Ag Impact 1/2 mi</b>	14		70.00		<b>Depth to Water</b>		
<b>Topography</b>					0-25	5	25.00
Flat Valley	2		10.00		26-50	1	5.00
Plateau	0		0.00		51-75	3	15.00
Hill Top	3		15.00		76-100	3	15.00
Depression	3		15.00		100+	7	35.00
Hillside	2		10.00		<b>Depth to Botton</b>		
<b>Soil Condition</b>					0-25	1	5.00
Sandy Loam	3		15.00		26-50	2	10.00

Clay Loam	1		5.00		51-75			0.00
Sandy Silty	7		35.00		76-100	2		10.00
Loamy			0.00		100-200	5		25.00
Clay			0.00		201-300	4		20.00
<b>Pesticide Use</b>					301-350	3		15.00
Adjacent			0.00		<b>Year Drilled/Dug</b>			
1/4 mile	10		50.00		1980-2000	9		45.00
1/2 mile	3		15.00		1960-1979	4		20.00
<b>Irrigation</b>	9		45.00		1940-1959	1		5.00
Chemigation used	0		0.00		1920-1939			0.00
<b>Domestic Use</b>	17		85.00		1900-1919			0.00
<b>Livestock Use</b>	4		20.00		1890-1899			0.00
<b>Casing Type</b>			0.00		<b>Unknown</b>	2		10.00
Steel	4		20.00		<b>Crop Within 300 ft.</b>	7		35.00
Plastic	13		65.00		<b>Crop</b>			
					Small Grain	9		45.00
					Sorghum	4		20.00
					Cotton			0.00
					Soybeans			0.00
					Peanuts			0.00
					Corn	3		15.00
					<b>Location</b>			
					Upland	20		100.00
					Flood Plain			0.00

The deepest well was 209 feet to water and 422 feet to the bottom and the shallowest well was 6 feet to water and 21 feet deep.

### Sampling Results.

#### Pesticides

Atrazine was the only pesticide detected in any of the water well samples. It was detected in well 5 at 0.0261 ug/l (ppb) on April 16, 2002 and well 8 on three occasions, April 16 at 0.047 ug/l (ppb), May 14 at .00656 ug/l (ppb) and June 18 at 0.026ug/l (ppb). Appendix 2 is all of the water sample results.

These detections are well below the 3 ug/l MCL (Maximum Contaminant Level) set by U. S. EPA.

Some of the characteristics of the two wells with pesticide detections are shown in Table 2.



Well No.	County	Soil Type	Depth to Water	Pesticide Used	Well Use	Ag Impact ½ mi
5	Beaver	Sandy/Loam	120	None	Domestic	No
8	Beaver	Sandy/Silty	60	With in ¼ mi.	Domestic	Yes

The only other detection was Chlorpyrifos at 0.0261 ug/l (ppb) in well 6. After conferring with the lab it was determined that this detection was mostly likely the result of lab contamination.

### **Nitrates.**

The nitrates were analyzed for during the initial sampling period in March. They ranged from 0.81 mg/l to 8.97 mg/l. The wells with the atrazine detections had NO<sub>3</sub>-N of 3.72 for well no. 5 and 5.23 for well no. 8.

### **QA Samples**

There were a total of 24 spiked samples, 14 blank samples and 12 duplicate samples ran for both lab and field quality assurance.

### **Summary**

Twenty water wells located in the High Plains Aquifer were sampled for six months from March to September 2002. The wells water was analyzed for atrazine, simazine, alachlor, metolochlor. Additionally, the samples had an organochloride and an organophosphorus scan run.

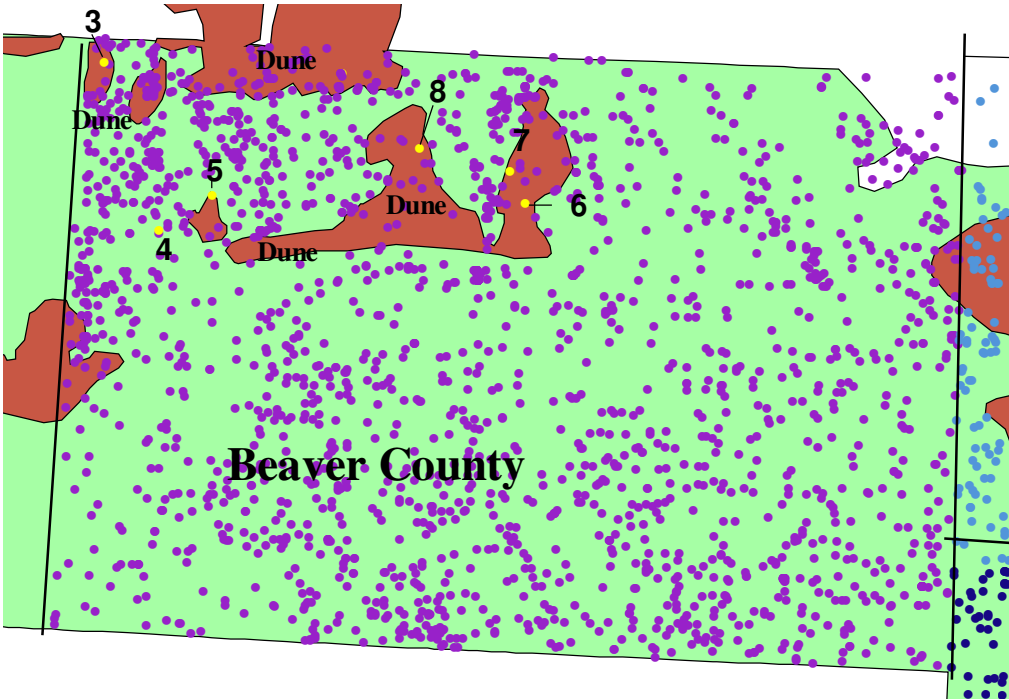
A total of 257 samples were taken with only atrazine being detected in two wells, well no. 5 once and well no. 8, three times. No pesticides were detected during the last three sampling periods.

### **Reference Cited**


Andrews, J. William, Osborn, N. J., Luckey, R. R., 2000, Rapid recharge of parts of the High Plains Aquifer indicated by a reconnaissance Study in Oklahoma, 1999U.S. Geological Survey Fact Sheet 137-00, 4p.

## **Appendix 1**

# Water Wells in Beaver County



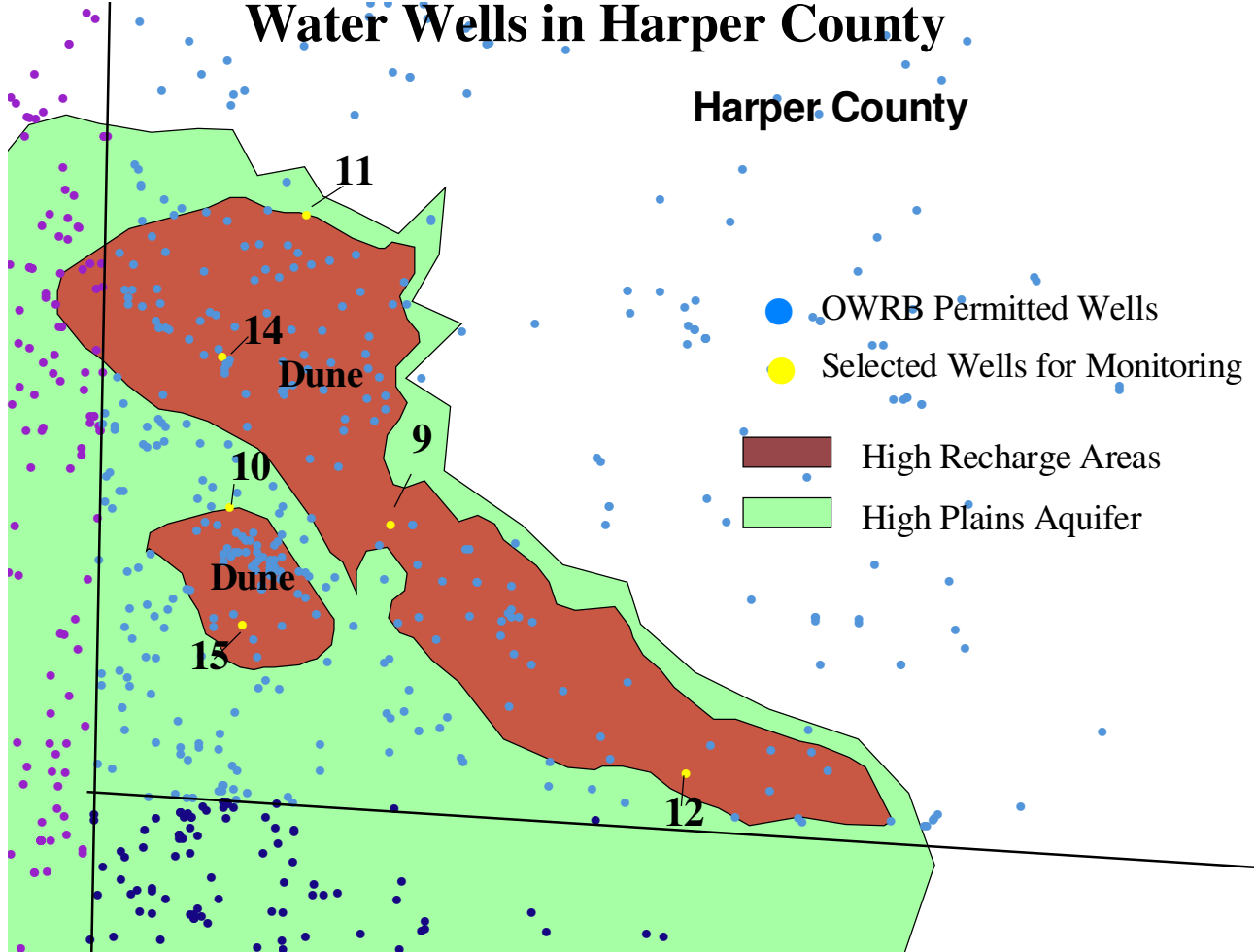
3 0 3 6 Miles

-  High Plains Aquifer
-  High Recharge Areas

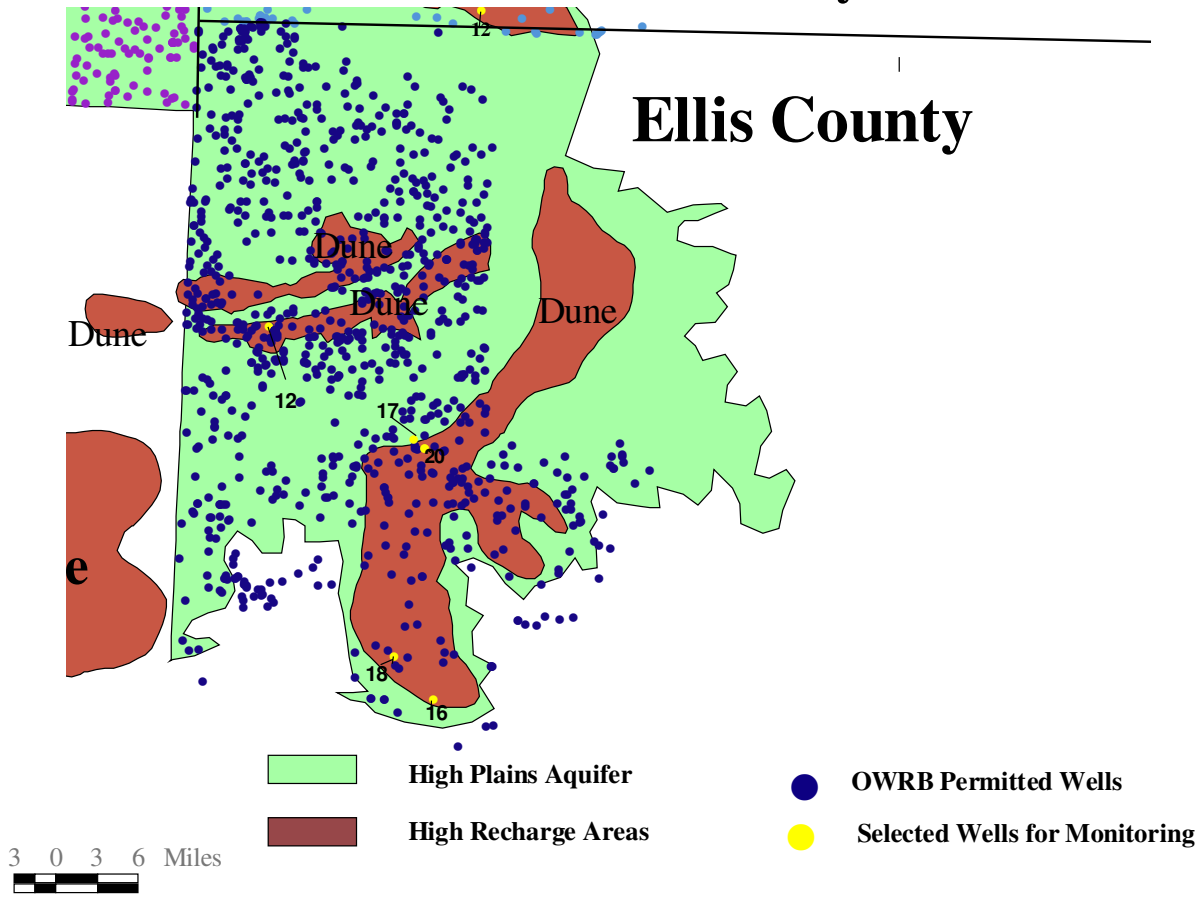
-  OWRB Permitted Wells
-  Selected Wells for Monitoring

# Water Wells in Harper County

## Harper County



# Water Wells in Ellis County



# **APPENDIX 1**

Maps of Well Locations in Beaver Harper and Ellis Counties of Northwest Oklahoma.

## Appendix 2

Appendix 2 is a table of the lab analysis for the water well samples taken during the High Plains Monitoring Project

### High Plains Water Monitoring Project

Date	Sample ID	Well	Organochlorides:	Organophosphates:	ATRAZINE	SIMAZINE	METOLACHLOR	ALACHLOR	NO3-N:
3/21/2002	RE-240-P	1			0	0	0	0	
3/21/2002	RE-238-P	1							2.81
3/21/2002	RE-239-P	1	0	0					
4/16/2002	RE-328-P	1	0	0					
4/16/2002	RE-327-P	1			0	0	0	0	
5/13/2002	RE-386-P	1	0	0					
5/13/2002	RE-387-P	1			0	0	0	0	
6/17/2002	RE-473-P	1			0	0	0	0	
6/17/2002	RE-474-P	1	0	0					
7/22/2002	RE-028-P	1			0	0	0	0	
7/22/2002	RE-029-P	1	0	0					
8/19/2002	RE-072-P	1			0	0	0	0	
8/19/2002	RE-071-P	1	0	0					
3/21/2002	RE-234-P	2							6.85
3/21/2002	RE-236-P	2			0	0	0	0	
3/21/2002	RE-235-P	2	0	0					
4/16/2002	RE-329-P	2	0	0					
4/16/2002	RE-330-P	2			0	0	0	0	
5/13/2002	RE-388-P	2			0	0	0	0	
5/14/2002	RE-389-P	2	0	0					
6/17/2002	RE-475-P	2			0	0	0	0	
6/17/2002	RE-476-P	2	0	0					
7/22/2002	RE-031-P	2	0	0					
7/22/2002	RE-030-P	2			0	0	0	0	
8/19/2002	RE-074-P	2			0	0	0	0	
8/19/2002	RE-075-P	2	0	0					
3/26/2002	RE-256-P	3							5.25
3/26/2002	RE-258-P	3			0	0	0	0	

Date	Sample ID	Well	Organochlorides:	Organophosphates:	ATRAZINE	SIMAZINE	METOLACHLOR	ALACHLOR	NO3-N:
4/16/2002	RE-338-P	3	0	0					
4/16/2002	RE-337-P	3			0	0	0	0	
4/26/2002	RE-257-P	3	0	0					
5/14/2002	RE-396-P	3			0	0	0	0	
5/14/2002	RE-395-P	3	0	0					
6/18/2002	RE-482-P	3			0	0	0	0	
6/18/2002	RE481-P	3	0	0					
7/22/2002	RE-039-P	3	0	0					
7/22/2002	RE-038-P	3			0	0	0	0	
8/20/2002	RE-082-P	3			0	0	0	0	
8/20/2002	RE-083-P	3	0	0					
3/20/2002	RE-230-P	4							7.98
3/21/2002	RE-231-P	4	0	0					
3/21/2002	RE-232-P	4			0	0	0	0	
4/16/2002	RE-340-P	4	0	0					
4/16/2002	RE-339-P	4			0	0	0	0	
5/14/2002	RE-391-P	4			0	0	0	0	
5/14/2002	RE-392-P	4	0	0					
6/18/2002	RE-480-P	4			0	0	0	0	
6/18/2002	RE-479-P	4	0	0					
7/22/2002	RE-040-P	4	0	0					
7/22/2002	RE-041-P	4			0	0	0	0	
8/20/2002	RE-085-P	4	0	0					
8/20/2002	RE-084-P	4			0	0	0	0	
3/26/2002	RE-253-P	5							3.72
3/26/2002	RE-255-P	5			0	0	0	0	
3/26/2002	RE-254-P	5	0	0					
4/16/2002	RE-341-P	5	0	0					
4/16/2002	RE-342-P	5			0.0251	0	0	0	
5/14/2002	RE-394-P	5			0	0	0	0	
5/14/2002	RE-393-P	5	0	0					
6/18/2002	RE-489-P	5	0	0					
6/18/2002	RE-490-P	5			0	0	0	0	

Date	Sample ID	Well	Organo chloride s:	Organophosphates:	ATRAZINE	SIMAZINE	METOLACHLOR	ALACHLOR	NO3-N:
7/22/2002	RE-043-P	5			0	0	0	0	
7/22/2002	RE-042-P	5	0	0					
8/20/2002	RE-087-P	5	0	0					
8/20/2002	RE-086-P	5			0	0	0	0	
3/26/2002	RE-244-P	6							8.39
3/26/2002	RE-245-P	6	0	0					
3/26/2002	RE-246-P	6			0	0	0	0	
4/16/2002	RE-331-P	6	0	0					
4/16/2002	RE-332-P	6			0	0	0	0	
5/14/2002	RE-401-P	6			0	0	0	0	
5/14/2002	RE-402-P	6	0	0					
6/18/2002	RE-488-P	6			0	0	0	0	
6/18/2002	RE-487-P	6	0	0					
7/22/2002	RE-032-P	6			0	0	0	0	
7/22/2002	RE-033-P	6	0	0					
8/19/2002	RE-077-P	6			0	0	0	0	
8/19/2002	RE-076-P	6	0	0.026					
3/26/2002	RE-252-P	7			0	0	0	0	
3/26/2002	RE-251-P	7	0	0					
3/26/2002	RE-250-P	7							3.46
4/16/2002	RE-335-P	7			0	0	0	0	
4/16/2002	RE-336-P	7	0	0					
5/14/2002	RE-398-P	7			0	0	0	0	
5/14/2002	RE-397-P	7	0	0					
6/18/2002	RE-483-P	7			0	0	0	0	
6/18/2002	RE-484-P	7	0	0					
7/22/2002	RE-036-P	7	0	0					
7/22/2002	RE-037-P	7			0	0	0	0	
8/20/2002	RE-081-P	7	0	0					
3/26/2002	RE-247-P	8							5.23
3/26/2002	RE-249-P	8			0	0	0	0	
3/26/2002	RE-248-P	8	0	0					
4/16/2002	RE-333-P	8	0	0					



Date	Sample ID	Well	Organochlorides:	Organophosphates:	ATRAZINE	SIMAZINE	METOLACHLOR	ALACHLOR	NO3-N:
4/16/2002	RE-334-P	8			0.047	0	0	0	
5/14/2002	RE-400-P	8			0.0656	0	0	0	
6/18/2002	RE-485-P	8			0.026	0	0	0	
6/18/2002	RE-486-P	8	0	0					
7/22/2002	RE-035-P	8			0	0	0	0	
7/22/2002	RE-034-P	8	0	0					
8/19/2002	RE-078-P	8			0	0	0	0	
8/20/2002	RE-079-P	8	0	0					
3/20/2002	RE-229-P	9			0	0	0	0	
3/20/2002	RE-228-P	9	0	0					
3/20/2002	RE-227-P	9							8.97
4/15/2002	RE-318-P	9			0	0	0	0	
4/15/2002	RE-317-P	9	0	0					
5/15/2002	RE-407-P	9			0	0	0	0	
5/15/2002	RE-408-P	9	0	0					
6/19/2002	RE-495-P	9	0	0					
6/19/2002	RE-496-P	9			0	0	0	0	
7/22/2002	RE-044-P	9			0	0	0	0	
7/23/2002	RE-045-P	9	0	0					
8/21/2002	RE-093-P	9	0	0					
8/21/2002	RE-092-P	9			0	0	0	0	
3/20/2002	RE-222-P	10	0	0					
3/20/2002	RE-223-P	10			0	0	0	0	
3/20/2002	RE-221-P	10							2.02
4/15/2002	RE-316-P	10	0	0					
4/15/2002	RE-315-P	10			0	0	0	0	
5/15/2002	RE-409-P	10	0	0					
5/15/2002	RE410-P	10			0	0	0	0	
6/19/2002	RE-497-P	10			0	0	0	0	
6/19/2002	RE-498-P	10	0	0					
7/22/2002	RE-050-P	10			0	0	0	0	
7/23/2002	RE-051-P	10	0	0					
8/21/2002	RE-094-P	10	0	0					

Date	Sample ID	Well	Organochlorides:	Organophosphates:	ATRAZINE	SIMAZINE	METOLACHLOR	ALACHLOR	NO3-N:
8/21/2002	RE-095-P	10			0	0	0	0	
3/20/2002	RE-215-P	11							0.81
3/20/2002	RE-216-P	11	0	0					
3/20/2002	RE-217-P	11			0	0	0	0	
3/25/2002	MM-413-P	11	0	0					
4/15/2002	RE-320-P	11			0	0	0	0	
4/15/2002	RE-319-P	11	0	0					
5/15/2002	RE-405-P	11	0	0					
5/15/2002	RE-406-P	11			0	0	0	0	
6/19/2002	RE-493-P	11	0	0					
6/19/2002	RE-494-P	11			0	0	0	0	
7/22/2002	RE-046-P	11			0	0	0	0	
8/21/2002	RE-090-P	11			0	0	0	0	
8/21/2002	RE-091-P	11	0	0					
3/27/2002	RE-261-P	12			0	0	0	0	
3/27/2002	RE-259-P	12							7.62
3/27/2002	RE-260-P	12	0	0					
4/15/2002	RE-326-P	12			0	0	0	0	
4/15/2002	RE-325-P	12	0	0					
5/15/2002	RE-416-P	12	0	0					
5/15/2002	RE-415-P	12			0	0	0	0	
6/19/2002	RE-503-P	12	0	0					
6/19/2002	RE-504-P	12			0	0	0	0	
7/23/2002	RE-057-P	12	0	0					
7/23/2002	RE-056-P	12			0	0	0	0	
8/21/2002	RE-100-P	12	0	0					
8/21/2002	RE-101-P	12			0	0	0	0	
3/25/2002	RE-242-P	13	0	0					
3/25/2002	RE-243-P	13			0	0	0	0	
3/25/2002	RE-241-P	13							3.59
4/15/2002	RE-323-P	13			0	0	0	0	
4/15/2002	RE-324-P	13	0	0					
5/15/2002	RE-414-P	13	0	0					

Date	Sample ID	Well	Organo chloride s:	Organoph osphates:	ATRAZINE	SIMAZINE	METOLACHLOR	ALACHLOR	NO3-N:
6/19/2002	RE-502-P	13			0	0	0	0	
6/19/2002	RE-501-P	13	0	0					
7/23/2002	RE-055-P	13			0	0	0	0	
7/23/2002	RE-054-P	13	0	0					
8/21/2002	RE-098-P	13			0	0	0	0	
8/21/2002	RE-099-P	13	0	0					
3/20/2002	RE-220-P	14	0	0					
3/20/2002	RE-218-P	14							4.83
3/20/2002	RE-219-P	14			0	0	0	0	
4/15/2002	RE-321-P	14	0	0					
4/15/2002	RE-322-P	14			0	0	0	0	
5/15/2002	RE-403-P	14	0	0					
5/15/2002	RE-404-P	14			0	0	0	0	
6/18/2002	RE-491-P	14	0	0					
6/19/2002	RE-492-P	14			0	0	0	0	
7/22/2002	RE-049-P	14	0	0					
7/22/2002	RE-048-P	14			0	0	0	0	
8/20/2002	RE-089-P	14	0	0					
8/20/2002	RE-088-P	14			0	0	0	0	
3/20/2002	RE-224-P	15							6.96
3/20/2002	RE-226-P	15			0	0	0	0	
3/20/2002	RE-225-P	15	0	0					
3/20/2002	MM-401-P	15	0	0					
4/15/2002	RE-313-P	15			0	0	0	0	
4/15/2002	RE-314-P	15	0	0					
5/15/2002	RE-412-P	15	0	0					
5/15/2002	RE-411-P	15			0	0	0	0	
6/19/2002	RE-500-P	15			0	0	0	0	
6/19/2002	RE-499-P	15	0	0					
7/22/2002	RE-053-P	15			0	0	0	0	
7/23/2002	RE-052-P	15	0	0					
8/21/2002	RE-096-P	15			0	0	0	0	
8/21/2002	RE-097-P	15	0	0					

Date	Sample ID	Well	Organochlorides:	Organophosphates:	ATRAZINE	SIMAZINE	METOLACHLOR	ALACHLOR	NO3-N:
3/25/2002	MM-411-P	16			0	0	0	0	
3/25/2002	MM-409-P	16							1.76
3/26/2002	MM-410-P	16	0	0					
4/16/2002	MM-476-P	16	0	0					
4/16/2002	MM-478-P	16			0	0	0	0	
5/15/2002	MM-576-P	16	0	0					
5/15/2002	MM-575-P	16			0	0	0	0	
6/19/2002	MM-675-P	16							
7/24/2002	MM-054-P	16			0	0	0	0	
7/24/2002	MM-053-P	16	0	0					
8/21/2002	MM-100-P	16			0	0	0	0	
8/21/2002	MM-099-P	16	0	0					
3/25/2002	MM-414-P	17			0	0	0	0	
3/25/2002	MM-412-P	17							2.19
4/16/2002	MM-481-P	17	0		0	0	0	0	
4/16/2002	MM-482-P	17	0	0					
4/16/2002	MM-477-P	17	0	0					
5/15/2002	MM-582-P	17			0	0	0	0	
5/15/2002	MM-581-P	17	0	0					
7/24/2002	MM-057-P	17	0	0					
7/24/2002	MM-058-P	17			0	0	0	0	
8/21/2002	MM-105-P	17	0	0					
8/21/2002	MM-104-P	17			0	0	0	0	
3/25/2002	MM-408-P	18			0	0	0	0	
3/25/2002	MM-406-P	18							0.84
3/25/2002	MM-407-P	18	0	0					
4/16/2002	MM-475-P	18			0	0	0	0	
5/14/2002	RE-399-P	18	0	0					
5/15/2002	MM-573-P	18	0	0					
5/15/2002	MM-562-P	18			0	0	0	0	
6/19/2002	MM-671-P	18	0	0					
7/22/2002	MM-051-P	18			0	0	0	0	
8/21/2002	MM-097-P	18	0	0					

Date	Sample ID	Well	Organo chloride s:	Organoph osphates:	ATRAZINE	SIMAZINE	METOLACHLOR	ALACHLOR	NO3-N:
8/21/2002	MM-098-P	18			0	0	0	0	
3/27/2002	MM-417-P	19							4.2
3/27/2002	MM-418-P	19	0	0					
3/27/2002	MM-419-P	19			0	0	0	0	
4/15/2002	MM-474-P	19			0	0	0	0	
4/15/2002	MM-473-P	19	0	0					
5/15/2002	RE-413-P	19			0	0	0	0	
5/15/2002	MM-585-P	19	0	0					
5/15/2002	MM-584-P	19			0	0	0	0	
7/22/2002	MM-049-P	19			0	0	0	0	
8/21/2002	MM-106-P	19			0	0	0	0	
8/21/2002	MM-107-P	19	0	0					
3/25/2002	MM-405-P	20			0	0	0	0	
3/25/2002	MM-404-P	20	0	0					
3/25/2002	MM-403-P	20							4.18
4/16/2002	MM-479-P	20	0	0					
4/16/2002	MM-480-P	20			0	0	0	0	
5/15/2002	MM-579-P	20			0	0	0	0	
5/15/2002	MM-578-P	20	0	0					
6/19/2002	MM-679-P	20	0	0					
7/24/2002	MM-056-P	20			0	0	0	0	
7/24/2002	MM-055-P	20	0	0					
8/21/2002	MM-103-P	20	0	0					
8/21/2002	MM-102-P	20			0	0	0	0	