ANNUAL MONITORING REPORT
2003

MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT

Underground Storage Facility Permit No. 71-563876 (PCFCD)
Water Storage Permit No. 73-563876.0100 (CMID)
Recovery Well Permit No. 74-568133 (CMID)

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1.0 INTRODUCTION

The Marana High Plains Effluent Recharge Project (MHPERP) is a demonstration recharge project developed by the Pima County Flood Control District (PCFCD) in cooperation with the Bureau of Reclamation (BOR), Arizona Water Protection Fund (AWPF), Cortaro-Marana Irrigation District (CMID), and the Town of Marana. The project is located in Section 33 of Township 11 South, Range 11 East in the Avra Valley sub-basin of the Tucson Active Management Area (**Figure 1**). It is one component of a regional water resource, flood control, environmental protection and enhancement, and recreation program (the Northwest TAMA Replenishment Program) that is sponsored by more than a dozen local, state, and federal entities.

MHPERP is designed to investigate the feasibility of recharging treated effluent into the local groundwater aquifer, while simultaneously investigating wildlife habitat opportunities associated with recharge facilities. The overall objectives for the project, as identified in the final Environmental Assessment (BOR, 1998), include the following:

- To recharge approximately 600 acre-feet of water per year for two years while determining what infiltration rates can be maintained in basins having side slopes vegetated with emergent plants and riparian trees, and in basins fully vegetated with native grasses tolerant of periodic inundation;

- To provide trails, descriptive literature, and interpretive signs describing the pilot project operation. Trails at the effluent pilot project site may eventually be linked to a longer river trail network that is scheduled to be built along the Santa Cruz River;

- To revegetate the area outside the recharge basins with plants that will improve wildlife habitat value and, once established, could survive if the recharge activities cease;

- To characterize wildlife, aquatic macroinvertebrates, and vegetative resources associated with an important effluent-dominated stream; and

- To identify and monitor any biological effects that may result from establishing other habitat types that are now rare to the area (e.g., marsh, grassland), and increase the aerial extent of riparian vegetation.

The MHPERP facility is comprised of one settling basin (equalization basin) and four spreading basins (recharge cells), totaling 3.88 acres of recharge area (**Figure 2**). A comprehensive description of the MHPERP and the related monitoring plan was provided to the Arizona Department of Water Resources (ADWR) in support of the Constructed Underground Storage Facility (USF) Permit Application for the project filed in October 1999. In addition to the USF Permit (No. 71-563876), the facility also has an Aquifer Protection Permit (No. P-103195) from the Arizona Department of Environmental Quality (ADEQ) authorizing the discharge of treated effluent into the aquifer.

Operations began in February 2003 and, in accordance with Sections 2 and 3 of the USF Permit, this is the first annual report for the MHPERP. This report includes all of the data that was collected during the 2003 Calendar Year.

2.0 PROJECT OPERATIONS

2.1 Water Delivery

Water is delivered to the MHPERP via the "oxbow" channel, a remnant channel of the Santa Cruz River from when the riverbed was less incised and the channel meandered back and forth across the floodplain. A berm consisting of streambed materials is used to divert some of the effluent flowing down the main channel of the Santa Cruz River into the oxbow channel. Sources of the effluent discharges are the Roger Road Wastewater Treatment Plant and the Ina Road Wastewater Treatment Plant, which are located approximately 15 miles and 10 miles upstream of the diversion structure respectively. The effluent flows down the oxbow channel for about one mile before reaching the MHPERP.

A constructed wet well collects the oxbow channel flows and two non-clogging, submersible pumps convey the effluent through an 8-inch line into an equalization basin. The equalization basin is used to provide a more constant source of available effluent for recharge, and to help serve as a settling basin for removing particulate materials that could clog the recharge cells. A level sensor is installed in this basin to automatically turn the pumps on and off based on levels within the oxbow channel and the equalization basin. From the equalization basin, the effluent passes through a 16-inch isolation valve into the main distribution line, which feeds into each of the four recharge cells through motorized butterfly valves. A level sensor is installed at each cell to automatically open and close the valves based on pre-set water levels. The valves are closed manually, using an electronic switch, by the daily operator when the cells are scheduled for a drying cycle.

Deliveries to MHPERP are based on the daily cycle of discharges from the treatment plants to the Santa Cruz River. Peaks in water levels at this site normally occur in the late morning and early evening hours. Deliveries to the facility are impacted by storm water events in the Santa Cruz River that demolish the earthen diversion structure used to divert flows into the oxbow channel. There were a number of interruptions to the recharge facility delivery system during the last two quarterly reporting periods, July through December, which greatly affected the projects's recharge capacity for the 2003 Calendar Year. Details of these interruptions are provided in Section 6.0 (Facility Inspections and Maintenance) of this report.

2.2 Inflow Volumes

Water deliveries into the MHPERP facility are measured using an American Sigma 950 Flow Meter equipped with a depth/velocity sensor installed within the main line that runs from the pumps to the equalization basin. Deliveries into each of the recharge cells are measured using an American Sigma 950 Flow Meter equipped with a depth/velocity sensor installed within the outlet pipe feeding into the cell. The meters measure flows on a continuing basis, record the data every minute, and compile the data into daily totals. The daily totals are read on-site by the facility operator, who compiles the data onto a daily log sheet. The daily log sheets are transmitted to PCFCD staff on a weekly basis.

Appendix A contains the daily inflow volumes recharged at the project since operations began in February 2003. The total water volume delivered to the MHPERP in 2003 is 277.39 acre-feet, the majority of which was delivered prior to July 2003. Water volumes stored by month are as follows: January - 0.00 AF, February - 23.09 AF, March - 84.54 AF, April - 63.74 AF, May - 51.43 AF, June 28.82 AF, July - 0.16 AF, August - 0.00 AF, September - 0.00 AF, October 16.19 AF, November 9.42 AF, and December - 0.00 AF. Water recharged during this Calendar Year was stored for and recovered by CMID, who has both a Water Storage Permit (No. 73-563876.0100) and a Recovery Well Permit (No. 74-568133) for this facility.

Column 2 of the Monthly Accounting Report (**Appendix A**) indicates the daily delivered volume to the equalization basin, which is used for temporary storage of the water before it is directed into the recharge cells.[1] Columns 3-6 show daily volumes delivered to each of the recharge cells. Column 7 shows the total daily volume delivered to the project, which is simply the sum of the inflows into each of the recharge cells. The difference between Column 2 and Column 7 indicates an approximate amount of effluent lost through infiltration and evaporation within the equalization basin.

2.3 Evaporation/Evapotranspiration

Column 8 of the Monthly Accounting Report displays the calculated evaporation volumes for Recharge Cells 1-3. These calculations are based on the Cooley Method (1970) using the "Maximum Curve", as approved by ADWR.

Column 9 shows the daily evapotranspiration volumes for Recharge Cell 4. These volumes are calculated using the daily reference evapotranspiration values determined by the Arizona Meteorological Network (AZMET) at their Marana weather station (**Figure 3**).[2] AZMET determines reference evapotranspiration (ETo) using a modification to the Penman Equation developed for the California Irrigation Management Information System (CIMIS). An explanation of the procedures used in this computation is provided in **Appendix B**. No multiplication factor was used in the calculation of reference evapotranspiration (ETo) for the MHPERP because there are no available crop coefficients for the native vegetation in this region.[3]

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[1] The totals for this quarter have been corrected due to errors in the flow calculations by the flow meter, Fmeq. See Section 6.0, Facility Inspections, for details.

[2] Data collection at the AZMET weather station in Marana was discontinued from September 8 through October 31 due to lack of funding. During this time, data from the Tucson weather station was used to calculate evapotranspiration losses because it was the next closest site to the recharge facility and the data was very similar to that collected at the Marana weather station. The AZMET Marana weather station has been back online since November 1, 2003.

[3] The reference evapotranspiration values are determined for tall (8-15 inches), cool season grasses. Much of the vegetation within Recharge Cell 4 consists mostly of grasses that are approximately 8-15 inches in height. Since no information is available for the species established at MHPERP, it is assumed that the evapotranspiration losses at this facility are the same as those calculated at the AZMET station.

2.4 Recharge Volumes

Column 10 in the Monthly Accounting Report displays the adjusted net recharge volume for the facility, which is the sum of the daily volumes delivered to the recharge cells less the evaporation/evapotranspiration losses. Net recharge for the facility during the 2003 Calendar Year is 271.27 AF. Monthly and cumulative recharge for each recharge cell and for the total project are displayed in **Figures 5** though **9**.

3.0 HYDROLOGIC MONITORING

Hydrologic monitoring of the facility includes measurement of on-site and off-site groundwater levels and direct observation of basin water levels. The on-site monitoring network consists of one monitor well and one piezometer, both measured bi-weekly using a depth sounder (**Figure 4**). Off-site monitoring consists of monthly water level measurements for three monitor wells: SC-09, SC-10 and AVMW-1 (**Figure 4**).

3.1 Basin Water Levels

Water levels within the equalization basin are expected to fluctuate from one to four feet above the bottom elevation of 1,984 feet above mean sea level. Water depths in each of the recharge cells are expected to fluctuate from three to nine inches during the wet cycles. Water levels sensors within the basins are programmed to automatically maintain these ranges. Basin water levels are observed visually on a daily basis to insure that the sensors are working properly.

3.2 Regional Groundwater Levels

Groundwater levels are measured for four monitoring wells, one on-site (HP-1) and three off-site (SC-09, SC-10 and AVMW-1). HP-1 is measured bi-weekly by PCFCD personnel using an electric sounder. Wells SC-09 and SC-10 are monitored on a monthly basis by PCFCD staff using an electric sounder. Well AVMW-1 is measured monthly by the Central Arizona Water Conservation District (CAWCD) using both an automatic datalogger and a manually operated electric sounder. PCFCD has an agreement with CAWCD to obtain the data collected from the AVMW-1 well.

Table 1 contains the water level data collected for the on-site and off-site monitor wells. All of the monitor wells have alert levels of 20 feet below land surface. Alert levels for the monitoring wells were not exceeded during the 2003 Calendar Year.

3.3 Perched Groundwater Occurrence

Table 2 contains the monitoring data for the one piezometer (HP-2) used to assess perched water conditions. A trace amount of perched water has been measured at the site since the beginning of recharge operations. Water levels have consistently been measured at approximately 82 feet below land surface, which is below the alert level set at 20 feet below land surface.

4.0 INFILTRATION RATE ASSESSMENT

Table 3 displays the infiltration rates for each of the recharge cells during the 2003 Calendar Year. Infiltration rates were estimated using the "volumetric" method, which is simply the total daily inflow divided by the wetted acreage. The total wetted acreage used to calculate the infiltration rate is a visual estimate, provided by the daily operator. Infiltration rates were determined over multiple days each month when the deliveries into the recharge cells were fairly steady.

Rates for the annual reporting period ranged from 0.43 feet/day to 2.42 feet/day. As expected, the rates were generally higher during the beginning of operations and gradually decreased over the next three months. The rates increased slightly in October, due to the basins being tilled in September, but then slowly decreased over the next month. Equipment malfunctions and periodic wash out of the diversion berm made it difficult to accurately determine the rates from October through November.

5.0 WATER QUALITY MONITORING

5.1 Water Quality Sampling Activities

The Aquifer Protection Permit requires water quality samples to be collected and analyzed on a monthly basis for nutrients (Nitrogen constituents), and on a quarterly basin for total metals and Volatile Organic Compounds (VOCs). Samples are collected from the source water inflow and from monitor well HP-1. Nitrogen forms are monitored more frequently because of the high nitrogen content in effluent water, and the potential for recharge to increase the nitrogen content in the local aquifer through leaching of nearby agricultural soils. Water quality sampling at the MHPERP also serves as a tool for studying nitrogen transformations in riparian and aquatic ecosystems, to determine if nitrogen levels can be reduced through the wetland recharge process.

5.2 Chemical Analyses Results

Table 4 summarizes the results from sampling taken during the 2003 Calendar Year. Samples were taken at the oxbow channel, when flowing, and at monitoring well HP-1. Sampling for nitrogen constituents was performed on a monthly basis, while sampling for Total Metals and VOCs was performed quarterly. There were no analytes reported above the alert levels set by the Aquifer Protection Permit for this facility. The laboratory reports and chain of custody forms are provided for reference in **Appendix C**.

6.0 FACILITY INSPECTIONS

Inspections of the facility equipment and functions are required by the Aquifer Protection Permit on a weekly basis. The facility operator at MHPERP performs these inspections on a daily basis while collecting data for PCFCD, transmitting any problems or required maintenance through daily logs that are delivered on a weekly basis to PCFCD. PCFCD staff is contacted immediately for any alarms or serious problems concerning the facility equipment.

The facility equipment remained in relatively good working condition from February 2003 through June 2003, resulting in a fair amount of recharge produced for the first two quarterly reporting periods. Over the last six months, a compilation of diversion berm wash-outs and equipment failures has severely limited the amount of recharge at the facility. **Table 5** lists the problems that occurred throughout the 2003 Calendar Year and the solutions performed to resolve them.

7.0 CONCLUSIONS

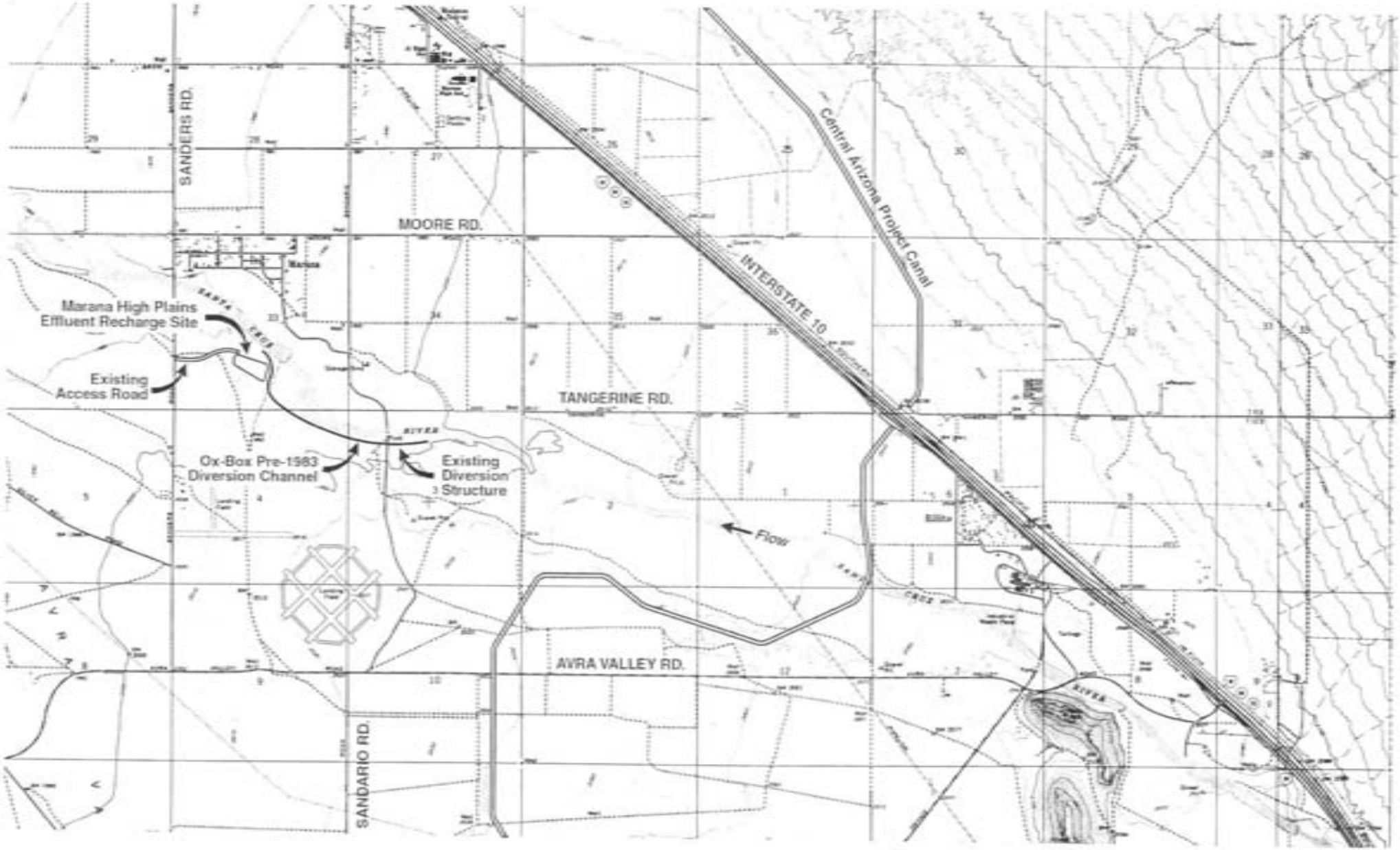
The volume of water stored at the MHPERP for Calendar Year 2003 is 271.27 AF. Monitoring of operations has shown no exceedences of water quality standards nor water alert levels at the project site. Off-site monitoring showed no negative impacts to surrounding operation from a water level perspective. Recharge operations were suspended at this facility from July through mid-October and from mid-November through December.

Initial recharge rates for MHPERP were expected to range from 1.25 feet/day to 2.5 feet/day based on infiltration tests that were performed in this area by Montgomery and Associates (1996) as part of the feasibility investigations for the Northwest Replenishment Program. The actual rates observed at the facility from February 2003 through April 2003 are comparable to what was expected. The rates sharply declined in May and June, suggesting that a clogging layer had formed in the basin bottoms. Infiltration rates in Recharge Cell 4 also sharply declined during this time, suggesting that the vegetation was not serving the purpose of breaking up the clogging layer. However, it was observed that the vegetation near the inlet pipe was causing the water to back up and trip the level sensor used to automatically open and close the motorized valve. Due to the limited amount of data collected at this time, it is difficult to determine if there is any benefit for using vegetative growth in the recharge cells to increase recharge capacity or limit basin maintenance costs.

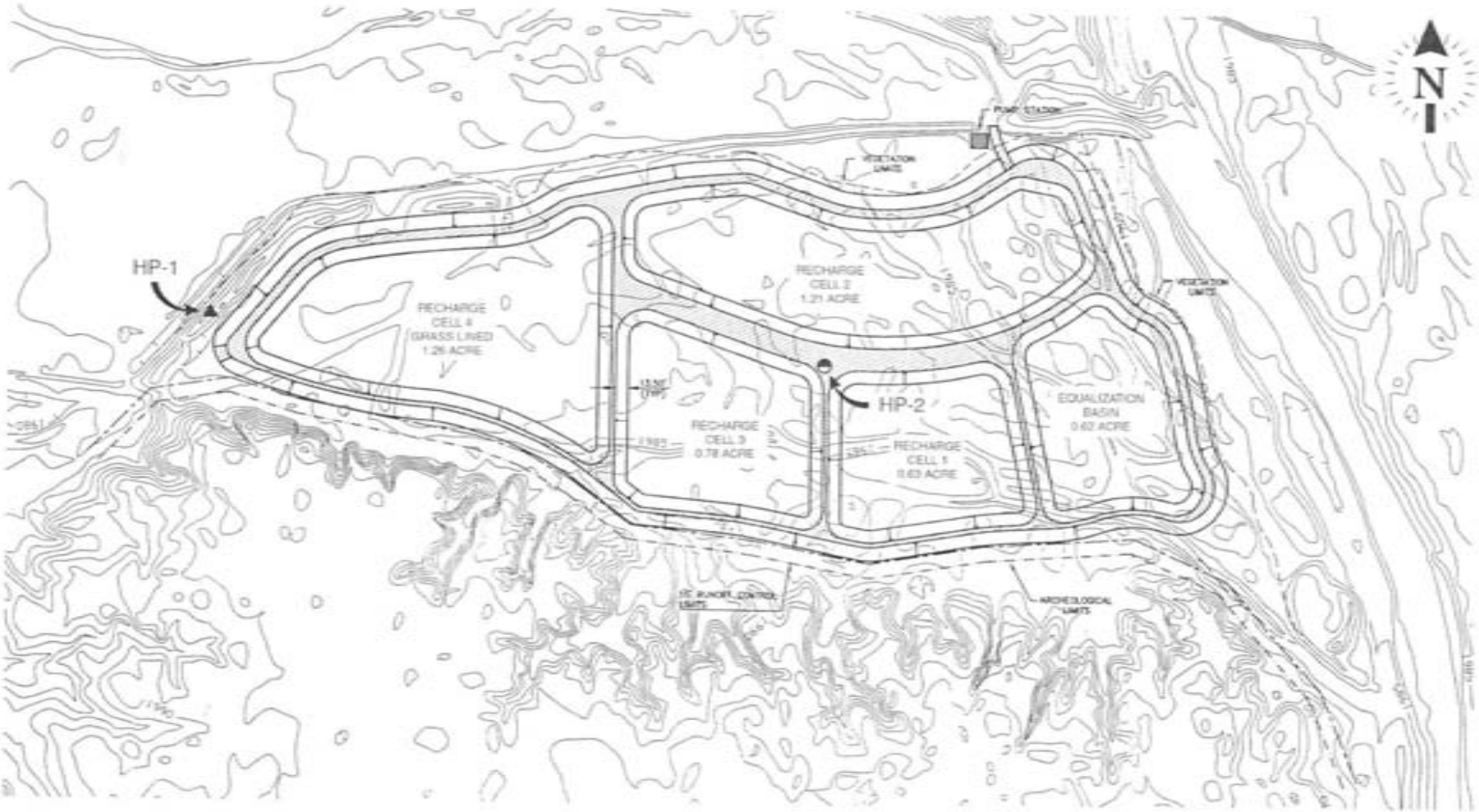
A number of repairs and modifications were performed at the facility from July 2003 through December 2003 to restore operations and increase the facility's recharge capacity. Depending on the frequency of significant storm flows along the lower portion of the Santa Cruz River, it is estimated that the MHPERP can reach its yearly goal of 600 acre-feet over the 2004 Calendar Year.

FIGURES

Location Map



Facility Map



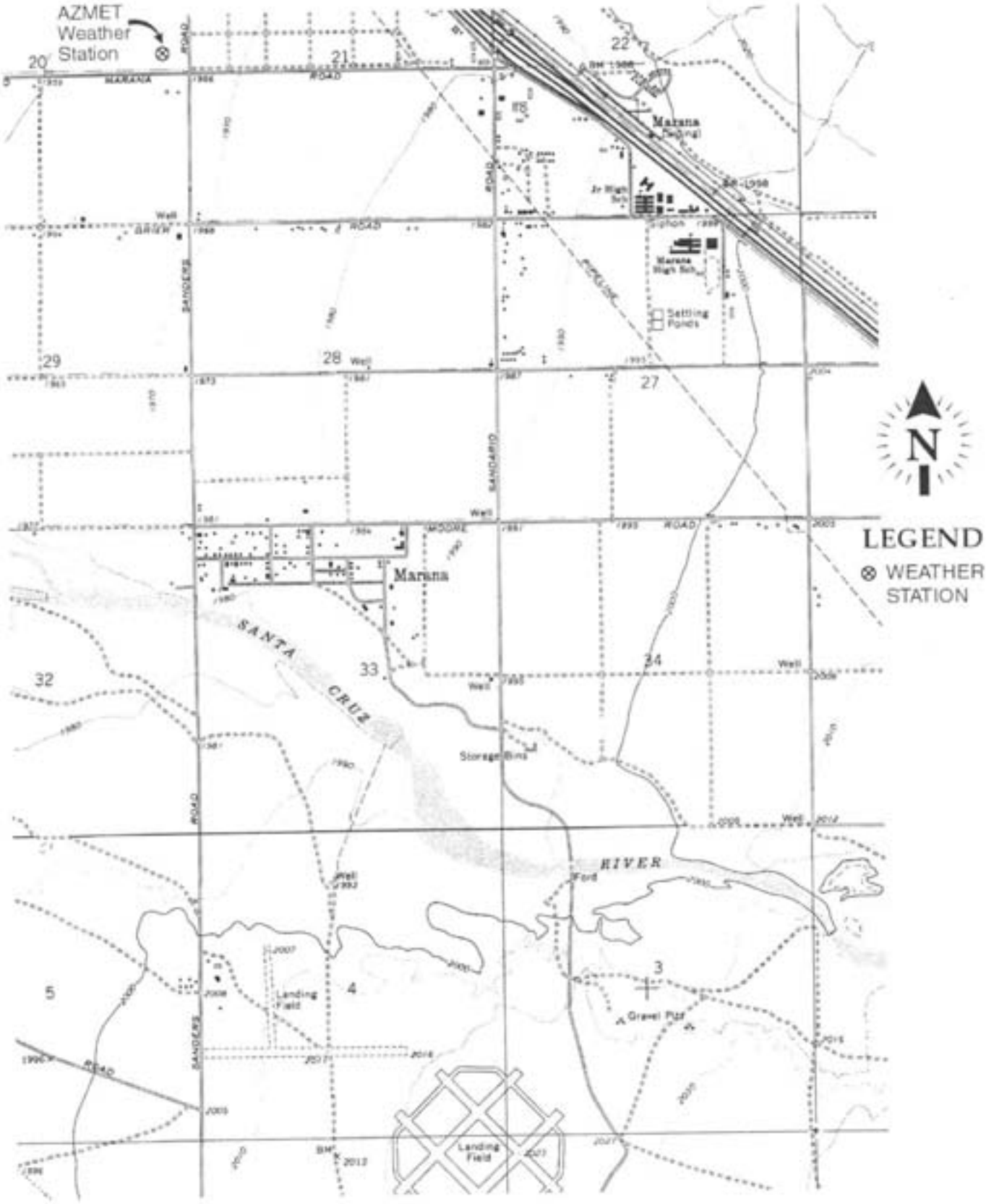
SCALE IN FEET:

TOTAL RECHARGE AREA = 3.88 ACRES
ESTIMATED RECHARGE VOLUME = 290 ACRE-FT/YR

LEGEND

▲ MONITOR WELL

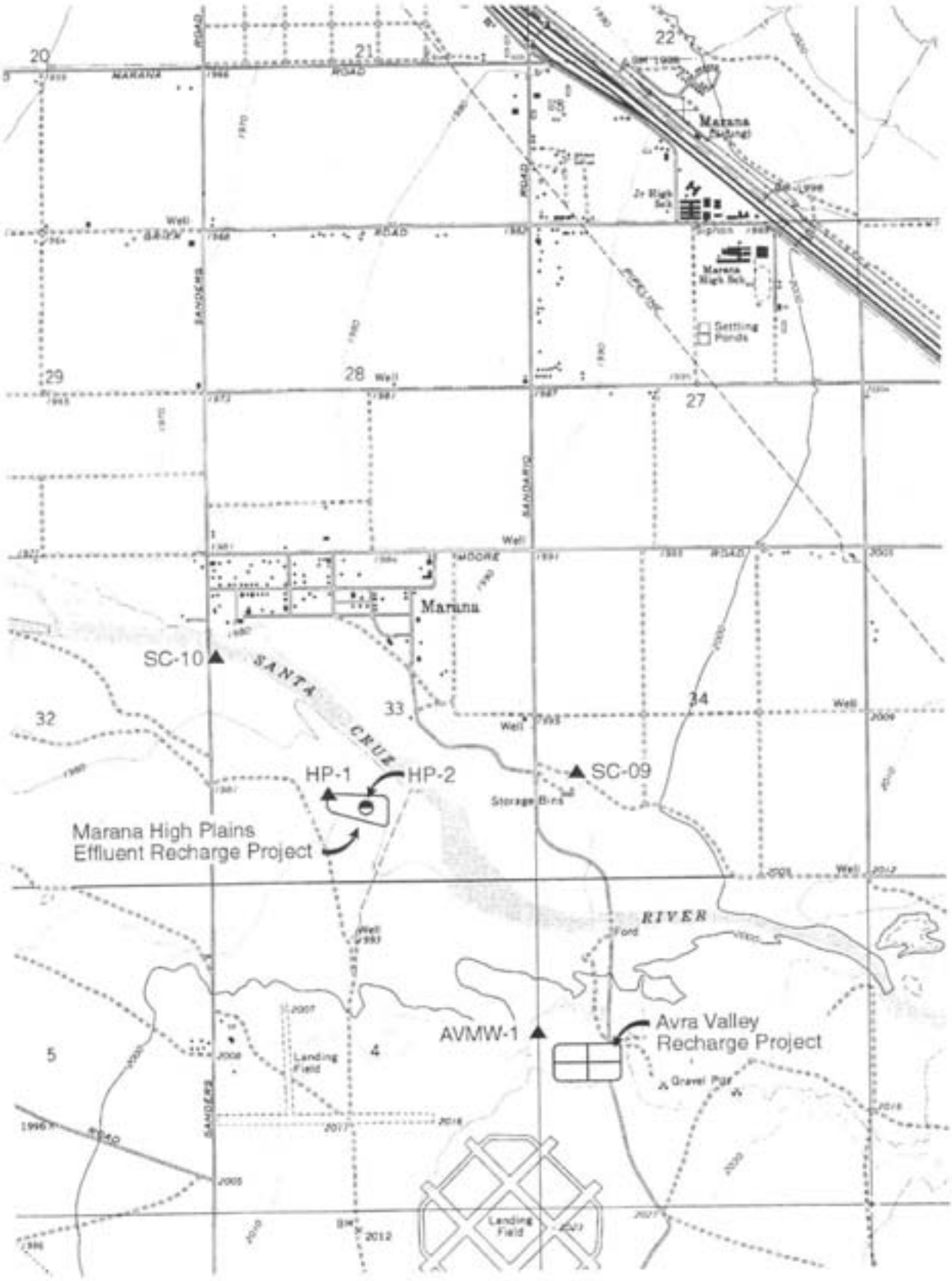
● PIEZOMETER



Date on line: Sep 1 1987 (Julian Day 244)
Location: 1.6 km (1 mile) west of I-10 on Trico-Marana Rd.
Elevation: 601 meters (1972 ft)
Coordinates: Latitude = 32° 27' 40" N; Longitude = 111° 14' 00" W
Cooperator: Marana Agricultural Center College of Agri., Univ. of Arizona

FIGURE 3
Marana High Plains Effluent Recharge Project : AZMET Weather Station Location Map

Miles .5 1 2
SCALE:



LEGEND

▲ MONITOR WELL

◓ PIEZOMETER

N

Miles .5 1 2

SCALE:

FIGURE 4
Marana High Plains
Effluent Recharge Project :
Offsite Monitor Well Location Map

FIGURE 5
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
Cell 1 - 2003 Monthly and Cumulative Recharge

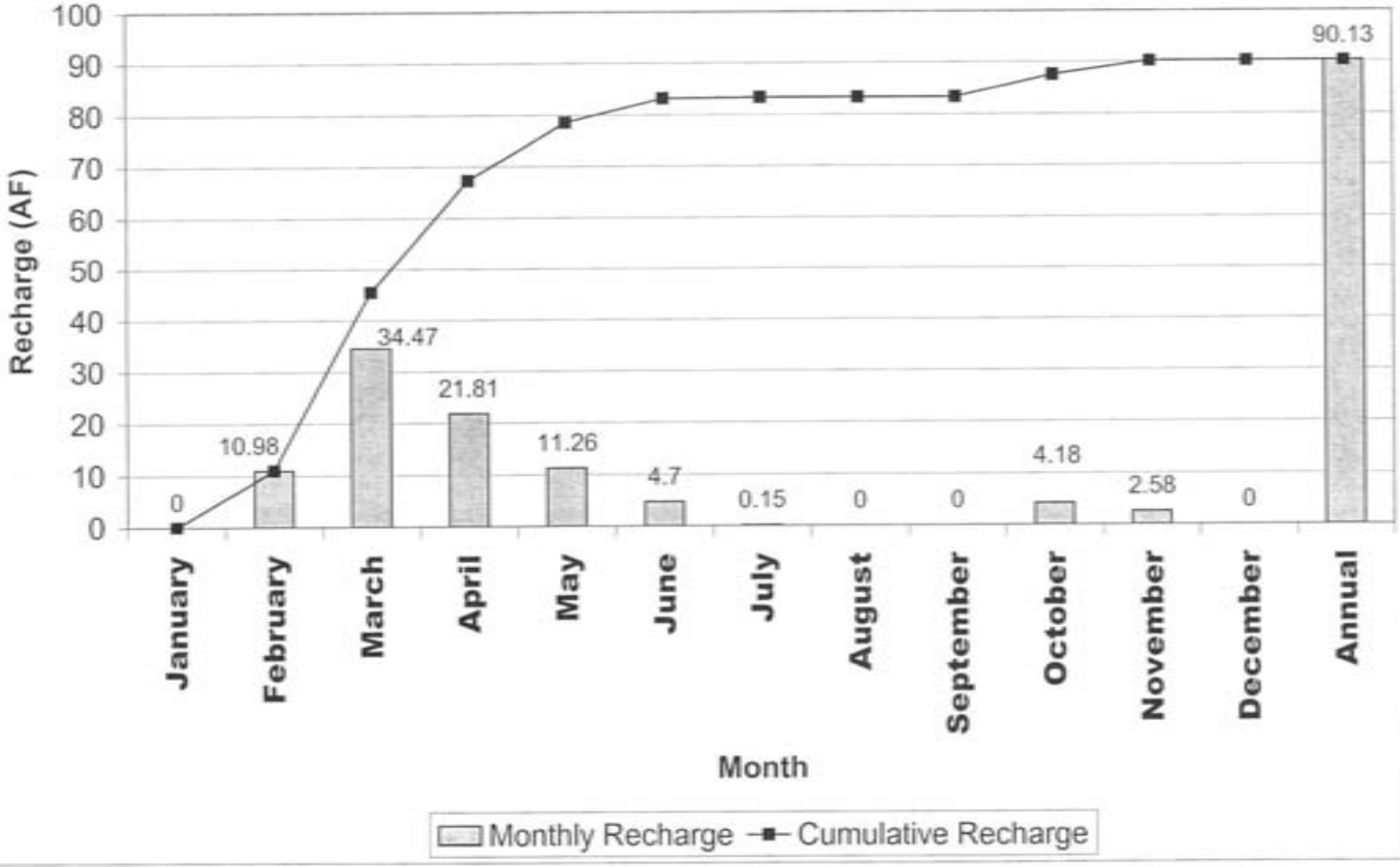


FIGURE 6
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
Cell 2 - 2003 Monthly and Cumulative Recharge

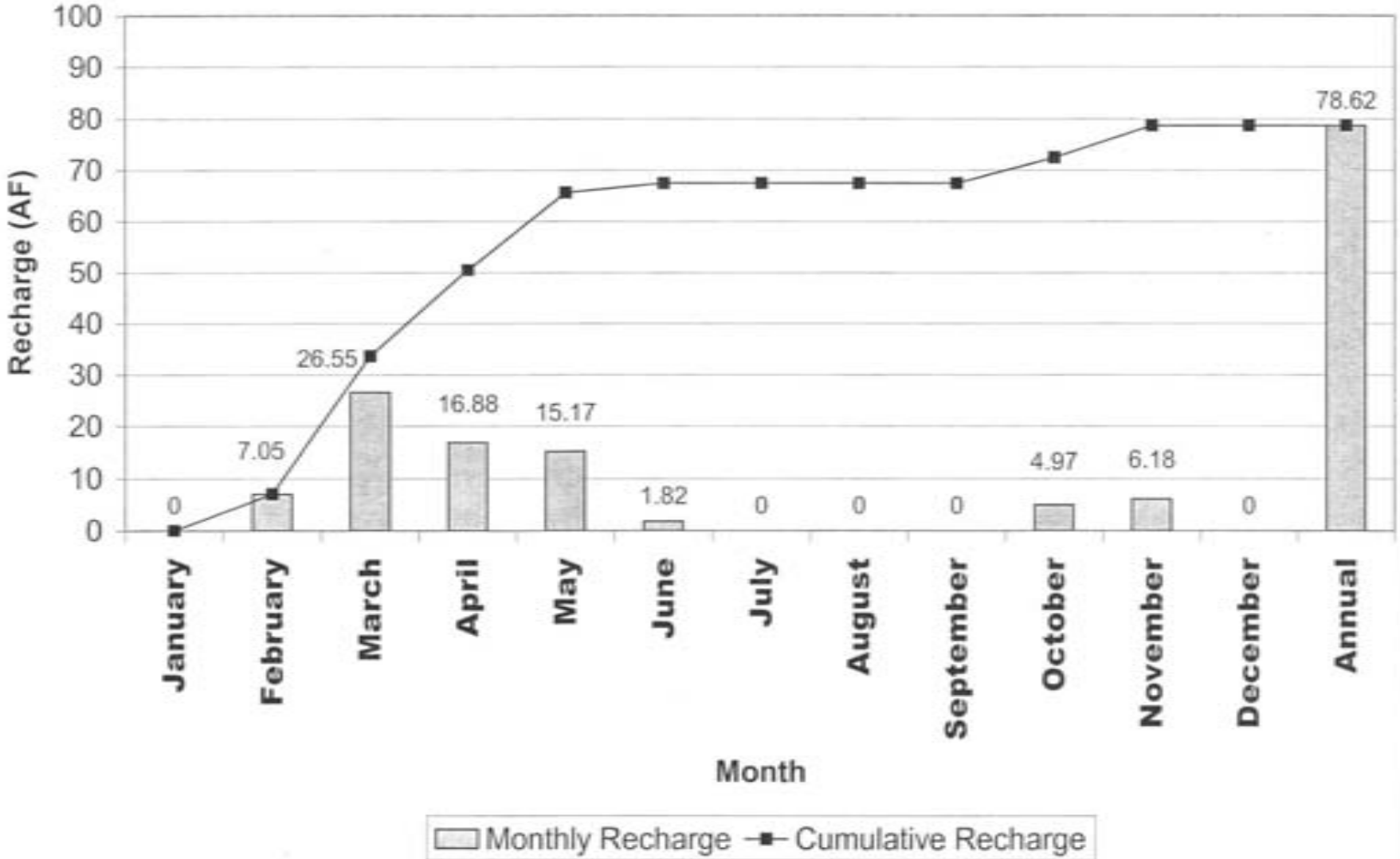


FIGURE 7
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
Cell 3 - 2003 Monthly and Cumulative Recharge

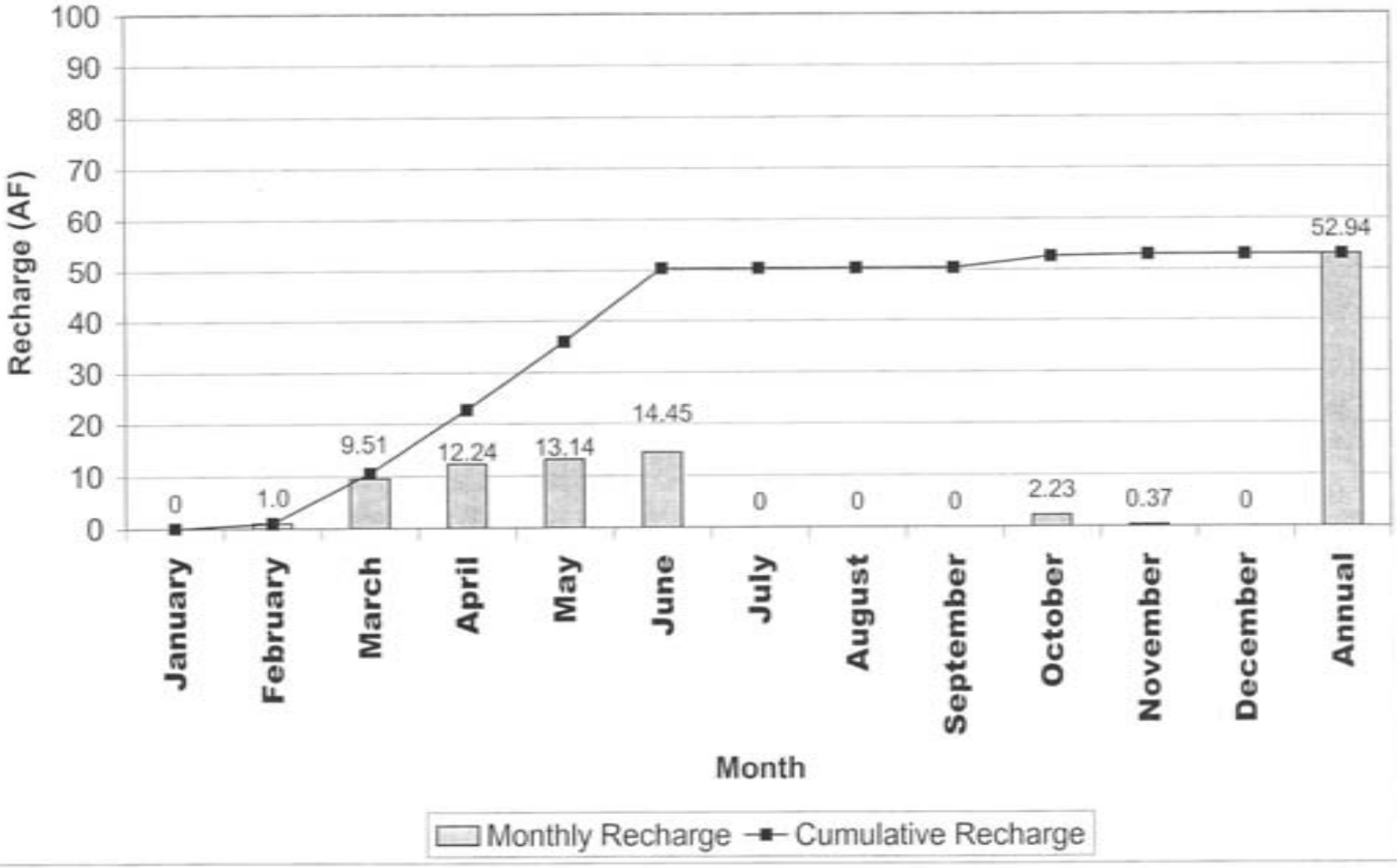


FIGURE 8
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
Cell 4 - 2003 Monthly and Cumulative Recharge

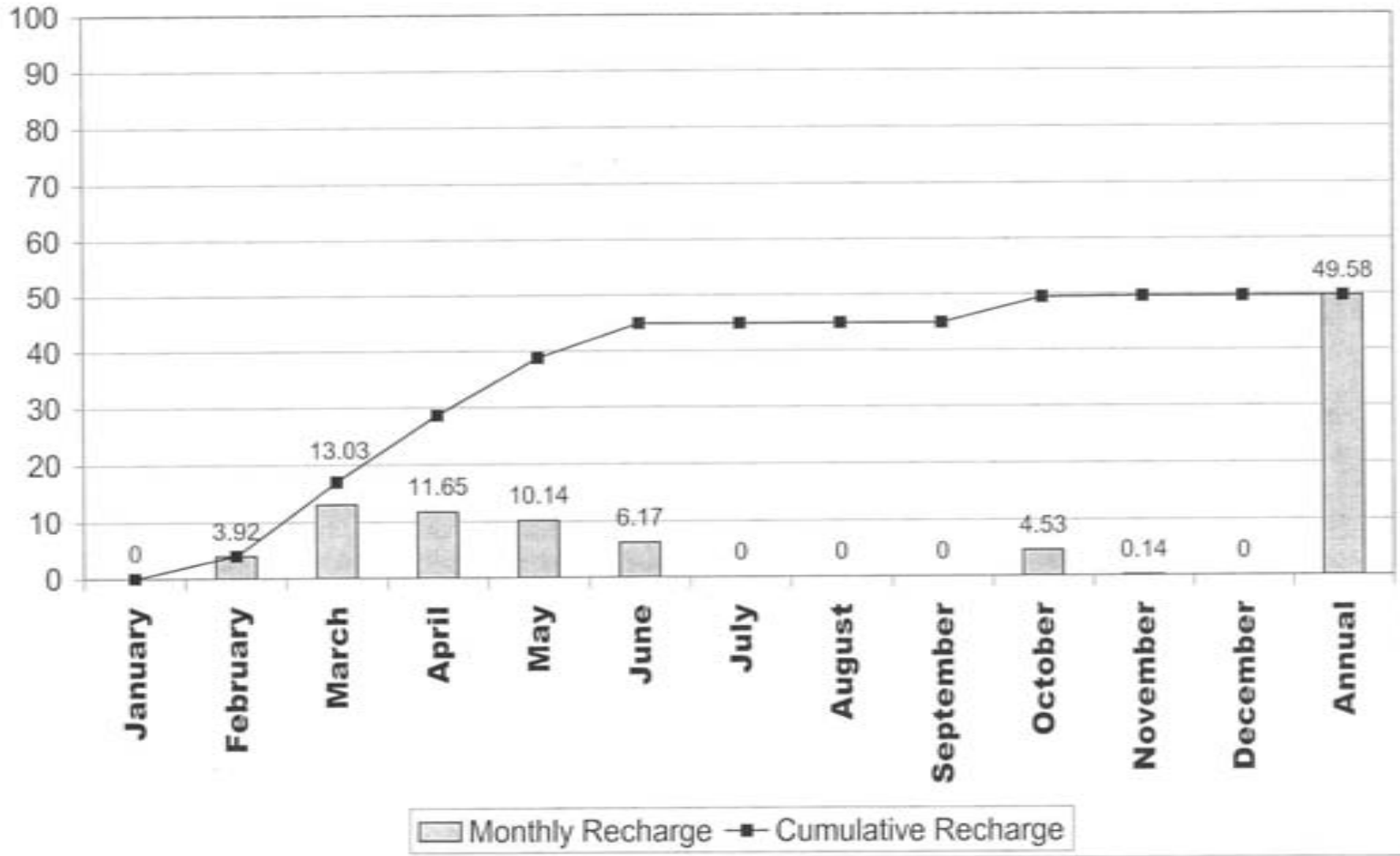
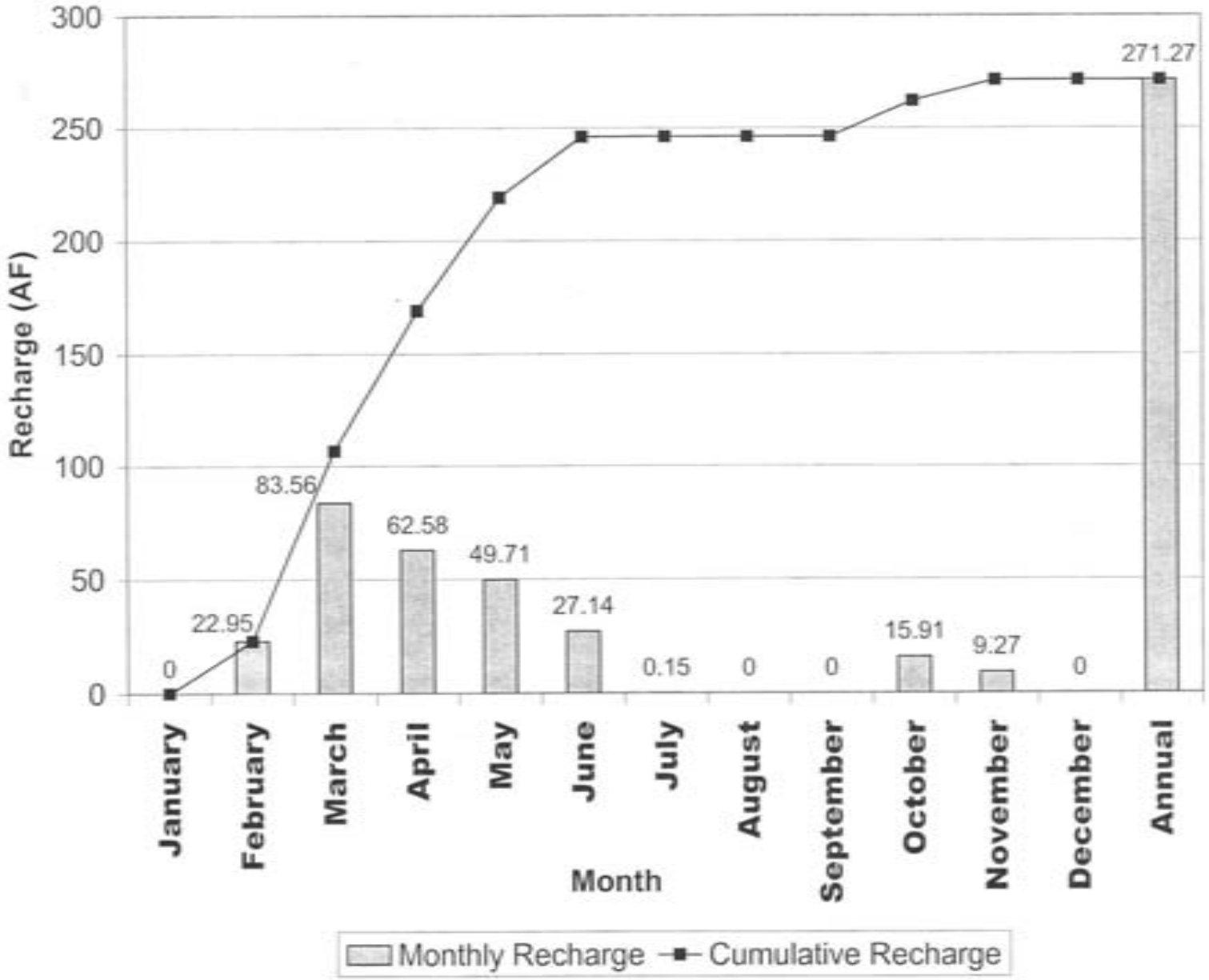


FIGURE 9
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
Total Project - 2003 Monthly and Cumulative Recharge



TABLES

TABLE 1
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
ON-SITE AND OFF-SITE MONITOR WELL LEVELS
CALENDAR YEAR 2003

Offsite Wells

Monitoring Well ID:	SC-09		Monitoring Well ID:	SC-10		Monitoring Well ID:	AVMW-1	
Cadastral Location:	D(11-11) 34cbc		Cadastral Location:	D(11-11) 33bcb		Cadastral Location:	D(12-11) 3cbb	
Reference Point Elev.:	1991.54		Reference Point Elev.:	1978.07		Reference Point Elev.:	2014.7	
Date	Depth to water	Water Level Elevation	Date	Depth to water	Water Level Elevation	Date	Depth to water	Water Level Elevation
4/24/2003	212.35	1779.19	4/24/2003	207.52	1770.55	1/14/2003	202.60	1812.10
5/27/2003	209.66	1781.88	5/27/2003	203.46	1774.61	2/12/2003	202.00	1812.70
6/24/2003	212.54	1779.00	6/24/2003	205.88	1772.19	3/18/2003	198.30	1816.40
7/14/2003	213.69	1777.85	7/14/2003	207.39	1770.68	4/1/2003	199.90	1814.80
8/21/2003	217.73	1773.81	8/21/2003	209.76	1768.31	5/1/2003	200.50	1814.20
9/9/2003	215.20	1776.34	9/9/2003	208.18	1769.89	6/1/2003	208.80	1805.90
10/8/2003	212.08	1779.46	10/8/2003	204.08	1773.99	7/16/2003	216.30	1798.40
11/4/2003	208.80	1782.74	11/4/2003	201.10	1776.97	8/12/2003	220.90	1793.80
12/11/2003	NA	NA	12/11/2003	197.95	1780.12	9/16/2003	207.20	1807.50
						10/14/2003	198.40	1816.30
						11/12/2003	193.50	1821.20
						12/24/2003	196.48	1818.22

NA = Not available

Onsite Well

Monitoring Well ID:	HP-1	
Cadastral Location:	D(11-11) 33cac	
Reference Point Elev.:	1985.17	
Date	Depth to water	Water Level Elevation
1/8/2003	201.15	1784.02
1/22/2003	202.43	1782.74
2/12/2003	201.74	1783.43
2/27/2003	200.69	1784.48
3/12/2003	200.85	1784.32
3/28/2003	202.53	1782.64
4/9/2003	204.44	1780.73
4/24/2003	206.05	1779.12
5/14/2003	204.34	1780.83
5/27/2003	202.57	1782.60
6/10/2003	202.84	1782.33
6/24/2003	205.49	1779.68
7/14/2003	207.39	1777.78
7/25/2003	206.54	1778.63
8/15/2003	209.30	1775.87
8/28/2003	209.10	1776.07
9/9/2003	207.36	1777.81
9/25/2003	205.59	1779.58
10/8/2003	203.42	1781.75
10/22/2003	201.56	1783.61
11/4/2003	200.47	1784.70
11/26/2003	198.34	1786.83
12/11/2003	197.29	1787.88
12/26/2003	196.41	1788.76

Note: All depths to water are measured in feet; all water level elevations are measured in feet above sea level.

TABLE 2
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
ON-SITE PIEZOMETER WATER LEVELS
CALENDAR YEAR 2003

Date Measured	Depth to Water (feet)	Mound Height	Elevation* (feet)
1/8/2003	82.06	trace	1904.69
1/22/2003	82.06	trace	1904.69
2/12/2003	82.06	trace	1904.69
2/27/2003	82.06	trace	1904.69
3/12/2003	82.06	trace	1904.69
3/28/2003	82.06	trace	1904.69
4/9/2003	82.06	trace	1904.69
4/24/2003	82.06	trace	1904.69
5/14/2003	82.06	trace	1904.69
5/27/2003	82.06	trace	1904.69
6/10/2003	82.06	trace	1904.69
6/24/2003	82.06	trace	1904.69
7/14/2003	82.06	trace	1904.69
7/25/2003	82.06	trace	1904.69
8/15/2003	82.06	trace	1904.69
8/28/2003	82.06	trace	1904.69
9/9/2003	82.06	trace	1904.69
9/25/2003	82.06	trace	1904.69
10/8/2003	82.06	trace	1904.69
10/22/2003	82.06	trace	1904.69
11/14/2003	82.06	trace	1904.69
11/26/2003	82.06	trace	1904.69
12/11/2003	82.06	trace	1904.69
12/26/2003	82.06	trace	1904.69

* Reference elevation for well port is 1986.75 feet (above sea level).

Note: Recharge operations at the facility began on February 18, 2003.

TABLE 3
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
BASIN INFILTRATION RATES: "VOLUMETRIC METHOD"
CALENDAR YEAR 2003

Cell 1

Date	Recharged Volume (AF)	Wetted Acres	Infilitration Rate (ft/day)
January-03	NA	NA	NA
February 19-26, 2003	10.74	4.85	2.21
March 20-27, 2003	12.19	5.04	2.42
April 11-18, 2003	7.26	4.37	1.66
May 6-13, 2003	8.83	4.29	2.06
June 17-24, 2003	2.39	4.27	0.56
July-03	NA	NA	NA
August-03	NA	NA	NA
September-03	NA	NA	NA
October-03	4.18	3.92	1.07
November-03	2.58	4.50	0.57
December-03	NA	NA	NA

Cell 3

Date	Recharged Volume (AF)	Wetted Acres	Infiltration Rate (ft/day)
January-03	NA	NA	NA
February-03	NA	NA	NA
March 18-26, 2003	4.55	2.60	1.75
April 17-24, 2003	6.29	4.44	1.42
May 1-8, 2003	5.15	4.99	1.03
June 11-17, 2003	7.92	8.68	0.91
July-03	NA	NA	NA
August-03	NA	NA	NA
September-03	NA	NA	NA
October-03	2.23	5.19	0.43
November-03	NA	NA	NA
December-03	NA	NA	NA

Cell 2

Date	Recharged Volume (AF)	Wetted Acres	Infiltration Rate (ft/day)
January-03	NA	NA	NA
February 23-28, 2003	6.88	4.90	1.40
March 17-24, 2003	12.76	10.89	1.17
April 16-23, 2003	9.44	7.34	1.29
May 1-8, 2003	6.30	7.20	0.88
June 11-17, 2003	7.92	8.68	0.91
July-03	NA	NA	NA
August-03	NA	NA	NA
September-03	NA	NA	NA
October-03	4.97	4.17	1.19
November-03	6.18	7.99	0.77
December-03	NA	NA	NA

Cell 4

Date	Recharged Volume (AF)	Wetted Acres	Infiltration Rate (ft/day)
January-03	NA	NA	NA
February 18-26, 2003	3.91	3.02	1.29
March 16-24, 2003	5.99	5.29	1.13
April 10-17, 2003	6.12	6.93	0.88
May 6-13, 2003	7.13	8.19	0.87
June 17-24, 2003	3.23	6.12	0.53
July-03	NA	NA	NA
August-03	NA	NA	NA
September-03	NA	NA	NA
October-03	4.53	3.84	1.18
November-03	NA	NA	NA
December-03	NA	NA	NA

NA = No recharge in basin or insufficient data to determine infiltration rate

TABLE 4

MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
WATER QUALITY SUMMARY: CALENDAR YEAR 2003

Constituent	Unit	Sample Date and Location											
		Source Water											
		Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03
Nutrients													
Total Nitrogen[1]	mg/l	No Event	36	35	34.73	30	36.7	20.6	No Flow	No Flow	53.1	No Flow	No Flow
Nitrate-Nitrite as N	mg/l	No Event	< 5.0	< 5.0	0.73	< 1.10	0.7	0.6	No Flow	No Flow	1.1	No Flow	No Flow
Total Kjeldahl Nitrogen (TKN)	mg/l	No Event	36	35	34	30	36	20	No Flow	No Flow	52	No Flow	No Flow
Metals (Total)													
Arsenic	mg/l	No Event	No Event	< 0.10	No Event	< 0.005	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Barium	mg/l	No Event	No Event	< 1.0	No Event	< 1.0	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Cadmium	mg/l	No Event	No Event	< 0.05	No Event	< 0.003	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Chromium	mg/l	No Event	No Event	< 0.10	No Event	< 0.03	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Lead	mg/l	No Event	No Event	< 0.15	No Event	< 0.005	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Antimony	mg/l	No Event	No Event	< 0.20	No Event	< 0.005	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Beryllium	mg/l	No Event	No Event	< 0.10	No Event	< 0.10	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Nickel	mg/l	No Event	No Event	< 0.10	No Event	< 0.10	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Mercury	mg/l	No Event	No Event	< 0.001	No Event	< 0.001	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Selenium	mg/l	No Event	No Event	< 0.10	No Event	< 0.005	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Thallium	mg/l	No Event	No Event	< 0.10	No Event	No Event	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Volatile Organic Compounds (VOCs)													
Benzene	mg/l	No Event	No Event	< 0.0005	No Event	< 0.0005	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Carbon tetrachloride	ug/l	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
o-Dichlorobenzene	mg/l	No Event	No Event	< 0.0005	No Event	< 0.0005	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
para-Dichlorobenzene	mg/l	No Event	No Event	< 0.0005	No Event	< 0.0005	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
1,2-Dichloroethane	ug/l	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
1,1-Dichloroethylene	ug/l	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
cis--1,2-Dichloroethylene	ug/l	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
trans-1,2-Dichloroethylene	ug/l	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
1,2-Dichloropropane	ug/l	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Ethylbenzene	ug/l	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Monochlorobenzene	ug/l	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Styrene	ug/l	No Event	No Event	< 0.0005	No Event	< 0.0005	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Tetrachloroethylene	ug/l	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Toluene	ug/l	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
1,1,1-Trichloroethane	ug/l	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
1,1,2-Trichloroethane	ug/l	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Trichloroethylene	ug/l	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Trihalomethanes (total THMs)	ug/l	No Event	No Event	< 0.50	No Event	No Event	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Vinyl Chloride	ug/l	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow
Xylenes (Total)	ug/l	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	No Flow	No Flow	No Event	No Flow	No Flow

No Event = No sample was taken; No Flow = No flow in the effluent channel

[1] Total Nitrogen is equal to Nitrate-Nitrite-N plus TKN (Aquifer Protection Permit No. P-103195)

TABLE 4

MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
WATER QUALITY SUMMARY: CALENDAR YEAR 2003

Constituent	Sample Date and Location											
	Monitor Well HP-1											
	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03
Nutrients												
Total Nitrogen[1]	No Event	4.2	3.7	4.6	4.7	4.2	3.5	4.4	3.6	5.09	No Event	No Event
Nitrate-Nitrite as N	No Event	4.2	3.7	4.6	4.7	4.2	3.5	4.4	3.6	4.3	No Event	No Event
Total Kjeldahl Nitrogen (TKN)	No Event	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.79	No Event	No Event
Metals (Total)												
Arsenic	No Event	No Event	< 0.005	No Event	< 0.005	No Event	No Event	< 0.005	No Event	No Event	No Event	No Event
Barium	No Event	No Event	< 1.0	No Event	< 1.0	No Event	No Event	< 1.0	No Event	No Event	No Event	No Event
Cadmium	No Event	No Event	< 0.003	No Event	< 0.003	No Event	No Event	< 0.003	No Event	No Event	No Event	No Event
Chromium	No Event	No Event	< 0.03	No Event	< 0.03	No Event	No Event	< 0.03	No Event	No Event	No Event	No Event
Lead	No Event	No Event	0.01	No Event	< 0.005	No Event	No Event	0.008	No Event	No Event	No Event	No Event
Antimony	No Event	No Event	< 0.005	No Event	< 0.005	No Event	No Event	< 0.005	No Event	No Event	No Event	No Event
Beryllium	No Event	No Event	< 0.10	No Event	< 0.10	No Event	No Event	< 0.10	No Event	No Event	No Event	No Event
Nickel	No Event	No Event	< 0.10	No Event	< 0.10	No Event	No Event	< 0.10	No Event	No Event	No Event	No Event
Mercury	No Event	No Event	< 0.001	No Event	< 0.001	No Event	No Event	< 0.001	No Event	No Event	No Event	No Event
Selenium	No Event	No Event	< 0.005	No Event	< 0.005	No Event	No Event	< 0.005	No Event	No Event	No Event	No Event
Thallium	No Event	No Event	< 0.002	No Event	< 0.002	No Event	No Event	< 0.002	No Event	No Event	No Event	No Event
Volatile Organic Compounds (VOCs)												
Benzene	No Event	No Event	< 0.0005	No Event	< 0.005	No Event	No Event	< 0.005	No Event	No Event	No Event	No Event
Carbon tetrachloride	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	< 0.50	No Event	No Event	No Event	No Event
o-Dichlorobenzene	No Event	No Event	< 0.0005	No Event	< 0.005	No Event	No Event	< 0.0005	No Event	No Event	No Event	No Event
para-Dichlorobenzene	No Event	No Event	< 0.0005	No Event	< 0.005	No Event	No Event	< 0.0005	No Event	No Event	No Event	No Event
1,2-Dichloroethane	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	< 0.50	No Event	No Event	No Event	No Event
1,1-Dichloroethylene	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	< 0.50	No Event	No Event	No Event	No Event
cis--1,2-Dichloroethylene	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	< 0.50	No Event	No Event	No Event	No Event
trans-1,2-Dichloroethylene	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	< 0.50	No Event	No Event	No Event	No Event
1,2-Dichloropropane	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	< 0.50	No Event	No Event	No Event	No Event
Ethylbenzene	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	< 0.50	No Event	No Event	No Event	No Event
Monochlorobenzene	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	< 0.50	No Event	No Event	No Event	No Event
Styrene	No Event	No Event	< 0.0005	No Event	< 0.0005	No Event	No Event	< 0.0005	No Event	No Event	No Event	No Event
Tetrachloroethylene	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	< 0.50	No Event	No Event	No Event	No Event
Toluene	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	< 0.50	No Event	No Event	No Event	No Event
1,1,1-Trichloroethane	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	< 0.50	No Event	No Event	No Event	No Event
1,1,2-Trichloroethane	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	< 0.50	No Event	No Event	No Event	No Event
Trichloroethylene	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	< 0.50	No Event	No Event	No Event	No Event
Trihalomethanes (total THMs)	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	< 0.50	No Event	No Event	No Event	No Event
Vinyl Chloride	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	< 0.50	No Event	No Event	No Event	No Event
Xylenes (Total)	No Event	No Event	< 0.50	No Event	< 0.50	No Event	No Event	< 0.50	No Event	No Event	No Event	No Event

No Event = No sample was taken; No Flow = N

[1] Total Nitrogen is equal to Nitrate-Nitrite-N plu

TABLE 5
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
FACILITY INSPECTIONS: PROBLEMS AND RELATED SOLUTIONS
CALENDAR YEAR 2003

Date	Problem	Solution
February 20, 2003	Water level in Equalization Basin was too high, approximately one foot from the top of the basin. The sensor should have shut off the pump before this level was reached.	Upon investigation, it was found that the pumps were set to manual (hand) control. This setting does not activate the sensor. The pumps switches were set to "auto" and the pumps instantly turned off.
February 20, 2003	The flow meters were reading water levels incorrectly.	The flow meters were re-calibrated and now read correctly.
February 20, 2003	The level sensor in Recharge Cell 3 does not shut the valve off at the high level.	PCFCD staff placed a request with the construction contractor to repair or replace a faulty control switch used to activate the sensor.
Early March	The area/velocity sensors (used to determine flow) were being pushed out by flows going into the recharge cells.	After re-calibration of the flow meters, the area/velcity sensors were secured into the inlet pipes using epoxy.
Late March	The main flow meter (Fmeq) was reading high flows for the first quarterly period. Flows were about 3 times the sum of flows going into the recharge cells.	Review of the data indicated that the velocities from the flow meter were, on average, 2.5 times higher (4.7 feet/second) than the pump capacity (1.87 feet/second). It was assumed, therefore, that the flows were about 2.5 times higher than the pumps could pump in one day. All flows from this flow meter during the first quarterly reporting period were divided by 2.5 to provide a more accurate measurement of deliveries into the Equalization Basin.
April 2003	FMeq was continuing to read high flows.	The flow meter was re-calibrated.
July 2003	Tumbleweeds are becoming a nuisance around the basin edges and at the electric control panels. Tamarisk is becoming a nuisance in the bottoms of Recharge Cells 3 and 4.	A request was placed to have a maintenance crew go out and clear the tumbleweeds and eliminate the tamarisk. A maintenance crew finally did perform this work in December 2003.

TABLE 5
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
FACILITY INSPECTIONS: PROBLEMS AND RELATED SOLUTIONS
CALENDAR YEAR 2003

Date	Problem	Solution
July 2003	The flow meters in Recharge Cells 2 and 4 were malfunctioning - screens had gone blank.	The flow meters were sent back to the manufacturer for repair. The flow meters were reinstalled and re-calibrated in August 2003. PCFCD staff also re-calibrated all of the other flow meters at this time.
July 2003	The control valve switch for Recharge Cell 3 was not working properly (it would not close the valve).	The switch was cleaned and tested for proper operation.
July 2003	Infiltration rates were observed to be declining in all recharge cells.	Recharge Cells 1, 2, and 3 were disced to break up the clogging layers in September 2003. Weedy vegetation that was blocking the inlet pipe for Recharge Cell 4 was removed in December 2003.
July 2003	It was observed by PCFCD staff that water levels in the equalization basin over the second quarter were not high enough to supply steady deliveries of effluent into the recharge cells.	The level sensor in the equalization basin was modified to turn the pump on when levels reach three feet (it was set at two feet) and turn the pump off when levels reach 5 feet (it was set at four).
October 2003	No effluent was present in the delivery channel (oxbow channel)	Diversion berm was repaired in mid-October 2003.
November 2003	No effluent was present in the oxbow channel.	Diversion berm was repaired in early December 2003.
December 2003	No power to the pumps nor the main flow meter, FMeq.	The daily operator investigated the problem and determined that a fuse in the power line had blown. The fuse was replaced by Trico Electric Cooperative in December 2003.
December 2003	Pumps were not operating.	The daily operator investigated the problem and identified that the pump switches were fused together and that the plastic was melted. PCFCD staff investigated actions to repair the switches.

APPENDIX A

APPENDIX A
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
MONTHLY ACCOUNTING REPORT
JANUARY 2003

1	2	3	4	5	6	7	8	9	10
Day	Project Inflow[1] (AF)	Cell 1 Inflow (AF)	Cell 2 Inflow (AF)	Cell 3 Inflow (AF)	Cell 4 Inflow (AF)	Total Recharge Inflow[2] (AF)	Calculated Evaporation Volume[3] (AF)	Calculated ET Volume[4] (AF)	Net Recharge (AF)
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

1 Total inflow into the equalization basin

2 Total inflow into the recharge cells (1-4)

3 Calculated Recharge Cells 1-3 using the Cooley Method with "Maximum Curve" (1970).

4 Calculated for Recharge Cell 4 using AZMET data (Marana Station)

APPENDIX A
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
MONTHLY ACCOUNTING REPORT
FEBRUARY 2003

1	2	3	4	5	6	7	8	9	10
Day	Project Inflow[1] (AF)	Cell 1 Inflow (AF)	Cell 2 Inflow (AF)	Cell 3 Inflow (AF)	Cell 4 Inflow (AF)	Total Recharge Inflow[2] (AF)	Calculated Evaporation Volume[3] (AF)	Calculated ET Volume[4] (AF)	Net Recharge (AF)
1	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
18	1.90	0.23	0.16	0.10	0.48	0.98	0.0089	0.0037	0.97
19	3.33	0.78	0.00	0.90	0.63	2.31	0.0150	0.0079	2.29
20	1.36	1.55	0.00	0.00	0.00	1.55	0.0071	0.0000	1.54
21	0.21	1.46	0.00	0.00	0.68	2.15	0.0067	0.0074	2.13
22	3.41	1.22	0.00	0.00	0.00	1.22	0.0067	0.0000	1.21
23	3.89	1.55	0.26	0.00	0.00	1.81	0.0067	0.0000	1.80
24	2.15	1.54	0.76	0.00	0.00	2.30	0.0074	0.0000	2.29
25	3.11	1.55	1.38	0.00	0.84	3.77	0.0197	0.0000	3.75
26	3.47	1.15	1.44	0.00	1.31	3.90	0.0190	0.0066	3.88
27	2.95	0.00	1.55	0.00	0.00	1.55	0.0129	0.0008	1.53
28	1.50	0.00	1.55	0.00	0.00	1.55	0.0129	0.0000	1.54
Total	27.28	11.04	7.10	1.01	3.94	23.09	0.1231	0.0264	22.94

1 Total inflow into the equalization basin

2 Total inflow into the recharge cells (1-4)

3 Calculated for Recharge Cells 1-3 using the Cooley Method with "Maximum Curve" (1970).

4 Calculated for Recharge Cell 4 using AZMET data (Marana Station)

APPENDIX A
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
MONTHLY ACCOUNTING REPORT
MARCH 2003

1	2	3	4	5	6	7	8	9	10
Day	Project Inflow[1] (AF)	Cell 1 Inflow (AF)	Cell 2 Inflow (AF)	Cell 3 Inflow (AF)	Cell 4 Inflow (AF)	Total Recharge Inflow[2] (AF)	Calculated Evaporation Volume[3] (AF)	Calculated ET Volume[4] (AF)	Net Recharge (AF)
1	1.48	0.00	1.55	0.00	0.00	1.55	0.0185	0.0000	1.53
2	0.60	0.00	1.53	0.00	0.00	1.53	0.0185	0.0000	1.51
3	1.30	0.00	0.41	1.35	0.00	1.76	0.0166	0.0000	1.74
4	0.74	0.00	0.00	1.35	0.00	1.35	0.0119	0.0000	1.34
5	0.21	0.00	0.00	0.71	0.00	0.71	0.0119	0.0000	0.70
6	2.48	0.02	0.00	0.00	0.26	0.29	0.0095	0.0000	0.28
7	4.60	0.05	0.00	0.00	0.72	0.77	0.0029	0.0140	0.76
8	4.63	0.34	0.00	0.00	0.80	1.14	0.0087	0.0140	1.12
9	4.13	1.16	0.00	0.00	0.57	1.73	0.0096	0.0210	1.70
10	4.61	1.52	0.00	0.00	0.22	1.74	0.0096	0.0154	1.71
11	4.57	1.53	0.00	0.00	0.29	1.83	0.0096	0.0221	1.79
12	1.80	1.55	0.00	0.00	0.00	1.55	0.0096	0.0162	1.52
13	2.50	1.51	0.26	0.00	0.00	1.77	0.0096	0.0088	1.75
14	3.58	1.20	0.64	0.38	0.00	2.22	0.0152	0.0000	2.21
15	2.98	1.42	1.07	1.23	0.55	4.27	0.0400	0.0000	4.23
16	3.02	1.49	1.29	0.00	1.46	4.24	0.0394	0.0066	4.20
17	2.04	1.55	1.55	0.00	1.09	4.19	0.0284	0.0147	4.14
18	1.50	1.55	1.54	0.79	0.00	3.88	0.0281	0.0041	3.84
19	1.54	1.55	1.54	0.65	0.00	3.74	0.0400	0.0000	3.70
20	1.47	1.58	1.54	0.00	0.00	3.12	0.0317	0.0000	3.09
21	1.43	1.55	1.54	0.00	0.00	3.09	0.0282	0.0000	3.06
22	1.50	1.52	1.41	0.00	0.77	3.69	0.0281	0.0000	3.66
23	2.39	1.42	1.08	0.00	1.34	3.84	0.0281	0.0252	3.79
24	2.94	1.55	1.48	0.00	1.39	4.42	0.0281	0.0273	4.36
25	2.91	1.55	1.34	0.92	0.36	4.18	0.0281	0.0252	4.12
26	4.76	1.55	1.42	1.51	0.00	4.47	0.0400	0.0000	4.43
27	4.92	1.55	1.55	0.72	0.00	3.82	0.0400	0.0000	3.78
28	4.98	1.55	0.00	0.00	0.00	1.55	0.0329	0.0000	1.51
29	4.12	1.50	1.07	0.00	0.79	3.36	0.0281	0.0000	3.33
30	3.68	1.42	1.55	0.00	1.37	4.34	0.0281	0.0263	4.29
31	2.81	1.55	1.55	0.00	1.31	4.41	0.0281	0.0315	4.35
Total	86.21	34.70	26.92	9.61	13.31	84.54	0.7075	0.2723	83.56

1 Total inflow into the equalization basin

2 Total inflow into the recharge cells (1-4)

3 Calculated for Recharge Cells 1-3 using the Cooley Method with "Maximum Curve" (1970).

4 Calculated for Recharge Cell 4 using AZMET data (Marana Station)

APPENDIX A
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
MONTHLY ACCOUNTING REPORT
APRIL 2003

1	2	3	4	5	6	7	8	9	10
Day	Project Inflow[1] (AF)	Cell 1 Inflow (AF)	Cell 2 Inflow (AF)	Cell 3 Inflow (AF)	Cell 4 Inflow (AF)	Total Recharge Inflow[2] (AF)	Calculated Evaporation Volume[3] (AF)	Calculated ET Volume[4] (AF)	Net Recharge (AF)
1	4.21	1.55	1.55	0.98	0.29	4.37	0.04	0.04	4.29
2	3.68	1.55	1.55	1.55	0.00	4.65	0.06	0.00	4.59
3	0.00	1.45	1.55	1.55	0.00	4.55	0.06	0.00	4.49
4	2.28	0.98	1.55	1.36	0.00	3.89	0.05	0.00	3.83
5	0.91	0.45	0.00	0.58	0.00	1.03	0.03	0.00	1.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	-0.02
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.39	0.00	0.00	0.00	0.39	0.00	0.00	0.39
9	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00
10	5.25	0.07	1.55	0.00	0.50	2.13	0.00	0.00	2.12
11	5.48	0.85	0.00	0.00	0.96	1.80	0.01	0.03	1.76
12	4.50	1.52	0.00	0.00	1.46	2.98	0.01	0.03	2.94
13	4.21	1.55	0.00	0.00	1.12	2.67	0.01	0.03	2.62
14	0.00	1.55	0.00	0.00	1.20	2.75	0.01	0.02	2.71
15	0.00	1.18	0.00	0.00	0.93	2.11	0.01	0.03	2.07
16	0.68	0.57	1.55	0.00	0.10	2.22	0.01	0.01	2.19
17	3.09	0.14	1.55	0.26	0.00	1.95	0.03	0.00	1.92
18	2.48	0.00	1.55	1.13	0.00	2.68	0.04	0.00	2.63
19	3.93	0.00	1.55	0.52	0.00	2.07	0.05	0.00	2.02
20	3.80	0.00	1.55	1.04	0.00	2.59	0.03	0.00	2.56
21	4.05	0.00	1.55	1.55	0.00	3.10	0.05	0.00	3.05
22	1.11	0.55	0.15	1.32	0.39	2.42	0.05	0.00	2.37
23	0.00	0.16	0.00	0.54	0.03	0.73	0.06	0.01	0.66
24	3.38	0.03	0.00	0.04	0.30	0.37	0.03	0.00	0.34
25	5.89	0.54	0.00	0.00	0.78	1.32	0.01	0.03	1.28
26	5.66	1.48	0.00	0.00	1.31	2.80	0.01	0.03	2.75
27	4.95	1.55	0.00	0.00	1.10	2.65	0.01	0.03	2.60
28	0.00	1.55	0.00	0.00	1.17	2.72	0.01	0.03	2.67
29	0.00	1.52	0.00	0.00	0.38	1.90	0.01	0.04	1.85
30	0.00	0.90	0.00	0.00	0.00	0.90	0.01	0.02	0.87
Total	69.51	22.10	17.19	12.43	12.02	63.74	0.79	0.37	62.58

1 Total inflow into the equalization basin

2 Total inflow into the recharge cells (1-4)

3 Calculated Recharge Cells 1-3 using the Cooley Method with "Maximum Curve" (1970).

4 Calculated for Recharge Cell 4 using AZMET data (Marana Station)

APPENDIX A
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
MONTHLY ACCOUNTING REPORT
MAY 2003

1	2	3	4	5	6	7	8	9	10
Day	Project Inflow[1] (AF)	Cell 1 Inflow (AF)	Cell 2 Inflow (AF)	Cell 3 Inflow (AF)	Cell 4 Inflow (AF)	Total Recharge Inflow[2] (AF)	Calculated Evaporation Volume[3] (AF)	Calculated ET Volume[4] (AF)	Net Recharge (AF)
1	2.12	0.00	1.09	0.28	0.00	1.37	0.02	0.00	1.35
2	4.47	0.00	1.18	1.30	0.00	2.48	0.06	0.00	2.42
3	3.78	0.00	1.07	1.24	0.00	2.31	0.06	0.00	2.25
4	4.18	0.00	1.58	1.14	0.00	2.73	0.06	0.00	2.67
5	4.95	0.55	1.49	1.29	0.50	3.84	0.06	0.00	3.78
6	5.25	1.51	0.00	0.00	1.40	2.91	0.07	0.03	2.81
7	1.55	1.55	0.00	0.00	1.11	2.66	0.07	0.04	2.55
8	0.00	1.54	0.00	0.00	1.07	2.62	0.03	0.03	2.55
9	0.00	0.82	0.00	0.00	0.63	1.45	0.02	0.03	1.40
10	0.88	0.21	0.00	0.00	0.03	0.24	0.02	0.01	0.22
11	2.12	0.38	0.00	0.00	0.67	1.05	0.02	0.01	1.03
12	0.03	1.44	0.00	0.00	1.33	2.76	0.02	0.03	2.71
13	0.81	1.52	0.76	0.59	1.10	3.97	0.02	0.04	3.91
14	1.21	0.00	0.63	1.03	0.00	1.66	0.07	0.03	1.56
15	2.13	0.00	1.30	1.04	0.00	2.34	0.07	0.00	2.27
16	2.28	0.00	1.55	1.39	0.00	2.93	0.07	0.00	2.87
17	2.34	0.00	0.79	1.28	0.00	2.07	0.06	0.00	2.01
18	2.79	0.00	0.00	0.59	0.00	0.59	0.06	0.00	0.54
19	0.36	0.00	0.00	1.11	0.00	1.11	0.04	0.00	1.07
20	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	-0.06
21	1.46	0.02	0.00	0.00	0.09	0.11	0.06	0.00	0.05
22	3.60	0.42	0.00	0.00	0.67	1.09	0.04	0.01	1.04
23	1.04	0.82	0.00	0.00	0.71	1.53	0.04	0.03	1.46
24	0.00	0.28	0.00	0.00	0.66	0.94	0.02	0.04	0.88
25	0.00	0.36	0.00	0.00	0.34	0.69	0.02	0.04	0.64
26	0.00	0.15	0.00	0.00	0.23	0.38	0.02	0.04	0.33
27	0.93	0.00	0.04	0.10	0.00	0.14	0.02	0.01	0.11
28	2.12	0.00	1.05	0.28	0.00	1.33	0.02	0.00	1.31
29	2.12	0.00	1.18	0.35	0.00	1.53	0.04	0.00	1.49
30	3.04	0.00	0.95	0.49	0.00	1.43	0.05	0.00	1.38
31	3.55	0.00	1.10	0.06	0.00	1.16	0.06	0.00	1.11
Total	59.13	11.57	15.76	13.56	10.54	51.43	1.32	0.40	49.71

1 Total inflow into the equalization basin

2 Total inflow into the recharge cells (1-4)

3 Calculated for the equalization basin and Recharge Cells 1-3 using the Cooley Method with "Maximum Curve" (1970)

4 Calculated for Recharge Cell 4 using AZMET data (Marana Station)

APPENDIX A
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
MONTHLY ACCOUNTING REPORT
JUNE 2003

1	2	3	4	5	6	7	8	9	10
Day	Project Inflow[1] (AF)	Cell 1 Inflow (AF)	Cell 2 Inflow (AF)	Cell 3 Inflow (AF)	Cell 4 Inflow (AF)	Total Recharge Inflow[2] (AF)	Calculated EV Volume[3] (AF)	Calculated ET Volume[4] (AF)	Net Recharge (AF)
1	2.74	0.00	1.55	1.51	0.00	3.05	0.06	0.00	3.00
2	2.85	0.00	0.71	0.36	0.00	1.07	0.06	0.00	1.01
3	0.42	0.42	0.00	0.00	0.61	1.03	0.05	0.00	0.98
4	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	-0.04
5	1.11	0.26	0.00	0.00	0.31	0.57	0.02	0.00	0.55
6	1.79	0.81	0.00	0.00	0.75	1.56	0.04	0.04	1.47
7	1.82	0.34	0.00	0.00	0.34	0.68	0.04	0.04	0.60
8	0.00	0.25	0.00	0.00	0.60	0.84	0.02	0.04	0.79
9	0.00	0.33	0.00	0.00	0.35	0.68	0.02	0.04	0.62
10	0.00	0.06	0.00	0.00	0.19	0.25	0.02	0.03	0.20
11	1.53	0.00	0.00	0.42	0.00	0.42	0.01	0.00	0.41
12	1.85	0.00	0.00	1.35	0.00	1.35	0.03	0.00	1.32
13	1.85	0.00	0.00	1.48	0.00	1.48	0.03	0.00	1.45
14	1.84	0.00	0.00	1.52	0.00	1.52	0.05	0.00	1.47
15	1.82	0.00	0.00	1.48	0.00	1.48	0.06	0.00	1.42
16	1.80	0.00	0.00	1.44	0.00	1.44	0.06	0.00	1.39
17	1.81	0.53	0.00	0.37	0.47	1.37	0.05	0.00	1.32
18	1.85	0.61	0.00	0.00	0.66	1.27	0.07	0.03	1.16
19	3.68	0.49	0.00	0.00	0.81	1.30	0.07	0.05	1.19
20	1.71	0.31	0.00	0.00	0.26	0.57	0.04	0.05	0.48
21	0.00	0.24	0.00	0.00	0.63	0.87	0.04	0.04	0.78
22	0.00	0.22	0.00	0.00	0.49	0.71	0.04	0.04	0.63
23	0.00	0.06	0.00	0.00	0.13	0.19	0.04	0.00	0.15
24	0.37	0.00	0.00	0.94	0.00	0.94	0.04	0.00	0.91
25	0.13	0.00	0.00	1.80	0.00	1.80	0.02	0.00	1.77
26	1.29	0.00	0.00	1.74	0.00	1.74	0.02	0.00	1.72
27	1.30	0.00	0.00	0.53	0.00	0.53	0.06	0.00	0.47
28	0.00	0.00	0.00	0.11	0.00	0.11	0.06	0.00	0.05
29	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	-0.06
30	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	-0.06
Total	33.56	4.94	2.25	15.05	6.58	28.82	1.28	0.40	27.14

1 Total inflow into the equalization basin

2 Total inflow into the recharge cells (1-4)

3 Calculated for the equalization basin and Recharge Cells 1-3 using the Cooley Method with "Maximum Curve" (1970).

4 Calculated for Recharge Cell 4 using AZMET (Marana Station) data

APPENDIX A
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
MONTHLY ACCOUNTING REPORT
JULY 2003

1	2	3	4	5	6	7	8	9	10
Day	Project Inflow[1] (AF)	Cell 1 Inflow (AF)	Cell 2 Inflow (AF)	Cell 3 Inflow (AF)	Cell 4 Inflow (AF)	Total Recharge Inflow[2] (AF)	Calculated Evaporation Volume[3] (AF)	Calculated ET Volume[4] (AF)	Net Recharge (AF)
1	0.00	0.16	0.00	0.00	0.00	0.16	0.01	0.00	0.15
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.16	0.00	0.00	0.00	0.16	0.01	0.00	0.15

1 Total inflow into the equalization basin

2 Total inflow into the recharge cells (1-4)

3 Calculated for the equalization basin and Recharge Cells 1-3 using the Cooley Method with "Maximum Curve" (1970).

4 Calculated for Recharge Cell 4 using AZMET (Marana Station) data

APPENDIX A
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
MONTHLY ACCOUNTING REPORT
AUGUST 2003

1	2	3	4	5	6	7	8	9	10
Day	Project Inflow[1] (AF)	Cell 1 Inflow (AF)	Cell 2 Inflow (AF)	Cell 3 Inflow (AF)	Cell 4 Inflow (AF)	Total Recharge Inflow[2] (AF)	Calculated Evaporation Volume[3] (AF)	Calculated ET Volume[4] (AF)	Net Recharge (AF)
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

1 Total inflow into the equalization basin

2 Total inflow into the recharge cells (1-4)

3 Calculated for the equalization basin and Recharge Cells 1-3 using the Cooley Method with "Maximum Curve" (1970).

4 Calculated for Recharge Cell 4 using AZMET (Marana Station) data

APPENDIX A
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
MONTHLY ACCOUNTING REPORT
SEPTEMBER 2003

1	2	3	4	5	6	7	8	9	10
Day	Project Inflow (AF)	Cell 1 Inflow (AF)	Cell 2 Inflow (AF)	Cell 3 Inflow (AF)	Cell 4 Inflow (AF)	Total Recharge Inflow (AF)	Calculated Evaporation Volume (AF)	Calculated ET Volume (AF)	Net Recharge (AF)
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

1 Total inflow into the equalization basin

2 Total inflow into the recharge cells (1-4)

3 Calculated for the equalization basin and Recharge Cells 1-3 using the Cooley Method with "Maximum Curve" (1970).

4 Calculated for Recharge Cell 4 using AZMET (Marana Station) data

APPENDIX A
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
MONTHLY ACCOUNTING REPORT
OCTOBER 2003

1	2	3	4	5	6	7	8	9	10
Day	Project Inflow[1] (AF)	Cell 1 Inflow (AF)	Cell 2 Inflow (AF)	Cell 3 Inflow (AF)	Cell 4 Inflow (AF)	Total Recharge Inflow[2] (AF)	Calculated EV Volume[3] (AF)	Calculated ET Volume[4] (AF)	Net Recharge (AF)
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	1.11	0.30	0.43	0.00	0.00	0.74	0.00	0.00	0.74
18	1.11	0.34	0.50	0.00	0.00	0.84	0.01	0.00	0.83
19	1.11	0.63	0.53	0.00	0.00	1.17	0.01	0.00	1.15
20	1.11	0.71	0.58	0.00	0.00	1.28	0.02	0.00	1.27
21	1.13	0.62	0.60	0.00	0.00	1.22	0.02	0.00	1.20
22	1.15	0.56	0.64	0.00	0.00	1.19	0.02	0.00	1.17
23	1.15	0.53	0.79	0.00	0.00	1.32	0.03	0.00	1.29
24	1.15	0.22	0.38	0.26	0.26	1.12	0.03	0.00	1.10
25	1.15	0.00	0.00	0.53	0.43	0.96	0.01	0.00	0.95
26	1.15	0.00	0.00	0.40	0.66	1.06	0.01	0.01	1.04
27	1.15	0.00	0.00	0.17	0.60	0.77	0.01	0.01	0.75
28	1.15	0.00	0.00	0.13	0.76	0.89	0.01	0.01	0.87
29	1.15	0.00	0.00	0.35	0.74	1.09	0.01	0.01	1.06
30	1.15	0.00	0.00	0.35	0.76	1.11	0.01	0.01	1.09
31	1.15	0.34	0.59	0.13	0.37	1.43	0.01	0.01	1.40
Total	17.64	4.24	5.04	2.32	4.59	16.19	0.22	0.06	15.91

1 Total inflow into the equalization basin

2 Total inflow into the recharge cells (1-4)

3 Calculated for the equalization basin and Recharge Cells 1-3 using the Cooley Method with "Maximum Curve" (1970).

4 Calculated for Recharge Cell 4 using AZMET data from the Tucson Station, modified for the Marana area.

APPENDIX A
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
MONTHLY ACCOUNTING REPORT
NOVEMBER 2003

1	2	3	4	5	6	7	8	9	10
Day	Project Inflow[1] (AF)	Cell 1 Inflow (AF)	Cell 2 Inflow (AF)	Cell 3 Inflow (AF)	Cell 4 Inflow (AF)	Total Recharge Inflow[2] (AF)	Calculated EV Volume[3] (AF)	Calculated ET Volume[4] (AF)	Net Recharge (AF)
1	1.28	0.65	0.74	0.00	0.00	1.39	0.02	0.00	1.37
2	1.28	0.41	0.94	0.00	0.00	1.35	0.02	0.00	1.33
3	1.28	0.40	0.73	0.00	0.00	1.13	0.02	0.00	1.11
4	1.28	0.36	0.96	0.00	0.00	1.32	0.02	0.00	1.30
5	1.28	0.39	1.18	0.00	0.00	1.57	0.02	0.00	1.55
6	1.28	0.34	1.04	0.00	0.00	1.38	0.02	0.00	1.36
7	1.27	0.09	0.32	0.00	0.00	0.41	0.02	0.00	0.39
8	0.88	0.00	0.24	0.00	0.00	0.24	0.01	0.00	0.23
9	0.88	0.00	0.10	0.00	0.12	0.22	0.00	0.00	0.22
10	0.88	0.00	0.00	0.37	0.03	0.40	0.01	0.00	0.39
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	11.61	2.63	6.27	0.37	0.15	9.42	0.14	0.01	9.27

1 Total inflow into the equalization basin

2 Total inflow into the recharge cells (1-4)

3 Calculated for the equalization basin and Recharge Cells 1-3 using the Cooley Method with "Maximum Curve" (1970).

4 Calculated for Recharge Cell 4 using AZMET (Marana Station) data

APPENDIX A
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
MONTHLY ACCOUNTING REPORT
DECEMBER 2003

1	2	3	4	5	6	7	8	9	10
Day	Project Inflow[1] (AF)	Cell 1 Inflow (AF)	Cell 2 Inflow (AF)	Cell 3 Inflow (AF)	Cell 4 Inflow (AF)	Total Recharge Inflow[2] (AF)	Calculated Evaporation Volume[3] (AF)	Calculated ET Volume[4] (AF)	Net Recharge (AF)
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

1 Total inflow into the equalization basin

2 Total inflow into the recharge cells (1-4)

3 Calculated for the equalization basin and Recharge Cells 1-3 using the Cooley Method with "Maximum Curve" (1970).

4 Calculated for Recharge Cell 4 using AZMET (Marana Station) data

APPENDIX B

AZMET COMPUTATION OF REFERENCE CROP EVAPOTRANSPIRATION

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INTRODUCTION

The Arizona Meteorological Network (AZMET) calculates reference crop evapotranspiration (ETo) using a modification of the Penman Equation developed for the California Irrigation Management Information System (CIMIS) by Snyder and Pruitt (1985). Reference crop evapotranspiration computed using this procedure provides an estimate of ET by a cool season grass, 8-15 cm in height, that completely covers the soil surface and is well watered. A detailed discussion of computational procedures employed by AZMET are provided in the paragraphs below.

ETo COMPUTATIONAL PROCEDURE

The CIMIS Penman Equation was developed for use with hourly weather data. Required input data for the ETo computation include hourly means of air temperature (Ta; units of degrees C), vapor pressure deficit (VPD; units of kilopascals: kPa), wind speed (U2; units of m/s), and net radiation (Rn: units of mm/hr of equivalent evaporation). Hourly values of ETo (EToh) in mm/hr are computed using the following:

$$EToh = W*Rn + (1-W)*VPD*FU2 \qquad (1)$$

where W is a dimensionless partitioning factor, and FU2 is an empirical wind function (units: mm/hr/kPa). Daily values of ETo are computed by simply summing the twenty-four hourly EToh values computed from Eq. 1 for the period ending at midnight (end of AZMET day). Specific computational procedures used to obtain the required parameters for Eq. 1 are provided below.

Net Radiation (Rn)

CIMIS originally measured Rn using instruments known as net radiometers. CIMIS abandoned the use of net radiometers in the early 1990s for a variety of reasons. AZMET chose not use net radiometers and has computed hourly net radiation since network inception (1986) using a simple, clear sky estimation procedure that uses solar radiation (SR) expressed in units of MJ/m*m/hr and mean hourly vapor pressure (ea; units: kPa). The procedure is provided below:

For Daytime Conditions (SR>=0.21 MJ/m*m/hr):

$$Rno = 277.8*(-0.3 + 0.767*SR) \qquad (2)$$

For Nighttime Conditions (SR<0.21 MJ/m*m/hr):

$$Rno = 277.8*(-0.17 + 0.767*SR + 0.056*ea) \qquad (3)$$

where the constant 277.8 converts the units of Rno from MJ/m*m/hr to W/m*m.

Vapor pressure (ea) is computed by subtracting VPD from the saturation vapor pressure (es):

$$ea = es - VPD \qquad (4)$$

where es is computed using the following:

$$es = 0.6108*exp((17.27*Ta)/(Ta+237.2)) \qquad (5)$$

It is important to note that this simple computational procedure for Rn works well in Arizona because: 1) the vast majority of the days are clear and 2) vapor pressure is reasonably constant throughout much of the year. Use of this Rn estimation procedure in regions with abundant cloudiness and high humidity is not recommended.

The Rno computed from Equations 2 and 3 is in units of W/m*m. Equation 1 requires net radiation in units of mm of equivalent water evaporation (Rn). This conversion of units is accomplished by dividing Rno in W/m*m by the latent heat of vaporization as follows:

$$Rn = Rno/(694.5*(1-0.000946*Ta)) \qquad (6)$$

where Ta is the mean hourly air temperature.

Partitioning Factor (W)

The partitioning factor, W, is computed using Equation 7:

$$W = S/(S+G) \qquad (7)$$

where S is the slope of the saturation vapor pressure curve at Ta and G is the psychrometer constant.

The value of S in units of kPa/C is computed using the following:

$$S = es*(597.4-0.571*Ta)/(0.1103*(Ta+273.16)^2) \qquad (8)$$

where es is the saturation vapor pressure at Ta.

The psychometer constant, G, is computed using the following:

$$G = 0.000646*P*(1+0.000949*Ta) \qquad (9)$$

where P is atmospheric station pressure in units of kPa.

For computation of ETo, P is considered a constant and computed from elevation above sea level.

Vapor Pressure Deficit (VPD)

Vapor pressure deficit is computed by AZMET dataloggers and therefore no computation is required to obtain VPD. The AZMET datalogger computes VPD by 1) computing the saturation vapor pressure (es) from air temperature, 2) multiplying es by the relative humidity fraction to obtain actual vapor pressure (ea), and 3) subtracting ea from es to obtain VPD. The hourly VPD value used in the ETo computation is the mean of 360 individual VPD computations (dataloggers scan sensors and make computations every 10 seconds).

Wind Function (FU2)

Two wind functions (FU2; units mm/hr/kPa) are used to compute ETo -- one for daytime conditions (Rn>0) and one for nighttime conditions (Rn<=0). These wind functions are as follows:

<u>Daytime: Rn>0</u>

$$FU2 = 0.03 + 0.0576*U2 \qquad (10)$$

Nighttime: Rn<=0

$$FU2 = 0.125 + 0.0439*U2 \qquad (11)$$

where U2 is the mean hourly wind speed obtained at a height of 2 m in units of m/s. AZMET measures wind speed at a height of 3m (U3); thus AZMET wind speeds are adjusted using:

$$U2 = 0.93*U3 \qquad (12)$$

where the constant 0.93 is derived from the standard power law equations that predict the variation of wind speed with height.

AZMET vs. CIMIS ETo

Both AZMET and CIMIS provide ETo data for locations along the Colorado River for use in on-farm water management and to aid in overall management of the Colorado River. It is therefore important that AZMET and CIMIS compute ETo in a similar manner. Both CIMIS and AZMET use the same basic procedure for estimating ETo from hourly weather data. The only significant difference between AZMET and CIMIS ETo procedures rests with the computation of Rn -- an important parameter in the ETo computation. AZMET uses a relatively simple clear sky procedure for estimating Rn. This procedure compares well with Rn measured with net radiometers. CIMIS originally used net radiometers to measure Rn; however, CIMIS abandoned measurement of Rn in the early 1990s and now uses an hourly Rn estimation procedure based on the work of Dong et al. (1992). A direct comparison of AZMET and the current CIMIS Rn procedures is nearing completion and should be available in written form by June 1998. Completion of this work will determine how much difference (if any) we can expect between AZMET ETo and CIMIS ETo.

REFERENCES

A. Dong, S.R. Grattan, J.J. Carroll and C.R.K. Prashar. 1992. Estimation of daytime net radiation over well-watered grass. J. Irr. & Drain. Eng. 118(3): 466-479. ASCE.

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APPENDIX C

TURNER
LABORATORIES INC.

March 26, 2003

David Scalero
Pima County Flood Control District
201 N. Stone, 4th Floor
Tucson, AZ 85701
TEL: (520) 740-6350
FAX (520) 740-6749

RE: MHPERP

Order No.: 0302169

Dear David Scalero,

Turner Laboratories, Inc. received 2 samples on 2/12/03 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Timothy Rand
Laboratory Director

Turner Laboratories, Inc.

Date: *26-Mar-03*

CLIENT: Pima County Flood Control District
Project: MHPERP
Lab Order: 0302169
Date Received: 2/12/03

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Tag Number	Collection Date
0302169-01A	Source Water Influent		2/12/03 11:25:00 AM
0302169-01B	Source Water Influent		2/12/03 11:25:00 AM
0302169-01C	Source Water Influent		2/12/03 11:25:00 AM
0302169-01D	Source Water Influent		2/12/03 11:25:00 AM
0302169-01E	Source Water Influent		2/12/03 11:25:00 AM
0302169-02A	HP-1		2/12/03 2:30:00 AM
0302169-02B	HP-1		2/12/03 2:30:00 AM
0302169-02C	HP-1		2/12/03 2:30:00 AM
0302169-02D	HP-1		2/12/03 2:30:00 AM
0302169-02E	HP-1		2/12/03 2:30:00 AM

CASE NARRATIVE

Some of the analyses used for the chemical determinations in this report may not be licensed by the Arizona Department of Health Services for use in a wastewater matrix.

Analytical Comments for METHOD COLOR_DW, SAMPLE 0302169-01B: The color result is expressed as 'true' color.

Prep Comments for 245.1PRWW, Sample 0302169-01D: The prep HoldTime for mercury was exceeded by 5 days.

Analytical Comments for METHOD COLOR_DW, SAMPLE 0302169-02B: The color result is expressed as 'apparent' color.

Prep Comments for 245.1PRDW, Sample 0302169-02D: The prep HoldTime for mercury was exceeded by 5 days.

Turner Laboratories, Inc.

Date: *26-Mar-03*

CLIENT: Pima County Flood Control District
Lab Order: 0302169
Project: MHPERP
Lab ID: 0302169-01A

Client Sample ID: Source Water Influent
Collection Date: 2/12/03 11:25:00 AM
Matrix: WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS IN WATER & WASTE WATER		**E200.7**				Analyst: **RAD**
Arsenic	ND	0.10		mg/L	1	2/27/03 4:01:41 PM
Barium	ND	1.0		mg/L	1	2/27/03 4:01:41 PM
Cadmium	ND	0.050		mg/L	1	2/27/03 4:01:41 PM
Calcium	48	4.0		mg/L	1	2/27/03 4:01:41 PM
Chromium	ND	0.10		mg/L	1	2/27/03 4:01:41 PM
Copper	ND	0.10		mg/L	1	2/27/03 4:01:41 PM
Iron	0.53	0.10		mg/L	1	2/27/03 4:01:41 PM
Lead	ND	0.15		mg/L	1	2/27/03 4:01:41 PM
Magnesium	9.3	3.0		mg/L	1	2/27/03 4:01:41 PM
Manganese	ND	0.10		mg/L	1	2/27/03 4:01:41 PM
Selenium	ND	0.10		mg/L	1	2/27/03 4:01:41 PM
Silver	ND	0.020		mg/L	1	2/27/03 4:01:41 PM
Sodium	130	20		mg/L	4	3/3/03 4:59:02 PM
Zinc	ND	0.50		mg/L	1	2/27/03 4:01:41 PM
MERCURY IN WATER & WASTE WATER		**E245.1**				Analyst: **RAD**
Mercury	ND	0.0010		mg/L	1	3/17/03 2:40:00 PM
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **TAR**
Chloride	100	5.0		mg/L	5	2/13/03 10:14:00 AM
Nitrogen, Nitrate (As N)	ND	5.0		mg/L	5	2/13/03 10:14:00 AM
Nitrogen, Nitrite	0.90	0.50		mg/L	5	2/13/03 10:14:00 AM
Sulfate	90	25		mg/L	5	2/13/03 10:14:00 AM
VOLATILE ORGANICS BY GCMS		**E624**				Analyst: **KP**
1,1,1-Trichloroethane	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
1,1,2-Trichloroethane	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
1,1-Dichloroethane	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
1,1-Dichloroethene	ND	5.0		µg/L	1	2/26/03 6:42:00 PM
1,2-Dichlorobenzene	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
1,2-Dichloroethane	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
1,2-Dichloropropane	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
1,3-Dichlorobenzene	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
1,4-Dichlorobenzene	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
Benzene	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
Bromodichloromethane	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
Bromoform	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
Bromomethane	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
Carbon tetrachloride	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
Chlorobenzene	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
Chloroethane	ND	5.0		µg/L	1	2/26/03 6:42:00 PM

Qualifiers:
ND - Not Detected at or above the PQL
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *26-Mar-03*

CLIENT: Pima County Flood Control District
Lab Order: 0302169
Project: MHPERP
Lab ID: 0302169-01A

Client Sample ID: Source Water Influent
Collection Date: 2/12/03 11:25:00 AM
Matrix: WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Chloroform	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
Chloromethane	ND	5.0		µg/L	1	2/26/03 6:42:00 PM
cis-1,3-Dichloropropene	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
Dibromochloromethane	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
Ethylbenzene	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
Methylene chloride	ND	10		µg/L	1	2/26/03 6:42:00 PM
Tetrachloroethene	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
Toluene	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
trans-1,2-Dichloroethene	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
trans-1,3-Dichloropropene	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
Trichloroethene	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
Trichlorofluoromethane	ND	5.0		µg/L	1	2/26/03 6:42:00 PM
Vinyl chloride	ND	2.0		µg/L	1	2/26/03 6:42:00 PM
Surr: 1,2-Dichloroethane-d4	107	70-130		%REC	1	2/26/03 6:42:00 PM
Surr: 4-Bromofluorobenzene	100	70-130		%REC	1	2/26/03 6:42:00 PM
Surr: Fluorobenzene	106	70-130		%REC	1	2/26/03 6:42:00 PM
ALKALINITY		**M2320 B**				Analyst: **DV**
Alkalinity, Total (As CaCO3)	200	1.0		mg/L CaCO3	1	2/25/03 9:00:00 AM
COLOR IN DRINKING WATER		**M2120 B**				Analyst: **DV**
Color	>15	15	E	Units	1	2/13/03 8:00:00 AM
PH		**E150.1**				Analyst: **DV**
pH	7.5	0		pH units	1	2/12/03 5:00:00 PM
TOTAL DISSOLVED SOLIDS		**M2540 C**				Analyst: **DV**
Total Dissolved Solids (Residue, Filterable)	490	20		mg/L	1	2/18/03 8:00:00 AM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DV**
Nitrogen, Kjeldahl, Total	38	10		mg/L	20	2/24/03 11:00:00 AM
TURBIDITY		**E180.1**				Analyst: **DV**
Turbidity	14	0.10		NTU	1	2/13/03 8:00:00 AM

Qualifiers:

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* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *26-Mar-03*

CLIENT: Pima County Flood Control District
Lab Order: 0302169
Project: MHPERP
Lab ID: 0302169-02A

Client Sample ID: HP-1
Collection Date: 2/12/03 2:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP (TOTAL) METALS IN DRINKING WATER		**E200.7**				Analyst: **RAD**
Barium	ND	1.0		mg/L	1	3/17/03 5:22:27 PM
Cadmium	ND	0.0030		mg/L	1	3/17/03 5:22:27 PM
Calcium	95	4.0		mg/L	1	3/17/03 5:22:27 PM
Chromium	ND	0.030		mg/L	1	3/17/03 5:22:27 PM
Copper	0.14	0.020		mg/L	1	3/17/03 5:22:27 PM
Iron	0.43	0.30		mg/L	1	3/17/03 5:22:27 PM
Magnesium	15	3.0		mg/L	1	3/17/03 5:22:27 PM
Manganese	ND	0.020		mg/L	1	3/17/03 5:22:27 PM
Silver	ND	0.010		mg/L	1	3/17/03 5:22:27 PM
Sodium	70	10		mg/L	2	3/17/03 5:18:06 PM
Zinc	0.43	0.040		mg/L	1	3/17/03 5:22:27 PM
GFAA METALS IN WATER		**E200.9**				Analyst: **RAD**
Arsenic	ND	0.0050		mg/L	1	3/19/03 1:00:00 PM
Lead	0.039	0.0050		mg/L	1	3/20/03 1:06:00 PM
Selenium	ND	0.0050		mg/L	1	3/18/03 1:27:00 PM
MERCURY (TOTAL) IN DRINKING WATER		**E245.1**				Analyst: **RAD**
Mercury	ND	0.0010		mg/L	1	3/17/03 2:37:00 PM
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **TAR**
Chloride	73	20		mg/L	20	2/13/03 6:16:00 PM
Nitrogen, Nitrate (As N)	4.2	1.0		mg/L	1	2/13/03 10:33:00 AM
Nitrogen, Nitrite	ND	0.10		mg/L	1	2/13/03 10:33:00 AM
Sulfate	140	100		mg/L	20	2/13/03 6:16:00 PM
PURGEABLE ORGANIC COMPOUNDS		**E524.2**				Analyst: **KP**
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
1,1,1-Trichloroethane	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
1,1-Dichloroethane	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
1,1-Dichloroethene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
1,1-Dichloropropene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
1,2,3-Trichloropropane	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
1,2-Dichloroethane	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
1,2-Dichloropropane	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM

Qualifiers:
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B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *26-Mar-03*

CLIENT: Pima County Flood Control District
Lab Order: 0302169
Project: MHPERP
Lab ID: 0302169-02A

Client Sample ID: HP-1
Collection Date: 2/12/03 2:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
1,3-Dichlorobenzene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
1,3-Dichloropropane	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
2,2-Dichloropropane	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
2-Chlorotoluene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
4-Chlorotoluene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
4-Isopropyltoluene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Benzene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Bromobenzene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Bromochloromethane	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Bromodichloromethane	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Bromoform	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Bromomethane	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Carbon tetrachloride	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Chlorobenzene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Chloroethane	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Chloroform	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Chloromethane	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
cis-1,2-Dichloroethene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Dibromochloromethane	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Dibromomethane	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Dichlorodifluoromethane	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Ethylbenzene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Hexachlorobutadiene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Isopropylbenzene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Methylene chloride	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
n-Butylbenzene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
n-Propylbenzene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Naphthalene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
sec-Butylbenzene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Styrene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
tert-Butylbenzene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Tetrachloroethene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Toluene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
trans-1,2-Dichloroethene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Trichloroethene	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Trichlorofluoromethane	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Vinyl chloride	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Xylenes, Total	ND	0.50		µg/L	1	2/26/03 4:32:00 PM
Surr: 1,2-Dichlorobenzene-d4	94.0	70-130		%REC	1	2/26/03 4:32:00 PM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *26-Mar-03*

CLIENT: Pima County Flood Control District
Lab Order: 0302169
Project: MHPERP
Lab ID: 0302169-02A

Client Sample ID: HP-1
Collection Date: 2/12/03 2:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Surr: 4-Bromofluorobenzene	95.0	70-130		%REC	1	2/26/03 4:32:00 PM
ALKALINITY		**M2320 B**				Analyst: **DV**
Alkalinity, Total (As CaCO3)	160	1.0		mg/L CaCO3	1	2/25/03 9:00:00 AM
COLOR IN DRINKING WATER		**M2120 B**				Analyst: **DV**
Color	ND	15		Units	1	2/13/03 8:00:00 AM
HARDNESS		**M2340 B**				Analyst: **TAR**
Hardness, Calcium/Magnesium (As CaCO3)	300	0		mg/L	1	3/26/03
PH		**E150.1**				Analyst: **DV**
pH	6.9	0		pH units	1	2/12/03 5:00:00 PM
TOTAL DISSOLVED SOLIDS		**M2540 C**				Analyst: **DV**
Total Dissolved Solids (Residue, Filterable)	490	20		mg/L	1	2/18/03 8:00:00 AM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DV**
Nitrogen, Kjeldahl, Total	ND	0.50		mg/L	1	2/24/03 11:00:00 AM
TURBIDITY		**E180.1**				Analyst: **DV**
Turbidity	1.6	0.10		NTU	1	2/13/03 8:00:00 AM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quanititation limits
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* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

TURNER
2445 N. Coyote Drive, Suite 104
Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
1-800-882-5804

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # D302169 DATE 2/12/03 PAGE 1 OF 2

PROJECT NAME MHPERP #
PROJECT MNGR Suzanne Shields, P.E.
COMPANY NAME Pima County Flood Control
ADDRESS 201 N. Stone Ave., 4th Floor
Tucson, Az 85701 PHONE 740-6350
SAMPLER'S SIGNATURE David Scalera

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	Base Neutrals 625/8270	Acids	Volatile Organics GC/MS 624/524.2/8260	Halogenated or Aromatic Volatiles 8021	Pesticides 8081	PCBs 8082	Total Petroleum Hydrocarbons 418.1	Oil and Grease Gravimetric 413.1	TCLP Analysis VOA	Semi-VOA	Bio-Tests	TCLP	Dissolved	Metals Total	Perm Pollutants	Cyanide Total	Anions	HAD	SEMI-INORGANICS PRIMARY/SECONDARY	Coliform MPN	Colilert	HAZARDOUS WASTE PROFILE	NO2 NO3	TKN	Alkalinity			
Source Water (Inflow)	2-12-03	11:25 AM		WW																								X					
Source Water (Inflow)	2-12-03	11:30 AM		WW																				X									
Source Water (Inflow)	2-12-03	11:35 AM		WW																									X				
Source Water (Inflow)	2-12-03	11:38 AM		WW											X															X			
Source Water (Inflow)	2-12-03	11:45 AM		WW				X																									
Source Water (Inflow)	2-12-03	11:47 AM		WW				X																									
Source Water (Inflow)	2-12-03	11:49 AM		WW				X																									
Source Water (Inflow)	2-12-03	11:50 AM		WW				X																									

1. RELINQUISHED BY:	2. RECEIVED BY:	TURNAROUND REQUIREMENTS:	REPORT REQUIREMENTS:	INVOICE INFORMATION:	SAMPLE RECEIPT:
Signature	Signature	____ Standard (approx. 10 days)*	____ I. Routine Report	Account ____ Y ____ N	
Printed Name	Printed Name	____ Next Day ____ 2 Day ____ 3 Day*	____ II. Report (includes DUP, MS, MSD, as required, may be charged as samples)	P.O. #	
Firm	Firm	____ Provide Verbal Preliminary Results	____ III. Data Validation Report (Includes All Raw Data) Add 10% to invoice	Bill to:	Total Containers
Date/Time	Date/Time	Requested Report Date			Ambient/Cold
		* Working Days			

3. RELINQUISHED BY:	4. RECEIVED BY:	* LEGEND	SPECIAL INSTRUCTIONS/COMMENTS:
David Scalera (Signature)	Donna Turner (Signature)	SL = SOIL	Compliance Analysis: ☒ Yes ☐ No
David Scalera (Printed Name)	Donna Turner (Printed Name)	SD = SOLID	Send report and invoice to David Scalera at above address.
Pima Co. Flood Control (Firm)	TURNER LABORATORIES, INC. (Firm)	SG = SLUDGE	
2-12-03 11:07 (Date/Time)	2/12/03 @ 1607 (Date/Time)	WW = WASTEWATER	
		GW = GROUNDWATER	
		DW = DRINKING WATER	

DISTRIBUTION: WHITE - return to originator YELLOW - lab PINK - retained by originator See back of pink copy for general terms and conditions/limits of liability.

TURNER
2445 N. Coyote Drive, Suite 104
Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
1-800-882-5804

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 0302169 DATE 2/12/03 PAGE 2 OF 2

PROJECT NAME MHPERP #
PROJECT MNGR Suzanne Shields
COMPANY NAME Pima County Flood Control
ADDRESS 201 N. Stone Ave., 4th Floor
Tucson, Az 85701 PHONE 740-6350
SAMPLER'S SIGNATURE David Scalera

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	Base Neutrals 625/8270 / Acids	Volatile Organics GC/MS 624/524.2/8260	Halogenated or Aromatic Volatiles 601/602 / 8021	Pesticides 8081	PCB's 8082	Total Petroleum Hydrocarbons 418.1/8015	Oil and Grease Gravimetric 413.1	TCLP Analysis VOA / Semi-VOA	TCLP / Pesticides	Metals Total / Priority Pollutants	Cyanide Total / Amen.	SDWA/INORGANICS PRIMARY/SECONDARY	Coliform MPN / Colilert	F/A	HAZARDOUS WASTE PROFILE	NO_3 & NO_3	TKN	Metals			
HP-1	2-12-03	2:30PM		GW													X									
HP-1	2-12-03	2:32PM		GW																X						
HP-1	2-12-03	2:34PM		GW									X													
HP-1	2-12-03	2:35PM		GW																	X					
HP-1	2-12-03	2:36PM		GW			X																			
HP-1	2-12-03	2:37PM		GW			X																			
HP-1	2-12-03	2:39PM		GW			X																			
HP-1	2-12-03	2:40PM		GW			X																			

1. RELINQUISHED BY:	2. RECEIVED BY:	TURNAROUND REQUIREMENTS:	REPORT REQUIREMENTS:	INVOICE INFORMATION:	SAMPLE RECEIPT:
Signature	Signature	___ Standard (approx. 10 days)*	___ I. Routine Report	Account ___ Y ___ N	
Printed Name	Printed Name	___ Next Day ___ 2 Day ___ 3 Day*	___ II. Report (includes DUP, MS, MSD, as required, may be charged as samples)	P.O. #	
Firm	Firm	___ Provide Verbal Preliminary Results	___ III. Data Validation Report (Includes All Raw Data) Add 10% to invoice	Bill to:	Total Containers
Date/Time	Date/Time	Requested Report Date			Ambient/Cold
		* Working Days			

3. RELINQUISHED BY:	4. RECEIVED BY:	* LEGEND	SPECIAL INSTRUCTIONS/COMMENTS:
David Scalera (Signature)	Donna Turner (Signature)	SL = SOIL	Compliance Analysis: ☑ Yes ☐ No
David Scalera (Printed Name)	Donna Turner (Printed Name)	SD = SOLID	Send report and invoice to David Scalera at above address.
Pima Co. Flood Control (Firm)	TURNER LABORATORIES, INC. (Firm)	SG = SLUDGE	
2-12-03 4:07 (Date/Time)	2/12/03 @ 1607 (Date/Time)	WW = WASTEWATER	
		GW = GROUNDWATER	
		DW = DRINKING WATER	

DISTRIBUTION: WHITE - return to originator YELLOW - lab PINK - retained by originator See back of pink copy for general terms and conditions/limits of liability.

TURNER
LABORATORIES INC.

April 09, 2003

David Scalero
Pima County Flood Control District
201 N. Stone, 4th Floor
Tucson, AZ 85701
TEL: (520) 740-6350
FAX (520) 740-6749

RE: MHPERP

Order No.: 0303186

Dear David Scalero,

Turner Laboratories, Inc. received 2 samples on 3/12/03 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Timothy Rand
Laboratory Director

2445 NORTH COYOTE DRIVE ■ SUITE #104 ■ TUCSON, ARIZONA 85745 ■ 520 882-5880 ■ FAX # 520 882-9788

Turner Laboratories, Inc. **Date:** *09-Apr-03*

CLIENT: Pima County Flood Control District
Project: MHPERP
Lab Order: 0303186

CASE NARRATIVE

Some of the analyses used for the chemical determinations in this report are not licensed by the Arizona Department of Health Services for use in the indicated matrices.

Analytical Comments for METHOD 524.2, SAMPLE LCS-720324: The recovery of 1,1,2,2-tetrachloroethane is outside of acceptance limits; however, since no 1,1,2,2-tetrachloroethane was detected in any of the associated samples, it is the opinion of Turner Laboratories that the quality of the sample data is not affected by the elevated percent recovery.

Analytical Comments for METHOD 300_DW, SAMPLE 0303186-01B: PQLs are elevated because the sample required dilution due to matrix interferences.

Analytical Comments for METHOD TKN_WW, SAMPLE 0303186-02C MS/MSD: The recovery of TKN is outside of acceptance limits due to matrix interferences. The recovery is acceptable in the LCS/LCSD.

Turner Laboratories, Inc.

Date: *09-Apr-03*

CLIENT: Pima County Flood Control District
Lab Order: 0303186
Project: MHPERP
Lab ID: 0303186-01A

Client Sample ID: Source Water
Collection Date: 3/12/03 9:08:00 AM
Matrix: WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS IN WATER & WASTE WATER		**E200.7**				Analyst: **RAD**
Antimony	ND	0.20		mg/L	1	3/20/03 2:11:48 PM
Arsenic	ND	0.10		mg/L	1	3/20/03 2:11:48 PM
Barium	ND	1.0		mg/L	1	3/20/03 2:11:48 PM
Beryllium	ND	0.10		mg/L	1	3/26/03 4:54:26 PM
Cadmium	ND	0.050		mg/L	1	3/20/03 2:11:48 PM
Chromium	ND	0.10		mg/L	1	3/20/03 2:11:48 PM
Lead	ND	0.15		mg/L	1	3/20/03 2:11:48 PM
Nickel	ND	0.10		mg/L	1	3/20/03 2:11:48 PM
Selenium	ND	0.10		mg/L	1	3/20/03 2:11:48 PM
Thallium	ND	0.10		mg/L	1	3/20/03 2:11:48 PM
MERCURY IN WATER & WASTE WATER		**E245.1**				Analyst: **RAD**
Mercury	ND	0.0010		mg/L	1	3/21/03 3:27:00 PM
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PGD**
Nitrogen, Nitrate (As N)	ND	5.0		mg/L	5	3/12/03 5:12:00 PM
Nitrogen, Nitrite	ND	0.50		mg/L	5	3/12/03 5:12:00 PM
PURGEABLE ORGANIC COMPOUNDS		**E524.2**				Analyst: **KP**
1,1,1-Trichloroethane	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
1,1-Dichloroethene	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
1,2-Dichloroethane	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
1,2-Dichloropropane	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
Benzene	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
Bromodichloromethane	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
Bromoform	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
Carbon tetrachloride	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
Chlorobenzene	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
Chloroform	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
cis-1,2-Dichloroethene	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
Dibromochloromethane	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
Ethylbenzene	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
Styrene	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
Tetrachloroethene	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
Toluene	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
trans-1,2-Dichloroethene	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
Trichloroethene	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
Vinyl chloride	ND	0.50		µg/L	1	3/24/03 7:11:00 PM
Xylenes, Total	ND	0.50		µg/L	1	3/24/03 7:11:00 PM

Qualifiers:
ND - Not Detected at or above the PQL
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *09-Apr-03*

CLIENT: Pima County Flood Control District
Lab Order: 0303186
Project: MHPERP
Lab ID: 0303186-01A

Client Sample ID: Source Water
Collection Date: 3/12/03 9:08:00 AM
Matrix: WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Surr: 1,2-Dichlorobenzene-d4	85.0	70-130		%REC	1	3/24/03 7:11:00 PM
Surr: 4-Bromofluorobenzene	97.0	70-130		%REC	1	3/24/03 7:11:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DV**
Nitrogen, Kjeldahl, Total	35	10		mg/L	20	3/13/03 11:00:00 AM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *09-Apr-03*

CLIENT: Pima County Flood Control District
Lab Order: 0303186
Project: MHPERP
Lab ID: 0303186-02A

Client Sample ID: HP-1
Collection Date: 3/12/03 2:40:00 PM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP (TOTAL) METALS IN DRINKING WATER		**E200.7**				Analyst: **RAD**
Barium	ND	1.0		mg/L	1	3/20/03 1:44:26 PM
Beryllium	ND	0.10		mg/L	1	3/26/03 4:50:02 PM
Cadmium	ND	0.0030		mg/L	1	3/20/03 1:44:26 PM
Chromium	ND	0.030		mg/L	1	3/20/03 1:44:26 PM
Nickel	ND	0.10		mg/L	1	3/20/03 1:44:26 PM
GFAA METALS IN WATER		**E200.9**				Analyst: **RAD**
Antimony	ND	0.0050		mg/L	1	3/25/03 8:58:00 PM
Arsenic	ND	0.0050		mg/L	1	3/24/03 7:14:00 PM
Lead	0.010	0.0050		mg/L	1	3/20/03 4:07:00 PM
Selenium	ND	0.0050		mg/L	1	3/29/03 12:18:00 PM
Thallium	ND	0.0020		mg/L	1	3/26/03 4:56:00 PM
MERCURY (TOTAL) IN DRINKING WATER		**E245.1**				Analyst: **RAD**
Mercury	ND	0.0010		mg/L	1	3/21/03 3:31:00 PM
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PGD**
Nitrogen, Nitrate (As N)	3.7	1.0		mg/L	1	3/12/03 4:54:00 PM
Nitrogen, Nitrite	ND	0.10		mg/L	1	3/12/03 4:54:00 PM
PURGEABLE ORGANIC COMPOUNDS		**E524.2**				Analyst: **KP**
1,1,1-Trichloroethane	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
1,1-Dichloroethene	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
1,2-Dichloroethane	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
1,2-Dichloropropane	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
Benzene	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
Bromodichloromethane	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
Bromoform	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
Carbon tetrachloride	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
Chlorobenzene	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
Chloroform	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
cis-1,2-Dichloroethene	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
Dibromochloromethane	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
Ethylbenzene	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
Styrene	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
Tetrachloroethene	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
Toluene	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
trans-1,2-Dichloroethene	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
Trichloroethene	ND	0.50		µg/L	1	3/24/03 7:42:00 PM

Qualifiers:
ND - Not Detected at or above the PQL
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *09-Apr-03*

CLIENT: Pima County Flood Control District
Lab Order: 0303186
Project: MHPERP
Lab ID: 0303186-02A

Client Sample ID: HP-1
Collection Date: 3/12/03 2:40:00 PM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Vinyl chloride	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
Xylenes, Total	ND	0.50		µg/L	1	3/24/03 7:42:00 PM
Surr: 1,2-Dichlorobenzene-d4	92.0	70-130		%REC	1	3/24/03 7:42:00 PM
Surr: 4-Bromofluorobenzene	94.0	70-130		%REC	1	3/24/03 7:42:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DV**
Nitrogen, Kjeldahl, Total	ND	0.50		mg/L	1	3/13/03 11:00:00 AM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Marana High Plains Effluent Recharge Project
Water Quality Data Summary

Constituent	Unit	Sample Date and Location					
		HP-1			Source Water		
		1/ /03	2/ /03	3/ /03	1/ /03	2/ /03	3/ /03
Nutrients							
Total Nitrogen	mg/l						
Nitrate-Nitrite as N	mg/l						
Total Kjeldahl Nitrogen (TKN)	mg/l						
Metals (Total)							
Arsenic	mg/l						
Barium	mg/l						
Cadmium	mg/l						
Chromium	mg/l						
Lead	mg/l						
Antimony	mg/l						
Beryllium	mg/l						
Nickel	mg/l						
Mercury	mg/l						
Selenium	mg/l						
Thallium	mg/l						
Volatile Organic Compounds (VOCs)							
Benzene	mg/l						
Carbon tetrachloride	mg/l						
o-Dichlorobenzene	mg/l						
para-Dichlorobenzene	mg/l						
1,2-Dichloroethane	mg/l						
1,1-Dichloroethylene	mg/l						
cis--1,2-Dichloroethylene	mg/l						
trans-1,2-Dichloroethylene	mg/l						
1,2-Dichloropropane	mg/l						
Ethylbenzene	mg/l						
Monochlorobenzene	mg/l						
Styrene	mg/l						
Tetrachloroethylene	mg/l						
Toluene	mg/l						
1,1,1-Trichloroethane	mg/l						
1,1,2-Trichloroethane	mg/l						
Trichloroethylene	mg/l						
Trihalomethanes (total THMs)	mg/l						
Vinyl Chloride	mg/l						
Xylenes (Total)	mg/l						

TURNER
2445 N. Coyote Drive, Suite 104
Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
1-800-882-5804

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 0303186 DATE 3-12-03 PAGE 1 OF 1

PROJECT NAME MHPERP #
PROJECT MNGR Suzanne Shields, P.E.
COMPANY NAME Pima County Flood Control
ADDRESS 201 N. Stone Ave., 4th Floor
Tucson, Az 85701 PHONE 740-6350
SAMPLER'S SIGNATURE David Scalero

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	Base Neutrals 625/8270 / Acids	Volatile Organics GC/MS 624/524.2/8260	Halogenated or Aromatic Volatiles 601/602	Pesticides 8081	PCB's 8082	Total Petroleum Hydrocarbons 418.1	Oil and Grease Gravimetric 413.1	TCLP Analysis VOA / Semi-VOA	Metals TCLP / Dissolved	Metals Total / Priority Pollutants	Cyanide Amen. / Total	Cyanide Total / SDWA INORGANICS PRIMARY/SECONDARY	Coliform MPN / Coliform P/A	Coliform HAZARDOUS WASTE PROFILE	$NO_3 + NO_2$	TKN				
Source Water	3-12-03	9:05 AM		WW	1																X				
Source Water	"	9:10 AM		WW	1															X					
Source Water	"	9:34 AM		WW	1									X											
Source Water	"	9:52 AM		WW	3		X																		
HP-1	3-12-03	2:10 PM		GW	1															X					
HP-1	"	2:14 PM		GW	1									X											
HP-1	"	2:25 PM		GW	1																X				
HP-1	"	2:47 PM		GW	3		X																		

1. RELINQUISHED BY:	2. RECEIVED BY:	TURNAROUND REQUIREMENTS:	REPORT REQUIREMENTS:	INVOICE INFORMATION:	SAMPLE RECEIPT:
David Scalero (Signature)	Signature	X Standard (approx. 10 days)*	X I. Routine Report	Account X Y ___ N	
David Scalero (Printed Name)	Printed Name	___ Next Day ___ 2 Day ___ 3 Day*	___ II. Report (includes DUP, MS, MSD, as required, may be charged as samples)	P.O. #	
Pima County Flood Cntl (Firm)	Firm	___ Provide Verbal Preliminary Results	___ III. Data Validation Report (Includes All Raw Data) Add 10% to invoice	Bill to: Pima County Flood Control address above	Total Containers
3-12-03 (Date/Time)	Date/Time	Requested Report Date			Ambient/Cold
		* Working Days			

3. RELINQUISHED BY:	4. RECEIVED BY:	* LEGEND	SPECIAL INSTRUCTIONS/COMMENTS:
David Scalero (Signature)	Heather M Ramsey (Signature)	SL = SOIL	Compliance Analysis: ☒ Yes ☐ No
David Scalero (Printed Name)	Heather M Ramsey (Printed Name)	SD = SOLID	Send invoice and report to the attention of David Scalero at above address
P.C. Flood Control (Firm)	TURNER LABORATORIES, INC. (Firm)	SG = SLUDGE	
3-12-03 (Date/Time)	3-12-03 15:38 (Date/Time)	WW = WASTEWATER	
		GW = GROUNDWATER	
		DW = DRINKING WATER	

DISTRIBUTION: WHITE - return to originator YELLOW - lab PINK - retained by originator See back of pink copy for general terms and conditions/limits of liability.

TURNER
LABORATORIES INC.

May 08, 2003

David Scalero
Pima County Flood Control District
201 N. Stone, 4th Floor
Tucson, AZ 85701
TEL: (520) 740-6350
FAX (520) 740-6749

RE: Marana High Plains Effluent Recharge Proj. Order No.: 0304353

Dear David Scalero,

Turner Laboratories, Inc. received 2 samples on 4/24/03 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Timothy Rand
Laboratory Director

Turner Laboratories, Inc. **Date:** *08-May-03*

CLIENT: Pima County Flood Control District
Project: Marana High Plains Effluent Recharge Proj.
Lab Order: 0304353

CASE NARRATIVE

Some of the analyses used for the chemical determinations in this report are not licensed by the Arizona Department of Health Services for use in a groundwater matrix.

Turner Laboratories, Inc.

Date: *08-May-03*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	Source Water
Lab Order:	0304353	**Collection Date:**	4/24/03 9:30:00 AM
Project:	Marana High Plains Effluent Recharge Proj.		
Lab ID:	0304353-01A	**Matrix:**	WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PGD**
Nitrogen, Nitrate (As N)	ND	1.0		mg/L	1	4/24/03 4:06:00 PM
Nitrogen, Nitrite	0.73	0.10		mg/L	1	4/24/03 4:06:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DV**
Nitrogen, Kjeldahl, Total	34	25		mg/L	50	5/6/03 10:00:00 AM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *08-May-03*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	HP-1
Lab Order:	0304353	**Collection Date:**	4/24/03 11:10:00 AM
Project:	Marana High Plains Effluent Recharge Proj.		
Lab ID:	0304353-02A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PGD**
Nitrogen, Nitrate (As N)	4.6	1.0		mg/L	1	4/24/03 3:48:00 PM
Nitrogen, Nitrite	ND	0.10		mg/L	1	4/24/03 3:48:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DV**
Nitrogen, Kjeldahl, Total	ND	0.50		mg/L	1	5/6/03 10:00:00 AM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

TURNER
2445 N. Coyote Drive, Suite 104
Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
1-800-882-5804

DRINKING WATER CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 0304B53 DATE 4-24-03 PAGE 1 OF 1

SYSTEM NAME Marana High Plains Effluent Recharge Proj.
COMPANY NAME Pima County Flood Control
ADDRESS 201 N. Stone Ave, 4th Floor
Tucson, Az 85701 PHONE 740-6350
SAMPLER'S SIGNATURE David Scalero

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

SAMPLE I.D.	DATE	TIME	LAB I.D.	SYSTEM I.D.	POE NUMBER	NUMBER OF CONTAINERS	SDWA INORGANICS PRIMARY/SECONDARY	VOC 524.2	CaPb	Coliform	Coliform	NOS	NO3 NO3	TKN							
Source Water	4/24/03	0930	WW										X								
Source Water	4/24/03	0930	WW											X							
HP-1	4/24/03	1110	GW										X								
HP-1	4/24/03	1110	GW											X							

1. RELINQUISHED BY:	2. RECEIVED BY:	TURNAROUND REQUIREMENTS:	REPORT REQUIREMENTS:	INVOICE INFORMATION:	SAMPLE RECEIPT:
Signature	Signature	X Standard (approx. 10 days)*	X I. Routine Report	Account X Y ___ N	
Printed Name	Printed Name	___ Next Day ___ 2 Day ___ 5 Day*	___ II. Report (includes DUP, MS, MSD, as required, may be charged as samples)	PO # 46352	
Firm	Firm	___ Provide Verbal Preliminary Results	___ III. Data Validation Report (Includes All Raw Data) Add 10% to invoice	Bill to Pima County Flood Control (address above)	Total Containers 4
Date/Time	Date/Time	Requested Report Date			Ambient/Cold
		* Working Days			
		Subcontracted SOC analyses 4-6 weeks			

3. RELINQUISHED BY:	4. RECEIVED BY:	SPECIAL INSTRUCTIONS/COMMENTS:
David Scalero (Signature)	SHARI BAHMAN (Signature)	Compliance Analysis: ☐ Yes ☐ No
David Scalero (Printed Name)	SHARI BAHMAN (Printed Name)	ADEQ forms required: ☐ Yes ☐ No
Pima Co Flood Cntl (Firm)	TURNER LABORATORIES, INC. (Firm)	Send report and invoice to David Scalero at Pima County Flood Control (address above)
4-24-03 / 1305 (Date/Time)	04-24-03 1305 (Date/Time)	

DISTRIBUTION: WHITE - return to originator YELLOW - lab PINK - retained by originator See back of pink copy for general terms and conditions/limits of liability.

TURNER
LABORATORIES INC.

June 17, 2003

David Scalero
Pima County Flood Control District
201 N. Stone, 4th Floor
Tucson, AZ 85701
TEL: (520) 740-6350
FAX (520) 740-6749

RE: MHPERP

Order No.: 0305196

Dear David Scalero,

Turner Laboratories, Inc. received 3 samples on 5/14/03 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Shari Bauman

Shari Bauman
Client Project Manager

Turner Laboratories, Inc. Date: *17-Jun-03*

CLIENT: Pima County Flood Control District
Project: MHPERP
Lab Order: 0305196

CASE NARRATIVE

Analytical Comments for METHOD COLOR_DW, SAMPLE 0305196-01A: The color result is expressed as 'true' color.

Analytical Comments for METHOD COLOR_DW, SAMPLE 0305196-02A: The color result is expressed as 'apparent' color.

Analytical Comments for METHOD 300_DW, SAMPLE 0305196-01A: PQLs are elevated because sample required dilution.

Analytical Comments for METHOD 300_DW, SAMPLE 0305196-02A: PQLs are elevated because sample required dilution.

Analytical Comments for METHOD 300_DW, SAMPLE 0305196-02AMS/MSD: PQLs are elevated because sample required dilution.

Turner Laboratories, Inc.

Date: *17-Jun-03*

CLIENT: Pima County Flood Control District
Lab Order: 0305196
Project: MHPERP
Lab ID: 0305196-01A

Client Sample ID: Source Water
Collection Date: 5/14/03 9:15:00 AM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP (TOTAL) METALS IN DRINKING WATER		**E200.7**				Analyst: **RAD**
Barium	ND	1.0		mg/L	1	6/4/03 6:36:40 PM
Beryllium	ND	0.10		mg/L	1	6/4/03 6:36:40 PM
Cadmium	ND	0.0030		mg/L	1	6/4/03 6:36:40 PM
Chromium	ND	0.030		mg/L	1	6/4/03 6:36:40 PM
Nickel	ND	0.10		mg/L	1	6/4/03 6:36:40 PM
GFAA METALS IN WATER		**E200.9**				Analyst: **RAD**
Antimony	ND	0.0050		mg/L	1	6/16/03 9:08:00 AM
Arsenic	ND	0.0050		mg/L	1	6/5/03 11:08:00 AM
Lead	ND	0.0050		mg/L	1	5/30/03 11:07:00 AM
Selenium	ND	0.0050		mg/L	1	6/2/03 12:50:00 PM
Thallium	ND	0.0020		mg/L	1	6/10/03 10:53:00 AM
MERCURY (TOTAL) IN DRINKING WATER		**E245.1**				Analyst: **RAD**
Mercury	ND	0.0010		mg/L	1	5/28/03 10:43:00 AM
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PGD**
Chloride	110	5.0		mg/L	5	5/15/03 9:54:00 AM
Fluoride	ND	1.0		mg/L	1	5/15/03 10:43:00 AM
Nitrogen, Nitrate (As N)	ND	1.0		mg/L	1	5/15/03 10:43:00 AM
Nitrogen, Nitrite	0.57	0.10		mg/L	1	5/15/03 10:43:00 AM
Sulfate	83	25		mg/L	5	5/15/03 9:54:00 AM
PURGEABLE ORGANIC COMPOUNDS		**E524.2**				Analyst: **KP**
1,1,1-Trichloroethane	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
1,1-Dichloroethene	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
1,2-Dichloroethane	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
1,2-Dichloropropane	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
Benzene	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
Bromodichloromethane	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
Bromoform	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
Carbon tetrachloride	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
Chlorobenzene	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
Chloroform	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
cis-1,2-Dichloroethene	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
Dibromochloromethane	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
Ethylbenzene	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
Styrene	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
Tetrachloroethene	ND	0.50		µg/L	1	5/21/03 1:39:00 PM

Qualifiers:
ND - Not Detected at or above the PQL
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *17-Jun-03*

CLIENT: Pima County Flood Control District
Lab Order: 0305196
Project: MHPERP
Lab ID: 0305196-01A

Client Sample ID: Source Water
Collection Date: 5/14/03 9:15:00 AM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Toluene	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
trans-1,2-Dichloroethene	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
Trichloroethene	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
Vinyl chloride	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
Xylenes, Total	ND	0.50		µg/L	1	5/21/03 1:39:00 PM
Surr: 1,2-Dichlorobenzene-d4	101	70-130		%REC	1	5/21/03 1:39:00 PM
Surr: 4-Bromofluorobenzene	96.0	70-130		%REC	1	5/21/03 1:39:00 PM
ALKALINITY		**M2320 B**				Analyst: **DV**
Alkalinity, Total (As CaCO3)	200	1.0		mg/L CaCO3	1	5/21/03 11:00:00 AM
COLOR IN DRINKING WATER		**M2120 B**				Analyst: **PGD**
Color	>15	15	E	Units	1	5/15/03 5:00:00 PM
SUM OF NITRITE AND NITRATE		**CALC**				Analyst: **SB**
Sum of Nitrate and Nitrite	ND	1.1		mg/L	1	6/9/03
PH		**E150.1**				Analyst: **DV**
pH	7.6	0		pH units	1	5/14/03 5:00:00 PM
TOTAL DISSOLVED SOLIDS		**M2540 C**				Analyst: **DV**
Total Dissolved Solids (Residue, Filterable)	470	20		mg/L	1	5/19/03 11:00:00 AM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DV**
Nitrogen, Kjeldahl, Total	30	25		mg/L	50	5/20/03 12:00:00 PM
TURBIDITY		**E180.1**				Analyst: **PGD**
Turbidity	19	0.10		NTU	1	5/15/03 5:00:00 PM

Qualifiers:

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J - Analyte detected below quantitation limits
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* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *17-Jun-03*

CLIENT: Pima County Flood Control District
Lab Order: 0305196
Project: MHPERP
Lab ID: 0305196-02A

Client Sample ID: HP-1
Collection Date: 5/14/03 11:20:00 AM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP (TOTAL) METALS IN DRINKING WATER		**E200.7**				Analyst: **RAD**
Barium	ND	1.0		mg/L	1	5/27/03 7:47:52 PM
Beryllium	ND	0.10		mg/L	1	5/27/03 7:47:52 PM
Cadmium	ND	0.0030		mg/L	1	5/27/03 7:47:52 PM
Chromium	ND	0.030		mg/L	1	5/27/03 7:47:52 PM
Nickel	ND	0.10		mg/L	1	5/27/03 7:47:52 PM
GFAA METALS IN WATER		**E200.9**				Analyst: **RAD**
Antimony	ND	0.0050		mg/L	1	5/28/03 7:40:00 PM
Arsenic	ND	0.0050		mg/L	1	5/28/03 12:50:00 PM
Lead	ND	0.0050		mg/L	1	5/30/03 11:59:00 AM
Selenium	ND	0.0050		mg/L	1	6/2/03 1:48:00 PM
Thallium	ND	0.0020		mg/L	1	5/29/03 1:45:00 PM
MERCURY (TOTAL) IN DRINKING WATER		**E245.1**				Analyst: **RAD**
Mercury	ND	0.0010		mg/L	1	5/28/03 10:47:00 AM
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PGD**
Chloride	68	20		mg/L	20	5/15/03 11:02:00 AM
Fluoride	ND	1.0		mg/L	1	5/15/03 10:12:00 AM
Nitrogen, Nitrate (As N)	4.7	1.0		mg/L	1	5/15/03 10:12:00 AM
Nitrogen, Nitrite	ND	0.10		mg/L	1	5/15/03 10:12:00 AM
Sulfate	130	100		mg/L	20	5/15/03 11:02:00 AM
PURGEABLE ORGANIC COMPOUNDS		**E524.2**				Analyst: **KP**
1,1,1-Trichloroethane	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
1,1-Dichloroethene	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
1,2-Dichloroethane	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
1,2-Dichloropropane	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
Benzene	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
Bromodichloromethane	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
Bromoform	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
Carbon tetrachloride	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
Chlorobenzene	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
Chloroform	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
cis-1,2-Dichloroethene	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
Dibromochloromethane	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
Ethylbenzene	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
Styrene	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
Tetrachloroethene	ND	0.50		µg/L	1	5/21/03 2:10:00 PM

Qualifiers:
ND - Not Detected at or above the PQL
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *17-Jun-03*

CLIENT: Pima County Flood Control District
Lab Order: 0305196
Project: MHPERP
Lab ID: 0305196-02A

Client Sample ID: HP-1
Collection Date: 5/14/03 11:20:00 AM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Toluene	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
trans-1,2-Dichloroethene	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
Trichloroethene	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
Vinyl chloride	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
Xylenes, Total	ND	0.50		µg/L	1	5/21/03 2:10:00 PM
Surr: 1,2-Dichlorobenzene-d4	97.0	70-130		%REC	1	5/21/03 2:10:00 PM
Surr: 4-Bromofluorobenzene	99.0	70-130		%REC	1	5/21/03 2:10:00 PM
ALKALINITY		**M2320 B**				Analyst: **DV**
Alkalinity, Total (As CaCO3)	170	1.0		mg/L CaCO3	1	5/21/03 11:00:00 AM
COLOR IN DRINKING WATER		**M2120 B**				Analyst: **PGD**
Color	ND	15		Units	1	5/15/03 5:00:00 PM
TOTAL NITROGEN (NO2+NO3+TKN) CALC.		**CALC**				Analyst: **SB**
Nitrogen, Total	4.7	0		mg/L	1	6/9/03
PH		**E150.1**				Analyst: **DV**
pH	7.0	0		pH units	1	5/14/03 5:00:00 PM
TOTAL DISSOLVED SOLIDS		**M2540 C**				Analyst: **DV**
Total Dissolved Solids (Residue, Filterable)	500	20		mg/L	1	5/19/03 11:00:00 AM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DV**
Nitrogen, Kjeldahl, Total	ND	0.50		mg/L	1	5/20/03 12:00:00 PM
TURBIDITY		**E180.1**				Analyst: **PGD**
Turbidity	1.1	0.10		NTU	1	5/15/03 5:00:00 PM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *17-Jun-03*

CLIENT: Pima County Flood Control District
Lab Order: 0305196
Project: MHPERP
Lab ID: 0305196-03A

Client Sample ID: Trip Blank
Collection Date: 5/14/03
Matrix: TRIP BLANK

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
PURGEABLE ORGANIC COMPOUNDS		E524.2				Analyst: **KP**
1,1,1-Trichloroethane	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
1,1-Dichloroethene	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
1,2-Dichloroethane	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
1,2-Dichloropropane	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
Benzene	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
Bromodichloromethane	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
Bromoform	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
Carbon tetrachloride	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
Chlorobenzene	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
Chloroform	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
cis-1,2-Dichloroethene	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
Dibromochloromethane	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
Ethylbenzene	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
Styrene	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
Tetrachloroethene	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
Toluene	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
trans-1,2-Dichloroethene	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
Trichloroethene	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
Vinyl chloride	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
Xylenes, Total	ND	0.50		µg/L	1	5/21/03 2:41:00 PM
Surr: 1,2-Dichlorobenzene-d4	96.0	70-130		%REC	1	5/21/03 2:41:00 PM
Surr: 4-Bromofluorobenzene	91.0	70-130		%REC	1	5/21/03 2:41:00 PM

Qualifiers:
ND - Not Detected at or above the PQL
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

TURNER LABORATORIES INC.
2445 N. Coyote Drive, Suite 104
Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
1-800-882-5804

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # D305196 DATE _____ PAGE _____ OF _____

PROJECT NAME MHPERP #
PROJECT MNGR Suzanne Shields, P.E.
COMPANY NAME Pima County Flood Control
ADDRESS 201 N Stone Ave, 4th Floor
Tucson, Az 85701 PHONE 740-6350
SAMPLER'S SIGNATURE David Scalera

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	Base Neutrals 625/8270	Acids	Volatile Organics GC/MS 624/524.2/8260	Halogenated or Aromatic Volatiles 8021	Pesticides 8081	PCBs 8082	Total Petroleum Hydrocarbons 418.1	Oil and Grease 413.1	TCLP Analysis VOA	Semi-VOA	Metals Total	Priority Pollutants	Cyanide Amen	WAD	Calcium AAW	Calcium	HAZARDOUS WASTE PROFILE	TKN	$NO_2 + NO_3$			
Source Water	5-14-03	915		WW	1											X											
Source Water	5-14-03	915		WW	1																	X					
Source Water	5-14-03	915		WW	1															X				X			
Source Water	5-14-03	915		WW	3			X																			
HP-1	5-14-03	1120		GW	1											X											
HP-1	5-14-03	1120		GW	1																	X					
HP-1	5-14-03	1120		GW	1															X				X			
HP-1	5-14-03	1120		GW	3			X																			
Trip Blank	5-14-03				1																						

1. RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

2. RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

TURNAROUND REQUIREMENTS:
X Standard (approx. 10 days)*
___ Next Day ___ 2 Day ___ 5 Day*
___ Provide Verbal Preliminary Results
Requested Report Date
* Working Days

REPORT REQUIREMENTS:
X I. Routine Report
___ II. Report (includes DUP, MS, MSD, as required, may be charged as samples)
___ III. Data Validation Report (Includes All Raw Data) Add 10% to invoice

INVOICE INFORMATION:
Account X Y ___ N
P.O. # 46382
Bill to: Pima County Flood Control address above

SAMPLE RECEIPT:
Total Containers
Ambient/Cold

3. RELINQUISHED BY:
David Scalera
Signature
David Scalera
Printed Name
Pima Co Flood Control
Firm
5-14-03 12:47
Date/Time

4. RECEIVED BY:
Shari Bauman
Signature
SHARI BAUMAN
Printed Name
TURNER LABORATORIES, INC.
Firm
05-14-03 1247
Date/Time

* LEGEND
SL = SOIL
SD = SOLID
SG = SLUDGE
WW = WASTEWATER
GW = GROUNDWATER
DW = DRINKING WATER

SPECIAL INSTRUCTIONS/COMMENTS:
Compliance Analysis: ☐ Yes ☐ No
List of constituents to be analyzed is included; Send report and invoice to David Scalera at address above.

DISTRIBUTION: WHITE - return to originator YELLOW - lab PINK - retained by originator See back of pink copy for general terms and conditions/limits of liability.

TURNER
LABORATORIES INC.

June 30, 2003

David Scalero
Pima County Flood Control District
201 N. Stone, 4th Floor
Tucson, AZ 85701
TEL: (520) 740-6350
FAX (520) 740-6749

RE: MHPERP

Order No.: 0306144

Dear David Scalero,

Turner Laboratories, Inc. received 2 samples on 6/10/03 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Shari Bauman

Shari Bauman
Client Project Manager

Turner Laboratories, Inc. **Date:** *30-Jun-03*

CLIENT: Pima County Flood Control District
Project: MHPERP
Lab Order: 0306144

CASE NARRATIVE

Analytical Comments for METHOD 300_DW, SAMPLE 0306144-01A: PQLs are elevated because the sample required dilution.

Turner Laboratories, Inc.

Date: *30-Jun-03*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	Source Water
Lab Order:	0306144	**Collection Date:**	6/10/03 9:20:00 AM
Project:	MHPERP		
Lab ID:	0306144-01A	**Matrix:**	WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		E300				Analyst: **PGD**
Nitrogen, Nitrate (As N)	ND	5.0		mg/L	5	6/10/03 5:18:00 PM
Nitrogen, Nitrite	0.70	0.50		mg/L	5	6/10/03 5:18:00 PM
TOTAL KJELDAHL NITROGEN		E351.1				Analyst: **DV**
Nitrogen, Kjeldahl, Total	36	10		mg/L	20	6/30/03 11:00:00 AM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

/

Turner Laboratories, Inc.

Date: *30-Jun-03*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	HP-1
Lab Order:	0306144	**Collection Date:**	6/10/03 11:15:00 AM
Project:	MHPERP		
Lab ID:	0306144-02A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PGD**
Nitrogen, Nitrate (As N)	4.2	1.0		mg/L	1	6/10/03 5:36:00 PM
Nitrogen, Nitrite	ND	0.10		mg/L	1	6/10/03 5:36:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DV**
Nitrogen, Kjeldahl, Total	ND	0.50		mg/L	1	6/30/03 11:00:00 AM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

TURNER
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Tucson, Arizona 85745
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Fax: (520) 882-9788
1-800-882-5804

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # C30V144 DATE 6/10/03 PAGE 1 OF 1

PROJECT NAME M4PERP #
PROJECT MNGR Suzanne Shields, P.E.
COMPANY NAME Pima County Flood Control
ADDRESS 201 N. Stone Ave, 4th Floor
Tucson, AZ 85701 PHONE 740-6350
SAMPLER'S SIGNATURE David Scalera

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	Base Neutrals 625/8270	Acids	Volatile Organics GC/MS 624/524.2/8260	Halogenated or Aromatic Volatiles 8021	PCB's 8082	Pesticides 8081	Total Petroleum Hydrocarbons 418.1	Oil and Grease Gravimetric 413.1	TCLP Analysis VOA	Semi-VOA	TCLP	Dissolved	Metals Total	Priority Pollutants	Cyanide Amen.	Total	HAD	SDWA INORGANICS PRIMARY/SECONDARY	Cadmium AAFN	Colifiform	F/A	HAZARDOUS WASTE PROFILE	$NO_3 + NO_2$	TKN				
Source Water	6-10-03	0920		WW	2																							X	X				
HP-1	6-10-03	1115		GW	2																							X	X				

1. RELINQUISHED BY:	2. RECEIVED BY:	TURNAROUND REQUIREMENTS:	REPORT REQUIREMENTS:	INVOICE INFORMATION:	SAMPLE RECEIPT:
Signature	Signature	X Standard (approx. 10 days)*	X I. Routine Report	Account X Y ___ N	
Printed Name	Printed Name	___ Next Day ___ 2 Day ___ 3 Day*	___ II. Report (includes DUP, MS, MSD, as required; may be charged as samples)	P.O.# 46382	
Firm	Firm	___ Provide Verbal Preliminary Results	___ III. Data Validation Report (Includes All Raw Data) Add 10% to invoice	Bill to: Pima County Flood Control (address above)	Total Containers 4
Date/Time	Date/Time	Requested Report Date			Ambient/Cold
		* Working Days			

3. RELINQUISHED BY:	4. RECEIVED BY:	* LEGEND	SPECIAL INSTRUCTIONS/COMMENTS
David Scalera (Signature)	Chris Facio (Signature)	SL = SOIL	Compliance Analysis: ☒ Yes ☐ No
David Scalera (Printed Name)	CHRIS FACIO (Printed Name)	SD = SOLID	Send report and invoice to David Scalera at Pima County Flood Control, address above
Pima Co. Flood Control (Firm)	TURNER LABORATORIES, INC. (Firm)	SG = SLUDGE	
6-10-03 1240 (Date/Time)	6/10/03 12:40 (Date/Time)	WW = WASTEWATER	
		GW = GROUNDWATER	
		DW = DRINKING WATER	

DISTRIBUTION: WHITE - return to originator YELLOW - lab PINK - retained by originator See back of pink copy for general terms and conditions/limits of liability.

TURNER
LABORATORIES INC.

August 15, 2003

David Scalero
Pima County Flood Control District
201 N. Stone, 4th Floor
Tucson, AZ 85701
TEL: (520) 740-6350
FAX (520) 740-6749

RE: MHPERP

Order No.: 0307320

Dear David Scalero,

Turner Laboratories, Inc. received 2 samples on 7/25/03 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Shari Bauman

Shari Bauman
Laboratory Director

CC:

Turner Laboratories, Inc.

Date: *15-Aug-03*

CLIENT: Pima County Flood Control District
Lab Order: 0307320
Project: MHPERP
Lab ID: 0307320-01A

Client Sample ID: Source Water
Collection Date: 7/25/03 9:10:00 AM
Matrix: WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		E300				Analyst: **PGD**
Nitrogen, Nitrate (As N)	ND	1.0		mg/L	1	7/25/03 4:28:00 PM
Nitrogen, Nitrite	0.60	0.50		mg/L	5	7/25/03 3:34:00 PM
TOTAL KJELDAHL NITROGEN		E351.1				Analyst: **DV**
Nitrogen, Kjeldahl, Total	20	10		mg/L	20	7/29/03 11:00:00 AM

Qualifiers:
ND - Not Detected at or above the PQL
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Aug-03*

CLIENT: Pima County Flood Control District
Lab Order: 0307320
Project: MHPERP
Lab ID: 0307320-02A

Client Sample ID: HP-1
Collection Date: 7/25/03 10:55:00 AM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PGD**
Nitrogen, Nitrate (As N)	3.5	1.0		mg/L	1	7/25/03 3:52:00 PM
Nitrogen, Nitrite	ND	0.10		mg/L	1	7/25/03 3:52:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DV**
Nitrogen, Kjeldahl, Total	ND	0.50		mg/L	1	8/14/03 9:00:00 AM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

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CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 0307320 DATE 7/25/03 PAGE 1 OF 1

PROJECT NAME MHPERP
PROJECT MNGR Suzanne Shields, P.E.
COMPANY NAME Pima County Flood Control
ADDRESS 201 N. Stone Ave, 4th Floor
Tucson, AZ 85701 PHONE 740-6350
SAMPLER'S SIGNATURE David Scalera

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	Base Neutrals 625/8270 / Acids	Volatile Organics GC/MS 624/524.2/8260	Halogenated or Aromatic Volatiles 601/602	Pesticides 8081	PCBs 8082	Total Petroleum Hydrocarbons 418.1	Oil and Grease Gravimetric 413.1	TCLP Analysis VOA / Semi-VOA / Pest./Herb.	TCLP / Dissolved	Metals Total / Priority Pollutants	Cyanide Amen. / Total	SDWA INORGANICS PRIMARY/SECONDARY	Coliform MPN / Colilert	P/A	HAZARDOUS WASTE PROFILE	$NO_2 + NO_3$	TKN				
Source Water	7-25-03	910		WW	2																X	X				
HP-1	7-25-03	1055		GW	2																X	X				

1. RELINQUISHED BY:	2. RECEIVED BY:	TURNAROUND REQUIREMENTS:	REPORT REQUIREMENTS:	INVOICE INFORMATION:	SAMPLE RECEIPT:
Signature	Signature	___ Standard (approx. 10 days)*	___ I. Routine Report	Account ___ Y X N	
Printed Name	Printed Name	___ Next Day ___ 2 Day ___ 5 Day*	___ II. Report (includes DUP, MS, MSD, as required, may be charged as samples)	P.O. #	
Firm	Firm	___ Provide Verbal Preliminary Results	___ III. Data Validation Report (includes All Raw Data) Add 10% to invoice	Bill to: Pima County Flood Control (address above)	Total Containers 4
Date/Time	Date/Time	Requested Report Date			Ambient (Cold)
		* Working Days			

3. RELINQUISHED BY:	4. RECEIVED BY:	* LEGEND	SPECIAL INSTRUCTIONS/COMMENTS:
Signature: David Scalera	Signature: Chris Facio	SL = SOIL	Compliance Analysis: ☒ Yes ☐ No
Printed Name: David Scalera	Printed Name: CHRIS FACIO	SD = SOLID	Send invoice and report to David Scalera, Pima County Flood Control, at address shown above
Firm: Pima Co Flood Control	Firm: TURNER LABORATORIES, INC.	SG = SLUDGE	
Date/Time: 7-25-03 1205	Date/Time: 7/25/03 12:05	WW = WASTEWATER	
		GW = GROUNDWATER	
		DW = DRINKING WATER	

DISTRIBUTION: WHITE - return to originator YELLOW - lab PINK - retained by originator See back of pink copy for general terms and conditions/limits of liability.

TURNER
LABORATORIES INC.

September 26, 2003

David Scalero
Pima County Flood Control District
201 N. Stone, 4th Floor
Tucson, AZ 85701
TEL: (520) 740-6350
FAX (520) 740-6749

RE: MHPERP

Order No.: 0308395

Dear David Scalero,

Turner Laboratories, Inc. received 1 sample on 8/28/03 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

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Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Shari Bauman

Shari Bauman
Laboratory Director

CC:

Turner Laboratories, Inc. **Date:** *26-Sep-03*

CLIENT: Pima County Flood Control District
Project: MHPERP
Lab Order: 0308395

CASE NARRATIVE

Analytical Comments for METHOD 524.2, SAMPLE 0308395-01A: Sample was received with headspace.

Turner Laboratories, Inc.

Date: *26-Sep-03*

CLIENT: Pima County Flood Control District
Lab Order: 0308395
Project: MHPERP
Lab ID: 0308395-01A

Client Sample ID: HP-1
Collection Date: 8/28/03 10:45:00 AM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP (TOTAL) METALS IN DRINKING WATER		**E200.7**				Analyst: **RAD**
Barium	ND	1.0		mg/L	1	9/2/03 5:05:41 PM
Beryllium	ND	0.10		mg/L	1	9/2/03 5:05:41 PM
Cadmium	ND	0.0030		mg/L	1	9/2/03 5:05:41 PM
Chromium	ND	0.030		mg/L	1	9/2/03 5:05:41 PM
Nickel	ND	0.10		mg/L	1	9/2/03 5:05:41 PM
GFAA METALS IN WATER		**E200.9**				Analyst: **RAD**
Antimony	ND	0.0050		mg/L	1	9/15/03 1:53:00 PM
Arsenic	ND	0.0050		mg/L	1	9/9/03 12:13:00 PM
Lead	0.0080	0.0050		mg/L	1	9/10/03 12:19:00 PM
Selenium	ND	0.0050		mg/L	1	9/4/03 6:45:00 PM
Thallium	ND	0.0020		mg/L	1	9/16/03 11:28:00 AM
MERCURY (TOTAL) IN DRINKING WATER		**E245.1**				Analyst: **RAD**
Mercury	ND	0.0010		mg/L	1	9/3/03 3:51:00 PM
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PGD**
Nitrogen, Nitrate (As N)	4.4	1.0		mg/L	1	8/28/03 4:18:00 PM
Nitrogen, Nitrite	ND	0.10		mg/L	1	8/28/03 4:18:00 PM
PURGEABLE ORGANIC COMPOUNDS		**E524.2**				Analyst: **KP**
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
1,1,1-Trichloroethane	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
1,1-Dichloroethane	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
1,1-Dichloroethene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
1,1-Dichloropropene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
1,2,3-Trichloropropane	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
1,2-Dichloroethane	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
1,2-Dichloropropane	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
1,3-Dichlorobenzene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
1,3-Dichloropropane	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
2,2-Dichloropropane	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
2-Chlorotoluene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
4-Chlorotoluene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM

Qualifiers:
ND - Not Detected at or above the PQL
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *26-Sep-03*

CLIENT: Pima County Flood Control District
Lab Order: 0308395
Project: MHPERP
Lab ID: 0308395-01A

Client Sample ID: HP-1
Collection Date: 8/28/03 10:45:00 AM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
4-Isopropyltoluene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Benzene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Bromobenzene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Bromochloromethane	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Bromodichloromethane	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Bromoform	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Bromomethane	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Carbon tetrachloride	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Chlorobenzene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Chloroethane	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Chloroform	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Chloromethane	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
cis-1,2-Dichloroethene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Dibromochloromethane	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Dibromomethane	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Dichlorodifluoromethane	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Ethylbenzene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Hexachlorobutadiene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Isopropylbenzene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Methylene chloride	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
n-Butylbenzene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
n-Propylbenzene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Naphthalene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
sec-Butylbenzene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Styrene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
tert-Butylbenzene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Tetrachloroethene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Toluene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
trans-1,2-Dichloroethene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Trichloroethene	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Trichlorofluoromethane	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Vinyl chloride	ND	0.50		µg/L	1	9/11/03 2:30:00 PM
Xylenes, Total	ND	1.5		µg/L	1	9/11/03 2:30:00 PM
Surr: 1,2-Dichlorobenzene-d4	96.0	70-130		%REC	1	9/11/03 2:30:00 PM
Surr: 4-Bromofluorobenzene	98.0	70-130		%REC	1	9/11/03 2:30:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **MH**
Nitrogen, Kjeldahl, Total	ND	0.50		mg/L	1	9/17/03 5:00:00 PM

Qualifiers:
ND - Not Detected at or above the PQL
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

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Fax: (520) 882-9788
1-800-882-5804

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 0308395 DATE 8/28/03 PAGE 1 OF 1

PROJECT NAME MHPERD
PROJECT MNGR Suzanne Shields, P.E.
COMPANY NAME Pima County Flood Control
ADDRESS 201 N. Stone Ave., 4th Floor
Tucson, Az 85701 PHONE 740-6350
SAMPLER'S SIGNATURE David Scalero

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	Base Neutrals 625/8270 / Acids	Volatile Organics GC/MS 624/524.2/8260	Halogenated or Aromatic Volatiles 601/602 / 8021	Pesticides 8081 / PCBs 8082	Total Petroleum Hydrocarbons 418.1/8015 SAE	Oil and Grease Gav. 413.1	TCLP Analysis VOA / Semi VOA	TCLP / Dissolved / Total Metals / Priority Pollutants	Cyanide Amen. / Total / WAD	SDWA-INORGANICS PRIMARY/SECONDARY	Coliform MPN / F/A / Coliform	HAZARDOUS WASTE PROFILE	$NO_2 + NO_3$	TKN				
HP-1	8-28-03	1045		GW	6		X						X						X	X			

1. RELINQUISHED BY:	2. RECEIVED BY:	TURNAROUND REQUIREMENTS:	REPORT REQUIREMENTS:	INVOICE INFORMATION:	SAMPLE RECEIPT:
Signature	Signature	X Standard (approx. 10 days)*	X I. Routine Report	Account ___ Y X N	
Printed Name	Printed Name	___ Next Day ___ 2 Day ___ 5 Day*	___ II. Report (includes DUP, MS, MSD, as required, may be charged as samples)	P.O. #	
Firm	Firm	___ Provide Verbal Preliminary Results	___ III. Data Validation Report (Includes All Raw Data) Add 10% to invoice	Bill to: Pima County Flood Control (address above)	Total Containers: 6
Date/Time	Date/Time	Requested Report Date			Ambient (Cold)
		* Working Days			

3. RELINQUISHED BY:	4. RECEIVED BY:	* LEGEND	SPECIAL INSTRUCTIONS/COMMENTS:
David Scalero (Signature)	Chris Facio (Signature)	SL = SOIL	Compliance Analysis: ☑ Yes ☐ No
David Scalero (Printed Name)	CHRIS FACIO (Printed Name)	SD = SOLID	Sample received with headspace. (CF)
Pima County Flood Control (Firm)	TURNER LABORATORIES, INC. (Firm)	SG = SLUDGE	Send invoice and report to David Scalero at Pima County Flood Control, address above.
8-28-03 / 1145 (Date/Time)	8/28/03 11:45 (Date/Time)	WW = WASTEWATER	
		GW = GROUNDWATER	
		DW = DRINKING WATER	

DISTRIBUTION: WHITE - return to originator YELLOW - lab PINK - retained by originator

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TURNER
LABORATORIES INC.

October 09, 2003

David Scalero
Pima County Flood Control District
201 N. Stone, 4th Floor
Tucson, AZ 85701
TEL: (520) 740-6350
FAX (520) 740-6749

RE: MHPERP

Order No.: 0309365

Dear David Scalero,

Turner Laboratories, Inc. received 1 sample on 9/25/03 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Shari Bauman

Shari Bauman
Laboratory Director

CC:

Turner Laboratories, Inc.

Date: *09-Oct-03*

CLIENT: Pima County Flood Control District
Project: MHPERP
Lab Order: 0309365

CASE NARRATIVE

Some of the analyses used for the chemical determinations in this report are not licensed by the Arizona Department of Health Services for use in a groundwater matrix.

Turner Laboratories, Inc.

Date: *09-Oct-03*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	HP-1
Lab Order:	0309365	**Collection Date:**	9/25/03 10:35:00 AM
Project:	MHPERP		
Lab ID:	0309365-01A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PGD**
Nitrogen, Nitrate (As N)	3.6	1.0		mg/L	1	9/25/03 3:31:00 PM
Nitrogen, Nitrite	ND	0.10		mg/L	1	9/25/03 3:31:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **MH**
Nitrogen, Kjeldahl, Total	ND	0.50		mg/L	1	10/9/03 0:00:00 AM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

TURNER
Tucson, AZ 857
(520) 882-5880
Fax: (520) 882-9788
1-800-882-5804

CHAIN OF CUSTODY, LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 0309365 DATE 9/25/03 PAGE 1 OF 1

PROJECT NAME MHPERP #
PROJECT MNGR Suzanne Shields, P.E.
COMPANY NAME Pima County Flood Control
ADDRESS 201 N. Stone Ave, 4th Floor
Tucson, Az 85701 PHONE 740-6350
SAMPLERS SIGNATURE David Scalero

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	$NO_2 + NO_3$	TKN
HP-1	9-25-03	1035		GW	2	X	X

1. RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

2. RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

TURNAROUND REQUIREMENTS:
___ Next Day ___ 2 Day ___ 5 Day*
X Standard (up to 10 days)
___ Provide Verbal Preliminary Results
Requested Report Date
* Working Days

REPORT REQUIREMENTS:
X I. Routine Report
___ II. Report (includes DUP, MS, MSD, as required, may be charged as samples)
___ III. Data Validation Report (Includes All Raw Data)

INVOICE INFORMATION:
P.O.# 47772
Bill to: Pima County Flood Control (address above)

SAMPLE RECEIPT:
Total Containers 2
Ambient / Cold

3. RELINQUISHED BY:
David Scalero
Signature
David Scalero
Printed Name
Pima County Flood Control
Firm
9-25-03 1152
Date/Time

4. RECEIVED BY:
Chris Facio
Signature
CHRIS FACIO
Printed Name
TURNER LABORATORIES, INC.
Firm
9/25/03 11:52
Date/Time

*LEGEND
SL = SOIL
SD = SOLID
SG = SLUDGE
WW = WASTEWATER
GW = GROUNDWATER
DW = DRINKING WATER

SPECIAL INSTRUCTIONS/COMMENTS:
Compliance Analysis: Yes X No ☐
Please send report to David Scalero, address above, no later than 10-21-03.

DISTRIBUTION: WHITE - return to originator YELLOW - lab PINK - retained by originator

See back of pink copy for general terms and conditions/limits of liability.

TURNER
LABORATORIES INC.

November 03, 2003

David Scalero
Pima County Flood Control District
201 N. Stone, 4th Floor
Tucson, AZ 85701
TEL: (520) 740-6350
FAX (520) 740-6749

RE: MHPERP

Order No.: 0310323

Dear David Scalero,

Turner Laboratories, Inc. received 2 samples on 10/22/03 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Shari Bauman

Shari Bauman
Laboratory Director

CC:

2445 NORTH COYOTE DRIVE ■ SUITE #104 ■ TUCSON, ARIZONA 85745 ■ 520 882-5880 ■ FAX # 520 882-9788

Turner Laboratories, Inc.

Date: *03-Nov-03*

CLIENT: Pima County Flood Control District
Lab Order: 0310323
Project: MHPERP
Lab ID: 0310323-01A

Client Sample ID: Source Water
Collection Date: 10/22/03 9:20:00 AM
Matrix: WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PGD**
Nitrogen, Nitrate (As N)	ND	1.0		mg/L	1	10/23/03 11:42:00 AM
Nitrogen, Nitrite	1.1	0.10	*	mg/L	1	10/23/03 11:42:00 AM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DB**
Nitrogen, Kjeldahl, Total	52	0.50		mg/L	1	10/28/03 12:00:00 PM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *03-Nov-03*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	HP-1
Lab Order:	0310323	**Collection Date:**	10/22/03 11:05:00 AM
Project:	MHPERP		
Lab ID:	0310323-02A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PGD**
Nitrogen, Nitrate (As N)	4.3	1.0		mg/L	1	10/23/03 12:00:00 PM
Nitrogen, Nitrite	ND	0.10		mg/L	1	10/23/03 12:00:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DB**
Nitrogen, Kjeldahl, Total	0.79	0.50		mg/L	1	10/28/03 12:00:00 PM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

03-Nov-03

Lab Order: 0310323
Client: Pima County Flood Control District
Project: MHPERP

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
0310323-01A	Source Water	10/22/03 9:20:00 AM	Waste Water	Anions by Ion Chromatography			10/23/03 11:42:00 AM
0310323-01B				Total Kjeldahl Nitrogen		10/27/03 8:00:00 AM	10/28/03 12:00:00 PM
0310323-02A	HP-1	10/22/03 11:05:00 AM	Groundwater	Anions by Ion Chromatography			10/23/03 12:00:00 PM
0310323-02B				Total Kjeldahl Nitrogen		10/27/03 8:00:00 AM	10/28/03 12:00:00 PM

TURNER
2445 N. Coyote Drive, Suite 104
Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
1-800-882-5804

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 0310323 DATE 10/22/03 PAGE 1 OF 1

PROJECT NAME MHPERP #
PROJECT MNGR Suzanne Shields, PE
COMPANY NAME Pima County Flood Control
ADDRESS 201 N. Stone Av, ~~Tucson~~ 4th Floor
Tucson AZ 85701 PHONE 740-6350
SAMPLER'S SIGNATURE David Scalero

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	Base Neutrals 625/8270 / Acids	Volatile Organics GC/MS 624/524.2/8260	Halogenated or Aromatic Volatiles 601/602 / 8021	Pesticides 8081 / PCB's 8082	Total Petroleum Hydrocarbons 1(8015AZ) / 418.1	Oil and Grease Grav. 413.1	TCLP Analysis VOA / Semi-VOA / Pest./Herb.	Metals TCLP / Dissolved / Total / Priority Pollutants	Cyanide Amens / Total / WAD	SDWA INORGANICS PRIMARY/SECONDARY	Coliform MPN / Colilert / P/A	HAZARDOUS WASTE PROFILE	NO_2, NO_3	TKN				
Source Water	10/22/03	920		WW	2													✓	✓				
HP-1	10/22/03	11:05		GW	2													✓	✓				

1. RELINQUISHED BY:	2. RECEIVED BY:	TURNAROUND REQUIREMENTS:	REPORT REQUIREMENTS:	INVOICE INFORMATION:	SAMPLE RECEIPT:
Signature Printed Name Firm Date/Time	Signature Printed Name Firm Date/Time	X Standard (approx. 10 days)* ___ Next Day ___ 2 Day ___ 5 Day* ___ Provide Verbal Preliminary Results Requested Report Date * Working Days	X I. Routine Report ___ II. Report (includes DUP, MS, MSD, as required, may be charged as samples) ___ III. Data Validation Report (Includes All Raw Data) Add 10% to invoice	Account X Y ___ N P.O. # 47772 Bill to: Pima County Flood Control address above	Total Containers 4 Ambient / Cold

3. RELINQUISHED BY:	4. RECEIVED BY:	* LEGEND	SPECIAL INSTRUCTIONS/COMMENTS:
David Scalero Signature David Scalero Printed Name Pima Co. Flood Cont Firm 1158 10/22/03 Date/Time	Chris Facio Signature CHRIS FACIO Printed Name TURNER LABORATORIES, INC. Firm 10/22/03 11:50 Date/Time	SL = SOIL SD = SOLID SG = SLUDGE WW = WASTEWATER GW = GROUNDWATER DW = DRINKING WATER	Compliance Analysis: ☒ Yes ☐ No Send invoice and report to David Scalero at address above.

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