ANNUAL MONITORING REPORT
2004

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 second annual report for the MHPERP. This report includes all of the data that was collected during the 2004 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 2004 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 for Calendar Year 2004. The total water volume delivered to the MHPERP for the year is 199.77 acre-feet. Water volumes stored by month are as follows: January - 0.00 AF, February - 0.00 AF, March - 24.67 AF, April - 25.60 AF, May - 33.02 AF, June 26.53 AF, July - 17.40 AF, August - 0.00 AF, September - 14.46 AF, October - 24.38 AF, November 29.77 AF, and December - 3.94 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 (**Appendix B**).

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**). 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 C**. 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.[2]

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 2004 Calendar Year

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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] 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.

is 167.06 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 2004 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 was measured at the site during the beginning of first half of the year, but the well has mostly been dry since June 2004. Water levels during the Calendar Year 2004 did not rise above 82 feet below land surface, which is well below the alert level set at 20 feet below land surface.

4.0 INFILTRATION RATE ASSESSMENT

Table 3 displays the average monthly infiltration rates for each of the recharge cells during the 2004 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.

The average monthly infiltration rates for the annual reporting period ranged from 0.16 feet/day to 1.38 feet/day. The rates for Recharge Cells 1 and 2 (the non-vegetated basins) were generally higher shortly after the basins were disced (January 2004 and September 2004) to break up the fine sediment layers. Recharge Cell 3 (with vegetated side slopes) had the highest rates overall, but this basin was not used for the majority of the year due to equipment malfunctions. Recharge Cell 4 (vegetated side slopes and bottom) had varying rates throughout the year. Periodic interruptions of deliveries into the cells throughout the latter half of the year made it difficult to accurately assess infiltration rates for MHPERP in 2004.

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 2004 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 D**.

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 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.

Table 5 lists the problems that occurred throughout the 2004 Calendar Year and the solutions performed to resolve them. A major hindrance to recharge at the facility was the occurrence of periodic storm water flows within the Santa Cruz River. The earthen diversion berm was washed

out in the months of February, July, September, and December. Since the berm cannot be repaired for up to two weeks after a storm water event, at least two months of operations were lost due to these events alone. The facility was also inoperable for an additional three months because of continuing river flows during the summer monsoons and the wetter-than-normal winter season. An additional month of recharge was lost during repairs to the pump starter switches at the beginning of the year.[3] This means that the facility was only operating for six months out of the year, which accounts for the low recharge total.

7.0 CONCLUSIONS

The volume of water stored at the MHPERP for Calendar Year 2004 is 167.06 AF. This total is almost 100 AF lower than last year's total, and about 430 AF lower than permitted total for the recharge facility. 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 in some of the basins periodically throughout the year due to operational and mechanical problems, and periodic wash outs of the diversion berm.

Infiltration rates for the 2004 Calendar Year were below those observed in 2003. This may suggest that the soils in the recharge cells are becoming clogged with fine sediment layers and organic material due to the addition of a water source that is high in dissolved solids and nutrient content. Periodic discing of Cells 1 through 3 provided some initial increase to the infiltration rates, but they slowly declined after a few months of operation. Infiltration rates have been variable in the vegetated basins (Cells 3 and 4), but they have been low overall as well. A limited amount of data collected at this time has made it difficult to compare the project's effectiveness for recharging effluent through both the vegetated and non-vegetated basins. Preliminary analysis of variance results comparing basin infiltration rates are currently inconclusive.

Total recharge volume at the MHPERP has been much lower than expected so far. However, this is mostly due to the facility having been operating for about one-half of its two-year life-span because of numerous wash outs of the diversion berm and periodic equipment failures. In addition, District staff and the daily operator have needed time to learn the equipment operation and to make the necessary adjustments to optimize recharge at the facility.

Based on the information provided above, the District considers the results of its study on different recharge treatments as preliminary and believes that more data is needed to make an accurate assessment and comparison of infiltration rates for the different basin treatments. In response, the District has submitted a permit renewal with Arizona Department of Water Resources to extend the Underground Storage Facility Permit for MHPERP through February 2007. The District plans to use the additional two years to gain more knowledge on the different basin treatments used and to evaluate if it is feasible to continue operating the facility as a multi-year, full-scale project.

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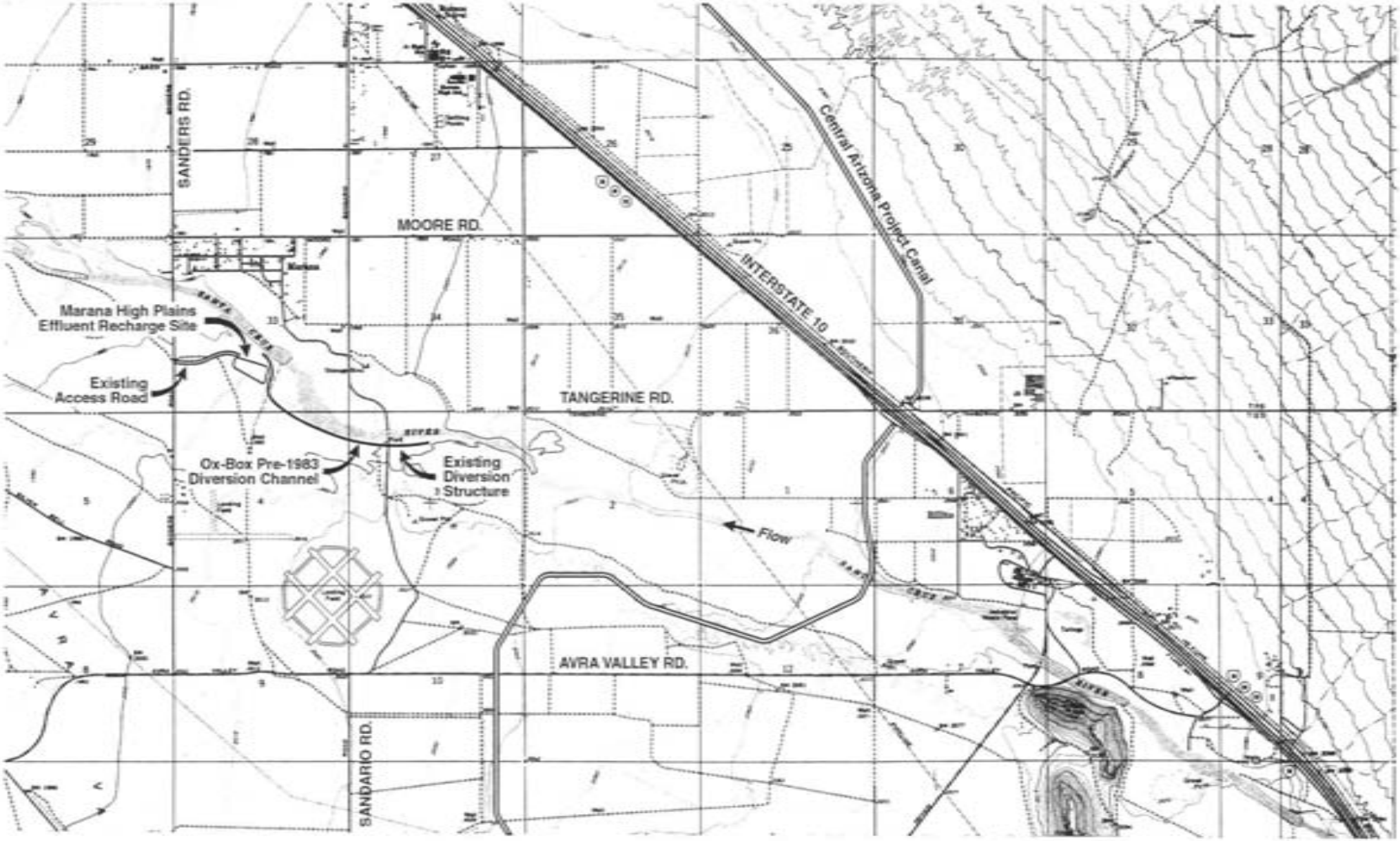
[3] Most of the delay time was due to ordering new parts. District staff is working to obtain extra facility equipment and components to help reduce down times during equipment repairs.

FIGURES



SCALE IN FEET:

0 1500 3000 6000

FIGURE 1
Location Map

N

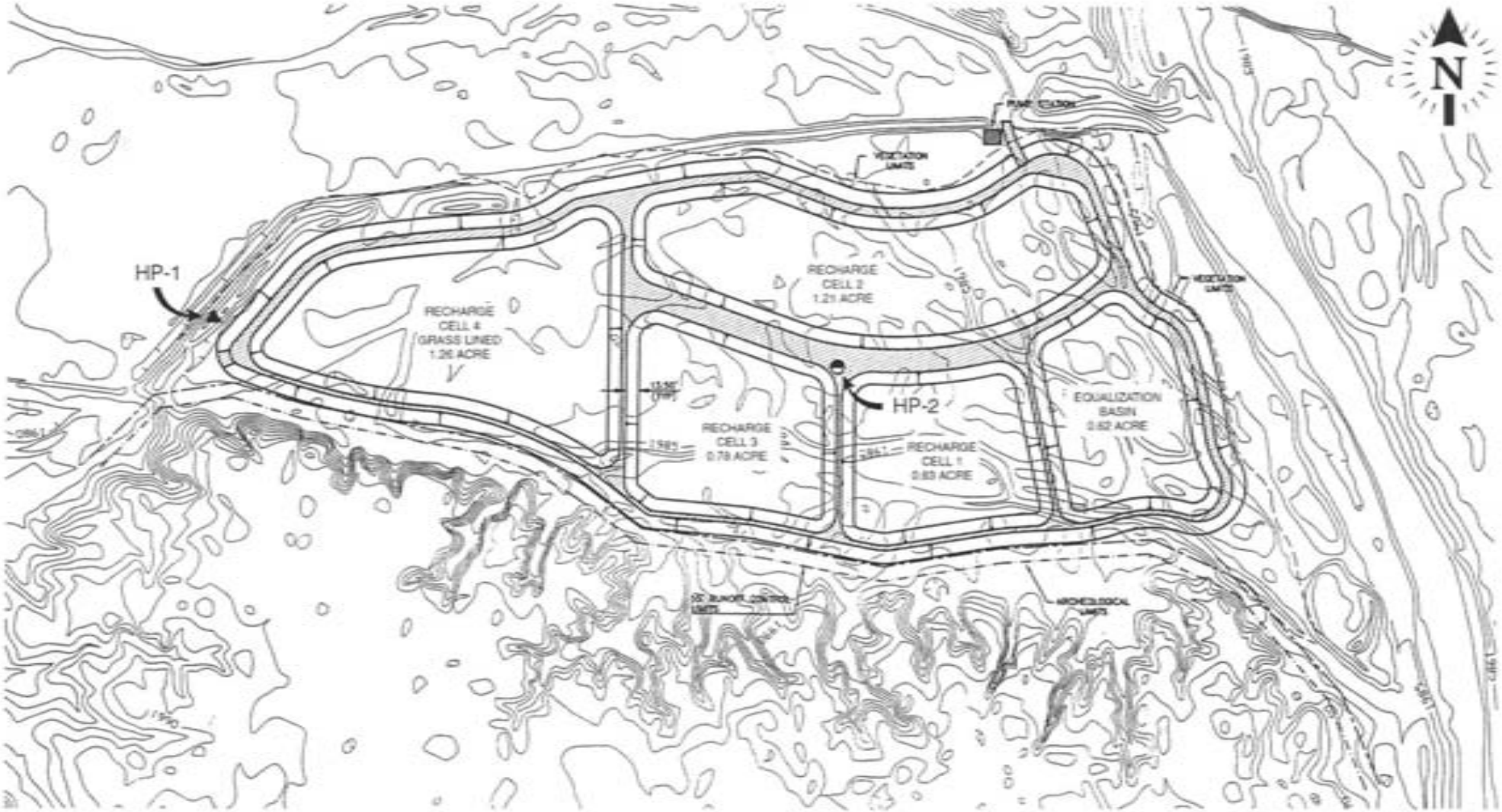


FIGURE 2
Facility Map

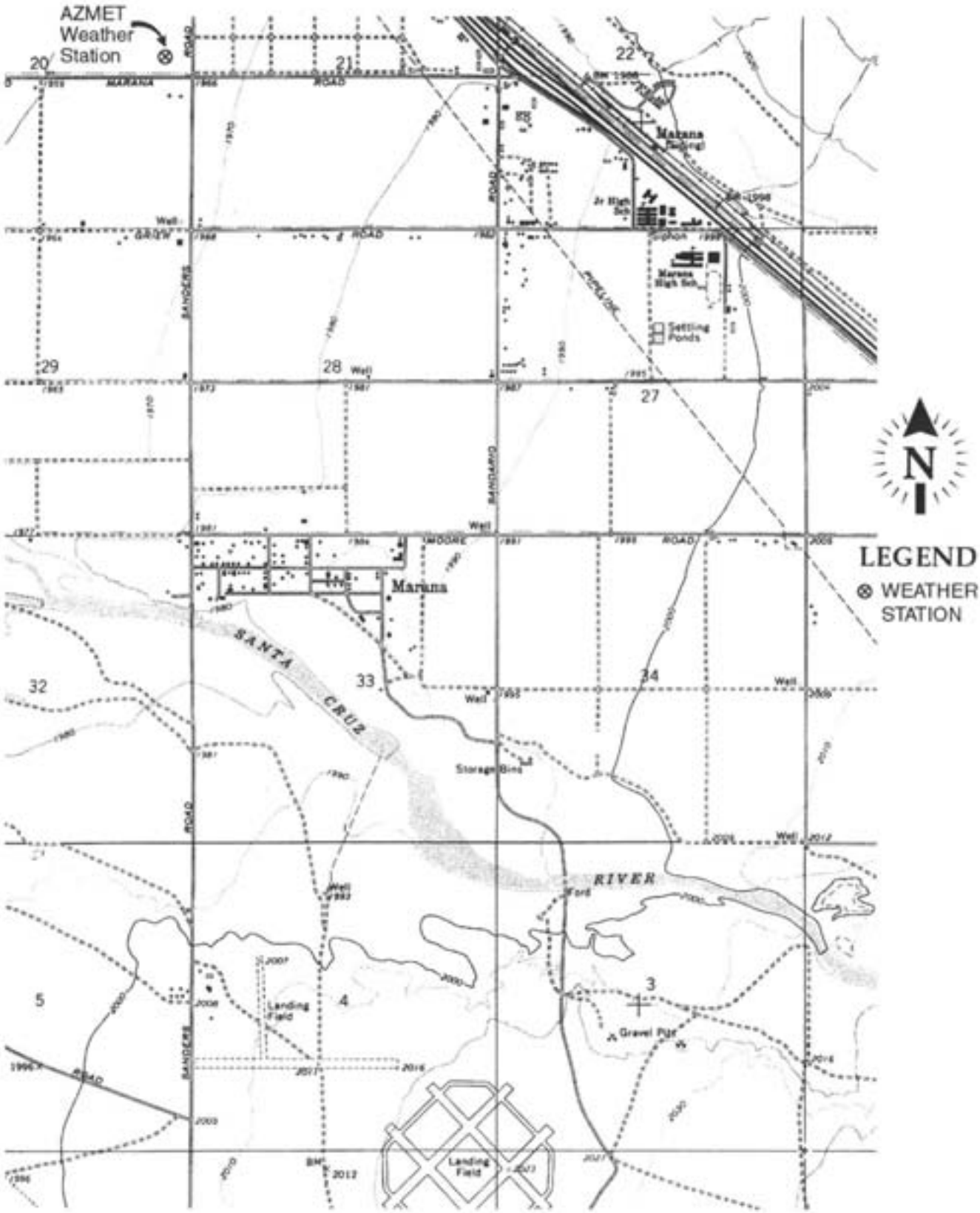
TOTAL RECHARGE AREA = 3.88 ACRES
ESTIMATED RECHARGE VOLUME = 290 ACRE-FT/YR

SCALE IN FEET:

LEGEND

▲ MONITOR WELL

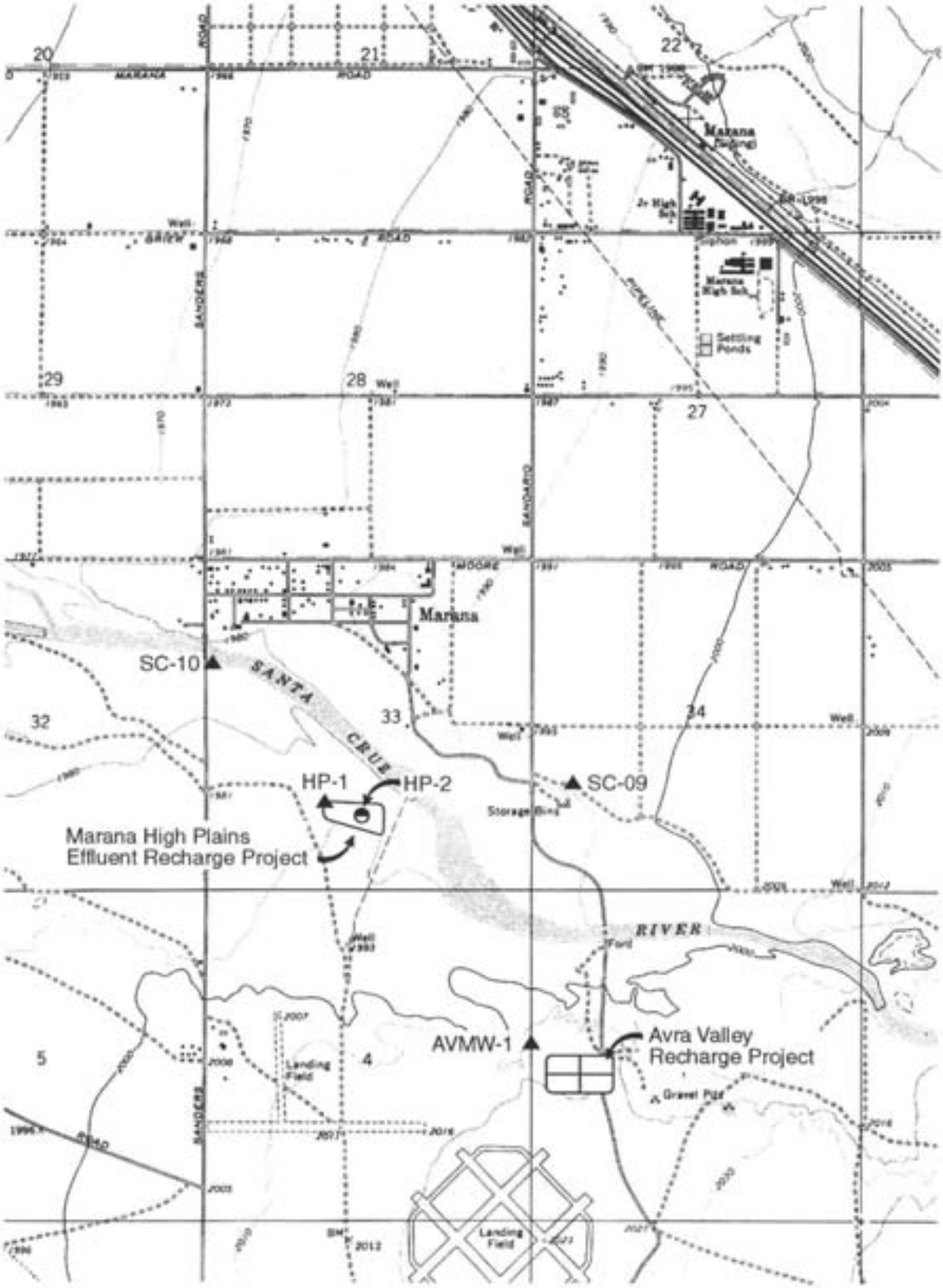
◓ PIEZOMETER



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 - 2004 Monthly and Cumulative Recharge

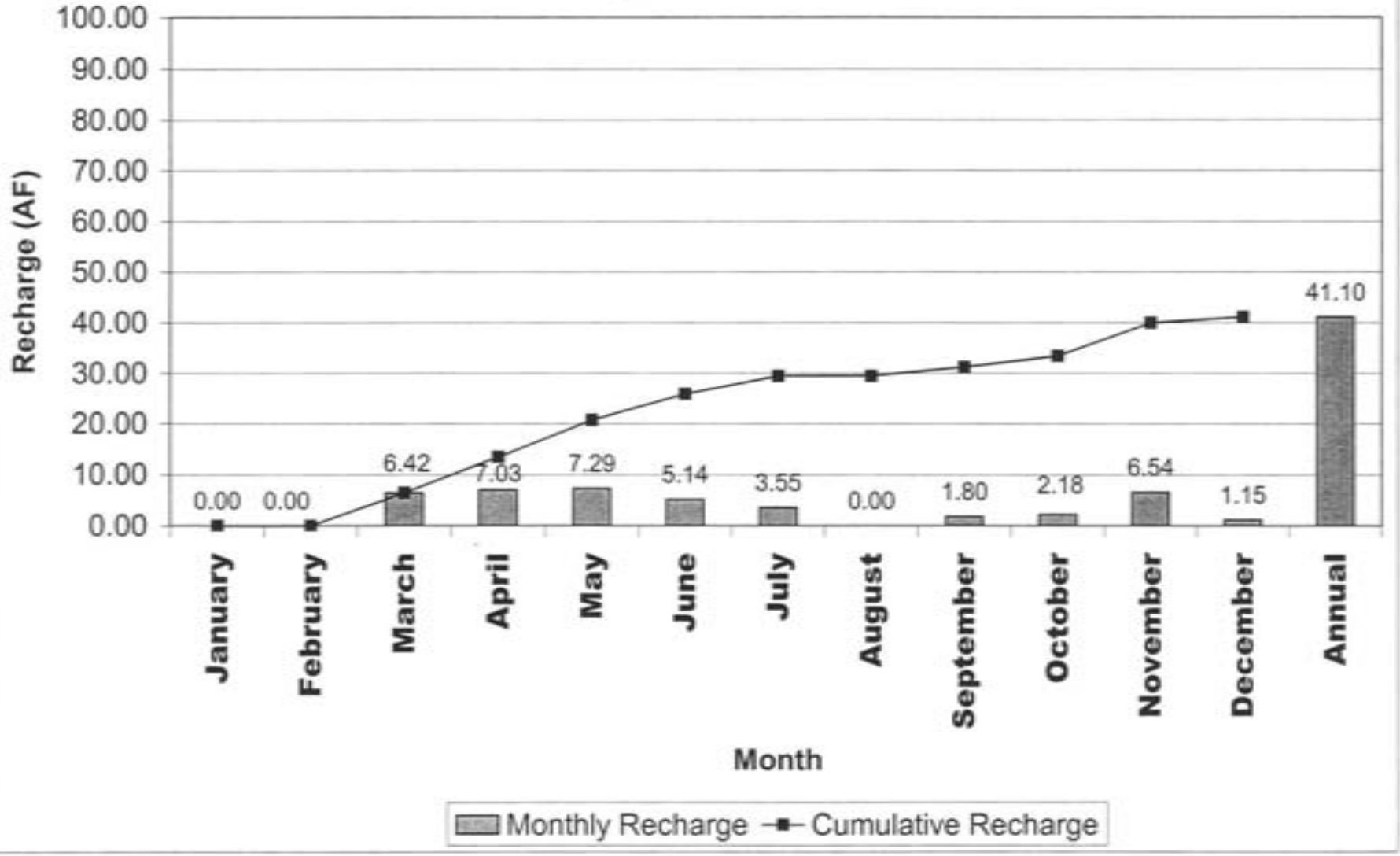


FIGURE 6
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
Cell 2 - 2004 Monthly and Cumulative Recharge

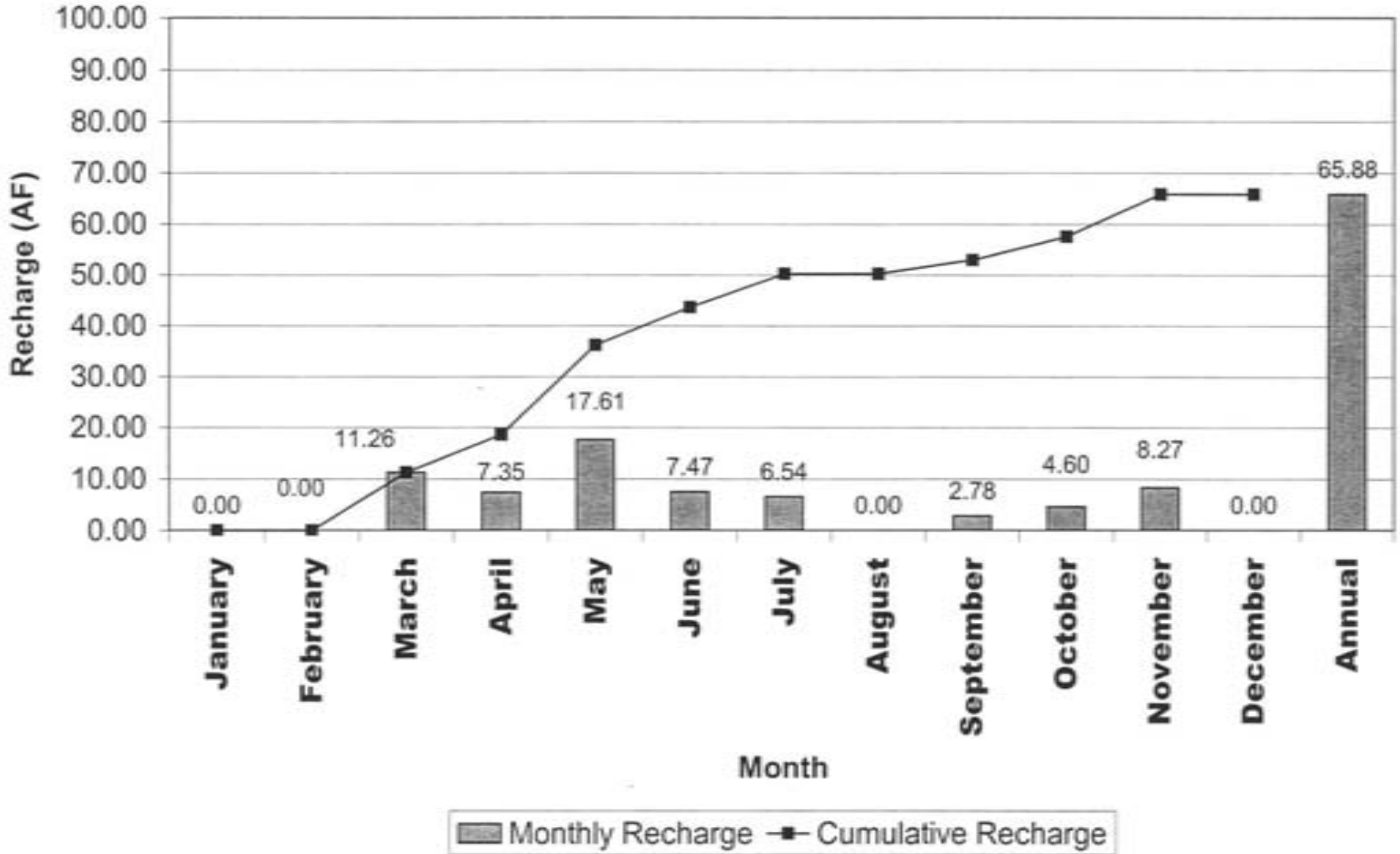


FIGURE 7
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
Cell 3 - 2004 Monthly and Cumulative Recharge

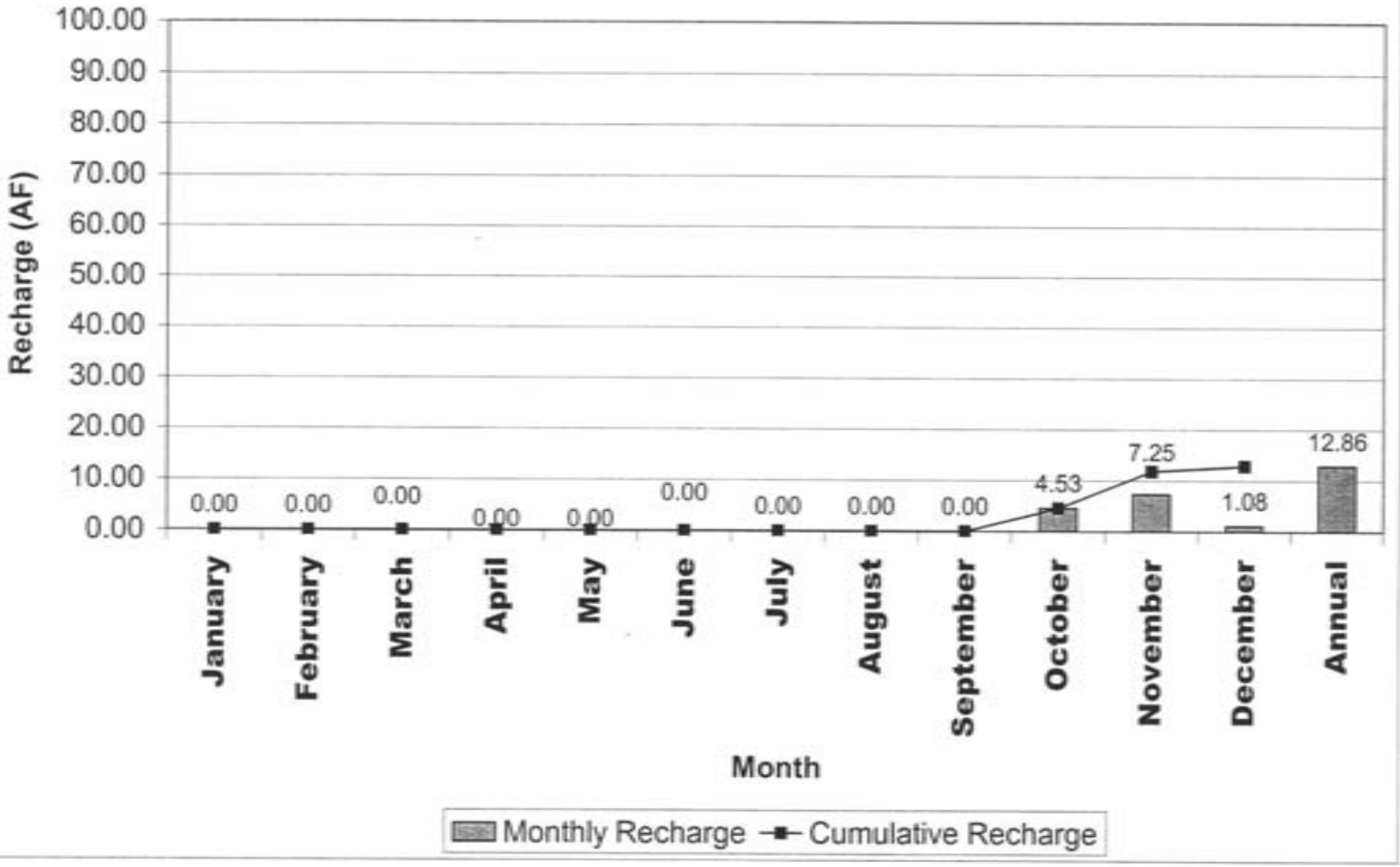


FIGURE 8
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
Cell 4 - 2004 Monthly and Cumulative Recharge

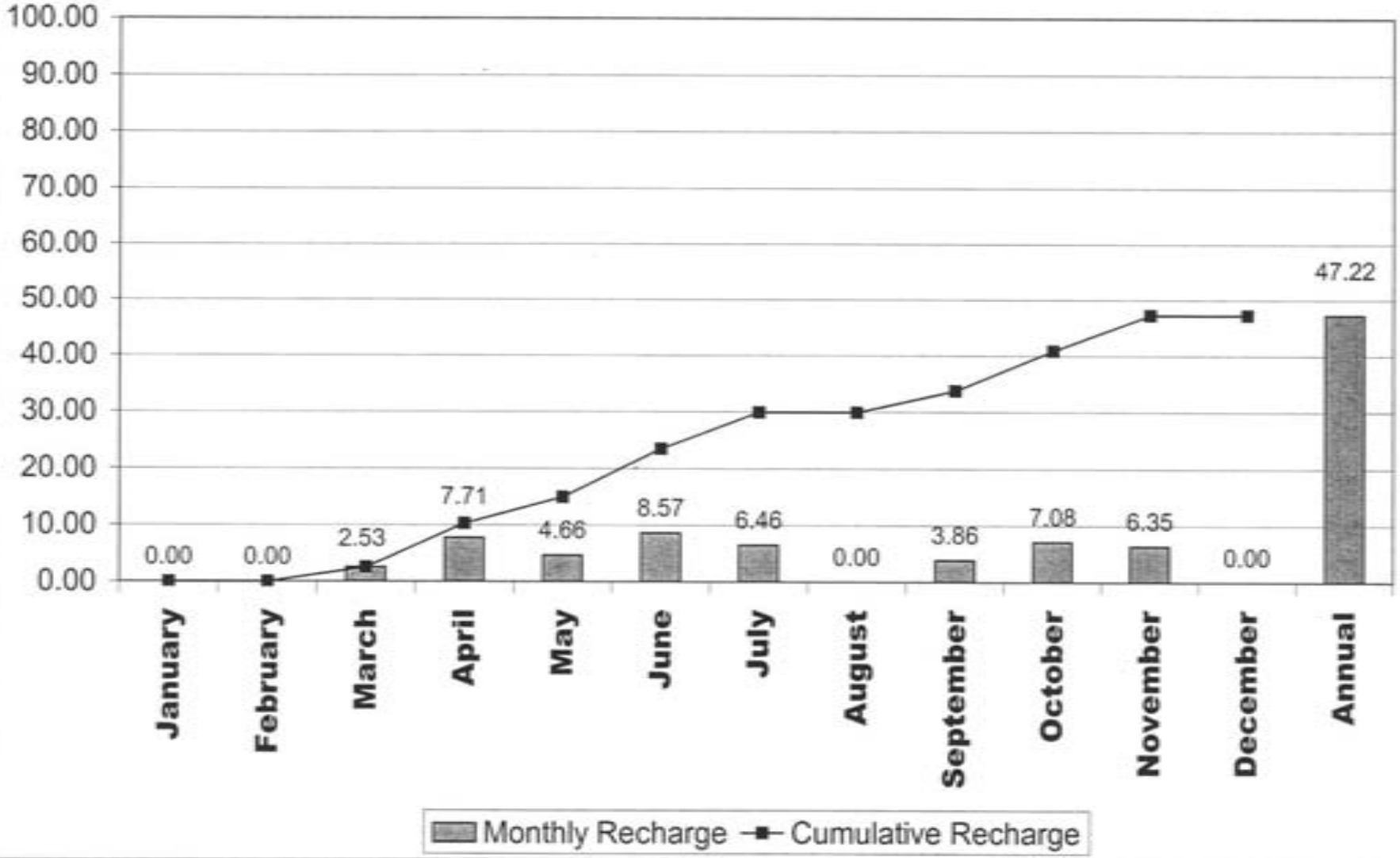
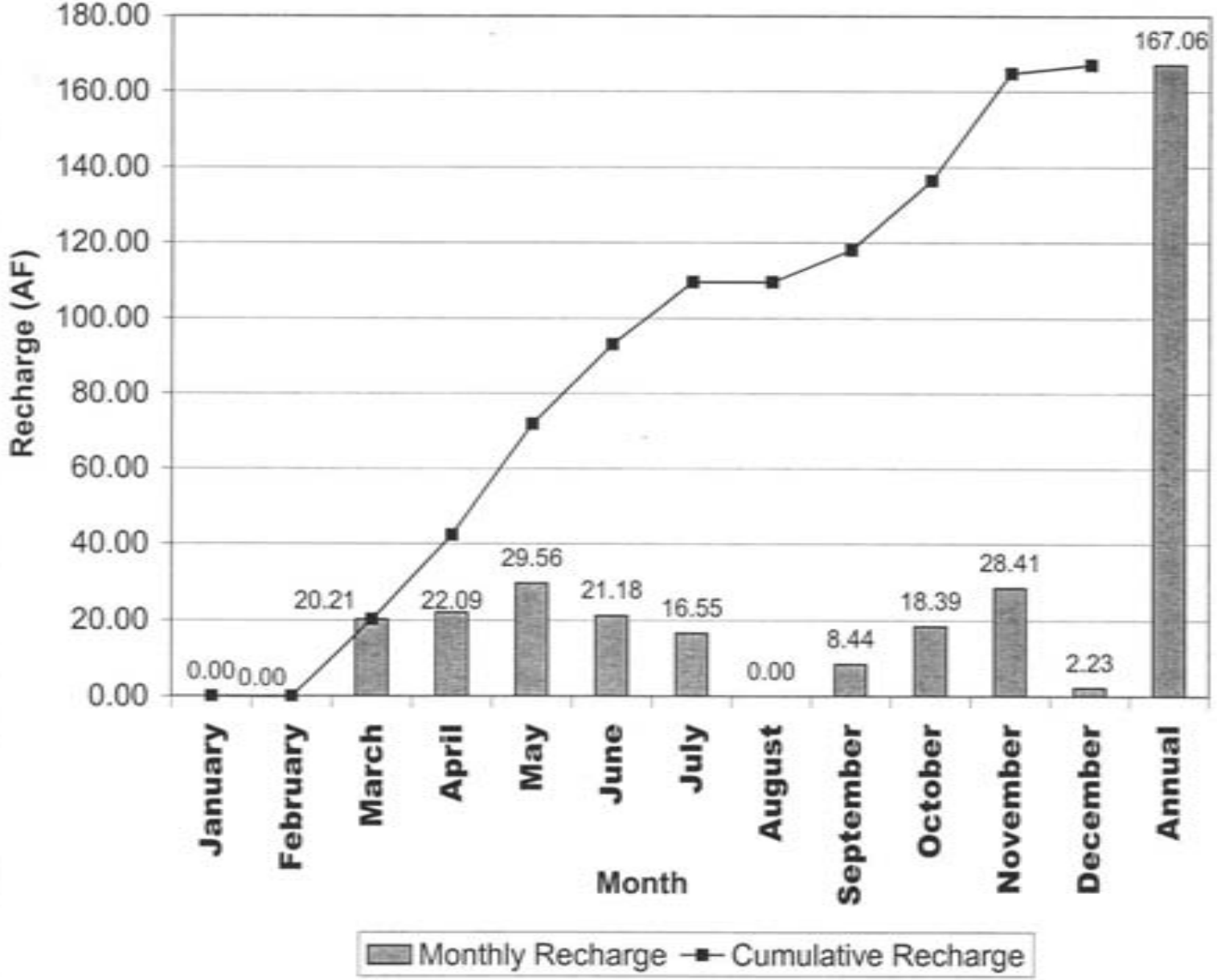


FIGURE 9
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
Total Project - 2004 Monthly and Cumulative Recharge



TABLES

TABLE 1
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
ON-SITE AND OFF-SITE MONITOR WELL LEVELS
CALENDAR YEAR 2004

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
1/16/2004	203.88	1787.66	1/16/2004	196.54	1781.53	1/20/2004	195.14	1819.56
2/11/2004	204.74	1786.80	2/11/2004	197.98	1780.09	2/17/2004	192.80	1821.90
3/10/2004	202.60	1788.94	3/10/2004	195.55	1782.52	3/16/2004	187.80	1826.90
4/7/2004	205.13	1786.41	4/7/2004	198.21	1779.86	4/20/2004	189.00	1825.70
5/19/2004	206.57	1784.97	5/19/2004	200.60	1777.47	5/18/2004	188.00	1826.70
6/28/2004	204.37	1787.17	6/28/2004	199.00	1779.07	6/14/2004	185.83	1828.87
7/29/2004	204.80	1786.74	7/29/2004	199.13	1778.94	7/20/2004	187.10	1827.60
8/9/2004	205.78	1785.76	8/9/2004	200.47	1777.60	8/17/2004	182.40	1832.30
9/7/2004	204.05	1787.49	9/7/2004	197.52	1780.55	9/21/2004	181.40	1833.30
10/12/2004	201.72	1789.82	10/12/2004	195.16	1782.91	10/19/2004	180.20	1834.50
11/12/2004	199.50	1792.04	11/12/2004	193.02	1785.05	11/16/2004	186.20	1828.50
12/8/2004	198.62	1792.92	12/8/2004	191.44	1786.63	12/21/2004	187.40	1827.30

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
1/16/2004	195.91	1789.26
1/29/2004	197.55	1787.62
2/11/2004	197.32	1787.85
2/24/2004	196.60	1788.57
3/10/2004	194.73	1790.44
3/30/2004	197.39	1787.78
4/7/2004	196.86	1788.31
4/19/2004	198.93	1786.24
5/12/2004	198.37	1786.80
5/19/2004	198.44	1786.73
6/11/2004	198.50	1786.67
6/28/2004	196.90	1788.27
7/16/2004	196.21	1788.96
7/29/2004	196.90	1788.27
8/9/2004	198.11	1787.06
8/26/2004	195.54	1789.63
9/7/2004	195.65	1789.52
9/22/2004	194.18	1790.99
10/12/2004	193.52	1791.65
10/22/2004	192.21	1792.96
11/12/2004	191.70	1793.47
11/24/2004	190.90	1794.27
12/8/2004	190.88	1794.29
12/22/2004	190.46	1794.71

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 2004

Date Measured	Depth to Water (feet)	Mound Height	Elevation* (feet)
1/16/2004	82.06	trace	1904.69
1/29/2004	82.06	trace	1904.69
2/11/2004	82.06	trace	1904.69
2/24/2004	82.06	trace	1904.69
3/10/2004	82.06	trace	1904.69
3/22/2004	82.06	trace	1904.69
4/7/2004	82.06	trace	1904.69
4/19/2004	82.06	trace	1904.69
5/12/2004	DRY	none	N/A
5/19/2004	82.06	trace	1904.69
6/11/2004	82.06	trace	1904.69
6/28/2004	DRY	none	N/A
7/16/2004	DRY	none	N/A
7/29/2004	DRY	none	N/A
8/9/2004	82.06	trace	1904.69
8/26/2004	DRY	none	N/A
9/7/2004	DRY	none	N/A
9/22/2004	DRY	none	N/A
10/12/2004	DRY	none	N/A
10/22/2004	DRY	none	N/A
11/12/2004	DRY	none	N/A
11/24/2004	DRY	none	N/A
12/8/2004	DRY	none	N/A
12/22/2004	DRY	none	N/A

* Reference elevation for well port is 1986.75 feet (above sea level).
N/A = Not applicable

TABLE 3
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
BASIN INFILTRATION RATES: "VOLUMETRIC METHOD"
CALENDAR YEAR 2004

Cell 1

Date	Recharged Volume (AF)	Wetted Acres	Infilitration Rate (ft/day)*
January-04	0.00	0.00	NA
February-04	0.00	0.00	NA
March-04	6.42	7.94	0.81
April-04	7.03	11.06	0.64
May-04	7.29	17.63	0.41
June-04	5.14	15.30	0.34
July-04	3.55	8.08	0.44
August-04	0.00	0.00	NA
September-04	1.80	2.58	0.70
October-04	2.18	6.77	0.32
November-04	6.54	13.48	0.49
December-04	1.15	4.54	0.25

Cell 3

Date	Recharged Volume (AF)	Wetted Acres	Infiltration Rate (ft/day)*
January-04	0.00	0.00	NA
February-04	0.00	0.00	NA
March-04	0.00	0.00	NA
April-04	0.00	0.00	NA
May-04	0.00	0.00	NA
June-04	0.00	0.00	NA
July-04	0.00	0.00	NA
August-04	0.00	0.00	NA
September-04	0.00	0.00	NA
October-04	4.53	7.25	0.62
November-04	7.25	13.42	0.54
December-04	1.08	0.78	1.38

Cell 2

Date	Recharged Volume (AF)	Wetted Acres	Infiltration Rate (ft/day)*
January-04	0.00	0.00	NA
February-04	0.00	0.00	NA
March-04	11.26	15.25	0.74
April-04	7.35	16.76	0.44
May-04	17.61	30.17	0.58
June-04	7.47	23.23	0.32
July-04	6.54	13.49	0.48
August-04	0.00	0.00	NA
September-04	2.78	3.87	0.72
October-04	4.60	14.34	0.32
November-04	8.27	23.99	0.34
December-04	0.00	0.00	NA

Cell 4

Date	Recharged Volume (AF)	Wetted Acres	Infiltration Rate (ft/day)*
January-04	0.00	0.00	NA
February-04	0.00	0.00	NA
March-04	2.53	1.89	1.34
April-04	7.71	15.50	0.50
May-04	4.66	29.36	0.16
June-04	8.57	21.04	0.41
July-04	6.46	14.81	0.44
August-04	0.00	0.00	NA
September-04	3.86	5.67	0.68
October-04	7.08	17.51	0.40
November-04	6.35	25.45	0.25
December-04	0.00	0.00	NA

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

* Infiltration rate represents an average of the daily rates determined during the period that recharge occurred for the month.

TABLE 4
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
WATER QUALITY SUMMARY: CALENDAR YEAR 2004

Constituent	Unit	Sample Date and Location											
		Source Water											
		Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04
Nutrients													
Total Nitrogen[1]	mg/l	No Event	5.2	17.8	16	35	29.72	0.95	No Event	19.4	25.7	26.7	22.36
Nitrate-Nitrite as N	mg/l	No Event	<5.0	0.8	<1.0	<1.0	0.72	<1.0	No Event	1.4	2.7	4.7	0.36
Total Kjeldahl Nitrogen (TKN)	mg/l	No Event	5.2	17	16	35	29	0.95	No Event	18	23	22	22
Metals (Total)													
Arsenic	mg/l	No Event	<0.005	No Event	No Event	<0.10	No Event	No Event	No Event	<0.10	No Event	<0.10	No Event
Barium	mg/l	No Event	<1.0	No Event	No Event	<1.0	No Event	No Event	No Event	<1.0	No Event	<1.0	No Event
Cadmium	mg/l	No Event	<0.003	No Event	No Event	<0.05	No Event	No Event	No Event	<0.05	No Event	<0.05	No Event
Chromium	mg/l	No Event	<0.03	No Event	No Event	<0.10	No Event	No Event	No Event	<0.10	No Event	<0.10	No Event
Lead	mg/l	No Event	<0.005	No Event	No Event	<0.15	No Event	No Event	No Event	<0.15	No Event	<0.15	No Event
Antimony	mg/l	No Event	<0.005	No Event	No Event	<0.20	No Event	No Event	No Event	<0.20	No Event	<0.20	No Event
Beryllium	mg/l	No Event	<0.002	No Event	No Event	<0.10	No Event	No Event	No Event	<1.0	No Event	<1.0	No Event
Nickel	mg/l	No Event	<0.10	No Event	No Event	<0.10	No Event	No Event	No Event	<0.08	No Event	<0.08	No Event
Mercury	mg/l	No Event	<0.001	No Event	No Event	<0.001	No Event	No Event	No Event	<0.001	No Event	<0.001	No Event
Selenium	mg/l	No Event	<0.005	No Event	No Event	<0.10	No Event	No Event	No Event	<0.10	No Event	<0.10	No Event
Thallium	mg/l	No Event	No Event	No Event	No Event	No Event	No Event	No Event	No Event	No Event	No Event	No Event	No Event
Volatile Organic Compounds (VOCs)													
Benzene	mg/l	No Event	<0.0005	No Event	No Event	<0.0005	No Event	No Event	No Event	<0.0005	No Event	<0.0005	No Event
Carbon tetrachloride	ug/l	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	No Event	<0.5	No Event	<0.5	No Event
o-Dichlorobenzene	mg/l	No Event	<0.0005	No Event	No Event	<0.0005	No Event	No Event	No Event	<0.0005	No Event	<0.0005	No Event
para-Dichlorobenzene	mg/l	No Event	<0.0005	No Event	No Event	<0.0005	No Event	No Event	No Event	<0.0005	No Event	<0.0005	No Event
1,2-Dichloroethane	ug/l	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	No Event	<0.5	No Event	<0.5	No Event
1,1-Dichloroethylene	ug/l	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	No Event	<0.5	No Event	<0.5	No Event
cis--1,2-Dichloroethylene	ug/l	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	No Event	<0.5	No Event	<0.5	No Event
trans-1,2-Dichloroethylene	ug/l	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	No Event	<0.5	No Event	<0.5	No Event
1,2-Dichloropropane	ug/l	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	No Event	<0.5	No Event	<0.5	No Event
Ethylbenzene	ug/l	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	No Event	<0.5	No Event	<0.5	No Event
Monochlorobenzene	ug/l	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	No Event	<0.5	No Event	<0.5	No Event
Styrene	ug/l	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	No Event	<0.5	No Event	<0.5	No Event
Tetrachloroethylene	ug/l	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	No Event	<0.5	No Event	<0.5	No Event
Toluene	ug/l	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	No Event	<0.5	No Event	<0.5	No Event
1,1,1-Trichloroethane	ug/l	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	No Event	<0.5	No Event	<0.5	No Event
1,1,2-Trichloroethane	ug/l	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	No Event	<0.5	No Event	<0.5	No Event
Trichloroethylene	ug/l	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	No Event	<0.5	No Event	<0.5	No Event
Trihalomethanes (total THMs)	ug/l	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	No Event	<0.5	No Event	<0.5	No Event
Vinyl Chloride	ug/l	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	No Event	<0.5	No Event	<0.5	No Event
Xylenes (Total)	ug/l	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	No Event	<0.5	No Event	<0.5	No Event

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 2004

Constituent	Sample Date and Location											
	Monitor Well HP-1											
	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04
Nutrients												
Total Nitrogen[1]	5.0	5.5	4.7	3.0	4.0	4.2	4.3	3.5	3.93	3.8	4.19	3.76
Nitrate-Nitrite as N	3.8	3.9	3.5	3.0	3.3	3.1	3.3	3.5	3.4	3.2	3.4	3.2
Total Kjeldahl Nitrogen (TKN)	1.2	1.6	1.2	<0.50	0.66	1.1	1	<0.50	0.53	0.6	0.79	0.56
Metals (Total)												
Arsenic	<0.005	No Event	No Event	No Event	<0.005	No Event	No Event	<0.005	No Event	No Event	<0.10	No Event
Barium	<1.0	No Event	No Event	No Event	<1.0	No Event	No Event	<1.0	No Event	No Event	<1.0	No Event
Cadmium	<0.003	No Event	No Event	No Event	<0.003	No Event	No Event	<0.003	No Event	No Event	<0.05	No Event
Chromium	<0.030	No Event	No Event	No Event	<0.030	No Event	No Event	<0.030	No Event	No Event	<0.10	No Event
Lead	0.0091	No Event	No Event	No Event	0.0091	No Event	No Event	0.0097	No Event	No Event	<0.15	No Event
Antimony	<0.005	No Event	No Event	No Event	<0.005	No Event	No Event	<0.005	No Event	No Event	<0.20	No Event
Beryllium	<0.10	No Event	No Event	No Event	<0.002	No Event	No Event	<0.002	No Event	No Event	<1.0	No Event
Nickel	<0.10	No Event	No Event	No Event	<0.10	No Event	No Event	<0.10	No Event	No Event	<0.08	No Event
Mercury	<0.001	No Event	No Event	No Event	<0.001	No Event	No Event	<0.001	No Event	No Event	<0.001	No Event
Selenium	<0.005	No Event	No Event	No Event	<0.005	No Event	No Event	<0.005	No Event	No Event	<0.10	No Event
Thallium	<0.002	No Event	No Event	No Event	<0.002	No Event	No Event	<0.002	No Event	No Event	<0.10	No Event
Volatile Organic Compounds (VOCs)												
Benzene	<0.0005	No Event	No Event	No Event	<0.0005	No Event	No Event	<0.0005	No Event	No Event	<0.0005	No Event
Carbon tetrachloride	<0.5	No Event	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event
o-Dichlorobenzene	<0.0005	No Event	No Event	No Event	<0.0005	No Event	No Event	<0.0005	No Event	No Event	<0.0005	No Event
para-Dichlorobenzene	<0.0005	No Event	No Event	No Event	<0.0005	No Event	No Event	<0.0005	No Event	No Event	<0.0005	No Event
1,2-Dichloroethane	<0.5	No Event	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event
1,1-Dichloroethylene	<0.5	No Event	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event
cis--1,2-Dichloroethylene	<0.5	No Event	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event
trans-1,2-Dichloroethylene	<0.5	No Event	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event
1,2-Dichloropropane	<0.5	No Event	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event
Ethylbenzene	<0.5	No Event	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event
Monochlorobenzene	<0.5	No Event	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event
Styrene	<0.5	No Event	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event
Tetrachloroethylene	<0.5	No Event	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event
Toluene	<0.5	No Event	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event
1,1,1-Trichloroethane	<0.5	No Event	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event
1,1,2-Trichloroethane	<0.5	No Event	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event
Trichloroethylene	<0.5	No Event	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event
Trihalomethanes (total THMs)	<0.5	No Event	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event
Vinyl Chloride	<0.5	No Event	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event
Xylenes (Total)	<0.5	No Event	No Event	No Event	<0.5	No Event	No Event	<0.5	No Event	No Event	<0.5	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 2004

Date	Problem	Solution
January 2004	Pump starter switches were not operable as of December 2003: the switches were melted and the inner workings were fused together.	Pima County electricians replaced the two switches in late February 2004 and noted openings in the electrical boxes where rain water could enter and condense onto the electrical wiring and switches. Pima County worked with the facility's daily operator to construct a roof structure over the electrical panel.
January 2004	Weedy vegetation is dominating the landscape around the recharge basins and within the bottom of Cells 2 and 3.	Pima County Operations was used to clear the vegetation and scrape the basin bottoms to enhance recharge.
February 2004	The earthen diversion berm was washed out due to storm water in the Santa Cruz River Channel.	The berm was repaired during March 13-14, 2004.
April 2004	Valve control switch in Cell 3 would not close the valve in "auto" mode.	Staff inspected and cleaned the control switch. The switch will now work manually, but will not trip the basin level sensor.
April 2004	Equalization basin overflowed into Cell 2, causing some erosion along the maintenance road between the two basins and exposing a portion of the inflow pipe.	Staff determined that the pump control switches were set to "hand" (manual) by the facility operator, which will not trip the basin level sensor and automatically turn off the pumps at the high water level. The pump control switches were set back to "auto" so that the sensor would control the basin levels automatically. The facility operator was informed of the problem and performed repair to the maintenance road in June 2004.
June 2004	Main electrical fuse was blown due to lightning strike.	Trico Electric Power Company came out and replaced the fuse.
July 2004	Storm water has washed out the earthen diversion berm.	The berm was repaired in early September 2004, after it was determined that continuing storm water events in the Santa Cruz River were unlikely.

TABLE 5
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
FACILITY INSPECTIONS: PROBLEMS AND RELATED SOLUTIONS
CALENDAR YEAR 2004

Date	Problem	Solution
September 2004	Weeds have become to excessive around all the basin edges and within the bottom of Cell 3.	Weeds were cleared around the basins by landscapers and Town of Marana staff cleared and disced basins 1, 2 and 3 in October 2004.
September 2004	Storm water has washed out the earthen diversion berm.	The berm was repaired in early October.
October 2004	The water level sensor in the Equalization Basin will not automatically turn the pumps on and off.	Inspection by District staff found that the wiring to the sensor had been severely damaged during weed clearing by the landscapers. The sensor was repaired in November 2004. Steps are being taken to insure the sensors are flagged during landscape maintenance to avoid future damage.
December 2004	The pressure transducers for the flow meters in Cell 2 and Cell 4 have been damaged and will no longer measure flows.	The pressure transducers could not be repaired so two new sensors were ordered as replacements.
December 2004	The earthen berm was washed out by storm water flows.	The berm will be repaired in Calendar Year 2005 when it is determined that the likelihood of storm water flows in the Santa Cruz River will be minimal. District staff is investigating methods to provide more reliable flows into the recharge facility.

APPENDIX A

APPENDIX A
MARANA HIGH PLAINS EFFLUENT RECHARGE PROJECT
MONTHLY ACCOUNTING REPORT
JANUARY 2004

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 2004

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	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00

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 2004

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	2.01	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.00
18	2.01	0.73	1.16	0.00	0.00	1.89	0.0206	0.0000	1.87
19	1.47	0.61	1.10	0.00	0.00	1.71	0.0244	0.0000	1.68
20	1.24	0.44	1.48	0.00	0.00	1.92	0.0263	0.0000	1.89
21	2.17	0.31	0.30	0.00	0.00	0.61	0.0272	0.0000	0.58
22	1.93	0.35	1.04	0.00	0.00	1.39	0.0253	0.0000	1.36
23	1.86	0.07	0.18	0.00	0.00	0.25	0.0262	0.0000	0.23
24	2.17	0.43	0.31	0.00	0.00	0.74	0.0243	0.0000	0.72
25	2.17	0.66	1.49	0.00	0.00	2.15	0.0252	0.0000	2.13
26	1.28	0.41	0.31	0.00	0.00	0.71	0.0272	0.0000	0.68
27	1.28	0.33	0.17	0.00	0.00	0.50	0.0281	0.0000	0.47
28	1.28	0.76	0.85	0.00	0.00	1.61	0.0226	0.0000	1.59
29	1.28	0.49	1.56	0.00	0.00	2.06	0.0244	0.0000	2.03
30	1.28	0.37	0.94	0.00	2.03	3.34	0.0253	0.0152	3.30
31	1.28	0.59	0.59	0.00	0.53	1.71	0.0272	0.0200	1.67
Total	24.67	6.54	11.50	0.00	2.57	20.60	0.3542	0.0352	20.21

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 2004

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	3.71	0.49	1.37	0.00	0.16	2.02	0.04	0.01	1.96
2	0.39	0.33	0.32	0.00	0.05	0.70	0.04	0.00	0.66
3	0.00	0.33	0.23	0.00	0.06	0.61	0.04	0.00	0.57
4	0.00	0.46	0.18	0.00	0.05	0.69	0.03	0.00	0.66
5	0.00	0.21	0.23	0.00	0.05	0.48	0.02	0.00	0.47
6	0.00	0.00	0.00	0.00	0.05	0.05	0.02	0.00	0.03
7	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.02
8	3.40	0.72	1.40	0.00	0.00	2.12	0.04	0.00	2.08
9	0.70	0.33	0.62	0.00	0.00	0.95	0.04	0.00	0.90
10	1.62	0.40	1.69	0.00	0.00	2.09	0.04	0.00	2.05
11	1.86	0.30	0.32	0.00	0.00	0.61	0.04	0.00	0.57
12	1.86	0.25	0.31	0.00	0.00	0.55	0.04	0.00	0.51
13	0.00	0.35	0.23	0.00	0.84	1.42	0.04	0.03	1.35
14	1.93	0.45	0.12	0.00	0.58	1.15	0.04	0.03	1.08
15	1.86	1.10	0.47	0.00	0.77	2.34	0.04	0.03	2.26
16	0.00	0.27	0.27	0.00	0.37	0.91	0.04	0.03	0.83
17	0.00	0.13	0.00	0.00	0.09	0.22	0.03	0.02	0.17
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	0.95	0.95	0.00	0.00	0.95
20	2.32	0.00	0.00	0.00	0.62	0.62	0.00	0.03	0.59
21	0.00	0.00	0.00	0.00	0.90	0.90	0.00	0.03	0.86
22	0.00	0.00	0.00	0.00	0.19	0.19	0.00	0.04	0.15
23	0.00	0.00	0.00	0.00	0.87	0.87	0.00	0.03	0.85
24	1.98	0.00	0.00	0.00	0.50	0.50	0.00	0.03	0.47
25	1.98	0.00	0.00	0.00	0.33	0.33	0.00	0.02	0.30
26	1.98	0.70	0.00	0.00	0.20	0.89	0.01	0.02	0.86
27	0.00	0.29	0.00	0.00	0.20	0.49	0.01	0.01	0.47
28	0.00	0.00	0.00	0.00	0.16	0.16	0.00	0.01	0.15
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.19	0.00	0.00	0.07	0.26	0.01	0.00	0.25
Total	25.60	7.28	7.74	0.00	8.08	23.11	0.64	0.37	22.09

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 2004

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	1.70	0.30	0.00	0.00	0.24	0.54	0.02	0.03	0.49
2	1.86	0.38	0.79	0.00	0.29	1.46	0.02	0.04	1.41
3	0.00	0.23	1.26	0.00	0.34	1.84	0.02	0.03	1.79
4	2.24	0.30	0.79	0.00	0.37	1.45	0.02	0.04	1.40
5	1.55	0.38	1.26	0.00	0.23	1.88	0.05	0.03	1.79
6	0.00	0.28	0.61	0.00	0.07	0.95	0.05	0.02	0.88
7	1.70	0.26	0.66	0.00	0.00	0.92	0.05	0.02	0.85
8	0.00	0.25	0.93	0.00	0.00	1.18	0.05	0.00	1.13
9	0.00	0.34	0.42	0.00	0.00	0.76	0.05	0.00	0.71
10	1.86	0.33	0.21	0.00	0.11	0.64	0.05	0.04	0.55
11	2.17	0.42	0.45	0.00	0.28	1.15	0.05	0.04	1.05
12	1.62	0.29	0.51	0.00	0.29	1.09	0.05	0.04	1.00
13	0.00	0.22	0.39	0.00	0.32	0.93	0.05	0.03	0.84
14	0.00	0.24	0.55	0.00	0.27	1.06	0.05	0.03	0.98
15	0.00	0.19	0.18	0.00	0.16	0.53	0.01	0.00	0.53
16	0.70	0.00	0.03	0.00	0.04	0.07	0.04	0.04	-0.02
17	2.47	0.15	0.11	0.00	0.10	0.37	0.05	0.04	0.27
18	2.17	0.42	0.39	0.00	0.25	1.06	0.05	0.04	0.97
19	1.39	0.30	0.66	0.00	0.28	1.24	0.05	0.04	1.15
20	2.01	0.29	0.83	0.00	0.34	1.46	0.05	0.04	1.37
21	0.00	0.29	1.23	0.00	0.27	1.79	0.05	0.04	1.69
22	0.00	0.14	0.82	0.00	0.27	1.23	0.05	0.03	1.15
23	0.00	0.08	0.15	0.00	0.29	0.52	0.05	0.04	0.43
24	2.01	0.17	0.22	0.00	0.22	0.60	0.05	0.04	0.51
25	1.86	0.37	1.01	0.00	0.12	1.49	0.05	0.03	1.41
26	1.86	0.28	0.95	0.00	0.29	1.51	0.05	0.04	1.42
27	0.77	0.25	0.70	0.00	0.14	1.10	0.05	0.03	1.01
28	0.00	0.17	0.31	0.00	0.00	0.48	0.05	0.04	0.39
29	0.00	0.22	0.27	0.00	0.00	0.49	0.05	0.00	0.44
30	1.24	0.19	0.17	0.00	0.00	0.36	0.05	0.00	0.31
31	1.86	0.08	1.63	0.00	0.00	1.71	0.05	0.00	1.66
Total	33.02	7.81	18.49	0.00	5.55	31.86	1.40	0.89	29.57

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 2004

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	1.86	0.00	0.72	0.00	0.00	0.72	0.05	0.00	0.67
2	1.86	0.00	0.31	0.00	0.00	0.31	0.04	0.00	0.27
3	0.00	0.00	0.33	0.00	0.00	0.33	0.04	0.00	0.29
4	0.00	0.95	0.35	0.00	0.00	1.30	0.06	0.00	1.25
5	0.00	0.23	0.29	0.00	0.00	0.52	0.06	0.00	0.47
6	1.78	0.26	0.14	0.00	0.00	0.40	0.06	0.00	0.35
7	0.00	0.00	0.02	0.00	0.00	0.02	0.03	0.05	-0.07
8	0.93	0.26	0.00	0.00	0.85	1.11	0.02	0.05	1.05
9	1.78	0.36	0.00	0.00	0.70	1.06	0.02	0.05	0.99
10	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	-0.05
11	0.70	0.18	0.86	0.00	0.99	2.03	0.02	0.04	1.97
12	1.93	0.00	1.67	0.00	0.00	1.67	0.06	0.03	1.58
13	1.78	0.00	0.68	0.00	0.00	0.68	0.06	0.00	0.63
14	0.00	0.00	0.31	0.00	0.00	0.31	0.06	0.00	0.26
15	1.62	0.00	0.31	0.00	0.00	0.31	0.05	0.00	0.26
16	0.00	0.00	0.31	0.00	0.00	0.31	0.05	0.00	0.26
17	0.00	0.00	0.32	0.00	0.00	0.32	0.04	0.00	0.28
18	0.00	0.00	1.12	0.00	0.00	1.12	0.04	0.00	1.08
19	0.00	0.00	0.31	0.00	0.00	0.31	0.04	0.00	0.28
20	2.17	0.62	0.11	0.00	0.76	1.49	0.06	0.04	1.39
21	0.31	0.00	0.00	0.00	0.00	0.00	0.06	0.04	-0.10
22	2.32	0.62	0.00	0.00	0.76	1.38	0.06	0.04	1.29
23	2.78	0.09	0.00	0.00	0.31	0.40	0.06	0.03	0.32
24	0.00	0.23	0.00	0.00	0.85	1.08	0.03	0.04	1.01
25	0.00	0.21	0.00	0.00	0.46	0.67	0.03	0.04	0.60
26	0.00	0.41	0.00	0.00	0.95	1.36	0.02	0.04	1.30
27	0.00	0.20	0.00	0.00	0.45	0.65	0.02	0.03	0.60
28	1.93	0.28	0.00	0.00	0.93	1.21	0.02	0.04	1.15
29	1.24	0.24	0.00	0.00	0.38	0.62	0.02	0.04	0.56
30	1.55	0.45	0.00	0.00	0.84	1.30	0.02	0.04	1.23
Total	26.53	5.60	8.17	0.00	9.24	23.01	1.16	0.67	21.18

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 2004

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	3.17	0.33	0.00	0.00	0.48	0.82	0.02	0.04	0.76
2	1.78	0.22	0.00	0.00	0.93	1.14	0.02	0.04	1.09
3	0.00	0.32	0.00	0.00	0.50	0.81	0.02	0.04	0.76
4	0.00	0.33	0.00	0.00	0.48	0.82	0.02	0.03	0.77
5	0.00	0.14	0.00	0.00	0.16	0.30	0.02	0.03	0.26
6	3.17	0.10	1.11	0.00	0.00	1.21	0.04	0.00	1.17
7	1.62	0.02	0.96	0.00	0.00	0.98	0.04	0.00	0.94
8	0.54	0.00	0.31	0.00	0.00	0.31	0.04	0.00	0.28
9	0.00	0.00	1.33	0.00	0.00	1.33	0.04	0.00	1.30
10	0.00	0.00	0.49	0.00	0.00	0.49	0.03	0.00	0.46
11	0.00	0.00	0.43	0.00	0.00	0.43	0.03	0.00	0.40
12	1.24	0.17	0.36	0.00	0.35	0.88	0.03	0.02	0.83
13	1.93	0.60	0.21	0.00	0.70	1.50	0.05	0.03	1.41
14	1.89	0.45	0.68	0.00	0.75	1.88	0.05	0.02	1.81
15	1.28	0.27	0.38	0.00	0.49	1.14	0.01	0.02	1.10
16	0.77	0.12	0.34	0.00	0.79	1.26	0.02	0.03	1.21
17	0.00	0.17	0.20	0.00	0.55	0.91	0.03	0.02	0.86
18	0.00	0.33	0.04	0.00	0.45	0.82	0.00	0.00	0.82
19	0.00	0.12	0.00	0.00	0.15	0.26	0.00	0.00	0.26
20	0.00	0.06	0.00	0.00	0.00	0.06	0.00	0.00	0.06
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	17.40	3.74	6.86	0.00	6.79	17.38	0.51	0.32	16.55

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
AUGUST 2004

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 2004

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	2.86	0.07	0.15	0.00	0.42	0.64	0.00	0.01	0.62
14	3.71	0.46	0.36	0.00	1.31	2.14	0.02	0.03	2.09
15	3.63	0.70	0.75	0.00	0.95	2.40	0.04	0.03	2.33
16	3.71	0.49	1.10	0.00	1.02	2.60	0.04	0.03	2.54
17	0.54	0.14	0.50	0.00	0.29	0.93	0.04	0.03	0.86
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	14.46	1.86	2.87	0.00	3.98	8.71	0.14	0.12	8.44

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 2004

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	1.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	1.02	0.51	0.23	0.00	0.60	1.33	0.01	0.02	1.30
14	0.00	0.00	0.00	0.00	0.59	0.59	0.00	0.02	0.57
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	0.17	0.00	0.00	0.00	0.17	0.00	0.00	0.17
19	0.85	0.09	0.33	0.00	0.46	0.88	0.01	0.00	0.87
20	2.47	0.36	0.54	0.00	0.85	1.75	0.04	0.03	1.68
21	3.71	0.74	0.56	0.00	0.65	1.95	0.04	0.01	1.89
22	1.89	0.11	0.31	0.98	0.75	2.16	0.04	0.01	2.11
23	1.89	0.07	0.31	0.78	0.62	1.78	0.04	0.02	1.73
24	1.82	0.10	0.45	0.02	0.64	1.21	0.04	0.01	1.15
25	0.97	0.09	0.51	0.56	0.39	1.55	0.04	0.01	1.50
26	0.00	0.05	0.26	0.16	0.19	0.65	0.04	0.01	0.60
27	1.24	0.00	0.22	0.53	0.28	1.04	0.03	0.02	0.98
28	1.86	0.00	0.40	0.42	0.44	1.26	0.03	0.01	1.22
29	1.86	0.00	0.34	0.55	0.34	1.24	0.03	0.01	1.19
30	1.89	0.00	0.35	0.65	0.51	1.51	0.03	0.01	1.47
31	1.74	0.00	0.01	0.00	0.00	0.01	0.03	0.01	-0.03
Total	24.38	2.29	4.83	4.67	7.30	19.09	0.48	0.21	18.39

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 2004

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	1.86	0.70	0.00	0.00	0.21	0.91	0.03	0.02	0.87
2	1.28	0.49	0.00	0.88	0.14	1.51	0.03	0.01	1.47
3	1.86	0.56	0.00	0.07	0.73	1.36	0.03	0.01	1.32
4	1.86	0.33	0.07	0.71	0.55	1.65	0.03	0.02	1.60
5	1.86	0.17	0.00	0.43	0.29	0.89	0.03	0.02	0.85
6	0.58	0.14	0.00	0.00	0.60	0.74	0.03	0.01	0.70
7	0.00	0.12	0.00	0.00	0.23	0.35	0.02	0.01	0.32
8	1.86	0.34	1.48	0.78	0.41	3.00	0.01	0.01	2.98
9	1.86	0.51	0.74	0.48	0.08	1.81	0.03	0.01	1.77
10	1.86	0.28	0.07	0.49	0.32	1.16	0.03	0.01	1.12
11	1.86	0.19	0.47	0.50	0.46	1.62	0.03	0.01	1.57
12	1.86	0.18	0.74	0.82	0.38	2.12	0.03	0.00	2.09
13	1.86	0.16	0.62	0.00	0.55	1.34	0.03	0.01	1.30
14	1.86	0.13	0.35	0.00	0.13	0.60	0.03	0.01	0.56
15	0.00	0.10	0.30	0.00	0.61	1.02	0.02	0.01	0.99
16	0.00	0.04	0.30	0.00	0.24	0.58	0.01	0.01	0.56
17	1.78	0.28	0.59	0.67	0.25	1.80	0.03	0.01	1.76
18	1.86	0.55	1.25	0.44	0.43	2.67	0.03	0.01	2.63
19	1.86	0.39	0.52	0.56	0.00	1.47	0.03	0.01	1.43
20	0.70	0.20	0.17	0.56	0.00	0.94	0.03	0.01	0.89
21	1.08	0.19	0.22	0.00	0.00	0.41	0.03	0.01	0.38
22	0.23	0.64	0.66	0.00	0.00	1.29	0.02	0.00	1.27
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	29.77	6.69	8.54	7.40	6.59	29.22	0.56	0.24	28.41

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 2004

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	1.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.62	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	0.46	0.00	1.08	0.00	1.55	0.01	0.00	1.54
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	0.13	0.00	0.00	0.00	0.13	0.00	0.00	0.13
25	0.00	0.07	0.00	0.00	0.00	0.07	0.00	0.00	0.07
26	0.00	0.06	0.00	0.00	0.00	0.06	0.00	0.00	0.06
27	0.00	0.08	0.00	0.00	0.00	0.08	0.00	0.00	0.08
28	0.00	0.06	0.00	0.00	0.00	0.06	0.00	0.00	0.06
29	1.62	0.20	0.00	0.00	0.00	0.20	0.00	0.00	0.20
30	0.46	0.06	0.00	0.00	0.00	0.06	0.00	0.00	0.05
31	0.00	0.06	0.00	0.00	0.00	0.06	0.00	0.00	0.05
Total	3.94	1.19	0.00	1.08	0.00	2.27	0.04	0.00	2.23

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

ARIZONA DEPARTMENT OF WATER RESOURCES
HYDROLOGY DIVISION

TECHNICAL BULLETIN

Justification for using the Cooley Method Maximum Curve as the standard method for calculating evaporation losses at open-air underground storage facilities.

The Hydrology Division recommends using the Cooley Method with the Maximum Curve when calculating evaporative losses for spreading basins. This recommendation was derived for the following reasons:

- The Cooley Method is very consistent, in that, the daily evaporation rates and adjustment factors are fixed and do not change over time. This allows for a very simplified calculation method that is identical from year to year.

- The Cooley method is easy to use and can be adopted by a wide range of permittees and facilities. Especially as it relates to the collecting, reporting, and reviewing of the data and calculations. This has proven to be a benefit for new facility operators and changes in personnel at the Department. This is an important factor to consider when taking into account a duration of twenty years or longer for some facilities.

- The consistency of the Cooley Method makes it easy for the Department to review and verify calculation parameters when reviewing a new application and/or determining long term storage credits.

- The Cooley Method can be used without the Department demanding extraneous monitoring cost. The information required such as, wet/dry status of the basin(s) and the volume of water discharged are currently required in the USF permit for credit calculations and infiltration calculations.

- The Cooley Method unlike other empirical methods was designed specifically for Arizona.

- Other methods of determining evaporation can be very accurate, however, they are relatively expensive, requiring intensive measurements and calculation efforts to obtain evaporation values. In Hydrology's experience the difference between these methods and Cooley is negligible. This is especially true given the relatively small ratio of evaporation to the total amount of water recharged.

- The daily evaporation rates and adjustment factors, determined by Cooley, are used by the Arizona Department of Environmental Quality (ADEQ Engineering Bulletin No. 12). Thus having consistency between state agencies.

Justification for Using the Maximum Curve of the Cooley Method

- Using the maximum evaporation rate calculates evaporative loss less than the Class A pan evaporation data and greater than the normal evaporation curve. This produces a value that assures that all losses have been accounted for when calculating annual storage credits but is not over conservative.

- Class A pan data was one of the three sources used in preparing the Cooley Method. The corrections used in Class A pan calculations were calibrated to open water surfaces, considerably deeper than the average spreading basin. These deep open water bodies contain cooler water upwelling toward the surface causing a decrease in the evaporation rate. The spreading basins used in current recharge operations typically contain very shallow water (2 to 3 feet) that heats up fairly rapidly, thus increasing evaporative losses. Therefore, using the evaporation values calibrated for open water conditions would underestimate the evaporative losses in a spreading basin. The maximum evaporation rate more accurately estimates the evaporative losses for the conditions present at shallow recharge basins.

- Evaporation caused by the "wicking effect" may continue during dry cycles even when the basin does not contain standing water. The "wicking effect" process consists of water moving upward toward the surface due to the drying and heating of the ground above. This factor is not taken into account when using the normal values of evaporation, but is compensated for when using the maximum evaporation rate in calculations.

Attachments:

Evaporation from Open Water Surfaces in Arizona, K.R. Cooley, 1970

EVAPORATION FROM OPEN WATER SURFACES IN ARIZONA

Keith R. Cooley
Research Hydrologist
U. S. Water Conservation Laboratory, Soil and Water Conservation Research Division, Agricultural Research Service, U. S. Department of Agriculture.

Most people know that a considerable amount of water is lost by evaporation from open water surfaces in Arizona. However, they are amazed that, from a stock tank containing water 7 feet deep, the loss to evaporation in a year's time could be as much as 6 feet, leaving only one foot for livestock. On the other hand, declines in water level of 3 or 4 inches per day from fish ponds and swimming pools cannot be due entirely to evaporation.

Using the method outlined in this folder, the home owner, farmer, rancher, contractor, or consultant can estimate the amount of evaporation expected from an open, unfrozen water surface during any part of the year and for any location in Arizona. Results will generally be within 10 percent of actual evaporation on an annual basis.

How to Estimate Evaporation

Estimation of evaporation consists of three steps.

1. Select the average daily or average monthly evaporation for the period in question from Figure 1. For daily evaporation, choose one of the three curves, depending on whether you want maximum, normal, or minimum expected evaporation.

Values of average normal evaporation are shown in the bar graph as inches per month.

Use the curve representing normal evaporation for an estimate of expected evaporation under average conditions. However, for extremely hot windy periods, or cool cloudy periods, the curves representing maximum and minimum evaporation, respectively, will give a better estimate. The curves of maximum and minimum evaporation may also be of value when considering the possible range of seepage losses from water storage facilities.

2. Determine an adjustment factor from Figure 2 for the location in question. Read from the map the factor nearest the location in which you are interested.

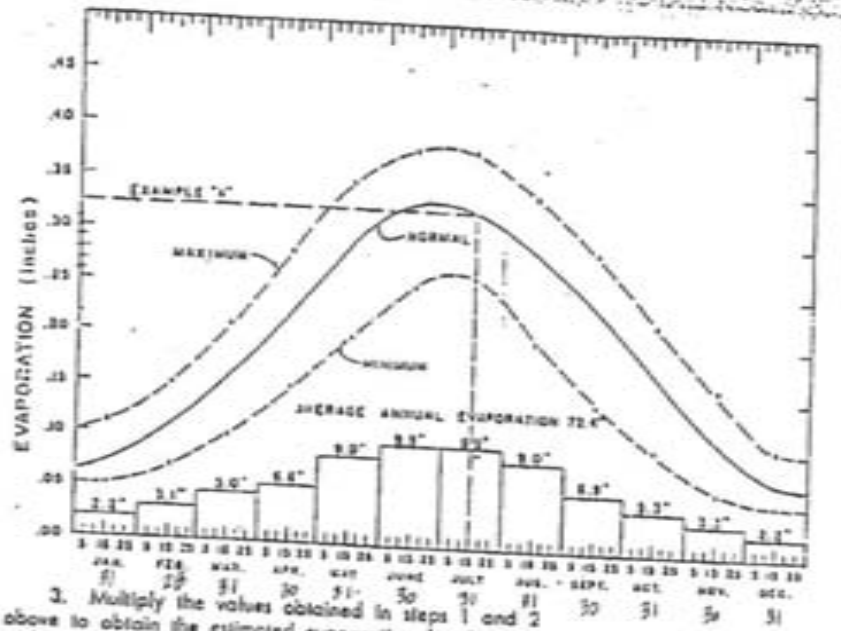


FIGURE 1. Maximum, Normal, and Minimum Daily Evaporation and Average Monthly Evaporation from Open Water Surfaces (Adjustment Factor = 1.00).

3. Multiply the values obtained in steps 1 and 2 above to obtain the estimated evaporation for the time and location in question.

For facilities with exposed walls, such as above-ground stock tanks and exposed-wall swimming pools, multiply the value obtained in step 3 above by 1.25, which is an average coefficient for the entire state for all types of exposed-wall structures.

Examples:

A. Wanted: Average daily normal evaporation from from a swimming pool in Tucson during July.
   Step 1. From Figure 1, average evaporation for July = 0.32 inches/day.
   Step 2. From Figure 2, adjustment factor = 0.95.
   Step 3. Multiply values obtained in steps 1 and 2 above: 0.32 x 0.95 = 0.3 inches/day = average daily evaporation during July in Tucson.

B. Wanted: Average normal evaporation from a fish pond in Phoenix during May and June.
   Step 1. From Figure 1, average evaporation for May and June = 9.0 and 9.9 inches, respectively.
   Step 2. Adjustment factor from Figure 2 for Phoenix = 1.0.

(See over)

FIGURE 2. Evaporation Adjustment Factors for Arizona

Step 3. Multiply values obtained in steps 1 and 2 above: (9.0 x 1.01) + (9.9 x 1.01) = 18.9 or approximately 19 inches = total average evaporation for May and June.

C. Wanted: Maximum evaporation to be expected from a stock pond near Snowflake during May, June, and July.

Step 1. From the curve of maximum values in Figure 1, values for May, June, and July are: 0.35, 0.38, and 0.38 inches/day, respectively.

Step 2. From Figure 2, adjustment factor for Snowflake = 0.80.

Step 3. Multiply values obtained in steps 1 and 2 above times the number of days in each month.

May: 0.35 x 31 x 0.8 = 8.7
June: 0.38 x 30 x 0.8 = 9.1
July: 0.38 x 31 x 0.8 = 9.4
Total: 27.2 inches

Maximum evaporation expected from a stock pond near Snowflake during May, June, and July is approximately 27 inches.

D. Wanted: Average normal evaporation from an exposed-wall swimming pool near Yuma during June.

Step 1. From Figure 1, average evaporation for June is 9.9 inches.

Step 2. From Figure 2, adjustment factor for Yuma = 1.10.

Step 3. Multiply values obtained in steps 1 and 2 above:
9.9 x 1.10 = 10.9 inches.

Step 4. Multiply by the coefficient for exposed-wall storage facilities, 1.25:
10.9 x 1.25 = 13.6 inches = average evaporation from an exposed-wall swimming pool at Yuma during June.

Acknowledgement

Data used in preparing this paper were obtained from three sources: (1) records of evaporation from sunken insulated evaporation pans at the U. S. Water Conservation Laboratory near Phoenix, Arizona, for the years 1966-1968, (2) records of evaporation from a Class A evaporation pan at the University of Arizona Mesa Experiment Farm for the years 1917-1967, and (3) evaporation maps of the United States based on 1946-1955 data.

Special acknowledgement is made to Mr. Paul C. Kangieser, U. S. Weather Bureau Climatologist, for supplying records of evaporation recorded at the Mesa Experiment Farm.

This publication is issued by the Cooperative Extension Service and the Agricultural Experiment Station of The University of Arizona. See your local County Extension Agent for additional information.

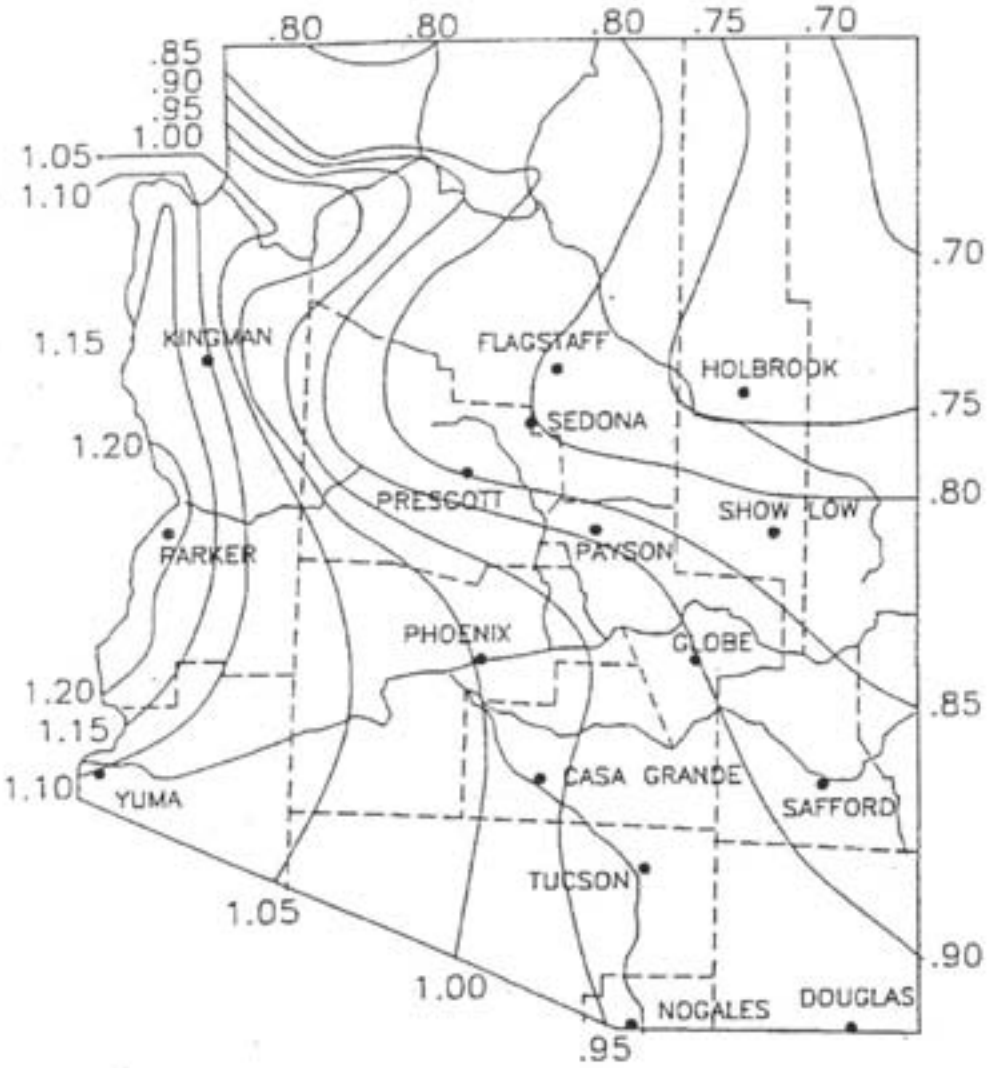
EVAPORATION FROM OPEN WATER SURFACES IN ARIZONA

FOLDER 158

Agricultural Experiment Station
And
Cooperative Extension Service
The University of Arizona

Issued in furtherance of cooperative extension work in agriculture and home economics, Acts of May 8 and June 30, 1914, in cooperation with the U. S. Department of Agriculture. George E. Hull, Director of Extension Service, The University of Arizona College of Agriculture, Tucson,

FIGURE 10. EVAPORATION ADJUSTMENT FACTORS FOR ARIZONA



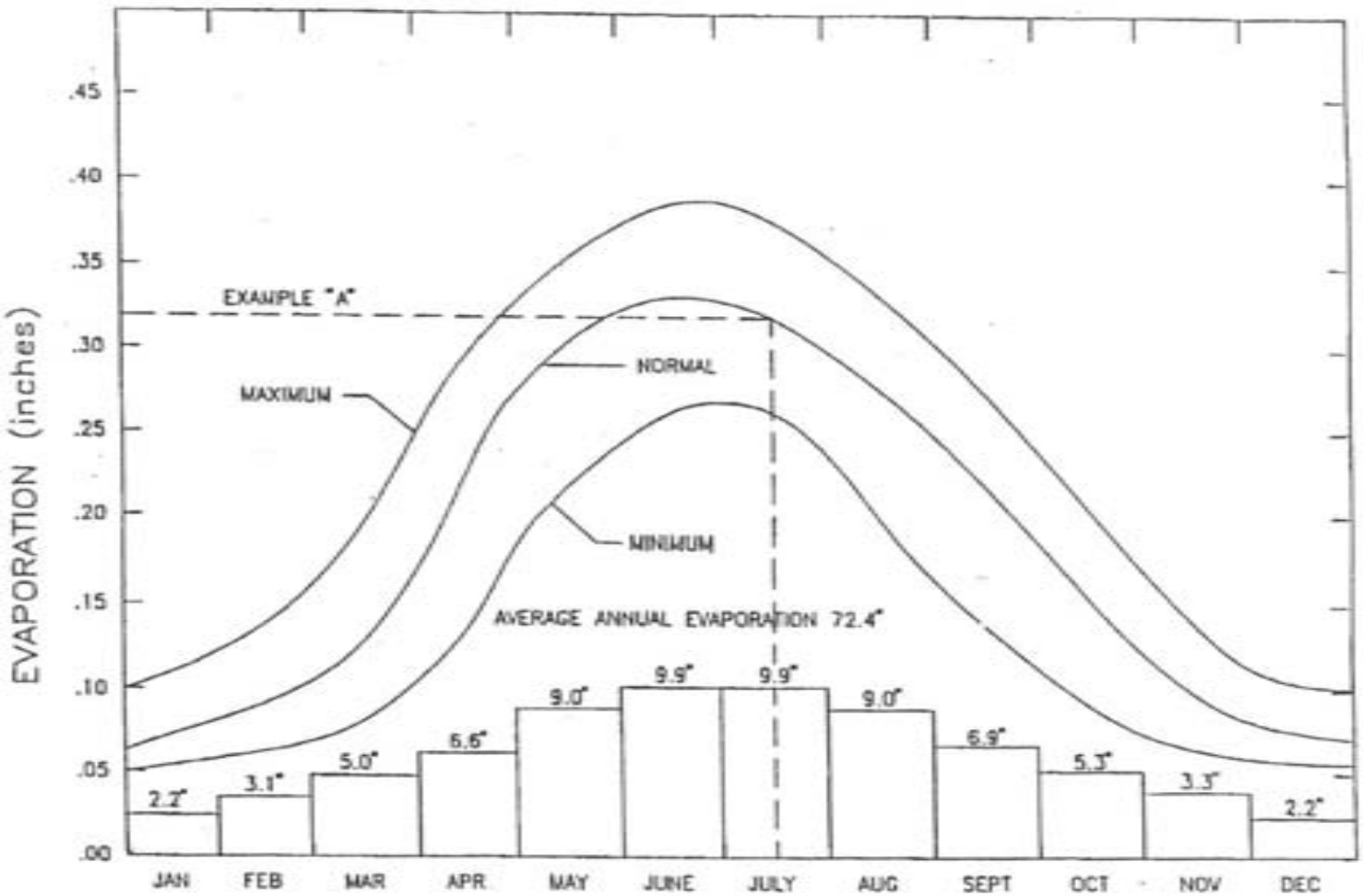


FIGURE 9. MAXIMUM, NORMAL AND MINIMUM DAILY EVAPORATION AND AVERAGE MONTHLY EVAPORATION FROM OPEN WATER SURFACES (Adjustment Factor = 1.00)

TABLE 3.2 MONTHLY MAXIMUM, NORMAL, AND MINIMUM OPEN WATER EVAPORATION AMOUNTS FOR ARIZONA (UNADJUSTED).

	EVAPORATION (IN)		
MONTH	MAXIMUM	NORMAL	MINIMUM
Jan (31 days)	3.6	2.2	1.6
Feb (28)	4.5	3.1	2.3
Mar (31)	6.5	5.0	3.1
April (30)	8.4	6.6	4.5
May (31)	10.9	9.0	6.2
June (30)	11.4	9.9	7.5
July (31)	11.8	9.9	8.1
August (31)	10.5	9.0	6.0
Sept (30)	8.7	6.9	4.1
Oct (31)	7.0	5.3	2.8
Nov (30)	4.8	3.3	1.8
Dec (31)	3.1	2.2	1.6
TOTAL	91.2 (7.6 ft.)	72.4 (6.0 ft.)	49.6 (4.1 ft.)

From: Cooley, 1970

APPENDIX C

AZMET COMPUTATION OF REFERENCE CROP EVAPOTRANSPIRATION

Paul W. Brown
Extension Specialist, Biometeorology
University of Arizona

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:

Daytime: Rn>0

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

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.

Snyder, R. and W. Pruitt. 1985. Estimating reference evapotranspiration with hourly data. In R. Snyder et al. (ed.) California Irrigation Management Information System Final Report. June 1985, Vol. 1. Land, Air and Water Resources Paper #10013-A. Univ. of California-Davis. Chpt. VII.

APPENDIX D

TURNER
LABORATORIES INC.

March 03, 2004

Suzanne Shields
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.: 0401381

Dear Suzanne Shields,

Turner Laboratories, Inc. received 1 sample on 1/29/04 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

Turner Laboratories, Inc. **Date:** *03-Mar-04*

CLIENT: Pima County Flood Control District
Project: MHPERP
Lab Order: 0401381

CASE NARRATIVE

Analytical Comments for METHOD 524.2, SAMPLE LCS/LCSD-720212: The recovery 1,2-dichloroethane is outside of acceptance limits. Since 1,2-dichloroethane was not detectd in the sample, it is the opinion of Turner Laboratories that the quality of the sample data has not been significantly affected.

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: *03-Mar-04*

CLIENT: Pima County Flood Control District
Lab Order: 0401381
Project: MHPERP
Lab ID: 0401381-01A

Client Sample ID: HP-1
Collection Date: 1/29/04 11:25:00 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	2/5/04 8:01:25 PM
Beryllium	ND	0.10		mg/L	1	2/5/04 8:01:25 PM
Cadmium	ND	0.0030		mg/L	1	2/5/04 8:01:25 PM
Chromium	ND	0.030		mg/L	1	2/5/04 8:01:25 PM
Nickel	ND	0.10		mg/L	1	2/5/04 8:01:25 PM
GFAA METALS IN WATER		**E200.9**				Analyst: **RAD**
Antimony	ND	0.0050		mg/L	1	2/6/04 12:08:00 PM
Arsenic	ND	0.0050		mg/L	1	2/9/04 6:32:00 PM
Lead	0.0091	0.0050		mg/L	1	2/17/04 1:59:00 PM
Selenium	ND	0.0050		mg/L	1	2/19/04 12:41:00 PM
Thallium	ND	0.0020		mg/L	1	2/9/04 12:10:00 PM
MERCURY (TOTAL) IN DRINKING WATER		**E245.1**				Analyst: **RAD**
Mercury	ND	0.0010		mg/L	1	2/12/04 1:18:00 PM
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PGD**
Nitrogen, Nitrate (As N)	3.8	1.0		mg/L	1	1/29/04 1:52:00 PM
Nitrogen, Nitrite	ND	0.10		mg/L	1	1/29/04 1:52:00 PM
PURGEABLE ORGANIC COMPOUNDS		**E524.2**				Analyst: **KP**
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
1,1,1-Trichloroethane	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
1,1-Dichloroethane	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
1,1-Dichloroethene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
1,1-Dichloropropene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
1,2,3-Trichloropropane	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
1,2-Dichloroethane	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
1,2-Dichloropropane	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
1,3-Dichlorobenzene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
1,3-Dichloropropane	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
2,2-Dichloropropane	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
2-Chlorotoluene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
4-Chlorotoluene	ND	0.50		µg/L	1	2/12/04 4:08:00 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-Mar-04*

CLIENT: Pima County Flood Control District
Lab Order: 0401381
Project: MHPERP
Lab ID: 0401381-01A

Client Sample ID: HP-1
Collection Date: 1/29/04 11:25:00 AM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
4-Isopropyltoluene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Benzene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Bromobenzene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Bromochloromethane	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Bromodichloromethane	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Bromoform	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Bromomethane	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Carbon tetrachloride	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Chlorobenzene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Chloroethane	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Chloroform	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Chloromethane	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
cis-1,2-Dichloroethene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Dibromochloromethane	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Dibromomethane	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Dichlorodifluoromethane	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Ethylbenzene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Hexachlorobutadiene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Isopropylbenzene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Methylene chloride	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
n-Butylbenzene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
n-Propylbenzene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Naphthalene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
sec-Butylbenzene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Styrene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
tert-Butylbenzene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Tetrachloroethene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Toluene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
trans-1,2-Dichloroethene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Trichloroethene	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Trichlorofluoromethane	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Vinyl chloride	ND	0.50		µg/L	1	2/12/04 4:08:00 PM
Xylenes, Total	ND	1.5		µg/L	1	2/12/04 4:08:00 PM
Surr: 1,2-Dichlorobenzene-d4	75.0	70-130		%REC	1	2/12/04 4:08:00 PM
Surr: 4-Bromofluorobenzene	88.0	70-130		%REC	1	2/12/04 4:08:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DB**
Nitrogen, Kjeldahl, Total	1.2	0.50		mg/L	1	2/12/04 8:30:00 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

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 0401381 DATE 1/29/04 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 Volatile 601/602	8021	Pesticides 8081	PCBs 8082	Total Petroleum Hydrocarbons 418.1/8015A2	Oil and Grease Gravimetric 413.1	TCLP Analysis VOA	Semi-VOA	Pest./Herb.	Metals Total	TCLP	Dissolved	Priority Pollutants	Cyanide Amen.	Total	WAD	SDWA INORGANICS PRIMARY/SECONDARY	Coliform MPN	Colilert	P/A	HAZARDOUS WASTE PROFILE	$NO_2 + NO_3$	TKN				
HP-1	1-29-04	1125		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 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. # 47772	
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 ✓
		* Working Days			

3. RELINQUISHED BY:	4. RECEIVED BY:	* LEGEND	SPECIAL INSTRUCTIONS/COMMENTS:
David Scalero	Chris Facio	SL = SOIL	Compliance Analysis: ☒ Yes ☐ No
Signature	Signature	SD = SOLID	Send invoice and report to David Scalero, PCFCD, at address above
David Scalero	CHRIS FACIO	SG = SLUDGE	
Printed Name	Printed Name	WW = WASTEWATER	
Pima Co. Flood Control	TURNER LABORATORIES, INC.	GW = GROUNDWATER	
Firm	Firm	DW = DRINKING WATER	
1-29-04 1213	1/29/04 12:13		
Date/Time	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.

March 17, 2004

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.: 0402372

Dear David Scalero,

Turner Laboratories, Inc. received 2 samples on 2/24/04 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

Turner Laboratories, Inc.

Date: *17-Mar-04*

CLIENT: Pima County Flood Control District
Project: MHPERP
Lab Order: 0402372

CASE NARRATIVE

Analytical Comments for METHOD 300_DW, SAMPLE 0402372-01C: PQLs elevated due to matrix interferences.

Turner Laboratories, Inc.

Date: *17-Mar-04*

CLIENT: Pima County Flood Control District
Lab Order: 0402372
Project: MHPERP
Lab ID: 0402372-01A

Client Sample ID: Source Water
Collection Date: 2/24/04 10:00:00 AM
Matrix: WASTE WATER

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	3/2/04 12:26:00 PM
Beryllium	ND	0.0020		mg/L	1	3/2/04 12:26:00 PM
Cadmium	ND	0.0030		mg/L	1	3/2/04 12:26:00 PM
Chromium	ND	0.030		mg/L	1	3/2/04 12:26:00 PM
Nickel	ND	0.10		mg/L	1	3/2/04 12:26:00 PM
GFAA METALS IN WATER		**E200.9**				Analyst: **RAD**
Antimony	ND	0.0050		mg/L	1	3/16/04 11:30:00 AM
Arsenic	ND	0.0050		mg/L	1	3/2/04 5:39:00 PM
Lead	ND	0.0050		mg/L	1	3/5/04 11:31:00 AM
Selenium	ND	0.0050		mg/L	1	3/4/04 4:12:00 PM
Thallium	ND	0.0020		mg/L	1	3/11/04 1:29:00 PM
MERCURY (TOTAL) IN DRINKING WATER		**E245.1**				Analyst: **RAD**
Mercury	ND	0.0010		mg/L	1	3/2/04 1:39:00 PM
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PGD**
Nitrogen, Nitrate (As N)	ND	5.0		mg/L	5	2/24/04 10:41:00 PM
Nitrogen, Nitrite	ND	0.50		mg/L	5	2/24/04 10:41:00 PM
PURGEABLE ORGANIC COMPOUNDS		**E524.2**				Analyst: **KP**
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
1,1,1-Trichloroethane	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
1,1-Dichloroethane	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
1,1-Dichloroethene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
1,1-Dichloropropene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
1,2,3-Trichloropropane	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
1,2-Dichloroethane	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
1,2-Dichloropropane	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
1,3-Dichlorobenzene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
1,3-Dichloropropane	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
2,2-Dichloropropane	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
2-Chlorotoluene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
4-Chlorotoluene	ND	0.50		µg/L	1	3/1/04 7:46:00 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-Mar-04*

CLIENT: Pima County Flood Control District
Lab Order: 0402372
Project: MHPERP
Lab ID: 0402372-01A

Client Sample ID: Source Water
Collection Date: 2/24/04 10:00:00 AM
Matrix: WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
4-Isopropyltoluene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Benzene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Bromobenzene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Bromochloromethane	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Bromodichloromethane	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Bromoform	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Bromomethane	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Carbon tetrachloride	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Chlorobenzene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Chloroethane	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Chloroform	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Chloromethane	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
cis-1,2-Dichloroethene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Dibromochloromethane	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Dibromomethane	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Dichlorodifluoromethane	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Ethylbenzene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Hexachlorobutadiene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Isopropylbenzene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Methylene chloride	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
n-Butylbenzene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
n-Propylbenzene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Naphthalene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
sec-Butylbenzene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Styrene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
tert-Butylbenzene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Tetrachloroethene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Toluene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
trans-1,2-Dichloroethene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Trichloroethene	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Trichlorofluoromethane	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Vinyl chloride	ND	0.50		µg/L	1	3/1/04 7:46:00 PM
Xylenes, Total	ND	1.5		µg/L	1	3/1/04 7:46:00 PM
Surr: 1,2-Dichlorobenzene-d4	90.0	70-130		%REC	1	3/1/04 7:46:00 PM
Surr: 4-Bromofluorobenzene	95.0	70-130		%REC	1	3/1/04 7:46:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DB**
Nitrogen, Kjeldahl, Total	5.2	5.0		mg/L	10	3/11/04 12:00:00 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-Mar-04*

CLIENT: Pima County Flood Control District
Lab Order: 0402372
Project: MHPERP
Lab ID: 0402372-02A

Client Sample ID: HP-1
Collection Date: 2/24/04 12:05:00 PM
Matrix: WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PGD**
Nitrogen, Nitrate (As N)	3.9	1.0		mg/L	1	2/24/04 10:59:00 PM
Nitrogen, Nitrite	ND	0.10		mg/L	1	2/24/04 10:59:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DB**
Nitrogen, Kjeldahl, Total	1.6	0.50		mg/L	1	3/11/04 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.
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 # 0402372 DATE 2/24/04 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	8021	Pesticides 8081	PCBs 8082	Total Petroleum Hydrocarbons 8015/5A21	418.1	Oil and Grease Gravimetric 413.1	TCLP Analysis VOA	Semi-VOA	Metals Total	TCLP	Dissolved	Priority Pollutants	Cyanide Total	Amen.	WAD	Cadmium SDWA/INORGANICS PRIMARY/SECONDARY	NPW	Cobalt	P/A	HAZARDOUS WASTE PRICHILL	$NO_2 + NO_3$	TKN				
Source Water	2-24-04	1000		WW	6			X										X												X	X				
HP-1	2-24-04	1205		GW	2																									X	X				

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 ___ 3 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. # 47772
Bill to: Pima County Flood Control (above address)

SAMPLE RECEIPT:
Total Containers 8
Ambient (0)

3. RELINQUISHED BY: David Scalero / David Scalero / Pima Co. Flood Control / 2-24-04 1430

4. RECEIVED BY: Chris Facio / CHRIS FACIO / TURNER LABORATORIES, INC. / 2/24/04 14:30

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

SPECIAL INSTRUCTIONS/COMMENTS:
Compliance Analysis: X Yes ☐ No
Send invoice and report to David Scalero at Pima County Flood Control (above address)

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

TURNER
LABORATORIES INC.

April 09, 2004

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.: 0403320

Dear David Scalero,

Turner Laboratories, Inc. received 1 sample on 3/22/04 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

Turner Laboratories, Inc.

Date: *09-Apr-04*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	Source Water
Lab Order:	0403320	**Collection Date:**	3/22/04 9:30:00 AM
Project:	MHPERP		
Lab ID:	0403320-01A	**Matrix:**	WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PMM**
Nitrogen, Nitrate (As N)	ND	1.0		mg/L	1	3/23/04 2:42:00 PM
Nitrogen, Nitrite	0.80	0.10		mg/L	1	3/23/04 2:42:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DB**
Nitrogen, Kjeldahl, Total	17	5.0		mg/L	10	4/1/04 8:30:00 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
15 N. ... ±Drive ±104
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Fax: (520) 882-9788
1-800-882-5804

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 0403320 DATE 3/22/04 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	8021	Pesticides 8081	PCBs 8082	Total Petroleum Hydrocarbons 8015/5AZ	418.1	Oil and Grease Gravimetric 413.1	TCLP Analysis VOA	Semi-VOA	Metals TCLP	Dissolved	Total	Priority Pollutants	Cyanide Total	Amen.	WAD	SDWA INORGANICS PRIMARY/SECONDARY	Coliform P/A	MPN	Colilert	HAZARDOUS WASTE PROFILE	$NO_2 + NO_3$	TKN
Source Water	3-22-04	930		WW	2																										

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 changed as samples)	P.O. # 47772	
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 2
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	Send invoice and report to David Scalero at above address. If you have questions, call David at 205-8353.
Pima County Flood Cntrl (Firm)	TURNER LABORATORIES, INC. (Firm)	SG = SLUDGE	
3-22-04 / 1138 (Date/Time)	3/22/04 11:38 (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.

April 23, 2004

Suzanne Shields
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.: 0403423

Dear Suzanne Shields,

Turner Laboratories, Inc. received 1 sample on 3/30/04 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

Turner Laboratories, Inc. **Date:** *23-Apr-04*

CLIENT: Pima County Flood Control District
Project: MHPERP
Lab Order: 0403423

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: *23-Apr-04*

CLIENT: Pima County Flood Control District
Lab Order: 0403423
Project: MHPERP
Lab ID: 0403423-01A

Client Sample ID: HP-1
Collection Date: 3/30/04 9:05:00 AM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PMM**
Nitrogen, Nitrate (As N)	3.5	1.0		mg/L	1	3/30/04 2:48:00 PM
Nitrogen, Nitrite	ND	0.10		mg/L	1	3/30/04 2:48:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DB**
Nitrogen, Kjeldahl, Total	1.2	0.50		mg/L	1	4/1/04 8:30:00 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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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 # 0403423 DATE 3/30/04 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	Base Neutrals 625/8270	Volatile Organics GC/MS 624/524.2/8260	Halogenated or Aromatic Volatiles 8021/602	Pesticides 8081	Total Petroleum Hydrocarbons 8015/1442	Oil and Grease Gravimetric 413.1	TCLP Analysis VOA	TCLP Semi VOA	TCLP Metals	Total Metals	Priority Pollutants	Cyanide Total	Cyanide Amen.	SDWA/INORGANICS PRIMARY/SECONDARY	Cadmium AA/PV	Cadmium Colorim.	F/A	HAZARDOUS WASTE PROFILE	$NO_3 + NO_2$	TKN				
HP-1	3-30-04	950		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.#: 47772	
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: 2
Date/Time:	Date/Time:	Requested Report Date:			Ambient (Cold)
		* Working Days			

3. RELINQUISHED BY:	4. RECEIVED BY:	* LEGEND	SPECIAL INSTRUCTIONS/COMMENTS:
David Scalero	C Gutierrez	SL = SOIL SD = SOLID SG = SLUDGE WW = WASTEWATER GW = GROUNDWATER DW = DRINKING WATER	Compliance Analysis: ☒ Yes ☐ No Send invoice and report to David Scalero (address above) by 4-21-04. Please call David at 205-8353 if you have any questions.
Signature:	Signature:		
Printed Name: David Scalero	Printed Name: C Gutierrez		
Firm: Pima Co. Flood Control	Firm: TURNER LABORATORIES, INC.		
Date/Time: 3-30-04 1050	Date/Time: 3/30/04 10:50AM		

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 07, 2004

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

RE: Order No.: 0404270

Dear David Scalero,

Turner Laboratories, Inc. received 2 samples on 4/19/04 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

Turner Laboratories, Inc. **Date:** *07-May-04*

CLIENT: Pima County Flood Control District
Project:
Lab Order: 0404270

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: *07-May-04*

CLIENT: Pima County Flood Control District
Lab Order: 0404270
Project:
Lab ID: 0404270-01A

Client Sample ID: Source water
Collection Date: 4/19/04 9:05:00 AM
Matrix: WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PMM**
Nitrogen, Nitrate (As N)	ND	1.0		mg/L	1	4/19/04 3:05:00 PM
Nitrogen, Nitrite	ND	0.10		mg/L	1	4/19/04 3:05:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DB**
Nitrogen, Kjeldahl, Total	16	5.0		mg/L	10	4/28/04 8:30:00 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: *07-May-04*

CLIENT: Pima County Flood Control District
Lab Order: 0404270
Project:
Lab ID: 0404270-02A

Client Sample ID: HP-1
Collection Date: 4/19/04 11:10:00 AM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PMM**
Nitrogen, Nitrate (As N)	3.0	1.0		mg/L	1	4/19/04 3:23:00 PM
Nitrogen, Nitrite	ND	0.10		mg/L	1	4/19/04 3:23:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DB**
Nitrogen, Kjeldahl, Total	ND	0.50		mg/L	1	4/28/04 8:30:00 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

45 N. Ie Dri. Ie 10
Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
1-800-882-5804

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 0404270 DATE 4/19/04 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	Nitrate + Nitrite	TKN
Source Water	4-19-04	905	WW→		2	X	X
HP-1	4-19-04	1110	GW→		2	X	X

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. # 47772
Bill to: Pima County Flood Control address above

SAMPLE RECEIPT:
Total Containers: 4
Ambient/Cold

3. RELINQUISHED BY: David Scalero / David Scalero / Pima Co. Flood Control / 4-19-04 12:05

4. RECEIVED BY: C. Gutierrez / TURNER LABORATORIES, INC. / 4/19/04 12:05 AM

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

SPECIAL INSTRUCTIONS/COMMENTS:
Compliance Analysis: ☒ Yes ☐ No
Send invoice and report to David Scalero 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 11, 2004

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

RE: MHPERD

Order No.: 0405168

Dear David Scalero,

Turner Laboratories, Inc. received 2 samples on 5/12/2004 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: *11-Jun-04*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	Source Water
Lab Order:	0405168	**Tag Number:**	
Project:	MHPERD	**Collection Date:**	5/12/2004 9:15:00 AM
Lab ID:	0405168-01A **Field pH:**	**Matrix:**	WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
PURGEABLE ORGANIC COMPOUNDS		E524.2				Analyst: **KP**
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
1,1,1-Trichloroethane	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
1,1-Dichloroethane	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
1,1-Dichloroethene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
1,1-Dichloropropene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
1,2,3-Trichloropropane	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
1,2-Dichloroethane	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
1,2-Dichloropropane	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
1,3-Dichlorobenzene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
1,3-Dichloropropane	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
2,2-Dichloropropane	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
2-Chlorotoluene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
4-Chlorotoluene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
4-Isopropyltoluene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Benzene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Bromobenzene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Bromochloromethane	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Bromodichloromethane	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Bromoform	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Bromomethane	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Carbon tetrachloride	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Chlorobenzene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Chloroethane	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Chloroform	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Chloromethane	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
cis-1,2-Dichloroethene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Dibromochloromethane	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Dibromomethane	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Dichlorodifluoromethane	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Ethylbenzene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Hexachlorobutadiene	ND	0.50		µg/L	1	5/24/2004 1:37:00 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: *11-Jun-04*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	Source Water
Lab Order:	0405168	**Tag Number:**	
Project:	MHPERD	**Collection Date:**	5/12/2004 9:15:00 AM
Lab ID:	0405168-01A **Field pH:**	**Matrix:**	WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Isopropylbenzene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Methylene chloride	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
n-Butylbenzene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
n-Propylbenzene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Naphthalene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
sec-Butylbenzene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Styrene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
tert-Butylbenzene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Tetrachloroethene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Toluene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
trans-1,2-Dichloroethene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Trichloroethene	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Trichlorofluoromethane	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Vinyl chloride	ND	0.50		µg/L	1	5/24/2004 1:37:00 PM
Xylenes, Total	ND	1.5		µg/L	1	5/24/2004 1:37:00 PM
Surr: 1,2-Dichlorobenzene-d4	101	70-130		%REC	1	5/24/2004 1:37:00 PM
Surr: 4-Bromofluorobenzene	99.0	70-130		%REC	1	5/24/2004 1:37:00 PM

Qualifiers:

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

Turner Laboratories, Inc.

Date: *11-Jun-04*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	Source Water
Lab Order:	0405168	**Tag Number:**	
Project:	MHPERD	**Collection Date:**	5/12/2004 9:15:00 AM
Lab ID:	0405168-01B **Field pH:**	**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	5/19/2004 6:34:20 PM
Arsenic	ND	0.10		mg/L	1	5/19/2004 6:34:20 PM
Barium	ND	1.0		mg/L	1	5/19/2004 6:34:20 PM
Beryllium	ND	0.10		mg/L	1	5/19/2004 6:34:20 PM
Cadmium	ND	0.050		mg/L	1	5/19/2004 6:34:20 PM
Chromium	ND	0.10		mg/L	1	5/19/2004 6:34:20 PM
Lead	ND	0.15		mg/L	1	5/19/2004 6:34:20 PM
Nickel	ND	0.10		mg/L	1	5/19/2004 6:34:20 PM
Selenium	ND	0.10		mg/L	1	5/19/2004 6:34:20 PM
Thallium	ND	0.10		mg/L	1	5/19/2004 6:34:20 PM
MERCURY IN WATER & WASTE WATER		**E245.1**				Analyst: **RAD**
Mercury	ND	0.0010		mg/L	1	5/20/2004 11:48:00 AM

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

Turner Laboratories, Inc.

Date: *11-Jun-04*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	Source Water
Lab Order:	0405168	**Tag Number:**	
Project:	MHPERD	**Collection Date:**	5/12/2004 9:15:00 AM
Lab ID:	0405168-01C **Field pH:**	**Matrix:**	WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PMM**
Nitrogen, Nitrate (As N)	ND	1.0		mg/L	1	5/18/2004 10:26:00 AM
Nitrogen, Nitrite	ND	0.10		mg/L	1	5/18/2004 10:26:00 AM
TOTAL NITROGEN (NO2+NO3+TKN) CALC.		**CALC**				Analyst: **SB**
Nitrogen, Total	35	0		mg/L	1	6/2/2004

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: *11-Jun-04*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	Source Water
Lab Order:	0405168	**Tag Number:**	
Project:	MHPERD	**Collection Date:**	5/12/2004 9:15:00 AM
Lab ID:	0405168-01D **Field pH:**	**Matrix:**	WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DB**
Nitrogen, Kjeldahl, Total	35	10		mg/L	20	5/25/2004 9:00:00 AM

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

Turner Laboratories, Inc.

Date: *11-Jun-04*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	HP-1
Lab Order:	0405168	**Tag Number:**	
Project:	MHPERD	**Collection Date:**	5/12/2004 9:15:00 AM
Lab ID:	0405168-02A **Field pH:**	**Matrix:**	WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
PURGEABLE ORGANIC COMPOUNDS		**E524.2**				Analyst: **KP**
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
1,1,1-Trichloroethane	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
1,1-Dichloroethane	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
1,1-Dichloroethene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
1,1-Dichloropropene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
1,2,3-Trichloropropane	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
1,2-Dichloroethane	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
1,2-Dichloropropane	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
1,3-Dichlorobenzene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
1,3-Dichloropropane	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
2,2-Dichloropropane	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
2-Chlorotoluene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
4-Chlorotoluene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
4-Isopropyltoluene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Benzene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Bromobenzene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Bromochloromethane	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Bromodichloromethane	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Bromoform	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Bromomethane	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Carbon tetrachloride	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Chlorobenzene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Chloroethane	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Chloroform	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Chloromethane	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
cis-1,2-Dichloroethene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Dibromochloromethane	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Dibromomethane	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Dichlorodifluoromethane	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Ethylbenzene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Hexachlorobutadiene	ND	0.50		µg/L	1	5/24/2004 2:09:00 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: *11-Jun-04*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	HP-1
Lab Order:	0405168	**Tag Number:**	
Project:	MHPERD	**Collection Date:**	5/12/2004 9:15:00 AM
Lab ID:	0405168-02A **Field pH:**	**Matrix:**	WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Isopropylbenzene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Methylene chloride	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
n-Butylbenzene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
n-Propylbenzene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Naphthalene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
sec-Butylbenzene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Styrene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
tert-Butylbenzene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Tetrachloroethene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Toluene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
trans-1,2-Dichloroethene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Trichloroethene	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Trichlorofluoromethane	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Vinyl chloride	ND	0.50		µg/L	1	5/24/2004 2:09:00 PM
Xylenes, Total	ND	1.5		µg/L	1	5/24/2004 2:09:00 PM
Surr: 1,2-Dichlorobenzene-d4	98.0	70-130		%REC	1	5/24/2004 2:09:00 PM
Surr: 4-Bromofluorobenzene	104	70-130		%REC	1	5/24/2004 2:09:00 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: *11-Jun-04*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	HP-1
Lab Order:	0405168	**Tag Number:**	
Project:	MHPERD	**Collection Date:**	5/12/2004 9:15:00 AM
Lab ID:	0405168-02B **Field pH:**	**Matrix:**	WASTE WATER

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	5/19/2004 8:20:18 PM
Beryllium	ND	0.0020		mg/L	1	5/19/2004 8:20:18 PM
Cadmium	ND	0.0030		mg/L	1	5/19/2004 8:20:18 PM
Chromium	ND	0.030		mg/L	1	5/19/2004 8:20:18 PM
Nickel	ND	0.10		mg/L	1	5/19/2004 8:20:18 PM
GFAA METALS IN WATER		**E200.9**				Analyst: **RAD**
Antimony	ND	0.0050		mg/L	1	5/21/2004 3:14:00 PM
Arsenic	ND	0.0050		mg/L	1	5/18/2004 5:16:00 PM
Lead	0.0091	0.0050		mg/L	1	6/1/2004 3:15:00 PM
Selenium	ND	0.0050		mg/L	1	5/19/2004 3:28:00 PM
Thallium	ND	0.0020		mg/L	1	5/24/2004 1:46:00 PM
MERCURY (TOTAL) IN DRINKING WATER		**E245.1**				Analyst: **RAD**
Mercury	ND	0.0010		mg/L	1	5/20/2004 11:24:00 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: *11-Jun-04*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	HP-1
Lab Order:	0405168	**Tag Number:**	
Project:	MHPERD	**Collection Date:**	5/12/2004 9:15:00 AM
Lab ID:	0405168-02C **Field pH:**	**Matrix:**	WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PMM**
Nitrogen, Nitrate (As N)	3.3	1.0		mg/L	1	5/18/2004 10:44:00 AM
Nitrogen, Nitrite	ND	0.10		mg/L	1	5/18/2004 10:44:00 AM
TOTAL NITROGEN (NO2+NO3+TKN) CALC.		**CALC**				Analyst: **SB**
Nitrogen, Total	4.0	0		mg/L	1	6/2/2004

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: *11-Jun-04*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	HP-1
Lab Order:	0405168	**Tag Number:**	
Project:	MHPERD	**Collection Date:**	5/12/2004 9:15:00 AM
Lab ID:	0405168-02D **Field pH:**	**Matrix:**	WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DB**
Nitrogen, Kjeldahl, Total	0.66	0.50		mg/L	1	5/25/2004 9:00:00 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

4451 N. Coyote Dirt Road Ave
Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
1-800-882-5804

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 0405168 DATE _____ PAGE _____ OF _____

PROJECT NAME MHFERP
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	Base Neutrals 625/8270	Acids	Volatile Organics GC/MS 624/8260	Halogenated or Aromatic Volatiles 601/602	Pesticides 8081	PCBs 8082	Total Petroleum Hydrocarbons (8100/1SA2) 418.1	Oil and Grease Gravimetric 413.1	TCLP Analysis VOA	Semi VOA	Metals TCLP	Dissolved	Total	Priority Pollutants	Cyanide Total	Amenable	1640	Coliform Total	Fecal	HAZARDOUS WASTE PROFILE	NO_3 - NO_2	TKN				
Source Water	5-2-04	9:15		WW	6			X								X										X	X				
HF-1	5-12-04	1115		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 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.# 47778	
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
Date/Time	Date/Time	Requested Report Date			Ambient/Cold
		* Working Days			

3. RELINQUISHED BY:	4. RECEIVED BY:	* LEGEND	SPECIAL INSTRUCTIONS/COMMENTS:
David Scalero	Rene White	SL = SOIL	Compliance Analysis: X Yes ___ No
Signature	Signature	SD = SOLID	Please send report and invoice to David Scalero at above address. If there are any questions, please call David at 205-8353
David Scalero	Rene White	SG = SLUDGE	
Printed Name	Printed Name	WW = WASTEWATER	
Pima Co. Flood Control	TURNER LABORATORIES, INC.	GW = GROUNDWATER	
Firm	Firm	DW = DRINKING WATER	
5-12-04 1220	5-12-04 1220		
Date/Time	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 28, 2004

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.: 0406196

Dear David Scalero,

Turner Laboratories, Inc. received 2 samples on 6/11/04 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

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

Turner Laboratories, Inc. Date: *28-Jun-04*

CLIENT: Pima County Flood Control District
Project: MHPERP
Lab Order: 0406196

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: *28-Jun-04*

CLIENT: Pima County Flood Control District
Lab Order: 0406196
Project: MHPERP
Lab ID: 0406196-01A

Client Sample ID: SOURCE WATER
Collection Date: 6/11/04 9:10:00 AM
Matrix: WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PMM**
Nitrogen, Nitrate (As N)	ND	1.0		mg/L	1	6/12/04 4:13:00 PM
Nitrogen, Nitrite	0.72	0.10		mg/L	1	6/12/04 4:13:00 PM
TOTAL NITROGEN (NO2+NO3+TKN) CALC.		**CALC**				Analyst: **SB**
Nitrogen, Total	29	0		mg/L	1	6/28/04
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DB**
Nitrogen, Kjeldahl, Total	29	10		mg/L	20	6/23/04 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: *28-Jun-04*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	HP-1
Lab Order:	0406196	**Collection Date:**	6/11/04 11:15:00 AM
Project:	MHPERP		
Lab ID:	0406196-02A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **PMM**
Nitrogen, Nitrate (As N)	3.1	1.0		mg/L	1	6/12/04 4:50:00 PM
Nitrogen, Nitrite	ND	0.10		mg/L	1	6/12/04 4:50:00 PM
TOTAL NITROGEN (NO2+NO3+TKN) CALC.		**CALC**				Analyst: **SB**
Nitrogen, Total	4.2	0		mg/L	1	6/28/04
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **DB**
Nitrogen, Kjeldahl, Total	1.1	0.50		mg/L	1	6/23/04 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

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Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
1-800-882-5804

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 0406196 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 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	PCBs 8082	Total Petroleum Hydrocarbons 418.1/8015AB	Oil and Grease Gravimetric 413.1	TCLP Analysis VOA / Semi VOA	Metals TCLP / Dissolved	Metals Total / Priority Pollutants	Cyanide Total / Amenable	SDWA INORGANICS PRIMARY/SECONDARY	Coliform P/A / MPN	HAZARDOUS WASTE PROFILE	$NO_3 + NO_2$	TKN	Total N. Nitrogen			
Source Water	6-11-04	910		WW	2															X	X	X			
HP-1	6-11-04	1115		GW	2															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: 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. # 47772	
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:
Date/Time:	Date/Time:	Requested Report Date			Ambient/Cold:
		* Working Days			

3. RELINQUISHED BY:	4. RECEIVED BY:	* LEGEND	SPECIAL INSTRUCTIONS/COMMENTS:
David Scalero	Lizzie White	SL = SOIL	Compliance Analysis: X Yes ☐ No
Signature	Signature	SD = SOLID	Invoice and report should be sent to David Scalero at Pima County Flood Control (address shown above).
David Scalero	Lizzie White	SG = SLUDGE	
Printed Name	Printed Name	WW = WASTEWATER	
Pima Co. Flood Control	TURNER LABORATORIES, INC.	GW = GROUNDWATER	
Firm	Firm	DW = DRINKING WATER	
6-11-04 / 1330	6-11-04 / 132		
Date/Time	Date/Time		

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

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TURNER
LABORATORIES INC.

August 04, 2004

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.: 0407256

Dear David Scalero,

Turner Laboratories, Inc. received 2 samples on 7/16/04 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

Turner Laboratories, Inc. **Date:** *04-Aug-04*

CLIENT: Pima County Flood Control District
Project: MHPERP
Lab Order: 0407256

CASE NARRATIVE

Analytical Comments for METHOD 300_DW, SAMPLE 0407256-02A: Per method, nitrate and nitrite analyses were performed on a preserved sample. Results are reported as combined nitrate/nitrite.

Turner Laboratories, Inc.

Date: *04-Aug-04*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	SOURCE WATER
Lab Order:	0407256	**Collection Date:**	7/16/04 8:00:00 AM
Project:	MHPERP		
Lab ID:	0407256-01A	**Matrix:**	WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **MLR**
Nitrogen, Nitrate (As N)	ND	1.0		mg/L	1	7/27/04 7:19:00 PM
Nitrogen, Nitrite	ND	0.10		mg/L	1	7/27/04 7:19:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **JM**
Nitrogen, Kjeldahl, Total	0.95	0.50		mg/L	1	8/3/04 4:00:00 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: *04-Aug-04*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	HP-1
Lab Order:	0407256	**Collection Date:**	7/16/04 9:30:00 AM
Project:	MHPERP		
Lab ID:	0407256-02A	**Matrix:**	WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **MLR**
Nitrogen, Nitrate (As N)	3.3	1.0		mg/L	1	7/27/04 7:37:00 PM
Nitrogen, Nitrite	ND	0.10		mg/L	1	7/27/04 7:37:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **JM**
Nitrogen, Kjeldahl, Total	1.0	0.50		mg/L	1	8/3/04 4:00:00 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.
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 # 0407256 DATE 7/16/04 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	8021	Pesticides 8081	PCBs 8082	Total Petroleum Hydrocarbons 418.1	Oil and Grease Gravimetric 413.1	TCLP Analysis VOA	Semi-Volatile	TCLP	Dissolved	Metals Total	Priority Pollutants	Cyanide Total	Amenable	HCN	SDWA INORGANICS PRIMARY/SECONDARY	Coliform P/A	MPN	Coliform	HAZARDOUS WASTE PROFILE	$NO_2 + NO_3$	TKN				
Source Water	7-16-04	800		WW	2																								X	X				
HP-1	7-16-04	950		GW	2																								X	X				

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

SAMPLE RECEIPT:
Total Containers: 4
Ambient/Cold

3. RELINQUISHED BY: David Scalera / David Scalera / Pima Co. Flood Control / 1040 / 7-16-04

4. RECEIVED BY: C Gutierrez / TURNER LABORATORIES, INC. / 7/16/04 10:40AM

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

SPECIAL INSTRUCTIONS/COMMENTS:
Compliance Analysis: X Yes ☐ No
Please direct invoice and report to David Scalera at above address.

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

TURNER
LABORATORIES INC.

September 10, 2004

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.: 0408389

Dear David Scalero,

Turner Laboratories, Inc. received 1 sample on 8/26/2004 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:** *10-Sep-04*

CLIENT: Pima County Flood Control District
Project: MHPERP
Lab Order: 0408389

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: *10-Sep-04*

CLIENT: Pima County Flood Control District
Lab Order: 0408389
Project: MHPERP
Lab ID: 0408389-01A

Client Sample ID: HP-1
Collection Date: 8/26/2004 10:15:00 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	8/27/2004 4:58:36 PM
Beryllium	ND	0.0020		mg/L	1	8/27/2004 4:58:36 PM
Cadmium	ND	0.0030		mg/L	1	8/27/2004 4:58:36 PM
Chromium	ND	0.030		mg/L	1	8/27/2004 4:58:36 PM
Nickel	ND	0.10		mg/L	1	8/27/2004 4:58:36 PM
GFAA METALS IN WATER		**E200.9**				Analyst: **RAD**
Antimony	ND	0.0050		mg/L	1	8/27/2004 5:50:00 PM
Arsenic	ND	0.0050		mg/L	1	9/3/2004 4:10:00 PM
Lead	0.0097	0.0050		mg/L	1	9/2/2004 5:10:00 PM
Selenium	ND	0.0050		mg/L	1	8/30/2004 7:10:00 PM
Thallium	ND	0.0020		mg/L	1	9/7/2004 3:23:00 PM
MERCURY (TOTAL) IN DRINKING WATER		**E245.1**				Analyst: **RAD**
Mercury	ND	0.0010		mg/L	1	9/1/2004 4:41:00 PM
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **MLR**
Nitrogen, Nitrate (As N)	3.5	1.0		mg/L	1	8/26/2004 3:17:00 PM
Nitrogen, Nitrite	ND	0.10		mg/L	1	8/26/2004 3:17:00 PM
PURGEABLE ORGANIC COMPOUNDS		**E524.2**				Analyst: **KP**
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
1,1,1-Trichloroethane	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
1,1-Dichloroethane	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
1,1-Dichloroethene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
1,1-Dichloropropene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
1,2,3-Trichloropropane	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
1,2-Dichloroethane	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
1,2-Dichloropropane	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
1,3-Dichlorobenzene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
1,3-Dichloropropane	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
2,2-Dichloropropane	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
2-Chlorotoluene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
4-Chlorotoluene	ND	0.50		µg/L	1	8/30/2004 2:21:00 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: *10-Sep-04*

CLIENT: Pima County Flood Control District
Lab Order: 0408389
Project: MHPERP
Lab ID: 0408389-01A

Client Sample ID: HP-1
Collection Date: 8/26/2004 10:15:00 AM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
4-Isopropyltoluene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Benzene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Bromobenzene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Bromochloromethane	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Bromodichloromethane	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Bromoform	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Bromomethane	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Carbon tetrachloride	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Chlorobenzene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Chloroethane	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Chloroform	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Chloromethane	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
cis-1,2-Dichloroethene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Dibromochloromethane	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Dibromomethane	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Dichlorodifluoromethane	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Ethylbenzene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Hexachlorobutadiene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Isopropylbenzene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Methylene chloride	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
n-Butylbenzene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
n-Propylbenzene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Naphthalene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
sec-Butylbenzene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Styrene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
tert-Butylbenzene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Tetrachloroethene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Toluene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
trans-1,2-Dichloroethene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Trichloroethene	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Trichlorofluoromethane	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Vinyl chloride	ND	0.50		µg/L	1	8/30/2004 2:21:00 PM
Xylenes, Total	ND	1.5		µg/L	1	8/30/2004 2:21:00 PM
Surr: 1,2-Dichlorobenzene-d4	89.0	70-130		%REC	1	8/30/2004 2:21:00 PM
Surr: 4-Bromofluorobenzene	93.0	70-130		%REC	1	8/30/2004 2:21:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **JM**
Nitrogen, Kjeldahl, Total	ND	0.50		mg/L	1	9/4/2004 3:30:00 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
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 # 0408389 DATE 8/26/04 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 624/8260	Halogenated or Aromatic Volatiles 601/602 / 8021	Pesticides 8081	PCBs 8082	Total Petroleum Hydrocarbons 8015/3620 / 418.1	Oil and Grease Gravimetric 413.1	TCLP Analysis VOA / Semi VOA / Pest/Herb	Metals TCLP / Dissolved / Total / Priority Pollutants	Cyanide Amen. / Total	SDWA/INORGANICS PRIMARY/SECONDARY	Coliform MPN / Colifecal	HAZARDOUS WASTE PROFILE	TKN	$NO_3 + NO_2$				
HP-1	8-26-04	1015	~~600~~	GW	6		X							X						X	X			

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 6 Ambient / Cold
3. RELINQUISHED BY: David Scalera / Printed Name: David Scalera / Firm: Pima Co. Flood Control / Date/Time: 8-26-04 / 1120	4. RECEIVED BY: Signature / Printed Name: C. Cuttemer / TURNER LABORATORIES, INC. / Date/Time: 8/26/04 1120AM	* LEGEND: SL = SOIL; SD = SOLID; SG = SLUDGE; WW = WASTEWATER; GW = GROUNDWATER; DW = DRINKING WATER		SPECIAL INSTRUCTIONS/COMMENTS: Compliance Analysis: X Yes ___ No	Invoice and report to David Scalera at above address

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.

October 06, 2004

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.: 0409315

Dear David Scalero,

Turner Laboratories, Inc. received 1 sample on 9/22/2004 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: *06-Oct-04*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	HP-1
Lab Order:	0409315	**Collection Date:**	9/22/2004 10:15:00 AM
Project:	MHPERP		
Lab ID:	0409315-01A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **JM**
Nitrogen, Nitrate (As N)	3.4	1.0		mg/L	1	9/22/2004 2:10:00 PM
Nitrogen, Nitrite	ND	0.10		mg/L	1	9/22/2004 2:10:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **JM**
Nitrogen, Kjeldahl, Total	0.53	0.50		mg/L	1	9/24/2004 4:00:00 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.
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 # 0409315 DATE 9/22/04 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 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 624/8260	Halogenated or Aromatic Volatiles 8021 / 601/602	Pesticides 8081	PCBs 8082	Total Petroleum Hydrocarbons 8015/1A2 / 418.1	Oil and Grease Gravimetric 413.1	TCLP Analysis VOA / Semi VOA / Met/Inorg	Metals Total / Priority Pollutants / TCLP / Dissolved	Cyanide Amenable / Total / HCN	SDWA/INORGANICS PRIMARY/SECONDARY	Cadmium Atomic / Colorimetric	P/A / HAZARDOUS WASTE PROFILE	$NO_2 + NO_3$	TKN				
HP-1	9-22-04	1015		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 ___ 5 Day*	___ II. Report (includes DUP, MS, MSD, as required, may be charged as samples)	P.O. # 47772	
Firm:	Firm:	___ Provide Verbal Preliminary Results	___ III. Data Validation Report (Includes All Raw Data) Add 10% to invoice	Bill to: Pima County Flood Control	Total Containers:
Date/Time:	Date/Time:	Requested Report Date:			Ambient/Cold:
		* Working Days			

3. RELINQUISHED BY:	4. RECEIVED BY:	* LEGEND	SPECIAL INSTRUCTIONS/COMMENTS:
Signature: David Scalero	Signature: Carla McClellan	SL = SOIL	Compliance Analysis: ☒ Yes ☐ No
Printed Name: David Scalero	Printed Name: Carlee McClellan	SO = SOLID	Send invoice and report to David Scalero at address above. Call 205-8353 if there are any questions
Firm: Pima Co. Flood Control	Firm: TURNER LABORATORIES, INC.	SG = SLUDGE	
Date/Time: 9-22-04 11:48	Date/Time: 9/22/04 11:50	WW = WASTEWATER	
		GW = GROUNDWATER	
		DW = DRINKING WATER	

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

TURNER
LABORATORIES INC.

October 21, 2004

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.: 0409355

Dear David Scalero,

Turner Laboratories, Inc. received 1 sample on 9/27/04 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

Turner Laboratories, Inc.

Date: *21-Oct-04*

CLIENT: Pima County Flood Control District
Lab Order: 0409355
Project: MHPERP
Lab ID: 0409355-01A

Client Sample ID: Source Water
Collection Date: 9/27/04 9:05:00 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	10/1/04 12:10:16 PM
Arsenic	ND	0.10		mg/L	1	10/1/04 12:10:16 PM
Barium	ND	1.0		mg/L	1	10/1/04 12:10:16 PM
Beryllium	ND	1.0		mg/L	1	10/1/04 12:10:16 PM
Cadmium	ND	0.050		mg/L	1	10/1/04 12:10:16 PM
Chromium	ND	0.10		mg/L	1	10/1/04 12:10:16 PM
Lead	ND	0.15		mg/L	1	10/1/04 12:10:16 PM
Nickel	ND	0.080		mg/L	1	10/1/04 12:10:16 PM
Selenium	ND	0.10		mg/L	1	10/1/04 12:10:16 PM
Thallium	ND	0.10		mg/L	1	10/1/04 12:10:16 PM
MERCURY IN WATER & WASTE WATER		**E245.1**				Analyst: **RAD**
Mercury	ND	0.0010		mg/L	1	10/13/04 2:02:00 PM
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **JM**
Nitrogen, Nitrate (As N)	ND	1.0		mg/L	1	9/28/04 10:18:00 AM
Nitrogen, Nitrite	1.4	0.10	*	mg/L	1	9/28/04 10:18:00 AM
PURGEABLE ORGANIC COMPOUNDS		**E524.2**				Analyst: **KP**
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
1,1,1-Trichloroethane	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
1,1-Dichloroethane	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
1,1-Dichloroethene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
1,1-Dichloropropene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
1,2,3-Trichloropropane	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
1,2-Dichloroethane	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
1,2-Dichloropropane	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
1,3-Dichlorobenzene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
1,3-Dichloropropane	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
2,2-Dichloropropane	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
2-Chlorotoluene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
4-Chlorotoluene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
4-Isopropyltoluene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Benzene	ND	0.50		µg/L	1	10/4/04 2:49:00 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: *21-Oct-04*

CLIENT: Pima County Flood Control District
Lab Order: 0409355
Project: MHPERP
Lab ID: 0409355-01A

Client Sample ID: Source Water
Collection Date: 9/27/04 9:05:00 AM
Matrix: WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Bromobenzene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Bromochloromethane	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Bromodichloromethane	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Bromoform	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Bromomethane	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Carbon tetrachloride	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Chlorobenzene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Chloroethane	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Chloroform	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Chloromethane	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
cis-1,2-Dichloroethene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Dibromochloromethane	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Dibromomethane	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Dichlorodifluoromethane	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Ethylbenzene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Hexachlorobutadiene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Isopropylbenzene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Methylene chloride	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
n-Butylbenzene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
n-Propylbenzene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Naphthalene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
sec-Butylbenzene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Styrene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
tert-Butylbenzene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Tetrachloroethene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Toluene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
trans-1,2-Dichloroethene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Trichloroethene	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Trichlorofluoromethane	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Vinyl chloride	ND	0.50		µg/L	1	10/4/04 2:49:00 PM
Xylenes, Total	ND	1.5		µg/L	1	10/4/04 2:49:00 PM
Surr: 1,2-Dichlorobenzene-d4	92.0	70-130		%REC	1	10/4/04 2:49:00 PM
Surr: 4-Bromofluorobenzene	95.0	70-130		%REC	1	10/4/04 2:49:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **JM**
Nitrogen, Kjeldahl, Total	18	10		mg/L	20	10/5/04 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
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 # 0409355 DATE 9/27/04 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 624/8260	Halogenated or Aromatic Volatiles 601/602	Pesticides 8081	PCBs 8082	Total Petroleum Hydrocarbons 418.1/8015/5A21	Oil and Grease Gravimetric 413.1	TCLP Analysis VOA	Semi-Volatile	TCLP	Dissolved	Metals Total	Priority Pollutants	Cyanide Amenable	WAD	Total	SDWA INORGANICS PRIMARY/SECONDARY	Coliform MPN	Colilert	F/A	HAZARDOUS WASTE PROFILE	NOx + NO2	TKN				
Source Water	9-27-04	905		WW	6			3								1												1	1				

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. # 47772	
Firm	Firm	___ Provide Verbal Preliminary Results	___ III. Data Validation Report (includes All Raw Data) Add 10% to invoice	Bill to: Pima County Flood Control	Total Containers 6
Date/Time	Date/Time	Requested Report Date			Ambient/Cold 20°C
		* Working Days			

3. RELINQUISHED BY:	4. RECEIVED BY:	* LEGEND	SPECIAL INSTRUCTIONS/COMMENTS:
David Scalero	C. Gutierrez	SL = SOIL	Compliance Analysis: X Yes ___ No
Signature	Signature	SD = SOLID	Report and invoice go to
David Scalero	C. Gutierrez	SG = SLUDGE	David Scalero, address above.
Printed Name	Printed Name	WW = WASTEWATER	
Pima Co. Flood Control	TURNER LABORATORIES, INC.	GW = GROUNDWATER	
Firm	Firm	DW = DRINKING WATER	
9-27-04 1000	9/27/04 10AM		
Date/Time	Date/Time		

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

TURNER
LABORATORIES INC.

November 04, 2004

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

RE: MHPFRP

Order No.: 0410326

Dear Suzanne Shields, P.E.,

Turner Laboratories, Inc. received 2 samples on 10/22/04 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

Turner Laboratories, Inc.

Date: *04-Nov-04*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	Source Water
Lab Order:	0410326	**Collection Date:**	10/22/04 8:30:00 AM
Project:	MHPERP		
Lab ID:	0410326-01A	**Matrix:**	WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **JM**
Nitrogen, Nitrate (As N)	1.1	1.0		mg/L	1	10/22/04 2:39:00 PM
Nitrogen, Nitrite	1.6	0.10	*	mg/L	1	10/22/04 2:39:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **JM**
Nitrogen, Kjeldahl, Total	23	10		mg/L	20	10/29/04 4:00:00 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: *04-Nov-04*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	HP-1
Lab Order:	0410326	**Collection Date:**	10/22/04 10:25:00 AM
Project:	MHPERP		
Lab ID:	0410326-02A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **JM**
Nitrogen, Nitrate (As N)	3.2	1.0		mg/L	1	10/22/04 3:22:00 PM
Nitrogen, Nitrite	ND	0.10		mg/L	1	10/22/04 3:22:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **JM**
Nitrogen, Kjeldahl, Total	0.60	0.50		mg/L	1	10/29/04 4:00:00 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.
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 # 0410326 DATE 10/22/04 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: ____

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 8100/1312	1664A	Oil and Grease Gravimetric 1664A	TCLP Analysis VOA	Semi-VOA	Pesticides	TCLP	Dissolved	Metals Total	Priority Pollutants	Cyanide Total	Amen	SDWA INORGANICS PRIMARY/SECONDARY	Cadmium MPC	Cadmium Cadmium	HAZARDOUS WASTE PROFILE	$NO_2 + NO_3$	TKN				
Source Water	10-22-04	830		WW	2																							1	1				
HP-1	10-22-04	1025		GW	2																							1	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.# 47772
Bill to: Pima County Flood Control (address above)

SAMPLE RECEIPT:
Total Containers: 4
Ambient/Cold: 5°C

3. RELINQUISHED BY: David Scalera
Signature: David Scalera
Printed Name: Pima Co. Flood Control
Firm: 10-22-04 1123
Date/Time

4. RECEIVED BY: Shari Bauman
Signature: Shari Bauman
Printed Name: TURNER LABORATORIES, INC.
Firm: 10/22/04 1125
Date/Time

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

SPECIAL INSTRUCTIONS/COMMENTS:
Compliance Analysis: ☒ Yes ☐ No
ADEQ Forms: ☐ Yes ☐ No

Report and invoice should be sent to David Scalera at address above. Contact David at 205-8353 if there are any questions

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.

December 14, 2004

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.: 0411331

Dear David Scalero,

Turner Laboratories, Inc. received 2 samples on 11/24/2004 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

Turner Laboratories, Inc. **Date:** *14-Dec-04*

CLIENT: Pima County Flood Control District
Project: MHPERP
Lab Order: 0411331

CASE NARRATIVE

Analytical Comments for METHOD 300_DW, SAMPLE 0411331-01C: The nitrite result should be considered an estimated concentration. Calibration of the nitrite standard did not meet Turner Laboratories internal QC requirements.

Analytical Comments for METHOD 300_DW, SAMPLE 0411331-02C: The nitrite result should be considered an estimated concentration. Calibration of the nitrite standard did not meet Turner Laboratories internal QC requirements.

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: *14-Dec-04*

CLIENT: Pima County Flood Control District
Lab Order: 0411331
Project: MHPERP
Lab ID: 0411331-01A

Client Sample ID: Source Water
Collection Date: 11/24/2004 9:40:00 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	12/1/2004 7:49:25 PM
Arsenic	ND	0.10		mg/L	1	12/1/2004 7:49:25 PM
Barium	ND	1.0		mg/L	1	12/1/2004 7:49:25 PM
Beryllium	ND	1.0		mg/L	1	12/1/2004 7:49:25 PM
Cadmium	ND	0.050		mg/L	1	12/1/2004 7:49:25 PM
Chromium	ND	0.10		mg/L	1	12/1/2004 7:49:25 PM
Lead	ND	0.15		mg/L	1	12/1/2004 7:49:25 PM
Nickel	ND	0.080		mg/L	1	12/1/2004 7:49:25 PM
Selenium	ND	0.10		mg/L	1	12/1/2004 7:49:25 PM
Thallium	ND	0.10		mg/L	1	12/1/2004 7:49:25 PM
MERCURY IN WATER & WASTE WATER		**E245.1**				Analyst: **RAD**
Mercury	ND	0.0010		mg/L	1	12/2/2004 5:42:00 PM
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **JM**
Nitrogen, Nitrate (As N)	1.1	1.0		mg/L	1	11/24/2004 4:47:00 PM
Nitrogen, Nitrite	3.6	0.10	*	mg/L	1	11/24/2004 4:47:00 PM
PURGEABLE ORGANIC COMPOUNDS		**E524.2**				Analyst: **KP**
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
1,1,1-Trichloroethane	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
1,1-Dichloroethane	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
1,1-Dichloroethene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
1,1-Dichloropropene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
1,2,3-Trichloropropane	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
1,2-Dichloroethane	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
1,2-Dichloropropane	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
1,3-Dichlorobenzene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
1,3-Dichloropropane	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
2,2-Dichloropropane	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
2-Chlorotoluene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
4-Chlorotoluene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
4-Isopropyltoluene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Benzene	ND	0.50		µg/L	1	12/7/2004 3:20:00 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: *14-Dec-04*

CLIENT: Pima County Flood Control District
Lab Order: 0411331
Project: MHPERP
Lab ID: 0411331-01A

Client Sample ID: Source Water
Collection Date: 11/24/2004 9:40:00 AM
Matrix: WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
Bromobenzene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Bromochloromethane	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Bromodichloromethane	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Bromoform	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Bromomethane	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Carbon tetrachloride	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Chlorobenzene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Chloroethane	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Chloroform	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Chloromethane	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
cis-1,2-Dichloroethene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Dibromochloromethane	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Dibromomethane	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Dichlorodifluoromethane	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Ethylbenzene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Hexachlorobutadiene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Isopropylbenzene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Methylene chloride	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
n-Butylbenzene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
n-Propylbenzene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Naphthalene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
sec-Butylbenzene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Styrene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
tert-Butylbenzene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Tetrachloroethene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Toluene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
trans-1,2-Dichloroethene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Trichloroethene	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Trichlorofluoromethane	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Vinyl chloride	ND	0.50		µg/L	1	12/7/2004 3:20:00 PM
Xylenes, Total	ND	1.5		µg/L	1	12/7/2004 3:20:00 PM
Surr: 1,2-Dichlorobenzene-d4	90.0	70-130		%REC	1	12/7/2004 3:20:00 PM
Surr: 4-Bromofluorobenzene	90.0	70-130		%REC	1	12/7/2004 3:20:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **JM**
Nitrogen, Kjeldahl, Total	22	10		mg/L	20	12/3/2004 10:30:00 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: *14-Dec-04*

CLIENT: Pima County Flood Control District
Lab Order: 0411331
Project: MHPERP
Lab ID: 0411331-02A

Client Sample ID: HP-1
Collection Date: 11/24/2004 12:20:00 PM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS IN WATER & WASTE WATER		**E200.7**				Analyst: **RAD**
Barium	ND	1.0		mg/L	1	12/1/2004 6:46:21 PM
Beryllium	ND	1.0		mg/L	1	12/1/2004 6:46:21 PM
Cadmium	ND	0.050		mg/L	1	12/1/2004 6:46:21 PM
Chromium	ND	0.10		mg/L	1	12/1/2004 6:46:21 PM
Nickel	ND	0.080		mg/L	1	12/1/2004 6:46:21 PM
GFAA METALS IN WATER		**E200.9**				Analyst: **RAD**
Antimony	ND	0.0048		mg/L	1	12/10/2004 11:27:00 AM
Arsenic	ND	0.0050		mg/L	1	12/8/2004 11:50:00 AM
Lead	ND	0.0050		mg/L	1	12/6/2004 3:19:00 PM
Selenium	ND	0.0050		mg/L	1	12/7/2004 2:04:00 PM
Thallium	ND	0.0016		mg/L	1	12/9/2004 5:55:00 PM
MERCURY (TOTAL) IN DRINKING WATER		**E245.1**				Analyst: **RAD**
Mercury	ND	0.0010		mg/L	1	12/2/2004 5:03:00 PM
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **JM**
Nitrogen, Nitrate (As N)	3.4	1.0		mg/L	1	11/24/2004 5:01:00 PM
Nitrogen, Nitrite	ND	0.10		mg/L	1	11/24/2004 5:01:00 PM
PURGEABLE ORGANIC COMPOUNDS		**E524.2**				Analyst: **KP**
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
1,1,1-Trichloroethane	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
1,1,2-Trichloroethane	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
1,1-Dichloroethane	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
1,1-Dichloroethene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
1,1-Dichloropropene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
1,2,3-Trichloropropane	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
1,2-Dichlorobenzene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
1,2-Dichloroethane	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
1,2-Dichloropropane	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
1,3-Dichlorobenzene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
1,3-Dichloropropane	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
1,4-Dichlorobenzene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
2,2-Dichloropropane	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
2-Chlorotoluene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
4-Chlorotoluene	ND	0.50		µg/L	1	12/7/2004 3:54:00 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: *14-Dec-04*

CLIENT: Pima County Flood Control District
Lab Order: 0411331
Project: MHPERP
Lab ID: 0411331-02A

Client Sample ID: HP-1
Collection Date: 11/24/2004 12:20:00 PM
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
4-Isopropyltoluene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Benzene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Bromobenzene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Bromochloromethane	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Bromodichloromethane	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Bromoform	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Bromomethane	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Carbon tetrachloride	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Chlorobenzene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Chloroethane	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Chloroform	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Chloromethane	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
cis-1,2-Dichloroethene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Dibromochloromethane	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Dibromomethane	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Dichlorodifluoromethane	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Ethylbenzene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Hexachlorobutadiene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Isopropylbenzene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Methylene chloride	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
n-Butylbenzene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
n-Propylbenzene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Naphthalene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
sec-Butylbenzene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Styrene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
tert-Butylbenzene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Tetrachloroethene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Toluene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
trans-1,2-Dichloroethene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Trichloroethene	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Trichlorofluoromethane	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Vinyl chloride	ND	0.50		µg/L	1	12/7/2004 3:54:00 PM
Xylenes, Total	ND	1.5		µg/L	1	12/7/2004 3:54:00 PM
Surr: 1,2-Dichlorobenzene-d4	88.0	70-130		%REC	1	12/7/2004 3:54:00 PM
Surr: 4-Bromofluorobenzene	91.0	70-130		%REC	1	12/7/2004 3:54:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **JM**
Nitrogen, Kjeldahl, Total	0.79	0.50		mg/L	1	12/3/2004 10:30:00 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.

SAMPLE CONTROL RECEIPT CHECKLIST

Turner Laboratories W.O. #: 0411331

Received By: Chris

Received Date/Time: 11/24/09 2PM

Delivered by: Pima County Flood Control

1. Shipping container/cooler in good condition?	☒ Yes	☐ No	☐ Not Present
2. Custody seals intact on sample bottles?	☒ Yes	☐ No	☐ Not Present
3. Chain of custody present?	☒ Yes	☐ No	
4. COC signed when relinquished and received?	☒ Yes	☐ No	
5. COC agrees with sample labels?	☒ Yes	☐ No	
6. Samples in proper container/bottle?	☒ Yes	☐ No	
7. Sample container intact?	☒ Yes	☐ No	
8. Sufficient sample volume for requested tests?	☒ Yes	☐ No	
9. Samples received within holding times?	☒ Yes	☐ No	
10. VOA vials received with no headspace?	☒ Yes	☐ No	☐ No Vials
11. Bacti bottles received with appropriate headspace?	☐ Yes	☐ Above 100ml	
		☐ Below 100ml	

12. Temperature upon receipt? 13°C

13. Number of sample containers received? 12

Additional Comments:

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 # 0411331 DATE 11/24/04 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	Base Neutrals 625/8270 / Acids	Volatile Organics GC/MS 624/8260	Halogenated or Aromatic Volatiles 8021	Pesticides 8081	PCBs 8082	Total Petroleum Hydrocarbons 1664A	Oil and Grease Gravimetric 1664A	TCLP Analysis VOA / Semi-VOA	TCLP / Dissolved	Metals Total / Priority Pollutants	Cyanide Amen. / Wad	SDWA-INORGANICS PRIMARY/SECONDARY	Coliform Colifor	HAZARDOUS WASTE PROFILE	$NO_2 + NO_3$	TKN				
Source Water	11-24-04	940		WW	6		3							1						1	1				
HP-1	11-24-04	1220		GW	6		3							1						1	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. # 47772
Bill to: Pima County Flood Control (address above)

SAMPLE RECEIPT:
Total Containers 12
Ambient/Cold 13°C

3. RELINQUISHED BY: David Scalero / David Scalero / P.C. Flood Control / 11-24-04 1400 / Date/Time

4. RECEIVED BY: C. Gutierrez / TURNER LABORATORIES, INC. / 11/24/04 2 PM / Date/Time

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

SPECIAL INSTRUCTIONS/COMMENTS:
Compliance Analysis: ☒ Yes ☐ No
ADEQ Forms: ☐ Yes ☐ No

Send invoice and report to David Scalero at address above.

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

TURNER
LABORATORIES INC.

January 10, 2005

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.: 0412330

Dear David Scalero,

Turner Laboratories, Inc. received 2 samples on 12/22/2004 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

Turner Laboratories, Inc.

Date: *10-Jan-05*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	Source Water
Lab Order:	0412330	**Collection Date:**	12/22/2004 11:30:00 AM
Project:	MHPERP		
Lab ID:	0412330-01A	**Matrix:**	WASTE WATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **JM**
Nitrogen, Nitrate (As N)	ND	1.0		mg/L	1	12/22/2004 5:25:00 PM
Nitrogen, Nitrite	0.36	0.10		mg/L	1	12/22/2004 5:25:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **JM**
Nitrogen, Kjeldahl, Total	22	10		mg/L	20	12/29/2004 11:30:00 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: *10-Jan-05*

CLIENT:	Pima County Flood Control District	**Client Sample ID:**	HP-1
Lab Order:	0412330	**Collection Date:**	12/22/2004 1:40:00 PM
Project:	MHPERP		
Lab ID:	0412330-02A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **JM**
Nitrogen, Nitrate (As N)	3.2	1.0		mg/L	1	12/22/2004 6:08:00 PM
Nitrogen, Nitrite	ND	0.10		mg/L	1	12/22/2004 6:08:00 PM
TOTAL KJELDAHL NITROGEN		**E351.1**				Analyst: **JM**
Nitrogen, Kjeldahl, Total	0.56	0.50		mg/L	1	12/29/2004 11:30:00 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.

SAMPLE CONTROL RECEIPT CHECKLIST

04/12 330

Received By: OMCC

Received Date/Time: 12/22/04 14:20

Delivered by: David

1. Shipping container/cooler in good condition?	☑ Yes	☐ No	☐ Not Present
2. Custody seals intact on sample bottles?	☐ Yes	☐ No	☑ Not Present
3. Chain of custody present?	☑ Yes	☐ No	
4. COC signed when relinquished and received?	☑ Yes	☐ No	
5. COC agrees with sample labels?	☑ Yes	☐ No	
6. Samples in proper container/bottle?	☑ Yes	☐ No	
7. Sample container intact?	☑ Yes	☐ No	
8. Sufficient sample volume for requested tests?	☑ Yes	☐ No	
9. Samples received within holding times?	☑ Yes	☐ No	
10. VOA vials received with no headspace?	☐ Yes	☐ No	☑ No Vials
11. Bacti bottles received with appropriate headspace?	☐ Yes	☐ Above 100ml	
		☐ Below 100ml	N/A

12. Temperature upon receipt? 19°C

13. Number of sample containers received? 4

Additional Comments:

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 # 0412330 DATE 12/22/04 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
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	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 8100/1.3.42	Oil and Grease Gravimetric 1664A	TCLP Analysis VOA / Semi VOA / Pest./Herb.	Metals TCLP / Dissolved / Total / Priority Pollutants	Cyanide Amen. / Total / HAD	SDWA INORGANICS PRIMARY/SECONDARY	Coliform MPN / Colilert	HAZARDOUS WASTE PROFILE	$NO_2 + NO_3$	TKN				
Source Water	12-22-04	1130		WW	2														1	1				
HP-1	12-22-04	1340		GW	2														1	1				

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. # 47772	
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: Amb °C
		* Working Days			

3. RELINQUISHED BY:	4. RECEIVED BY:	* LEGEND	SPECIAL INSTRUCTIONS/COMMENTS:
Signature: David Scalero	Signature: Carla McClellan	SL = SOIL	Compliance Analysis: X Yes ___ No
Printed Name: David Scalero	Printed Name: C. McClellan	SD = SOLID	ADEQ Forms: ___ Yes ___ No
Firm: P.C. Flood Control	Firm: TURNER LABORATORIES, INC.	SG = SLUDGE	Send invoice and report to David Scalero, address above.
Date/Time: 12-22-04 1420	Date/Time: 12/22/04 14:20	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