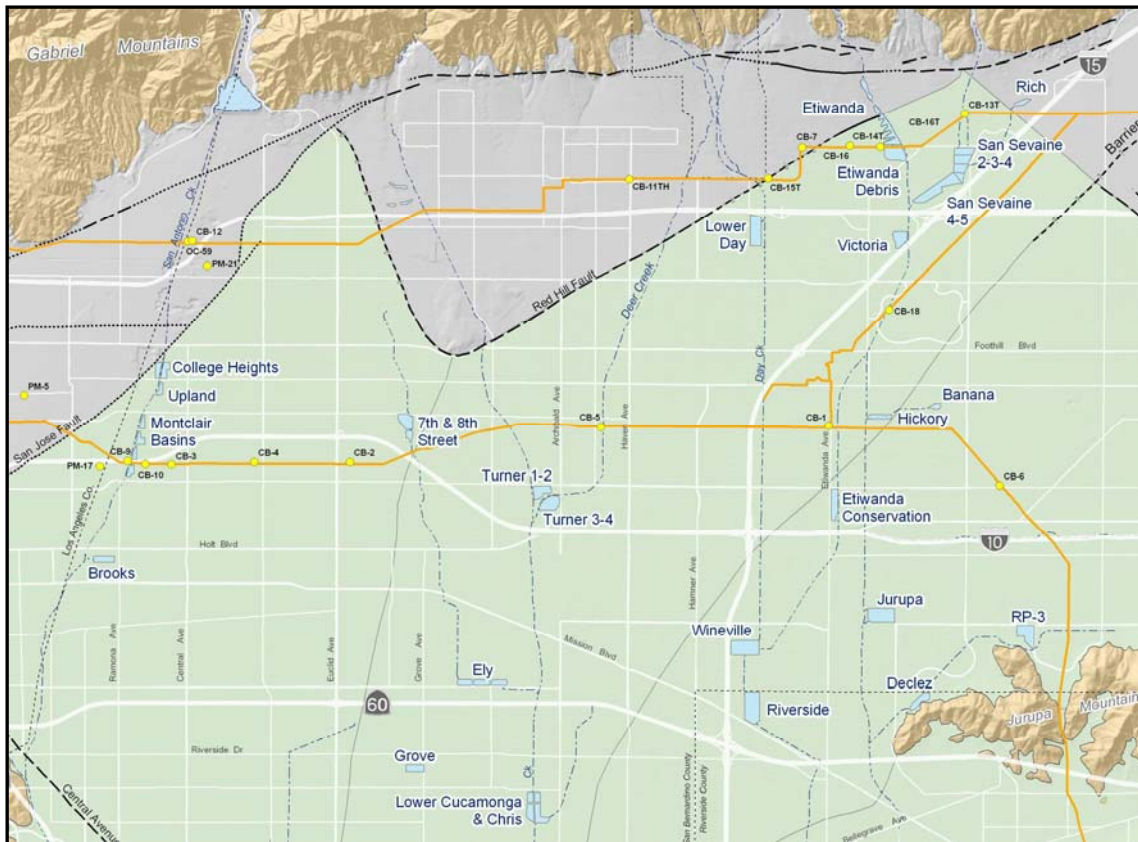


Chino Basin Recycled Water Groundwater Recharge Program

Quarterly Monitoring Report October through December 2006



Prepared by:



and



February 15, 2007



Patrick O. Shields
Executive Manager of Operations

Kenneth Manning
CEO

February 15, 2007

Regional Water Quality Control Board, Santa Ana Region

Attention: Mr. Gerard Thibeault

3737 Main Street, Suite 500

Riverside, California 92501-3348

**Subject: Chino Basin Recycled Water Groundwater Recharge Program
Transmittal of the Quarterly Monitoring Report for October through December 2006**

Dear Mr. Thibeault,

The Inland Empire Utilities Agency (IEUA) and the Chino Basin Watermaster (Watermaster) hereby submit the *Quarterly Monitoring Report* for the fourth quarter of 2006 (4Q06), October through December 2006, for the *Recycled Water Groundwater Recharge Program* that is being implemented. This document is submitted pursuant to requirements in Order No. R8-2005-0033 and Monitoring and Reporting Program No. R8-2005-0033:

- California Regional Water Quality Control Board, Santa Ana Region. Order No. R8-2005-0033. Water Recycling Requirements for Inland Empire Utilities Agency and Chino Basin Watermaster. Phase 1 Chino Basin Recycled Water Groundwater Recharge Project, San Bernardino County. Final Order: April 2005.
- California Regional Water Quality Control Board, Santa Ana Region. Monitoring and Reporting Program No. R8-2005-0033 for Inland Empire Utilities Agency and Chino Basin Watermaster. Phase 1 Chino Basin Recycled Water Groundwater Recharge Project, San Bernardino County.

DECLARATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments thereto; and that, based on my inquiry of the individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Executed on the 15th day of February 2007 at IEUA's office in Chino, California

Patrick O. Shields
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Chino Basin Recycled Water Groundwater Recharge Program

Quarterly Monitoring Report

October through December 2007

Prepared by:



and



February 15, 2007

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1. Introduction

The Inland Empire Utilities Agency (IEUA), Chino Basin Watermaster (Watermaster), Chino Basin Water Conservation District, and San Bernardino County Flood Control District jointly sponsor the Chino Basin Recycled Water Groundwater Recharge Program. This is a comprehensive water supply program to enhance water supply reliability and improve groundwater quality in local drinking water wells throughout the Chino Groundwater Basin by increasing the recharge of stormwater, imported water, and recycled water. This program is an integral part of Watermaster's Optimum Basin Management Program (OBMP).

1.1 Requirements of Order No. R8-2005-0033

The Recycled Water Groundwater Recharge Program being implemented by the IEUA and Watermaster is subject to the following requirements:

- California Regional Water Quality Control Board, Santa Ana Region (RWQCB). Order No. R8-2005-0033 (Order). Water Recycling Requirements for Inland Empire Utilities Agency and Chino Basin Watermaster. Phase 1 Chino Basin Recycled Water Groundwater Recharge Project, San Bernardino County, April 15, 2005.
- RWQCB, Santa Ana Region. Monitoring and Reporting Program (M&RP) No. R8-2005-0033 for Inland Empire Utilities Agency and Chino Basin Watermaster. Phase 1 Chino Basin Recycled Water Groundwater Recharge Project, San Bernardino County, April 15, 2005.

The M&RP (RWQCB, 2005b) describes the requirements for the quarterly monitoring reports. This document is the quarterly report for the Fourth Quarter of 2006 (4Q06). The following is an excerpt of Section VI of the M&RP, which details the requirements of quarterly monitoring reports:

VI. REPORTING REQUIREMENTS

A. Quarterly Monitoring Reports

1. Quarterly monitoring reports shall be submitted in accordance with following schedule:

<u>Reporting Period</u>	<u>Report Due Date</u>
January – March	May 15 th
April – June	August 15 th
July – September	November 15 th
October – December	February 15 th

2. If no reclaimed water was delivered for spreading during the quarter, the report shall so state.
3. Each quarterly monitoring report shall include, at a minimum, the following:
 - a. All monitoring results for recycled water produced from the RWRP-1 and RWRP-4 facilities, diluents, recharged water with or without blending with diluents prior to recharge, and groundwater.
 - b. A tabular form report showing the amount of recharged recycled water and diluent water recharge[d] into each recharge basin including any non-compliance events, which occurred at the individual recharge sites during the reporting period. A summary of these data shall be included in the annual report.



- c. Records of any operational problems, plant upset and equipment breakdowns or malfunctions, and any diversion(s) of off-specification recycled water and the location(s) of final disposal.
- d. All corrective or preventive action(s) taken.
- e. A certification by the users that no groundwater has been pumped from the zone that extends 500 feet and 6 months underground travel time from the recharge basin(s) where recycled water is applied for domestic water supply use.
- f. The Regional Board may request supporting documentation, such as daily logs of operations.

1.2 Basin Operations

During 4Q06, the IEUA recharged recycled water at Banana Basin, Hickory Basin, and the Turner Basins. Recycled water was not recharged in the other Phase 1 basins during 4Q06; namely, RP3 and Declez Basins.

This quarterly report contains the monitoring results for Banana, Hickory, and Turner Basins operations through the completion of 4Q06. Because compliance monitoring points have not yet been established for the Turner Basins, all sampling data are presented in this report for these basins. In the quarterly reports following the completion of the basin Start-Up Period reports, quarterly monitoring and reporting will be limited to sampling points that are selected as the compliance monitoring points; as was determined through the Start-Up Protocols.

1.3 Outline of the Quarterly Report

Section 2 of this quarterly report discusses the monitoring results for recycled water, diluent water, basin surface water, vadose zone water from lysimeters, and groundwater water from monitoring wells. Section 3 provides an overview of recharge operations, including the volume of diluent water and recycled water recharged. Section 4 describes any operational problems that were encountered. Section 5 provides any preventive and/or corrective actions taken. Finally, Section 6 contains the certification of non-pumping in the 500-foot buffer zones around each basin.



2. Monitoring Results

2.1 Recycled Water: RP-1 and RP-4

The requirements for recycled water monitoring are provided in the M&RP (RWQCB, 2005b). Tables 2-1 through 2-9 list all of the requisite 4Q06 data results. Many of the limits defined in the Order are based on moving averages. For example, compliance with Recycled Water Specifications A.1 and A.2 (Tables I and II in the Order) “shall be based on the running-quarterly average concentration, calculated each quarter using the previous consecutive four quarterly data for the specific constituent.” Running-quarterly average concentration data for 1Q06 through 4Q06 are summarized in Table 2-4 of this report. The compliance limits for analytes with specified limits in Tables I through III of the Order (RWQCB, 2005a) are included next to the results in Tables 2-6, 2-7, and 2-9 to facilitate comparison.

In the process of selecting a recycled water sampling location that is representative of the system blend of recycled water recharge, the IEUA has conducted sampling from the distribution pipeline at the turnout to Reliant Energy, an IEUA customer. For most constituents, this sampling location has been suitable; however, it is not suitable for parameters that can change upon leaving the reclamation plants. Such parameters include Total Trihalomethanes (THMs) and Total Haloacetic Acids (HAA5). Over the past 12 months, THMs of the RP1 and RP4 blended recycled water have ranged between 26 and 241 mg/L and averaged approximately 126 mg/L. The IEUA has also conducted sampling of the surface water and pore water in the 25-foot lysimeters at the Hickory Basin East Cell. The samples collected at the basin provide more consistent and representative samples of the recharged water prior to reaching the groundwater table.

Of the numerous parameters tested at the distribution system location and at the basins, only odor exceeded limits of the Order during 4Q06. Additional stormwater sampling of the basin and lysimeters has indicated that a slight odor is common to the formation.

For 4Q06, samples for THMs and HAA5 were collected from the 25-foot lysimeter in the Hickory Basin East Cell on November 7, 2006; the 25-foot lysimeter is considered the future compliance point for these constituents. The result for THMs from the 25-foot lysimeter sample was 66 µg/L, and the result for HAA5 was <1 µg/L. A summary of these data can be found in Table 2-6. Compliance with the specified limits (THMs-80 µg/L and HAA5-60 µg/L) for THMs and HAA5 was achieved before the delivered, recycled water reached the groundwater table.

In addition to the limits listed in Tables I, II, and III of the Order, the following “narrative” limits also apply to recycled water quality (A.4 through A.8 in RWQCB, 2005a):

4. Recycled water produced by RP-1 and RP-4 for recharge shall at all times, be adequately oxidized, filtered, and disinfected tertiary treated wastewater and shall meet the following limitations:
 - a. The turbidity of the filter effluent shall not exceed any of the following:
 - (1) Average of 2 Nephelometric Turbidity Unit (NTU) within any 24-hour period;
 - (2) 5 NTU more than 5 percent of the time in any 24-hour period; and
 - (3) 10 NTU at any time.
 - b. The 7-day median number of total coliform shall not exceed a Most Probable Number (MPN) of 2.2 total coliform bacteria per 100 milliliters (ml).
 - c. The number of total coliform organism shall not exceed an MPN of 23 total coliform bacteria per 100 ml in more than one sample in any 30-day period prior to spreading.



- d. No total coliform sample shall exceed an MPN of 240 total coliform bacteria per 100 ml.
5. The Total Dissolved Solids (TDS) and Total Inorganic Nitrogen (TIN) concentration of the recycled water shall not exceed a 12-month running average concentration limit of 550 mg/l and 8 mg/l, respectively from the combined effluent of all IEUA treatment plants (see also Provisions H.4. and H.5.).
6. The recycled water used for recharge, or if supplemented with diluent water, the blend of the two, prior to reaching the regional groundwater table shall not contain constituent concentrations that exceed the following limitations:
 - a. A total nitrogen concentration of 10 mg/L;
 - b. The sum of nitrite, organic, and ammonia nitrogen shall not exceed 5 mg/L as nitrogen; and
 - c. The nitrite level shall not exceed 1 mg/L as nitrogen.
7. The pH of recycled water used for recharge shall at all times be within the range of 6 to 9 pH units.
8. The total organic carbon (TOC) concentration of the filtered wastewater shall not exceed 16 mg/L for more than two consecutive readings.

None of these limits were exceeded in 4Q06, as summarized in Tables 2-1 through 2-3.

2.2 Diluent Water

In 4Q06, State Water Project (SWP) water and local runoff were delivered to the Banana Basin, the Hickory Basin, and the Turner Basins. Table 3-1 lists the schedule of diluent water deliveries to these basins. Table 2-10 lists the water quality of the SWP water. These water quality data were reported by the LaVerne laboratory of the Metropolitan Water District of Southern California.

2.3 Basin and Lysimeter Samples

The M&RP schedule (RWQCB, 2005b) for basin and lysimeter sampling is as follows:

- TOC: Weekly
- Nitrate-Nitrogen: Twice per Week
- Nitrate-Nitrogen: Twice per Week
- Nitrite-Nitrogen: Twice per Week
- Ammonia: Twice per Week
- Organic Nitrogen: Twice per Week
- Total Inorganic Nitrogen (TIN) – by Addition: Twice per Week
- Total Nitrogen (TN) – by Addition: Twice per Week

Based on the fact that historical nitrogen analyses at the basin and lysimeters are significantly and consistently below the 10 mg/L compliance concentration, the CDHS has communicated that nitrogen sampling and analysis can be reduced to weekly. As sampling has shown, nitrogen in RP1 and RP4 plant effluent is also predominately less than 10 mg/L; however, sampling will continue at two times per week. The basin and lysimeter data are summarized in Tables 2-11 through 2-19. The tables include data for the Banana, Hickory, and Turner Basins and are organized by analyte group (TOC, Nitrogen Species).



2.4 Groundwater Monitoring Wells

Groundwater quality within the vicinity of the Banana and Hickory Basins is monitored by sampling a network of six wells, including one nested monitoring well (BH-1) down gradient of Hickory Basin (Figure 2-1). BH-1 is a nest of two casings: BH-1/1, from 366-406 feet below the top of the casing; and BH-1/2, from 437-477 feet below the top of the casing. BH-1/1 was constructed above the regional groundwater table in anticipation of a future water level rise and is not sampled at this time. Should the regional water table rise, the sampling of BH-1/1 will replace the sampling of BH-1/2.

Groundwater quality within the vicinity of Turner Basin is monitored by sampling a network of five wells, including two nested wells (Figure 2-2). T-1 is a nest of two casings: T-1/1, from 340-360 feet below ground surface; and T-1/2, from 380-400 feet below ground surface. T-2 is also a nest of two casings: T-2/1, from 350-370 feet below ground surface; and T-2/2, from 392-412 feet below ground surface. T-1/1 and T-2/1 were constructed above the regional groundwater table in anticipation of a future water level rise, and are not sampled at this time. Should the regional water table rise, the sampling of T-1/1 and T-2/1 will replace the sampling of T-1/2 and T-2/2, respectively.

All constituents analyzed from the monitoring wells during 4Q06 were below their respective MCLs. Groundwater monitoring results are presented in Table 2-20. Based on the Title 22 Engineering Report (CH2M-Hill, 2003), the travel times to wells BH-1, T-1, and T-2 were all approximately 6 months. Electrical conductivity (EC) listed in Table 2-19 as Specific Conductance is used as an indicator of recycled water presence at the monitoring wells. The IEUA began recharging recycled water in Banana Basin, Hickory Basin, and the Turner Basins in July 2005, September 2005, and July 2006, respectively. The 4Q05 increase in EC results indicated that BH-1 may have received some recycled water recharge indicating a travel time of 5 months to this location. However, the 1Q06 EC data for BH-1 showed a decrease in EC and, as is such, did not continue to indicate recycled water at the well. Groundwater quality results for 4Q06 at BH-1/2, T-1, and T-2 show a background condition for EC as do the other area monitoring wells.



3. Recharge Operations

The IEUA's Groundwater Recharge Coordinator recorded the daily volumes of water routed to the Banana, Hickory, and Turner Basins. The Banana, Hickory, and Turner Basins were the only Phase 1 recharge basins to receive recycled water this quarter. Table 3-1 lists the schedule of diluent water, recycled water, and/or local runoff captured at these basins.

Banana Basin

Recycled water was delivered periodically through the Whittram force main. Local runoff and imported water were also delivered to Banana Basin during 4Q06 by pumping from Hickory Basin.

Hickory Basin

Recycled water was delivered periodically through the Whittram force main. Perennial local runoff was captured in Hickory Basin from the San Sevaine Channel during 4Q06. Imported water was delivered to Hickory Basin during 4Q06; some of which was pumped to Banana Basin.

Turner Basins

During 3Q06, the Start-Up Period for the Turner Basins was initiated. Recycled water was delivered through the RP4 west extension recycled water pipeline. Local runoff was captured in the Turner Basins from Deer Creek—commingled with recycled water in Deer Creek—en route to the Turner Basins. During Start-Up Period testing, local runoff has been collected at the Turner Basins only when recycled water is routed to the basins in order to maximize the percentage of recycled water recharged.



4. Operational Problems Encountered

4.1 Regional Plants RP-1 and RP-4

No operational problems encountered this quarter.

4.2 Recharge Operations

During 4Q06, the Turner Basins recycled water delivery and its start-up period were interrupted by the need to clean construction debris from the RP-4 west extension recycled water pipeline.

4.3 Lysimeter Sampling

No operational problems encountered this quarter.

4.4 Monitoring Well Sampling

No operational problems encountered this quarter.



5. Preventive and/or Corrective Actions

5.1 Regional Plants RP-1 and RP-4

As no operational problems encountered this quarter, no corrective actions were necessary.

5.2 Recharge Operations

The RP4 west extension recycled water pipeline was taken out of service for video inspection and to remove construction debris.

5.3 Lysimeter Sampling

As no operational problems encountered this quarter, no corrective actions were necessary.

5.4 Monitoring Well Sampling

As no operational problems encountered this quarter, no corrective actions were necessary.



6. Certification of Non-Pumping in the Buffer Zones

Watermaster has certified that there was no reported pumping of groundwater for domestic or municipal use from the zones that extend 500 feet and 6 months underground travel time from the Hickory, Banana, and Turner Basins in 4Q06. In fact, there are no production wells within the buffer zones of these three basins. Appendix A provides a letter from Watermaster that certifies non-pumping in the buffer zones.

The IEUA will continue to work with the San Bernardino County Department of Environmental Health Services (SBCDEHS) to prevent the drilling and construction of new drinking water wells within the buffer zones.

The SBCDEHS reviews new well permit applications in part by checking the proposed location of a new drinking water well against a list of parcels that abut IEUA recharge basins and their 500-foot buffers. The IEUA has provided the SBCDEHS with a list of parcels abutting each recharge basin and a series of the maps showing the recharge basins, buffers, and township/range/section parcels adjacent the basins and buffers. If a well falls within an abutting parcel, the SBCDEHS will review the proposed well location using maps of the basins and buffers. If the well falls too near the buffer boundary for the SBCDEHS to determine the relationship of the proposed well location to the buffer boundary, the SBCDEHS will defer to the IEUA for a prompt review of the proposed well location, utilizing a field review. The field review may include contacting and having the well applicant identify the exact location of the proposed well casing. To conduct a detailed field review, the SBCDEHS will contact and provide the IEUA Groundwater Recharge Coordinator with a copy of the well permit application and a timeline for the completion of the IEUA's review. Following the review, the IEUA will notify the SBCDEHS of its findings in writing. The IEUA will also notify the CDHS and the RWQCB of well permit applications that it recommends be declined due to well locations that are determined to fall within a 500-foot buffer.

The SBCDEHS has initiated control over production well permitting within the buffer zones of all Phase 1 basins through the use of buffer zone maps that utilize the same land coordinate system (Township/Range/Section) that is used in the permitting process.



7. References

- California Regional Water Quality Control Board, Santa Ana Region. 2005a. Order No. R8-2005-0033. *Water Recycling Requirements for Inland Empire Utilities Agency and Chino Basin Watermaster. Phase 1 Chino Basin Recycled Water Groundwater Recharge Project, San Bernardino County.* Draft Order: April 2005.
- California Regional Water Quality Control Board, Santa Ana Region. 2005b. *Monitoring and Reporting Program No. R8-2005-0033 for Inland Empire Utilities Agency and Chino Basin Watermaster. Phase 1 Chino Basin Recycled Water Groundwater Recharge Project, San Bernardino County.*
- CH2M-Hill. 2003. *Title 22 Engineering Report. Phase 1 Chino Basin Recycled Water Groundwater Recharge Project. Final Report.* Prepared for the Inland Empire Utilities Agency. November 2003.
- Metropolitan Water District of Southern California. 2006. *Table D. Monthly Analyses of the District Water Supplies – April 2006.*
- Metropolitan Water District of Southern California. 2006. *Table D. Monthly Analyses of the District Water Supplies – May 2006.*
- Metropolitan Water District of Southern California. 2006. *Table D. Monthly Analyses of the District Water Supplies – June 2006.*
- Wildermuth Environmental, Inc. 1999. *Chino Basin Optimum Basin Management Program, Phase I Report.* Prepared for Chino Basin Watermaster. August 19, 1999.



Table 2-8
Recycled Water Monitoring Results: Endocrine Disrupting Chemicals & Pharmaceuticals
Analyzed on an Annual Basis

Chemicals	Date	RP-1/RP-4 Blend	RP-1 Effluent	RP-4 Effluent	Units	Method
Chemicals with State Notification Levels ⁽¹⁾						
N-butylbenzene	6/7/2006	<0.5	--	--	µg/L	524.2
sec-butylbenzene	6/7/2006	<0.5	--	--	µg/L	524.2
tert-butylbenzene	6/7/2006	<0.5	--	--	µg/L	524.2
Carbon disulfide	6/7/2006	⁽²⁾	--	--	µg/L	524.2
Chlorate	6/7/2006	1150	--	--	µg/L	300.0
2-chlorotoluene	6/7/2006	<0.5	--	--	µg/L	524.2
Diazinon	6/6/2006	<0.1	--	--	µg/L	525.2
1,4-Dioxane	6/7/2006	<2	--	--	µg/L	Purge and Trap-GC/MS
Formaldehyde	6/7/2006	75	--	--	µg/L	
Isopropylbenzene	6/7/2006	<0.5	--	--	µg/L	524.2
N-propylbenzene	6/7/2006	<0.5	--	--	µg/L	524.2
1,2,4-trimethylbenzene	6/7/2006	<0.5	--	--	µg/L	524.2
1,3,5-trimethylbenzene	6/7/2006	<0.5	--	--	µg/L	524.2
Nitrosoamines ⁽¹⁾						
N-Nitrosodiethylamine (NDEA)	6/7/2006	<4	--	--	ng/L	525
N-Nitrosopyrrolidine	6/7/2006	5.3	--	--	ng/L	525
Hormones						
Ethinyl estradiol	5/3/2006	--	4.5	2.8	ng/L	HPLC/MS-SEDC
17-B estradiol	5/3/2006	--	<2	10	ng/L	HPLC/MS-SEDC
Estrone	5/3/2006	--	<1	1.3	ng/L	HPLC/MS-SEDC
"Industrial" Endocrine Disruptors						
Bisphenol A	5/3/2006	--	<10	<10	ng/L	HPLC/MS-SEDC
Nonylphenol and nonylphenol polyethoxylate	5/3/2006	--	810	5.1	ng/L	HPLC/MS-SEDC
Octylphenol and octylphenol polyethoxylate	5/3/2006	--	150	<1.5	ng/L	HPLC/MS-SEDC
PolybromiNA	5/3/2006	--	<0.97	<0.96	ng/L	8270C SIM
PBDE 28	5/3/2006	--	<0.97	<0.96	ng/L	8270C SIM
PBDE 71	5/3/2006	--	<0.97	<0.96	ng/L	8270C SIM
PBDE 47	5/3/2006	--	4	3.1	ng/L	8270C SIM
PBDE 66	5/3/2006	--	<0.97	<0.96	ng/L	8270C SIM
PBDE 100	5/3/2006	--	<0.97	<0.96	ng/L	8270C SIM
PBDE 99	5/3/2006	--	3	2.2	ng/L	8270C SIM
PBDE 85	5/3/2006	--	<0.97	<0.96	ng/L	8270C SIM
PBDE 154	5/3/2006	--	<0.97	<0.96	ng/L	8270C SIM
PBDE 153	5/3/2006	--	<0.97	<0.96	ng/L	8270C SIM
PBDE 138	5/3/2006	--	<0.97	<0.96	ng/L	8270C SIM
PBDE 128	5/3/2006	--	<0.97	<0.96	ng/L	8270C SIM
PBDE 183	5/3/2006	--	<0.97	<0.96	ng/L	8270C SIM
PBDE 190	5/3/2006	--	<0.97	<0.96	ng/L	8270C SIM
PBDE 203	5/3/2006	--	<0.97	<0.96	ng/L	8270C SIM
PBDE 206	5/3/2006	--	<97	<96	ng/L	8270C SIM
PBDE 209	5/3/2006	--	<97	<96	ng/L	8270C SIM



Table 2-8
Recycled Water Monitoring Results: Endocrine Disrupting Chemicals & Pharmaceuticals
Analyzed on an Annual Basis

Chemicals	Date	RP-1/RP-4 Blend	RP-1 Effluent	RP-4 Effluent	Units	Method
Pharmaceuticals and Other Substances						
Acetaminophen	5/3/2006	--	1400	300	ng/L	HPLC/MS-SEDC
Amoxicillin ⁽³⁾						
Azithromycin ⁽³⁾						
Caffeine	5/3/2006	--	67	<5	ng/L	HPLC/MS-SEDC
Carbamazepine	5/3/2006	--	480	<0.5	ng/L	HPLC/MS-SEDC
Ciprofloxacin ⁽³⁾						
Ethylenediamine tetra-acetic acid (EDTA)		--	NA	NA		
Gemfibrozil	5/3/2006	--	18	<0.5	ng/L	HPLC/MS-SEDC
Ibuprofen	5/3/2006	--	<10	170	ng/L	HPLC/MS-SEDC
Iodinated contrast media	5/3/2006	--	460	110	ng/L	HPLC/MS-SEDC
Lipitor ⁽³⁾						
Methadone	5/3/2006	--	<0.5	<0.5	ng/L	HPLC/MS-SEDC
Morphine ⁽³⁾						
Salicylic acid	5/3/2006	--	27	35	ng/L	HPLC/MS-SEDC
Triclosan	5/3/2006	--	14	54.0	ng/L	HPLC/MS-SEDC

(1) Results are a blend from the Effluent of RP-1 and RP-4

(2) Contract lab does not include carbon disulfide in method 524.2. IEUA does include carbon disulfide in method 524.2 and will conduct this analysis for future annual sampling events.

(3) Method development is being refined to enhance recovery

NA = Not Analyzed at this time, method development in process.

Bold signifies an exceedance of a limit in the Order.



**Table 2-11
Basin and Lysimeter Water Monitoring Results for Banana Basin: TOC**

Station ID	Depth	Sample Date	Result	Units
BNA-0	0 ft	10/3/2006	5.54	mg/L
BNA-5	5 ft	10/3/2006	2.09	mg/L
BNA-10	10 ft	10/3/2006	2.22	mg/L
BNA-15	15 ft	10/3/2006	1.76	mg/L
BNA-25	25 ft	10/3/2006	1.58	mg/L
BNA-0	0 ft	10/10/2006	8.80	mg/L
BNA-5	5 ft	10/10/2006	2.16	mg/L
BNA-10	10 ft	10/10/2006	2.00	mg/L
BNA-15	15 ft	10/10/2006	1.71	mg/L
BNA-25	25 ft	10/10/2006	1.75	mg/L
BNA-0	0 ft	10/17/2006	4.05	mg/L
BNA-5	5 ft	10/17/2006	1.88	mg/L
BNA-10	10 ft	10/17/2006	1.88	mg/L
BNA-15	15 ft	10/17/2006	1.57	mg/L
BNA-25	25 ft	10/17/2006	1.44	mg/L
BNA-0	0 ft	12/28/2007	5.08	mg/L
BNA-25	5 ft	12/28/2007	1.25	mg/L

Notes:

ft: feet below the bottom of the basin

mg/L: milligrams per liter

TOC: Total Organic Carbon



Table 2-12
Basin and Lysimeter Water Monitoring Results for Banana Basin:
Ammonia-N, Nitrite-N, Nitrate-N, TKN, and TN (mg/L)

Station ID	Depth	Sample Date	NH3-N	NO2-N	NO3-N	TKN	TN
BNA-0	0 ft	7/4/2006	<0.1	<0.01	2.6	2.6	5.2
BNA-5	5 ft	7/4/2006	<0.1	<0.01	<0.1	<0.5	<0.6
BNA-10	10 ft	7/4/2006	<0.1	<0.01	<0.1	<0.5	<0.6
BNA-15	15 ft	7/4/2006	<0.1	<0.01	0.2	0.5	0.7
BNA-25	25 ft	7/4/2006	<0.1	<0.01	0.4	1.3	1.7
BNA-0	0 ft	7/7/2006	<0.1	<0.01	3.8	1.3	5.1
BNA-5	5 ft	7/7/2006	<0.1	<0.01	0.3	1.2	1.5
BNA-10	10 ft	7/7/2006	<0.1	<0.01	<0.1	1.2	1.2
BNA-15	15 ft	7/7/2006	<0.1	<0.01	0.1	1.1	1.2
BNA-25	25 ft	7/7/2006	<0.1	<0.01	0.4	<0.5	0.4
BNA-0	0 ft	7/11/2006	<0.1	<0.01	1.7	2.3	4
BNA-5	5 ft	7/11/2006	<0.1	<0.01	<0.1	0.6	0.6
BNA-10	10 ft	7/11/2006	<0.1	<0.01	<0.1	0.7	0.7
BNA-15	15 ft	7/11/2006	<0.1	<0.01	<0.1	<0.5	<0.6
BNA-25	25 ft	7/11/2006	<0.1	<0.01	0.3	<0.5	0.3
BNA-0	0 ft	10/3/2006	<0.1	<0.01	3.8	0.7	4.5
BNA-5	5 ft	10/3/2006	<0.1	<0.01	4.4	<0.5	4.4
BNA-10	10 ft	10/3/2006	<0.1	<0.01	1.8	<0.5	1.8
BNA-15	15 ft	10/3/2006	<0.1	<0.01	3.4	<0.5	3.4
BNA-25	25 ft	10/3/2006	<0.1	<0.01	2.6	<0.5	2.6
BNA-0	0 ft	10/10/2006	<0.1	<0.01	<0.1	2.2	2.2
BNA-5	5 ft	10/10/2006	IV	IV	IV	IV	IDC
BNA-10	10 ft	10/10/2006	<0.1	<0.01	2	<0.5	2
BNA-15	15 ft	10/10/2006	<0.1	<0.01	2.1	<0.5	2.1
BNA-25	25 ft	10/10/2006	<0.1	IV	IV	<0.5	IDC
BNA-0	0 ft	10/17/2006	<0.1	<0.01	0.3	0.5	0.8
BNA-5	5 ft	10/17/2006	<0.1	<0.01	3.3	<0.5	3.3
BNA-10	10 ft	10/17/2006	<0.1	<0.01	2.9	<0.5	2.9
BNA-15	15 ft	10/17/2006	<0.1	<0.01	1.7	<0.5	1.7
BNA-25	25 ft	10/17/2006	<0.1	<0.01	2.2	<0.5	2.2
BNA-0	0 ft	12/28/2007	IV	IV	IV	IV	IV
BNA-25	25 ft	12/28/2007	IV	IV	IV	IV	IV

Notes:

ft: feet below the bottom of the basin
mg/L: milligrams per liter
TKN: Total Kjeldahl Nitrogen
TN: Total Nitrogen
DNR: Laboratory did not report data prior publishing this report
IDC: Insufficient data to calculate
IV: Insufficient volume for analysis



**Table 2-13
Basin and Lysimeter Water Monitoring Results for Hickory Basin East Cell: TOC**

Station ID	Depth	Sample Date	Result	Units
HKE-0	0 ft	10/24/2006	6.43	mg/L
HKE-5	5 ft	10/24/2006	3.01	mg/L
HKE-10	10 ft	10/24/2006	2.95	mg/L
HKE-15	15 ft	10/24/2006	2.58	mg/L
HKE-25	25 ft	10/24/2006	1.09	mg/L
HKE-0	0 ft	10/31/2006	6.64	mg/L
HKE-5	5 ft	10/31/2006	2.69	mg/L
HKE-10	10 ft	10/31/2006	2.28	mg/L
HKE-15	15 ft	10/31/2006	1.12	mg/L
HKE-25	25 ft	10/31/2006	1.68	mg/L
HKE-0	0 ft	11/7/2006	6.24	mg/L
HKE-5	5 ft	11/7/2006	2.51	mg/L
HKE-10	10 ft	11/7/2006	1.98	mg/L
HKE-15	15 ft	11/7/2006	1.39	mg/L
HKE-25	25 ft	11/7/2006	1.27	mg/L
HKE-0	0 ft	11/14/2006	4.06	mg/L
HKE-5	5 ft	11/14/2006	2.26	mg/L
HKE-10	10 ft	11/14/2006	2.02	mg/L
HKE-15	15 ft	11/14/2006	1.57	mg/L
HKE-25	25 ft	11/14/2006	1.03	mg/L
HKE-0	0 ft	11/21/2006	1.32	mg/L
HKE-5	5 ft	11/21/2006	1.53	mg/L
HKE-10	10 ft	11/21/2006	1.61	mg/L
HKE-15	15 ft	11/21/2006	1.37	mg/L
HKE-25	25 ft	11/21/2006	1.27	mg/L

Notes:

ft: feet below the bottom of the basin
mg/L: milligrams per liter
TOC: Total Organic Carbon



Table 2-14
Basin and Lysimeter Water Monitoring Results for Hickory Basin East Cell:
Ammonia-N, Nitrite-N, Nitrate-N, TKN, and TN (mg/L)

Station ID	Depth	Sample Date	NH3-N	NO2-N	NO3-N	TKN	TN
HKE-0	0 ft	10/24/2006	<0.1	<0.01	3.1	1	4.1
HKE-5	5 ft	10/24/2006	<0.1	<0.01	2.6	<0.5	2.6
HKE-10	10 ft	10/24/2006	<0.1	<0.01	1.4	0.6	2.0
HKE-15	15 ft	10/24/2006	<0.1	<0.01	1.2	0.5	1.7
HKE-25	25 ft	10/24/2006	<0.1	<0.01	1.8	<0.5	1.8
HKE-0	0 ft	10/31/2006	<0.1	0.03	2.4	0.5	2.9
HKE-5	5 ft	10/31/2006	<0.1	<0.01	1.7	<0.5	1.7
HKE-10	10 ft	10/31/2006	<0.1	IV	IV	<0.5	IDC
HKE-15	15 ft	10/31/2006	<0.1	<0.01	1.7	<0.5	1.7
HKE-25	25 ft	10/31/2006	<0.1	0.04	3.7	0.5	4.2
HKE-0	0 ft	11/7/2006	<0.1	0.01	4.1	1.6	5.7
HKE-5	5 ft	11/7/2006	<0.1	IV	IV	<0.5	IDC
HKE-10	10 ft	11/7/2006	IV	IV	IV	IV	IDC
HKE-15	15 ft	11/7/2006	<0.1	<0.01	5.9	<0.5	6.0
HKE-25	25 ft	11/7/2006	<0.1	<0.01	5.1	0.5	5.6
HKE-0	0 ft	11/14/2006	<0.1	<0.01	<0.1	2.9	2.9
HKE-5	5 ft	11/14/2006	IV	IV	IV	IV	IDC
HKE-10	10 ft	11/14/2006	IV	IV	IV	IV	IDC
HKE-15	15 ft	11/14/2006	<0.1	<0.01	5.6	0.9	6.5
HKE-25	25 ft	11/14/2006	<0.1	<0.01	5.2	0.9	6.1
HKE-0	0 ft	11/21/2006	<0.1	<0.01	4.8	<0.5	4.8
HKE-5	5 ft	11/21/2006	<0.1	IV	IV	<0.5	IDC
HKE-10	10 ft	11/21/2006	<0.1	IV	IV	<0.5	IDC
HKE-15	15 ft	11/21/2006	<0.1	<0.01	5.4	<0.5	5.4
HKE-25	25 ft	11/21/2006	<0.1	<0.01	4.9	1.3	6.2

Notes:

ft: feet below the bottom of the basin

mg/L: milligrams per liter

TKN: Total Kjeldahl Nitrogen

TN: Total Nitrogen

DNR: Laboratory did not report data prior publishing this report

IDC: Insufficient data to calculate

IV: Insufficient volume for analysis



**Table 2-15
Basin and Lysimeter Water Monitoring Results for Turner 1 Basin: TOC**

Station ID	Depth	Sample Date	Result	Units
TRN1-0	0 ft	10/3/2006	5.37	mg/L
TRN1-5	5 ft	10/3/2006	3.57	mg/L
TRN1-10	10 ft	10/3/2006	2.91	mg/L
TRN1-15	15 ft	10/3/2006	1.89	mg/L
TRN1-25	25 ft	10/3/2006	2.37	mg/L
TRN1-35	35 ft	10/3/2006	1.69	mg/L
TRN1-0	0 ft	10/10/2006	5.54	mg/L
TRN1-5	5 ft	10/10/2006	3.16	mg/L
TRN1-10	10 ft	10/10/2006	2.70	mg/L
TRN1-15	15 ft	10/10/2006	1.73	mg/L
TRN1-25	25 ft	10/10/2006	2.27	mg/L
TRN1-35	35 ft	10/10/2006	1.62	mg/L
TRN1-0	0 ft	10/17/2006	2.71	mg/L
TRN1-5	5 ft	10/17/2006	3.02	mg/L
TRN1-10	10 ft	10/17/2006	2.59	mg/L
TRN1-15	15 ft	10/17/2006	1.82	mg/L
TRN1-25	25 ft	10/17/2006	2.42	mg/L
TRN1-35	35 ft	10/17/2006	1.63	mg/L
TRN1-0	0 ft	10/24/2006	4.28	mg/L
TRN1-5	5 ft	10/24/2006	2.77	mg/L
TRN1-10	10 ft	10/24/2006	2.42	mg/L
TRN1-15	15 ft	10/24/2006	1.57	mg/L
TRN1-25	25 ft	10/24/2006	2.01	mg/L
TRN1-35	35 ft	10/24/2006	1.54	mg/L
TRN1-0	0 ft	10/31/2006	2.54	mg/L
TRN1-5	5 ft	10/31/2006	2.60	mg/L
TRN1-10	10 ft	10/31/2006	2.27	mg/L
TRN1-15	15 ft	10/31/2006	1.83	mg/L
TRN1-25	25 ft	10/31/2006	1.91	mg/L
TRN1-35	35 ft	10/31/2006	1.67	mg/L
TRN1-0	0 ft	11/7/2006	5.16	mg/L
TRN1-5	5 ft	11/7/2006	2.45	mg/L
TRN1-10	10 ft	11/7/2006	2.17	mg/L
TRN1-15	15 ft	11/7/2006	1.61	mg/L
TRN1-25	25 ft	11/7/2006	1.95	mg/L
TRN1-35	35 ft	11/7/2006	2.97	mg/L
TRN1-0	0 ft	11/14/2006	5.63	mg/L
TRN1-5	5 ft	11/14/2006	2.74	mg/L
TRN1-10	10 ft	11/14/2006	2.28	mg/L
TRN1-15	15 ft	11/14/2006	1.48	mg/L
TRN1-25	25 ft	11/14/2006	1.86	mg/L
TRN1-35	35 ft	11/14/2006	3.70	mg/L
TRN1-0	0 ft	11/21/2006	5.97	mg/L
TRN1-5	5 ft	11/21/2006	2.72	mg/L
TRN1-10	10 ft	11/21/2006	2.22	mg/L
TRN1-15	15 ft	11/21/2006	1.40	mg/L
TRN1-25	25 ft	11/21/2006	1.70	mg/L
TRN1-35	35 ft	11/21/2006	2.04	mg/L



**Table 2-15
Basin and Lysimeter Water Monitoring Results for Turner 1 Basin: TOC**

Station ID	Depth	Sample Date	Result	Units
TRN1-0	0 ft	11/28/2006	8.02	mg/L
TRN1-5	5 ft	11/28/2006	2.92	mg/L
TRN1-10	10 ft	11/28/2006	2.20	mg/L
TRN1-15	15 ft	11/28/2006	1.37	mg/L
TRN1-25	25 ft	11/28/2006	1.65	mg/L
TRN1-35	35 ft	11/28/2006	2.20	mg/L
TRN1-0	0 ft	12/5/2006	9.05	mg/L
TRN1-5	5 ft	12/5/2006	3.61	mg/L
TRN1-10	10 ft	12/5/2006	2.51	mg/L
TRN1-15	15 ft	12/5/2006	1.37	mg/L
TRN1-25	25 ft	12/5/2006	1.76	mg/L
TRN1-35	35 ft	12/5/2006	1.65	mg/L
TRN1-0	0 ft	12/12/2006	6.83	mg/L
TRN1-5	5 ft	12/12/2006	3.45	mg/L
TRN1-10	10 ft	12/12/2006	2.69	mg/L
TRN1-15	15 ft	12/12/2006	3.58	mg/L
TRN1-25	25 ft	12/12/2006	1.91	mg/L
TRN1-35	35 ft	12/12/2006	1.49	mg/L
TRN1-0	0 ft	12/19/2006	7.08	mg/L
TRN1-5	5 ft	12/19/2006	3.40	mg/L
TRN1-10	10 ft	12/19/2006	2.53	mg/L
TRN1-15	15 ft	12/19/2006	1.29	mg/L
TRN1-25	25 ft	12/19/2006	1.56	mg/L
TRN1-35	35 ft	12/19/2006	2.10	mg/L
TRN1-0	0 ft	12/28/2006	6.05	mg/L
TRN1-5	5 ft	12/28/2006	3.52	mg/L
TRN1-10	10 ft	12/28/2006	2.54	mg/L
TRN1-15	15 ft	12/28/2006	1.19	mg/L
TRN1-25	25 ft	12/28/2006	1.45	mg/L
TRN1-35	35 ft	12/28/2006	1.32	mg/L

Notes:

- ft: feet below the bottom of the basin
- mg/L: milligrams per liter
- TOC: Total Organic Carbon
- IV: Insufficient volume for analysis



Table 2-16
Basin and Lysimeter Water Monitoring Results for Turner 1 Basin:
Ammonia-N, Nitrite-N, Nitrate-N, TKN, and TN (mg/L)

Station ID	Depth	Sample Date	NH3-N	NO2-N	NO3-N	TKN	TN
TRN1-0	0 ft	10/3/2006	<0.1	<0.01	0.1	1.7	1.8
TRN1-5	5 ft	10/3/2006	<0.1	<0.01	0.2	<0.5	0.2
TRN1-10	10 ft	10/3/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN1-15	15 ft	10/3/2006	<0.1	IV	IV	<0.5	IDC
TRN1-25	25 ft	10/3/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN1-35	35 ft	10/3/2006	IV	IV	IV	IV	IDC
TRN1-0	0 ft	10/10/2006	<0.1	<0.01	<0.1	1.6	1.6
TRN1-5	5 ft	10/10/2006	<0.1	<0.01	0.2	<0.5	0.2
TRN1-10	10 ft	10/10/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN1-15	15 ft	10/10/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN1-25	25 ft	10/10/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN1-35	35 ft	10/10/2006	IV	IV	IV	IV	IDC
TRN1-0	0 ft	10/17/2006	<0.1	<0.01	<0.1	2.0	2.0
TRN1-5	5 ft	10/17/2006	<0.1	<0.01	0.2	<0.5	0.2
TRN1-10	10 ft	10/17/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN1-15	15 ft	10/17/2006	<0.1	IV	IV	<0.5	IDC
TRN1-25	25 ft	10/17/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN1-35	35 ft	10/17/2006	IV	IV	IV	IV	IDC
TRN1-0	0 ft	10/24/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN1-5	5 ft	10/24/2006	<0.1	<0.01	0.2	1.9	2.1
TRN1-10	10 ft	10/24/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN1-15	15 ft	10/24/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN1-25	25 ft	10/24/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN1-35	35 ft	10/24/2006	IV	IV	IV	IV	IDC
TRN1-0	0 ft	10/31/2006	<0.1	0.08	0.7	4.9	5.7
TRN1-5	5 ft	10/31/2006	<0.1	0.07	0.2	0.7	1.0
TRN1-10	10 ft	10/31/2006	<0.1	0.07	<0.1	0.9	1.0
TRN1-15	15 ft	10/31/2006	<0.1	0.06	<0.1	<0.5	0.1
TRN1-25	25 ft	10/31/2006	<0.1	0.06	<0.1	0.6	0.7
TRN1-35	35 ft	10/31/2006	<0.1	IV	IV	0.5	IDC
TRN1-0	0 ft	11/7/2006	0.2	0.02	0.8	1.8	2.6
TRN1-5	5 ft	11/7/2006	<0.1	<0.01	0.2	0.8	1.0
TRN1-10	10 ft	11/7/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN1-15	15 ft	11/7/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN1-25	25 ft	11/7/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN1-35	35 ft	11/7/2006	0.1	IV	IV	0.9	IDC
TRN1-0	0 ft	11/14/2006	0.2	0.45	0.3	2.2	3.0
TRN1-5	5 ft	11/14/2006	<0.1	<0.01	0.2	<0.5	0.2
TRN1-10	10 ft	11/14/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN1-15	15 ft	11/14/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN1-25	25 ft	11/14/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN1-35	35 ft	11/14/2006	IV	IV	IV	IV	IDC
TRN1-0	0 ft	11/21/2006	<0.1	IV	IV	2.5	IDC
TRN1-5	5 ft	11/21/2006	<0.1	IV	IV	<0.5	IDC
TRN1-10	10 ft	11/21/2006	<0.1	IV	IV	<0.5	IDC
TRN1-15	15 ft	11/21/2006	<0.1	IV	IV	<0.5	IDC
TRN1-25	25 ft	11/21/2006	<0.1	IV	IV	<0.5	IDC
TRN1-35	35 ft	11/21/2006	<0.1	IV	IV	<0.5	IDC
TRN1-0	0 ft	11/28/2006	<0.1	IV	IV	1.9	IDC
TRN1-5	5 ft	11/28/2006	<0.1	IV	IV	<0.5	IDC
TRN1-10	10 ft	11/28/2006	<0.1	IV	IV	<0.5	IDC
TRN1-15	15 ft	11/28/2006	<0.1	IV	IV	<0.5	IDC
TRN1-25	25 ft	11/28/2006	<0.1	IV	IV	<0.5	IDC
TRN1-35	35 ft	11/28/2006	IV	IV	IV	IV	IDC



Table 2-16
Basin and Lysimeter Water Monitoring Results for Turner 1 Basin:
Ammonia-N, Nitrite-N, Nitrate-N, TKN, and TN (mg/L)

Station ID	Depth	Sample Date	NH3-N	NO2-N	NO3-N	TKN	TN
TRN1-0	0 ft	12/5/2006	<0.1	0.09	0.2	1.9	2.2
TRN1-5	5 ft	12/5/2006	<0.1	<0.01	0.3	<0.5	0.3
TRN1-10	10 ft	12/5/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN1-15	15 ft	12/5/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN1-25	25 ft	12/5/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN1-35	35 ft	12/5/2006	IV	IV	IV	IV	IDC
TRN1-0	0 ft	12/12/2006	<0.1	0.02	3.3	1.7	5.0
TRN1-5	5 ft	12/12/2006	0.1	<0.01	0.3	<0.5	0.3
TRN1-10	10 ft	12/12/2006	<0.1	<0.01	0.2	<0.5	0.2
TRN1-15	15 ft	12/12/2006	<0.1	IV	0.2	IV	IDC
TRN1-25	25 ft	12/12/2006	<0.1	<0.01	0.2	<0.5	0.2
TRN1-35	35 ft	12/12/2006	IV	IV	IV	IV	IDC
TRN1-0	0 ft	12/19/2006	<0.1	0.03	2.1	2.0	4.1
TRN1-5	5 ft	12/19/2006	<0.1	<0.01	0.4	<0.5	0.4
TRN1-10	10 ft	12/19/2006	<0.1	<0.01	0.1	<0.5	0.1
TRN1-15	15 ft	12/19/2006	<0.1	IV	IV	<0.5	IDC
TRN1-25	25 ft	12/19/2006	<0.1	<0.01	0.1	<0.5	0.1
TRN1-35	35 ft	12/19/2006	<0.1	IV	IV	<0.5	IDC
TRN1-0	0 ft	12/28/2006	0.1	<0.01	3.6	1.4	5.0
TRN1-5	5 ft	12/28/2006	<0.1	<0.01	1.0	<0.5	1.0
TRN1-10	10 ft	12/28/2006	<0.1	<0.01	0.2	<0.5	0.2
TRN1-15	15 ft	12/28/2006	<0.1	<0.01	<0.1	<0.5	0.0
TRN1-25	25 ft	12/28/2006	<0.1	<0.01	0.2	<0.5	0.2
TRN1-35	35 ft	12/28/2006	IV	IV	IV	IV	IDC

Notes:

- ft: feet below the bottom of the basin
- mg/L: milligrams per liter
- TKN: Total Kjeldahl Nitrogen
- TN: Total Nitrogen
- DNR: Laboratory did not report data prior publishing this report
- IDC: Insufficient data to calculate
- IV: Insufficient Volume for analysis



**Table 2-17
Basin and Lysimeter Water Monitoring Results for Turner 4 Basin: TOC**

Station ID	Depth	Sample Date	Result	Units
TRN4-0	0 ft	10/3/2006	5.00	mg/L
TRN4-5	5 ft	10/3/2006	3.70	mg/L
TRN4-10	10 ft	10/3/2006	2.32	mg/L
TRN4-15	15 ft	10/3/2006	4.17	mg/L
TRN4-25	25 ft	10/3/2006	1.60	mg/L
TRN4-35	35 ft	10/3/2006	1.65	mg/L
TRN4-0	0 ft	10/10/2006	5.28	mg/L
TRN4-5	5 ft	10/10/2006	3.31	mg/L
TRN4-10	10 ft	10/10/2006	2.40	mg/L
TRN4-15	15 ft	10/10/2006	2.44	mg/L
TRN4-25	25 ft	10/10/2006	1.68	mg/L
TRN4-35	35 ft	10/10/2006	1.60	mg/L
TRN4-0	0 ft	10/17/2006	5.15	mg/L
TRN4-5	5 ft	10/17/2006	3.11	mg/L
TRN4-10	10 ft	10/17/2006	2.26	mg/L
TRN4-15	15 ft	10/17/2006	2.38	mg/L
TRN4-25	25 ft	10/17/2006	1.69	mg/L
TRN4-35	35 ft	10/17/2006	1.59	mg/L
TRN4-0	0 ft	10/24/2006	4.83	mg/L
TRN4-5	5 ft	10/24/2006	2.89	mg/L
TRN4-10	10 ft	10/24/2006	2.18	mg/L
TRN4-15	15 ft	10/24/2006	2.17	mg/L
TRN4-25	25 ft	10/24/2006	1.55	mg/L
TRN4-35	35 ft	10/24/2006	1.49	mg/L
TRN4-0	0 ft	10/31/2006	4.18	mg/L
TRN4-5	5 ft	10/31/2006	2.93	mg/L
TRN4-10	10 ft	10/31/2006	2.20	mg/L
TRN4-15	15 ft	10/31/2006	2.18	mg/L
TRN4-25	25 ft	10/31/2006	1.56	mg/L
TRN4-35	35 ft	10/31/2006	1.49	mg/L
TRN4-0	0 ft	11/7/2006	4.40	mg/L
TRN4-5	5 ft	11/7/2006	2.87	mg/L
TRN4-10	10 ft	11/7/2006	2.14	mg/L
TRN4-15	15 ft	11/7/2006	2.21	mg/L
TRN4-25	25 ft	11/7/2006	1.55	mg/L
TRN4-35	35 ft	11/7/2006	1.49	mg/L
TRN4-0	0 ft	11/14/2006	4.69	mg/L
TRN4-5	5 ft	11/14/2006	2.62	mg/L
TRN4-10	10 ft	11/14/2006	2.07	mg/L
TRN4-15	15 ft	11/14/2006	2.08	mg/L
TRN4-25	25 ft	11/14/2006	1.47	mg/L
TRN4-35	35 ft	11/14/2006	1.41	mg/L



**Table 2-17
Basin and Lysimeter Water Monitoring Results for Turner 4 Basin: TOC**

Station ID	Depth	Sample Date	Result	Units
TRN4-0	0 ft	11/21/2006	3.01	mg/L
TRN4-5	5 ft	11/21/2006	2.68	mg/L
TRN4-10	10 ft	11/21/2006	2.11	mg/L
TRN4-15	15 ft	11/21/2006	2.03	mg/L
TRN4-25	25 ft	11/21/2006	1.67	mg/L
TRN4-35	35 ft	11/21/2006	1.38	mg/L
TRN4-0	0 ft	11/28/2006	4.76	mg/L
TRN4-5	5 ft	11/28/2006	2.52	mg/L
TRN4-10	10 ft	11/28/2006	1.99	mg/L
TRN4-15	15 ft	11/28/2006	1.93	mg/L
TRN4-25	25 ft	11/28/2006	1.38	mg/L
TRN4-35	35 ft	11/28/2006	1.35	mg/L
TRN4-0	0 ft	12/5/2006	5.29	mg/L
TRN4-5	5 ft	12/5/2006	2.71	mg/L
TRN4-10	10 ft	12/5/2006	2.14	mg/L
TRN4-15	15 ft	12/5/2006	2.15	mg/L
TRN4-25	25 ft	12/5/2006	3.01	mg/L
TRN4-35	35 ft	12/5/2006	1.40	mg/L
TRN4-0	0 ft	12/12/2006	5.23	mg/L
TRN4-5	5 ft	12/12/2006	2.65	mg/L
TRN4-10	10 ft	12/12/2006	2.03	mg/L
TRN4-15	15 ft	12/12/2006	2.04	mg/L
TRN4-25	25 ft	12/12/2006	1.37	mg/L
TRN4-35	35 ft	12/12/2006	1.40	mg/L
TRN4-0	0 ft	12/19/2006	5.17	mg/L
TRN4-5	5 ft	12/19/2006	2.49	mg/L
TRN4-10	10 ft	12/19/2006	1.92	mg/L
TRN4-15	15 ft	12/19/2006	1.93	mg/L
TRN4-25	25 ft	12/19/2006	1.28	mg/L
TRN4-35	35 ft	12/19/2006	1.32	mg/L
TRN4-0	0 ft	12/28/2006	6.46	mg/L
TRN4-5	5 ft	12/28/2006	2.55	mg/L
TRN4-10	10 ft	12/28/2006	1.85	mg/L
TRN4-15	15 ft	12/28/2006	1.84	mg/L
TRN4-25	25 ft	12/28/2006	1.26	mg/L
TRN4-35	35 ft	12/28/2006	1.30	mg/L

Notes:

ft: feet below the bottom of the basin

mg/L: milligrams per liter

TOC: Total Organic Carbon



Table 2-18
Basin and Lysimeter Water Monitoring Results for Turner 4 Basin:
Ammonia-N, Nitrite-N, Nitrate-N, TKN, and TN (mg/L)

Station ID	Depth	Sample Date	NH3-N	NO2-N	NO3-N	TKN	TN
TRN4-0	0 ft	10/3/2006	<0.1	<0.01	<0.1	0.9	0.9
TRN4-5	5 ft	10/3/2006	<0.1	<0.01	<0.1	0.8	0.8
TRN4-10	10 ft	10/3/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-15	15 ft	10/3/2006	IV	IV	IV	IV	IDC
TRN4-25	25 ft	10/3/2006	<0.1	IV	IV	0.7	IDC
TRN4-35	35 ft	10/3/2006	<0.1	IV	IV	<0.5	IDC
TRN4-0	0 ft	10/10/2006	<0.1	<0.01	<0.1	0.7	0.7
TRN4-5	5 ft	10/10/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-10	10 ft	10/10/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-15	15 ft	10/10/2006	IV	IV	IV	IV	IDC
TRN4-25	25 ft	10/10/2006	<0.1	IV	IV	<0.5	IDC
TRN4-35	35 ft	10/10/2006	<0.1	<0.01	0.4	<0.5	0.4
TRN4-0	0 ft	10/17/2006	<0.1	<0.01	<0.1	0.6	0.6
TRN4-5	5 ft	10/17/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-10	10 ft	10/17/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-15	15 ft	10/17/2006	IV	IV	IV	IV	IDC
TRN4-25	25 ft	10/17/2006	<0.1	IV	IV	<0.5	IDC
TRN4-35	35 ft	10/17/2006	<0.1	<0.01	0.4	<0.5	0.4
TRN4-0	0 ft	10/24/2006	<0.1	<0.01	<0.1	1.2	1.2
TRN4-5	5 ft	10/24/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-10	10 ft	10/24/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-15	15 ft	10/24/2006	IV	IV	IV	IV	IDC
TRN4-25	25 ft	10/24/2006	<0.1	IV	IV	<0.5	IDC
TRN4-35	35 ft	10/24/2006	<0.1	<0.01	0.4	<0.5	0.4
TRN4-0	0 ft	10/31/2006	<0.1	0.05	<0.1	1.0	1.1
TRN4-5	5 ft	10/31/2006	<0.1	0.05	<0.1	<0.5	0.1
TRN4-10	10 ft	10/31/2006	<0.1	0.05	<0.1	<0.5	0.1
TRN4-15	15 ft	10/31/2006	<0.1	IV	IV	<0.5	IDC
TRN4-25	25 ft	10/31/2006	<0.1	IV	IV	<0.5	IDC
TRN4-35	35 ft	10/31/2006	<0.1	0.05	0.4	<0.5	0.5
TRN4-0	0 ft	11/7/2006	<0.1	<0.01	<0.1	0.9	0.9
TRN4-5	5 ft	11/7/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-10	10 ft	11/7/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-15	15 ft	11/7/2006	<0.1	IV	IV	<0.5	IDC
TRN4-25	25 ft	11/7/2006	<0.1	IV	IV	<0.5	IDC
TRN4-35	35 ft	11/7/2006	<0.1	<0.01	0.4	<0.5	0.4
TRN4-0	0 ft	11/14/2006	<0.1	<0.01	<0.1	0.8	0.8
TRN4-5	5 ft	11/14/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-10	10 ft	11/14/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-15	15 ft	11/14/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-25	25 ft	11/14/2006	<0.1	IV	IV	<0.5	IDC
TRN4-35	35 ft	11/14/2006	<0.1	<0.01	0.4	<0.5	0.4
TRN4-0	0 ft	11/21/2006	<0.1	0.25	0.2	2.5	3.0
TRN4-5	5 ft	11/21/2006	<0.1	<0.01	0.2	<0.5	0.2
TRN4-10	10 ft	11/21/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-15	15 ft	11/21/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-25	25 ft	11/21/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-35	35 ft	11/21/2006	<0.1	IV	IV	<0.5	IDC
TRN4-0	0 ft	11/28/2006	<0.1	0.14	0.3	1.9	2.3
TRN4-5	5 ft	11/28/2006	<0.1	<0.01	0.2	<0.5	0.2
TRN4-10	10 ft	11/28/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-15	15 ft	11/28/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-25	25 ft	11/28/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-35	35 ft	11/28/2006	<0.1	IV	IV	<0.5	IDC



Table 2-18
Basin and Lysimeter Water Monitoring Results for Turner 4 Basin:
Ammonia-N, Nitrite-N, Nitrate-N, TKN, and TN (mg/L)

Station ID	Depth	Sample Date	NH3-N	NO2-N	NO3-N	TKN	TN
TRN4-0	0 ft	12/5/2006	<0.1	<0.01	<0.1	1.1	1.1
TRN4-5	5 ft	12/5/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-10	10 ft	12/5/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-15	15 ft	12/5/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-25	25 ft	12/5/2006	<0.1	IV	IV	<0.5	IDC
TRN4-35	35 ft	12/5/2006	<0.1	<0.01	0.4	<0.5	0.4
TRN4-0	0 ft	12/12/2006	<0.1	0.02	3.3	1.7	5.0
TRN4-5	5 ft	12/12/2006	0.1	<0.01	0.3	<0.5	0.3
TRN4-10	10 ft	12/12/2006	<0.1	<0.01	0.2	<0.5	0.2
TRN4-15	15 ft	12/12/2006	<0.1	IV	0.2	IV	IDC
TRN4-25	25 ft	12/12/2006	<0.1	<0.01	0.2	<0.5	0.2
TRN4-35	35 ft	12/12/2006	IV	IV	IV	<0.5	IDC
TRN4-0	0 ft	12/19/2006	<0.1	0.03	2.1	2.0	4.1
TRN4-5	5 ft	12/19/2006	<0.1	<0.01	0.4	<0.5	0.4
TRN4-10	10 ft	12/19/2006	<0.1	<0.01	0.1	<0.5	0.1
TRN4-15	15 ft	12/19/2006	<0.1	IV	IV	<0.5	IDC
TRN4-25	25 ft	12/19/2006	<0.1	<0.01	0.1	<0.5	0.1
TRN4-35	35 ft	12/19/2006	<0.1	IV	IV	<0.5	IDC
TRN4-0	0 ft	12/28/2006	0.1	<0.01	3.6	1.4	5.0
TRN4-5	5 ft	12/28/2006	<0.1	<0.01	1	<0.5	1.0
TRN4-10	10 ft	12/28/2006	<0.1	<0.01	0.2	<0.5	0.2
TRN4-15	15 ft	12/28/2006	<0.1	<0.01	<0.1	<0.5	<0.6
TRN4-25	25 ft	12/28/2006	<0.1	<0.01	0.2	<0.5	0.2
TRN4-35	35 ft	12/28/2006	0.3	IV	IV	<0.5	IDC

Notes:

- ft: feet below the bottom of the basin
- mg/L: milligrams per liter
- TKN: Total Kjeldahl Nitrogen
- TN: Total Nitrogen
- DNR: Laboratory did not report data prior publishing this report
- IDC: Insufficient data to calculate
- IV: Insufficient volume for analysis



Appendix A.
Watermaster Certification of
Non-Pumping in the Buffer Zones





CHINO BASIN WATERMASTER

9641 San Bernardino Road, Rancho Cucamonga, Ca 91730-4665
Tel: 909.484.3888 Fax: 909.484.3890 www.cbwm.org

Kenneth Manning
CEO

February 15, 2006

Regional Water Quality Control Board, Santa Ana Region

Attention: Mr. Gerard Thibeault

3737 Main Street, Suite 500

Riverside, California 92501-3348

**Subject: Chino Basin Recycled Water Groundwater Recharge Program
Certification of Non-Pumping in the Buffer Zones of Banana, Hickory, and Turner Basins**

Dear Mr. Thibeault,

The Chino Basin Watermaster hereby certifies that, during the period of October 2006 through December 2006, there was no reported pumping for drinking water purposes in the buffer zones—zones that extend 500 feet and 6 months underground travel time—of the Banana, Hickory, and Turner Basins. In point of fact, there are no production wells in the buffer zones of these three basins.

If you have any questions, please do not hesitate to call me.

Best regards,

Kenneth Manning
Chief Executive Officer
