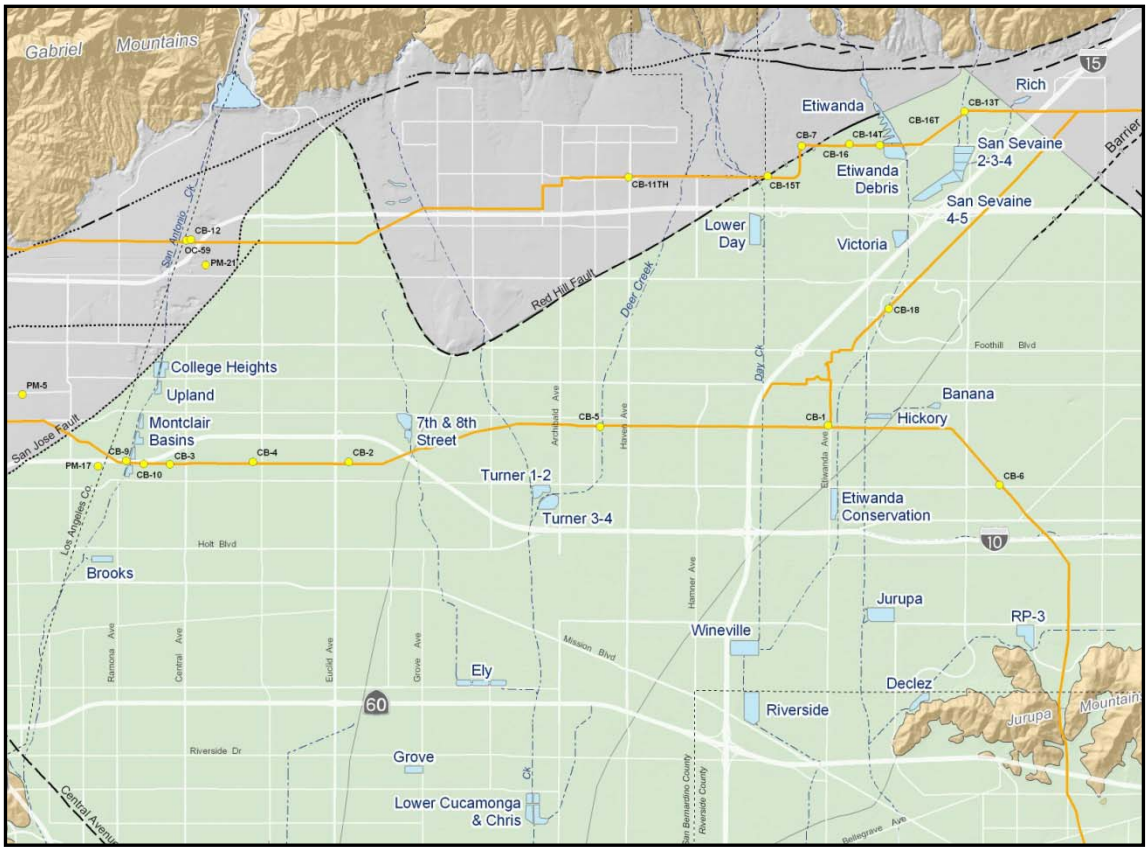
Chino Basin Recycled Water Groundwater Recharge Program

Annual Report

2007



May 1, 2008

Inland Empire
UTILITIES AGENCY

Patrick O. Sheilds
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May 1, 2008

Regional Water Quality Control Board, Santa Ana Region
Attention: Mr. Gerard Thibeault
3737 Main Street, Suite 500
Riverside, California 92501-3348

Subject: Transmittal of the Annual Report for 2007
Chino Basin Recycled Water Groundwater Recharge Program

Dear Mr. Thibeault,

The Inland Empire Utilities Agency (IEUA) and the Chino Basin Watermaster (Watermaster) hereby submit the *Annual Report 2007* regarding the *Recycled Water Groundwater Recharge Program* being implemented by IEUA and Watermaster. This document is submitted pursuant to requirements in Order No.R8-2007-0039 and Monitoring and Reporting Program No. R8-2007-0039:

- California Regional Water Quality Control Board, Santa Ana Region. Order No. R8-2007-0039. Water Recycling Requirements for Inland Empire Utilities Agency and Chino Basin Watermaster. Chino Basin Recycled Water Groundwater Recharge Program: Phase I and Phase II Projects, San Bernardino County, June 29, 2007.

- California Regional Water Quality Control Board, Santa Ana Region. Monitoring and Reporting Program No. R8-2007-0039 for Inland Empire Utilities Agency and Chino Basin Watermaster. Chino Basin Recycled Water Groundwater Recharge Program: Phase I and Phase II Projects, San Bernardino County, June 29, 2007.

ACTIVITIES, FINDINGS, AND CONCLUSIONS

The following bullets summarize the principal activities, findings, and conclusions of the *Recycled Water Groundwater Recharge Program* for 2007:

- Program highlights during the 2007 calendar year include development and approval of the Phase II recycled water groundwater recharge permit, completion of the Turner basins start-up period, initiation of the 8th Street basins start-up period, preparation of the required Diluent Water Monitoring Plan, and total program recharge of 11,684 acre-feet (AF) including 1,622 AF of recycled water.

- During 2007, recycled water monitoring was conducted in accordance with MRP No. R8-2007-0039. No Turbidity, Coliform, TN, TOC, DO limits were exceeded during 2007. No Regulated and Unregulated Contaminants limits were exceeded during 2007.

- No operational problems were encountered during the 2007 calendar year; therefore no corrective actions were necessary for RP-1, RP-4, recharge operations, lysimeter, and well sampling. No violations or suspensions of recharge operations occurred. No unit process changes occurred during 2007, therefore there was no impact on water quality.

- In-aquifer blending of recycled water, diluent water, and native groundwater was evidenced at monitoring wells in the vicinity of Banana, Hickory, and Turner basins. Blending was observed to be occurring both in the area of the groundwater mound and down gradient. Recycled water has not been recharged long enough at 8th Street basin for impacts to be observed. Recharge using recycled water has occurred at Ely basin since 1999, thus no significant changes in water chemistry were observed nor are anticipated.

- At the end of 2007, the volume-based RWC for 8th, Banana, Ely, Hickory, and Turner Basins was 13%, 35%, 12%, 30%, and 20%, respectively. With initial maximum RWC limits of 36%, 29%, and 36%, respectively, Banana, Ely, and Hickory recharge sites are in compliance with maximum RWC limits determined from their start-up periods. RWC management plans indicate these basins will continue to be in compliance with RWC limits over the next 60 months.

- Watermaster has certified that there was no reported pumping of groundwater in 2007 for domestic or municipal use from the zones that extend 500 feet and 6 months underground travel time from the Hickory, Banana, Turner, 8th Street, and Ely Basins.

- Sufficient data exist to estimate arrival times of recycled water at monitoring wells BH-1 (59 to 106 days) for Hickory Basin, California Speedway Infield well (198 days) for Banana basin, and monitoring wells TRN-1 (97 days) and TRN-2 (285 days) for Turner cell 1 and cell 4, respectively. Other program monitoring wells have yet to indicate arrival of recycled water.

- Comparison of the pre-recharge elevation contours with the post-program start-up contours indicates the recharge program has not changed the overall groundwater flow path directions. Groundwater flow paths have not changed significantly as the recharge program has not reached the full-scale annual recharge volumes modeled.

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 1st day of May 2008 at IEUA's office in Chino, California

Patrick O. Sheilds
Executive Manager of Operations

Kenneth R. Manning
Chief Executive Officer

Chino Basin Recycled Water Groundwater Recharge Program

Annual Report 2007

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TABLE OF CONTENTS

1 INTRODUCTION 1-1
1.1 Requirements of Order No. R8-2007-0039 1-1
1.2 Organization of the Annual Report 1-2
2 RECYCLED WATER QUALITY MONITORING 2-1
2.1 Water Quality Specifications 2-1
2.1.1 Detections and Compliance with Turbidity, Coliform, TN, TOC, DO 2-1
2.1.2 Detections and Compliance with Regulated and Unregulated Contaminants 2-1
2.2 Title 22 Results from Nearest Potable Wells 2-1
2.3 Laboratory Certifications and Test Methods 2-2
2.4 Calibration Summary 2-2
2.5 Violations, Suspensions, and Corrective Actions 2-2
2.6 Unit Process Changes and Anticipated Impact on Water Quality 2-3
2.7 Summary of Chemical Usage 2-3
3 GROUNDWATER RECHARGE MONITORING 3-1
3.1 Summary of Recharge Operations 3-1
3.2 In-Aquifer Blending of Recycled Water 3-1
3.2.1 Evidence of Blending Based on Volume 3-1
3.2.2 Evidence of Blending Based on Water Quality 3-2
3.3 RWC Management Plan 3-3
3.4 Buffer Zone/Travel Time Compliance 3-4
3.4.1 Recharge Water Arrival Times 3-4
3.4.2 Leading Edge of Recycled Water in Aquifer 3-5
3.4.3 Tracer Test Results 3-5
3.5 Groundwater Elevations 3-5
3.5.1 Current Elevation vs. Modeled Elevation 3-5
3.5.2 Water Level Trends in Monitoring Wells 3-6
4 REFERENCES 4-1

LIST OF TABLES

2-1	Title 22 Drinking Water Quality Data for the Nearest Domestic Water Supply Wells
2-2	Summary of Treatment Chemical Usage at RP-1 and RP-4
3-1	Evidence of Blending Based on Water Quality

LIST OF APPENDICES

A	Monthly Groundwater Recharge Summaries
B	Evidence for Blending: EC, TDS, & Chloride Time-Series Graphs
C	RWC Management Plans
D	Groundwater Elevation Contour Maps
E	Monitoring Well Hydrographs

1 INTRODUCTION

This document is the Annual Report for Chino Basin Recycled Water Groundwater Recharge Program for the 2007 calendar year. Inland Empire Utilities Agency (IEUA), Chino Basin Watermaster (Watermaster), Chino Basin Water Conservation District, and San Bernardino County Flood Control District are partners in the operation and maintenance of the Chino Basin Recycled Water Groundwater Recharge Program. This is a comprehensive water supply program to enhance water supply reliability and improve the groundwater quality in local drinking water wells throughout the Chino Groundwater Basin by increasing the recharge of stormwater, imported water and recycled water. The annual report summarizes recycled water quality monitoring and the affects of the recharge program on the groundwater basin. The 2007 recharge operations have previously been summarized in the four 2007 quarterly reports, which documents the recharge activities for the basins having already begun recharge with recycled water, namely Banana, Hickory, Turner, Ely, and 8th Street Basins. Highlights during the 2007 calendar year include development and approval of the Phase II recycled water groundwater recharge permit, completion of the Turner basins start-up period, initiation of the 8th Street basins start-up period, preparation of the required Diluent Water Monitoring Plan, and total program recharge of 11,684 acre-feet (AF) including 1,622 AF of recycled water.

1.1 Requirements of Order No. R8-2007-0039

This Recycled Water Groundwater Recharge Program is subject to the requirements found in the following documents issued by the California Regional Water Quality Control Board Santa Ana Region:

- Order No. R8-2007-0039 Water Recycling Requirements for Inland Empire Utilities Agency and Chino Basin Watermaster, Chino Basin Recycled Water Groundwater Recharge Program, Phase I and Phase II Projects, June 29, 2007, and
- Monitoring and Reporting Program No. R8-2007-0039 for Inland Empire Utilities Agency and Chino Basin Watermaster Chino Basin Recycled Water Groundwater Recharge Program Phase I and Phase II Projects San Bernardino County.

The Monitoring and Reporting Program (M&RP) describes the requirements for the Annual Reports. The following is an excerpt from Section VI of the M&RP:

3. The annual report shall include the following:

   a. A list of the analytical methods employed for each test and associated laboratory quality assurance/quality control procedures. The report shall restate, for the record, the laboratories used by the users to monitor compliance with this Order and their status of certification. Upon request by Regional Board staff, the users shall also provide a summary of performance.

b. A mass balance to ensure that blending is occurring in the aquifer at each recharge basin. Recharge water groundwater flow paths shall be determined annually from groundwater elevation contours and compared to the flow and transport model's flow paths, travel of recharge waters, including leading edge of the recharged water plume, any anticipated changes. The flow and transport model shall be updated to match as closely as possible the actual flow patterns observed within the aquifer if the flow paths have significantly changed.

c. A summary of corrective actions taken as a result of violations, suspensions of recharge, detections of monitored constituents and any observed trends, information on the travel of the recycled water (estimated location of the leading edge), description of any changes in operation of any unit processes or facilities, and description of any anticipated changes, including any impacts on other unit processes.

d. A summary of calibration records for equipments, such as pH meters, flow meters, turbidity meters, and lysimeters.

e. All down gradient public drinking water systems. A summary discussion on whether domestic drinking water wells extracted water within the buffer zone defined by the area less than 500 feet and 6 months underground travel time from the recharge basins, including the actions/measures that were undertaken to prevent reoccurrence. If there were none, a statement to that effect shall be written.

f. A summary of the results and recommendations of any tracer testing conducted during the past year.

4. At least one year after the blended recharged water has reached at least one groundwater monitoring well, the users shall submit a report to the CDHS and Regional Board evaluating the compliance with the minimum underground retention time, distance to the nearest point of extraction, blending, and the maximum RWC requirements. The annual report shall include water quality data on turbidity, coliform, total nitrogen, dissolved oxygen, regulated contaminants, TOC, and non-regulated contaminants compliance.

1.2 Organization of the Annual Report

The annual report contains two main sections: Chapter 2: Recycled Water Quality Monitoring and Chapter 3: Groundwater Recharge Monitoring. Supporting documents for these sections are included in the 2007 quarterly reports or are provided as appendices to this report. Chapter 2 discusses compliance with recycled water production specifications and other water quality requirements. Chapter 3 discusses the blending and movement of recycled water in the groundwater basin.

2 RECYCLED WATER QUALITY MONITORING

2.1 Water Quality Specifications

During 2007, recycled water monitoring was conducted in accordance to the required frequency for all parameters as specified in MRP No. R8-2007-0039. All monitoring and compliance data for the year can be found in the quarterly reports submitted to the Regional Board (IEUA & WEI, 2007; IEUA, 2007a & 2007b, and IEUA, 2008).

2.1.1 Detections and Compliance with Turbidity, Coliform, TN, TOC, DO

Recycled Water Specifications A.5 though A.9 are narrative limits in the permit with the exception of that for dissolved oxygen. The monitoring and compliance for these parameters is based on the analysis of the two separate recycled water sources, Regional Plant No. 1 and Regional Plant No. 4. Dissolved oxygen is a narrative limit in the RP-1/RP-4 NPDES permit; the limit specifies that the there should be no DO depletion in the receiving water below 5.0 mg/L. None of these limits were exceeded during 2007.

2.1.2 Detections and Compliance with Regulated and Unregulated Contaminants

Recycled Water Specifications A.1 through A.3 (Tables I, II, and III in the Order) specifies constituents with maximum contaminant levels (MCLs) and secondary MCLs. Compliance determination for these constituents are based on 4-quarter running averages. During 2007, the 4-quarter running averages were met for all MCLs and secondary MCLs, with the exception of odor (a secondary MCL). None of these limits were exceeded during 2007.

The monitoring and compliance for these parameters is based on the analysis of a sample collected at a recycled water sampling point along the distribution pipeline. The sample point is the turnout to Reliant Energy as it represents a mixture of water from both RP1 and RP4. The exception is the sample site used to collect samples for Trihalomethanes (TTHMs) and Total Haloacetic Acids (HAA5). For TTHMs and HAA5, samples collected at a recharge basin are more consistent and representative of the recycled water prior to reaching the groundwater table. Compliance is selected at a point prior to the groundwater table and has in previous quarters been selected at a lysimeter actively receiving recycled water recharge during the defined sampling time.

2.2 Title 22 Results from Nearest Potable Wells

Table 2-1 contains Title 22 drinking water quality data for the nearest potable water supply well located down gradient of recharge sites that have initiated recharge using recycled water. The Title 22 parameters included in this table are the same as those parameters tested for recycled water.

2.3 Laboratory Certifications and Test Methods

The IEUA and MWH Laboratories were utilized for the analytical testing required during the recycled water recharge program. Both of the laboratories are California Department of Public Health Environmental Laboratory Accreditation Program (ELAP) certified, pursuant to the California Environmental Laboratory Improvement Act. The IEUA laboratory certification is valid through October 2008 and the MWH laboratory certification is valid through January 2009.

To ensure the quality and reliability of test measurements and results, specific programs and procedures have been developed by both the IEUA and MWH Laboratories. The 2005 Annual Report contained an electronic copy the QA/QC manual from each laboratory, including analytical methodologies; this information has not changed since last reported. The 2007 Annual Laboratory QA/QC Data Summary Report was also submitted on March 30, 2008 to the Regional Board as an attachment to the RP-1/RP-4 2007 Annual NPDES Report.

2.4 Calibration Summary

The field instruments used during the recycled water field sampling included the following:

- Myron L Ultrameter II
- QED MP20 Multiparameter Meter with flow cell.

Field parameters, temperature, pH, conductivity, and total dissolved solids, were recorded during surface water sampling from recharge basins using the Myron L Ultrameter. Additionally, field parameters were collected from basin monitoring wells using a QED MP20 Multiparameter Meter. This instrument utilizes a flow-cell to allow purge water to flow through the meter chamber without exposure to the atmosphere. The QED meter monitors temperature, pH, conductivity, dissolved oxygen, and oxidation/reduction potential (ORP).

Field analytical instruments used throughout this project were maintained and calibrated each day of use. Calibration was conducted according to instructions provided by the instrument manufacturer. Meters were calibrated for instrument appropriate parameters including pH, dissolved oxygen, and conductivity. Calibration logs indicating the meter readings before and after calibration are stored in our field office for review and confirmation.

2.5 Violations, Suspensions, and Corrective Actions

No operational problems were encountered during the 2007 calendar year, therefore no corrective actions were necessary for the following: RP-1, RP-4, recharge operations, lysimeter and monitoring well sampling. No violations or suspensions of recharge operations occurred during the 2007 calendar year.

2.6 Unit Process Changes and Anticipated Impact on Water Quality

No unit process changes occurred during the 2007 calendar year, therefore there was no impact on water quality. RP-4 experienced several shutdowns during the year due to an expansion project currently in progress to increase design capacity from 7 MGD to 14 MGD. The project is slated to be completed by July 2008. The shutdowns at RP-4 had no impact on water quality, as RP-1 recycled water was able to supplement flows when RP-4 recycled water was not available.

2.7 Summary of Chemical Usage

The summary of treatment chemicals used on a monthly basis at RP-1 and RP-4 during the 2007 calendar year is presented in Table No. 2-2.

3 GROUNDWATER RECHARGE MONITORING

3.1 Summary of Recharge Operations

Groundwater recharge using recycled water has been initiated in Banana, Hickory, Turner, Ely, and 8th Street Basins. During 2007, 1,622 AF of recycled water was recharged using these basins. Of this volume less than 10 AF was delivered to Banana Basin as it is at its recycled water contribution (RWC) limit following its start-up period ending in 2006. A discussion of basin RWC limits is included in this chapter. The start-up period for 8th Street Basin began in September 2007 and continued into 2008. Recharge volumes, including diluent and recycled water volumes, are presented in the quarterly reports (IEUA & WEI, 2007; IEUA, 2007a & 2007b, and IEUA, 2008), but are repeated in this report in this chapter's discussion of RWC management plans. Appendix A of this report contains the monthly groundwater recharge summaries for all sites in the recycled water groundwater recharge program.

3.2 In-Aquifer Blending of Recycled Water

Section 4.B.3.b of the M&RP requires the annual report include:

> A mass balance to ensure that blending is occurring in the aquifer at each recharge basin.

In-aquifer blending of recharge using recycled water and diluent water can be shown in two ways. The first is the mass balance of relative volumes of the recharge water sources presented in the RWC Management Plans. The second is by comparison of relative concentrations of water quality parameters that have distinct mass concentrations in both the background groundwater and the recycled water used for recharge, such as EC, TDS, and chloride (Cl).

While these methods are appropriate, they should be used together as evidence of in-aquifer blending. They are appropriate as the horizontal groundwater flow travel velocity away from the recharge site is much slower than the vertical recharge percolation velocity. This velocity difference results in the development of the groundwater mound beneath a recharge site. In-aquifer blending occurs as the accumulating water sources comprising the mound dissipate away from the basin. This blending is evidenced by mound elevation changes beneath the recharge sites and the concentration changes in the monitoring wells located down gradient from the recharge sites. The volume-based percentage expresses a reasonably anticipated blending as recharge moves towards distant monitoring wells. Blending however, will likely be greater as recharge also blends with groundwater in storage.

3.2.1 Evidence of Blending Based on Volume

The 2007 recharge volumes by water type are presented in Appendix A and in the historical recharge portion of the RWC Management Plans (Appendix C). Recycled water and diluent water are typically recharged in distinct batches. However, there can be some blending of local runoff with recycled water as

it is delivered to the basins, or if stormwater enters a basin already containing some recycled water. Variations in the delivery period of diluent water and recycled water batches do support a level of blending approaching that of the RWC maximum without giving credit for additional blending with water already in groundwater storage. At the end of 2007, the RWCs for 8th Street, Banana, Ely, Hickory, and Turner Basins were 13%, 35%, 12%, 30%, and 20%, respectively. Maximum RWC and RWC management are discussed in more detail later in this chapter. These volume-based percentages express reasonably anticipated blending as recharge moves towards distant monitoring wells.

3.2.2 Evidence of Blending Based on Water Quality

Time series graphs of EC, TDS, and Cl were prepared for monitoring wells adjacent the recharge sites to help identify if blending is occurring within the aquifer. The graphs depicting trends in EC, TDS, and Cl are presented in Appendix B. In general, background groundwater concentrations of EC, TDS, and Cl are much lower that recycled water used for recharge. Blending can be gauged based on how rapidly these concentrations change and for how long the concentration changes persist. For relevance, the trend graphs are scaled to include the range of drinking water standards for TDS and Cl, 1,000 mg/L and 250 mg/L, respectively. The degree of blending can be estimated based on a simple mass balance of EC given the general EC of recycled water and the background groundwater EC. For wells having EC increases associated with recycled water recharge, Table 3-1 provides estimates of the degree of blending.

For the 8th Street basin area, the monitoring well at the basin has yet to show variations in EC, TDS, or Cl that can be attributed to recharge using recycled water. The basin only began the recharge of recycled water in September 2007 and was interrupted by stormwater for all of December 2007. Recycled water arrival at the first downgradient monitoring well is anticipated in 2008.

In the Banana and Hickory basins area, monitoring well BH-1 casing 2 (BH-1/2) adjacent to Hickory basin has noticeable variations in EC, TDS, and Cl (200-mg/L TDS difference) that can be attributed to cycles of recycled water recharge. These concentrations return to background levels following periods of recycled water recharge, which is an indication of groundwater flow moving the recycled water recharge away from the site. The California Speedway Infield well south of Banana basin shows a gradual concentration increase (100-mg/L TDS difference) since the initiation of recycled water recharge, indicating gradual blending as groundwater moves away from the basin (compare with the 200-mg/L variation at the basin). As presented in Table 3-1, the groundwater mound at BH-1/2 reached a high of approximately 59% recycled water and groundwater at the California Speedway Infield well located down gradient of Banana and Hickory reached a high of approximately 19% recycled water. The data show blending is occurring in the aquifer down gradient of the Banana and Hickory Basins.

For the Ely basin area, monitoring wells are located at the basin (Philadelphia well) and down gradient (Walnut well and the Riverside well). Recycled water has been recharged at Ely basin since 1999. TDS of groundwater at the Philadelphia and Riverside wells were relatively constant at 200 and 300 mg/L, respectively. EC, TDS, and Cl at the Walnut well fluctuate at higher concentrations (TDS just below

600 mg/L), but is not linked to recycled water recharge. Groundwater in the area directly south of Ely basin (south of the 60 freeway) lies on the northern perimeter of the Chino Basin area having high TDS-high nitrate concentrations. Groundwater in this immediate area can have TDS concentrations between 500 and 1,000 mg/L as is typical of lands in the Chino Basin with irrigation history (Watermaster, 2003).

For the Turner basin area, monitoring well TRN-1 (adjacent Turner cell 1) has noticeable variations in EC, TDS, and Cl (200 mg/L for TDS) that can be attributed to cycles of recycled water recharge. These concentrations decrease towards background levels following periods of recycled water recharge, which indicates groundwater blending and movement away from Turner Basin. Monitoring well TRN-2 (adjacent Turner cell 4) shows a gradual and steady increase in concentration of about 125 mg/L for TDS. This steady trend and lower difference in concentration change at TRN-2 indicates that recharge from cell 4 is more regionally distributed when it reaches the groundwater table. This is consistent with the slower recharge rates observed at cell 4, and supports more immediately aquifer blending occurring beneath Turner cell 4 in comparison to Turner cell 1. As presented in Table 3-1, the groundwater mound at TRN-1/2 and TRN-2/2 reached a high of approximately 67% and 30% recycled water respectively. The data show blending is occurring in the aquifer beneath the Turner Basins. Additional data for future monitoring are required to assess the degree of blending down gradient from Turner Basins.

3.3 RWC Management Plan

The RWC Management Plan is a necessary tool to demonstrate how IEUA and Watermaster will meet a recharge site's maximum RWC following a site's startup period. Small excursions above the initial RWC limit can occasionally occur in the 60-months following the start-up period process for basins with limited diluent water availability or basins with limited historical diluent water recharge. Each recharge site's RWC Management Plan is updated and presented annually to reflect the past year's operations. Appendix C contains the RWC Management Plans for Banana, Ely, and Hickory basins. Appendix C does include RWC history of the Turner and 8th Street basins, but without a maximum RWC limit or future RWC projections. These were left off as the Turner Basin Start-Up Report is in progress and the 8th Street basin start-up period has not yet been completed.

Each basin's plan was developed from historical recharge of diluent water (imported and stormwater) and recycled water, and projections of diluent water and recycled water. Diluent water projections are based on the historical averages of diluent recharge for the months January through December. There is no attempt to adjust the projections to forecast storm and imported water availability. With each subsequent year, diluent projections will be modified by averaging in the past year's data. Within these limits of historical recharge and diluent projections, planned recycled water deliveries are forecasted to maintain the volume-based RWC with the maximum RWC limit. The RWC management plans contain the previous 60 months of recharge and projections for the next 60 months. The volume-based RWC is a calculation of the percent recycled water infiltrated based on a 60-month rolling average.

At the end of 2007, the volume-based RWC for 8th, Banana, Ely, Hickory, and Turner Basins was 13%, 35%, 12%, 30%, and 20%, respectively. With initial maximum RWC limits of 36%, 29%, and 36%, respectively, the Banana, Ely, and Hickory recharge sites are in compliance with maximum RWC limits determined from their start-up periods. Based on 60-month projections of historical diluent recharge, each of these basins can continue to be in RWC limit compliance.

3.4 Buffer Zone/Travel Time Compliance

Section VI.B.3.e of the M&RP requires the annual report to include the following:

> A summary discussion on whether domestic drinking water wells extracted water within the buffer zone defined by the area less than 500 feet and 6 months underground travel time from the recharge basins, including the actions/measures that were undertaken to -prevent reoccurrence. If there were none, a statement to that effect shall be written.

As stated in the cover letters of the 2007 quarterly reports, Watermaster has certified that there was no reported pumping of groundwater in 2007 for domestic or municipal use from the zones that extend 500 feet and 6 months underground travel time from the Hickory, Banana, Turner, 8th Street, and Ely Basins. In fact, there are no production wells within the buffer zones of these aforementioned recharge sites. The California Speedway Infield Well (not a potable use well) is located at about the 6 month travel time from Banana Basin (see Section 3.4.1).

3.4.1 Recharge Water Arrival Times

Sufficient data exist to estimate arrival times of recycled water at monitoring wells BH-1 for Hickory Basin, California Speedway Infield well for Banana basin, and monitoring wells TRN-1 and TRN-2 for Turner cell 1 and cell 4 respectively. Other program monitoring wells have yet to indicate arrival of recycled water.

Recharge using recycled water at Banana basin and Hickory basin began on July 25 and September 10, 2005, respectively. At monitoring well BH-1/2, groundwater elevations rise and fall gradually out of phase with the times of high and low recharge volumes. The overall groundwater trend in 2007 at BH-1/2 was a decrease in elevation. These trends are small in magnitude and cannot be used alone to indicate the arrival of recycled water recharge. EC, TDS, and EC data do however support identifying the arrival of recycled water at BH-1/2 by November 8, 2005, but required sufficient data after this date for positive identification. This provides a travel time estimate of 106 days if from Banana basin or 59 days if from Hickory basin. Based on the well location and groundwater flow direction, the source is more likely Hickory basin. Original modeling (CH2MHill, 2003) for the Hickory recharge site used a 8.3 feet per day vadose zone vertical velocity and a 4.0 feet per day saturated zone velocity, which would predict a 126 day travel time to BH-1 (51 days in the vadose zone (420 feet) and 75 days in the saturated travel time (300 feet)).

California Speedway Infield well south of Banana basin shows TDS concentrations fluctuating between 250 and 300 mg/L during the 2 years after recycled water recharge initiation. These gradual fluctuations

appear seasonal and cannot definitively be correlated with recycled water recharge. The first quarter 2008 sample results indicate a noticeable increase in TDS, EC, and Cl concentrations, but will require a full year or more of sampling to correlate with recycled water recharge. The absence of a definite correlation of recharge at this well suggests a minimum travel time in excess of 2 years. The modeled travel time to this well was 682 days (CH2MHill). Other Banana-Hickory monitoring wells have not yet shown variations in EC, TDS, and Cl that could signal arrival of recycled water at these well sites.

Recharge using recycled water began at Turner basin cells 1 and 2 on July 28, 2006 and at Turner basin cells 3 and 4 on July 6, 2006. Based on EC, TDS, and Cl data, recycled water arrived at wells TRN-1 and TRN-2 on November 2, 2006 and May 17, 2007, respectively. These dates provide estimated travel times of 97 days and 285 days to monitoring wells TRN-1 and TRN-2, respectively. Original modeling (CH2MHill, 2003) for the Turner recharge site used a 3.1 foot per day vadose zone vertical velocity, which would predict a 109-day travel time to these two wells (340-foot depth to water).

3.4.2 Leading Edge of Recycled Water in Aquifer

Using groundwater elevations and EC data, the leading edge of groundwater containing a component of recycled water is past the first monitoring wells located down gradient of Banana, Hickory, and Turner Basins. Production wells used for monitoring near these basins do not show any increases in EC above the background concentrations that could be associated with recycled water recharge.

3.4.3 Tracer Test Results

There were no tracer tests conducted in 2007. The Brooks Basin tracer test is scheduled to be conducted in the summer of 2008 using protocols approved by CDPH.

3.5 Groundwater Elevations

Section VI.B.3.b of the M&RP requires the annual report to include a discussion of groundwater elevations and flow paths:

> Recharge water groundwater flow paths shall be determined annually from groundwater elevation contours and compared to the flow and transport model's flow paths, travel of recharge waters, including leading edge of the recharged water plume, any anticipated changes. The flow and transport model shall be updated to match as closely as possible the actual flow patterns observed within the aquifer if the flow paths have significantly changed.

3.5.1 Current Elevation vs. Modeled Elevation

Groundwater elevations from the recharge program monitoring wells and many other wells are used by Watermaster to periodically prepare groundwater elevation contours of the Chino groundwater basin. Groundwater Contour maps were prepared for fall 2000, 2003, and 2006, and are presented in Appendix D. The next scheduled regional contour map will be prepared by Watermaster in 2009. Comparison of the pre-recharge elevation contours with the post-program start-up contours indicates the

recharge program has not changed the overall groundwater flow directions. Groundwater flow directions have not changed significantly as the recharge program has not reached the maximum annual recharge volumes modeled and not all permitted recharge sites are operational. A contour map of the modeled depth to groundwater is also included in Appendix D.

3.5.2 Water Level Trends in Monitoring Wells

Appendix E contains hydrographs of groundwater elevations from the monitoring wells constructed for the recharge program. Plotted on the hydrographs is the daily recharge for the nearest recharge site(s). These hydrographs can be used to identify local increases water elevations and their correlation with local recharge.

The 2007 hydrographs for wells in the vicinity of Banana and Hickory Basins show a generally decreasing water elevation trend 5-feet in magnitude with seasonal fluctuations out of phase with the high and low of recharge volumes. Impacts on water levels from the Banana-Hickory basins' recharge is more likely muted and delayed due to the over 400-foot depth to the water table at this location.

The Turner Basin hydrographs for 2007 show a decrease of 10 feet, which is a continuation of the 20-foot decrease observed in mid to late 2006. Both of these decreases correlate with a decrease in recharge in the summer months. A slight increase in water level toward the end of 2007 is likely due to seasonal decreases in pumping due to the heavy rainfall in December 2007.

The 8th Street Basin hydrographs for 2007 are not for the full year as the wells have only recently been installed. However, there is a 2 foot increasing trend at the end of the year, but there is insufficient data to draw correlation with variations in recharge.

4 REFERENCES

California Regional Water Quality Control Board, Santa Ana Region, 2007a, Order No. R8-2007-0039 Water Recycling Requirements for Inland Empire Utilities Agency and Chino Basin Watermaster, Chino Basin Recycled Water Groundwater Recharge Program, Phase I and Phase II Projects.

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TABLES

Table 2-1

Title 22 Drinking Water Quality Data For The Nearest Domestic Water Supply Wells

Sample Location	Date	TOC (mg/L)	Total Coliform (MPN/100mL)	pH	EC (µmho/cm)	TDS (mg/L)	Al (µg/L)	Color (units)	Cu (µg/L)	Corrosivity Index (SI)	Foaming Agents (mg/L)	Fe (µg/L)	Mn (µg/L)	MTBE (µg/L)	Odor Threshold (TON)	Ag (µg/L)	Thiobencarb (µg/L)	Turbidity (NTU)	Zn (µg/L)	Cl (mg/L)	Hardness (mg $CaCO_3$/L)	Na (mg/L)	SO_4 (mg/L)	NH_3-N (mg/L)	NO_2-N (mg/L)	NO_3-N (mg/L)	Nitrogen, Total (mg/L)	TKN (mg/L)	Alkalinity (mg $CaCO_3$/L)	Dissolved Oxygen (mg/L)
Banana & Hickory	City of Ontario Well No. 20	1/29/07	<0.1	<2	7.95	320	200	<25	<3	4.0	0.4	<0.05	<15	<1	<0.5	1	<0.25	<0.2	0.22	2	5	144	14	6	<0.1	<0.01	1.4	1.4	<0.5	155	17.0
		6/25/07	<0.1	<2	7.60	327	212	<25	<3	41	0.1	<0.05	59	<1	<0.5	1	<0.25	<0.2	0.32	8	5	158	14	6	<0.1	<0.01	1.4	1.4	<0.5	165	6.1
		7/12/07	0.1	<2	7.95	330	220	<25	<3	3.0	0.5	<0.05	<15	<1	<0.5	1	<0.25	<0.2	0.14	4	6	155	13	6	<0.1	<0.01	1.6	1.6	<0.5	163	6.0
		10/9/07	<0.1	<2	7.85	340	246	<25	<3	3.0	0.3	<0.05	28	<1	<0.5	1	<0.25	<0.2	0.27	4	6	166	14	6	<0.1	<0.01	2.1	2.1	<0.5	161	8.6
7th & 8th Street	City of Ontario Well No. 4	5/20/04						84	<3	150000		<0.05	3600	<1		1	<0.25		20	41						<0.01					
		6/7/04														2											12.2				
		6/8/04														1											12.0				
		6/9/04														1											11.7				
		6/10/04														1											12.0				
		6/11/04														1											11.5				
		7/14/04			7.50	400	340	780	<3	<0.5		0.1	<15	<1		1	<0.25		0.82	<1	25	190	19	28		<0.01	12.0			130	
		8/27/04			7.40	460	320														10	180	18				12.4				
Turner	City of Ontario Well No. 29	1/29/07	<0.1	12	7.80	405	262	<25	<3	5.0	0.3	<0.05	<15	<1	<0.5		<0.25	<0.2	0.30	3	13		22	21	<0.1	<0.01	6.5	6.5	<0.5	151	10.5
		3/26/07	<0.1	<2	7.85	365	236	<25	<3	5.0	0.3	<0.05	<15	<1	<0.5		<0.25	<0.2	0.10	2	10	153	23	19	<0.1	<0.01	3.8	3.8	<0.5	150	
		6/25/07	0.2	<2	7.75	355	232	<25	<3	3.0	0.2	0.1	<15	<1	<0.5		<0.25	<0.2	0.17	2	9		24	17	0.1	<0.01	3.2	3.2	<0.5	152	4.9
		7/12/07	<0.1	<2	7.90	345	242	<25	<3	2.0	0.3	<0.05	<15	<1	<0.5	2	<0.25	<0.2	0.17	3	9	144	22	17	<0.1	<0.01	3.2	3.2	<0.5	154	5.7
		10/9/07	0.1	<2	7.85	345	234	<25	<3	2.0	0.3	<0.05	<15	<1	<0.5	1	<0.25	<0.2	0.18	<1	8	147	23	17	<0.1	0.06	2.9	3.0	<0.5	150	7.4
Ely	Bishop Of San Bernardino Corp. Sole - Domest	1/31/07			7.35	932									<0.5	8															9.6

Blank cells indicate that analysis was not run for a constituent on that particular date

Table 2-2
Summary of Treatment Chemical Usage At RP-1 And RP-4

	RP-1 (Flow)								RP-1 (Tertiary)						RP-4					
	Ferric Chloride		HW Polymer		Sodium Hypochlorite-Odor Scrub		Sodium Hydroxide 50%		Aluminum Sulfate		Sodium Bisulfite		Sodium Hypochlorite		Ferric Chloride		Aluminum Sulfate		Sodium Hypochlorite	
Month	Gal.	lbs.	Gal.	lbs.	Gal.	lbs.	Gal.	lbs.		lbs.	Gal.	lbs.	Gal.	lbs.	Gal.	lbs.	Gal.	lbs.	Gal.	lbs.
Jan-07	33,299	162,463	460	4,051	4,926	6,162	151	962		23,520	36,377	91,015	129,700	162,255	1,126	5,494	0	0	11,550	14,449
Feb-07	30,300	147,831	448	3,939	5,950	7,444	75	479		19,920	32,914	82,351	118,700	148,494	1,843	8,991	0	0	9,245	11,565
Mar-07	30,600	149,294	448	3,945	3,925	4,910	60	383		21,480	40,471	101,258	132,500	165,758	1,182	5,768	0	0	11,835	14,806
Apr-07	30,600	149,294	448	3,945	3,925	4,910	60	383		18,000	34,056	85,208	121,300	151,746	852	4,157	0	0	12,375	15,481
May-07	31,000	151,246	451	3,972	8,175	10,227	35	120		14,760	30,471	76,238	130,200	162,880	1,047	5,109	11	58	9,895	12,379
Jun-07	30,500	148,806	451	3,968	3,595	4,497	71	453		15,480	29,148	72,928	135,300	169,260	1,345	6,561	0	0	12,060	15,087
Jul-07	29,350	143,196	472	4,156	8,904	11,139	165	1,053		15,120	35,011	87,598	151,200	189,151	1,259	6,142	95	499	12,860	16,088
Aug-07	30,400	148,319	489	4,304	8,290	10,371	100	638		16,080	31,436	78,653	147,000	183,897	2,408	11,747	0	0	11,005	13,767
Sep-07	30,750	150,026	426	3,746	4,765	5,961	125	798		13,200	30,072	75,240	139,800	174,890	3,034	14,801	0	0	13,738	17,186
Oct-07	32,500	158,564	440	3,875	9,340	11,684	110	702		15,120	28,788	72,028	143,600	179,644	1,744	8,508	16	87	12,295	15,381
Nov-07	30,150	147,099	451	3,968	5,565	6,962	575	3,669		23,640	25,244	63,160	139,800	174,890	3,770	18,393	29	153	10,930	13,673
Dec-07	29,650	144,659	411	3,620	8,650	10,821	90	575		26,040	51,675	129,291	153,400	191,903	3,915	19,103	0	0	13,815	17,283
Total	369,099	1,800,798	5,397	47,490	76,010	95,088	1,617	10,214		222,360	405,663	1,014,969	1,642,500	2,054,768	23,525	114,775	151	797	141,603	177,145

Table 3-1
Evidence of Blending Based on Water Quality
Mass Balance based on EC

Well	Well Position	Recycled Water EC (µmhos/cm)	Groundwater Background EC (µmhos/cm)	Peak EC at Well (µmhos/cm)	Mass-Balance Blend (% Recycled Water)
BH-1/2	Mound	700	360	560	59%
California Speedway Infield	Down gradient	700	380	440	19%
TRN-1/2	Mound	700	400	600	67%
TRN-2/2	Mound	700	170	330	30%

APPENDIX A

MONTHLY GROUNDWATER RECHARGE SUMMARIES

SUMMARY OF GROUNDWATER RECHARGE OPERATIONS

January 2007

Drainage System / Basin	Recharge Volume (AF) SW/LR	MW	RW	Management Zone Subtotals
San Antonio Channel Drainage System				
College Heights East	-	**92**	N	
College Heights West	-	**102**	N	MZ-1
Upland	**56**	**613**	N	**2,095**
Montclair 1, 2, 3 & 4	**51**	**1,009**	N	AF
Brooks	**25**	**87**	X	
Brooks Non-replenishment* (MVWD)	-	-	X	
West Cucamonga Channel Drainage System				
8th Street	**29**	X	X	
7th Street	**30**	X	X	
Ely 1, 2, & 3	**95**	-	**58**	
Ely Non-replenishment* (GE)	-	-	-	
Minor Drainage				
Grove	**6**	X	X	
Cucamonga and Deer Creek Channel Drainage Systems				
Turner 1 & 2	**28**	-	**71**	
Turner 3 & 4	**10**	-	**31**	MZ-2
Day Creek Channel Drainage System				**1,372**
Lower Day	**8**	**100**	X	AF
Etiwanda Channel Drainage System				
Etiwanda Debris	-	-	X	
Victoria	**15**	X	X	
San Sevaine Channel Drainage System				
San Sevaine 1, 2, 3, 4, & 5	**36**	**900**	X	
West Fontana Channel System				
Hickory	**16**	-	-	
Banana	**33**	**298**	-	
Declez Channel Drainage System				MZ-3
RP3	**22**	X	X	**437**
Declez	**83**	X	X	AF
Month Total = 3,904 AF	**543**	**3,201**	**160**	
Fiscal Year to Date Total Since July 1, 2006 = 37,099 AF	**2,447**	**32,233**	**2,419**	

SW : Storm Water, LR : Local Runoff (and GE, MVWD), MW : MWD Imported Water, RW : Recycled Water

- :No stormwater/local runoff, or basin not in use due to maintenance or testing.

X :Turnouts not available - to be installed within future projects.

N :No turnout planned for installation.

*Non-Replenishment (deduct) is groundwater pumped from Chino Basin and recharged back into the basin.

Data are preliminary based on the data available at the time of this report preparation

Printed: Feb. 06, 07

SUMMARY OF CHINO BASIN GROUNDWATER RECHARGE OPERATIONS
February 2007

Drainage System / Basin	Recharge Volume (AF) SW/LR	MW	RW	Management Zone Subtotals
San Antonio Channel Drainage System				
College Heights East	**1**	**62**	N	
College Heights West	-	**54**	N	MZ-1
Upland	**75**	-	N	**829**
Montclair 1, 2, 3 & 4	**133**	**208**	N	AF
Brooks	**62**	**67**	X	
Brooks Non-replenishment* (MVWD)	-	-	X	
West Cucamonga Channel Drainage System				
8th Street	**45**	X	X	
7th Street	**123**	X	X	
Ely 1, 2, & 3	**150**	-	**23**	
Ely Non-replenishment* (GE)	-	-	-	
Minor Drainage				
Grove	**89**	X	X	
Cucamonga and Deer Creek Channel Drainage Systems				
Turner 1 & 2	**8**	**3**	**44**	
Turner 3 & 4	**9**	-	**21**	MZ-2
Day Creek Channel Drainage System				**908**
Lower Day	**19**	**46**	X	AF
Etiwanda Channel Drainage System				
Etiwanda Debris	-	-	X	
Victoria	**70**	X	X	
San Sevaine Channel Drainage System				
San Sevaine 1, 2, 3, 4, & 5	**76**	**266**	X	
West Fontana Channel System				
Hickory	**40**	-	**42**	
Banana	**74**	-	-	
Declez Channel Drainage System				MZ-3
RP3	**19**	X	X	**240**
Declez	**147**	X	X	AF
Month Total = 1,976 AF	**1,140**	**706**	**130**	
Fiscal Year to Date Total Since July 1, 2006 = 39,075 AF	**3,588**	**32,939**	**2,549**	

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N :No turnout planned for installation.

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Data are preliminary based on the data available at the time of this report preparation.

Printed: Jun. 11, 07

SUMMARY OF GROUNDWATER RECHARGE OPERATIONS

March 2007

Drainage System / Basin	Recharge Volume (AF) SW/LR	MW	Recycled	Management Zone Subtotals
San Antonio Channel Drainage System				
College Heights East	-	-	N	
College Heights West	-	-	N	MZ-1
Upland	**9**	-	N	**64**
Montclair 1, 2, 3 & 4	**13**	-	N	AF
Brooks	**4**	-	-	
Brooks Non-replenishment* (MVWD)	**-**	-	-	
West Cucamonga Channel Drainage System				
8th Street	**36**	X	X	
7th Street	**3**	X	X	
Ely 1, 2, & 3	**29**	-	**45**	
Ely Non-replenishment* (GE)	**(12)**	-	-	
Minor Drainage				
Grove	**3**	X	X	
Cucamonga and Deer Creek Channel Drainage Systems				
Turner 1 & 2	**25**	-	**56**	
Turner 3 & 4	**4**	-	**16**	
Day Creek Channel Drainage System				
Lower Day	**5**	-	X	MZ-2
Etiwanda Channel Drainage System				**219**
Etiwanda Debris	-	-	X	AF
Victoria	**8**	X	X	
San Sevaine Channel Drainage System				
San Sevaine 1, 2, 3, 4, & 5	**5**	-	X	
West Fontana Channel System				
Hickory	**28**	**7**	-	
Banana	**12**	**41**	-	
Declez Channel Drainage System				MZ-3
RP3	**7**	X	X	**81**
Declez	**21**	X	X	AF
Month Total = 365 AF	**200**	**48**	**117**	
Fiscal Year to Date Total Since July 1, 2006 = 39,488 AF	**3,845**	**32,987**	**2,657**	

SW : Storm Water, LR : Local Runoff (and GE, MVWD), MW : MWD Imported Water, RW : Recycled Water

- :No stormwater/local runoff, or basin not in use due to maintenance or testing.

X :Turnouts not available - to be installed within future projects.

N :No turnout planned for installation.

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Data are preliminary based on the data available at the time of this report preparation

Printed: Apr. 02, 07

SUMMARY OF CHINO BASIN GROUNDWATER RECHARGE OPERATIONS
April 2007

Drainage System / Basin	Recharge Volume (AF) SW/LR	MW	Recycled	Management Zone Subtotals
San Antonio Channel Drainage System				
College Heights East	-	-	N	
College Heights West	-	-	N	MZ-1
Upland	**27**	-	N	**227**
Montclair 1, 2, 3 & 4	**78**	-	N	AF
Brooks	**102**	-	X	
Non-replenishment* (MVWD)	**(69)**	-	X	
West Cucamonga Channel Drainage System				
8th Street	**45**	X	X	
7th Street	**44**	X	X	
Ely 1, 2, & 3	**80**	-	**41**	
Ely Non-replenishment* (GE)	**(21)**	-	-	
Minor Drainage				
Grove	**26**	X	X	
Cucamonga and Deer Creek Channel Drainage Systems				
Turner 1 & 2	**5**	-	**14**	
Turner 3 & 4	**3**	-	**8**	MZ-2
Day Creek Channel Drainage System				**314**
Lower Day	**3**	**4**	X	AF
Etiwanda Channel Drainage System				
Etiwanda Debris	-	-	X	
Victoria	**35**	X	X	
San Sevaine Channel Drainage System				
San Sevaine 1, 2, 3, 4, & 5	**3**	-	X	
West Fontana Channel System				
Hickory	**50**	-	**63**	
Banana	**29**	-	**4**	
Declez Channel Drainage System				MZ-3
RP3	**4**	X	X	**238**
Declez	**88**	X	X	AF
Month Total = 666 AF	**532**	**4**	**130**	
Fiscal Year to Date Total Since July 1, 2006 = 40,107 AF	**4,319**	**32,991**	**2797**	

SW : Storm Water, LR : Local Runoff (and GE, MVWD), MW : MWD Imported Water, RW : Recycled Water

- :No stormwater/local runoff, or basin not in use due to maintenance or testing.

X :Turnouts not available - to be installed within future projects.

N :No turnout planned for installation.

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Data are preliminary based on the data available at the time of this report preparation.

Printed: Apr. 29, 08

SUMMARY OF CHINO BASIN GROUNDWATER RECHARGE OPERATIONS

May 2007

Drainage System / Basin	Recharge Volume (AF) SW/LR	MWD	Recycled	Management Zone Subtotals
San Antonio Channel Drainage System				
College Heights East	-	-	N	
College Heights West	-	-	N	MZ-1
Upland	-	-	N	**54**
Montclair 1, 2, 3 & 4	**17**	-	N	AF
Brooks	**4**	-	X	
MVWD Non-replenishment* (Montclair)	**(9)**	N	X	
West Cucamonga Channel Drainage System				
8th Street	**42**	X	X	
7th Street	-	X	X	
Ely 1, 2, & 3	**44**	X	**40**	
Ely Non-replenishment* (GE)	**(30)**	N	X	
Minor Drainage				
Grove	**2**	X	X	
Cucamonga and Deer Creek Channel Drainage Systems				
Turner 1 & 2	**12**	-	**79**	
Turner 3 & 4	**8**	-	**57**	
Day Creek Channel Drainage System				
Lower Day	**2**	-	X	MZ-2
Etiwanda Channel Drainage System				**310**
Etiwanda Debris	-	-	X	AF
Victoria	**7**	X	X	
San Sevaine Channel Drainage System				
San Sevaine 1, 2, 3, 4, & 5	**31**	-	X	
West Fontana Channel System				
Hickory	**58**	-	-	
Banana	**37**	-	**6**	
Declez Channel Drainage System				MZ-3
RP3	**2**	X	X	**63**
Declez	**18**	X	X	AF
Month Total = 427 AF	**245**	**0**	**182**	
Fiscal Year to Date Total Since July 1, 2006 = 40,588 AF	**4,621**	**32,991**	**2,976**	

SW : Storm Water, LR : Local Runoff (and GE, MVWD), MWD : MWD Imported Water, RW : Recycled Wate

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X :Turnouts not available - to be installed within future projects.

N :No turnout planned for installation.

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Data are preliminary based on the data available at the time of this report preparation.

Printed: Jun. 06, 07

SUMMARY OF CHINO BASIN GROUNDWATER RECHARGE OPERATIONS

June 2007

Drainage System / Basin	Recharge Volume (AF) SW/LR	MWD	Recycled	Management Zone Subtotals
San Antonio Channel Drainage System				
College Heights East	-	-	N	
College Heights West	-	-	N	MZ-1
Upland	-	-	N	**44**
Montclair 1, 2, 3 & 4	-	-	N	AF
Brooks	**2**	-	X	
Brooks Non-replenishment* (MVWD)	-	-	X	
West Cucamonga Channel Drainage System				
8th Street	**42**	X	X	
7th Street	-	X	X	
Ely 1, 2, & 3	**27**	-	**7**	
Ely Non-replenishment* (GE)	**(9)**	-	-	
Minor Drainage				
Grove	**1**	X	X	
Cucamonga and Deer Creek Channel Drainage Systems				
Turner 1 & 2	**1**	-	**3**	MZ-2
Turner 3 & 4	**10**	-	-	**170**
Day Creek Channel Drainage System				AF
Lower Day	**1**	-	X	
Etiwanda Channel Drainage System				
Etiwanda Debris	-	-	X	
Victoria	**9**	X	X	
San Sevaine Channel Drainage System				
San Sevaine 1, 2, 3, 4, & 5	**30**	-	X	
West Fontana Channel System				
Hickory	**90**	-	-	
Banana	-	-	-	
Declez Channel Drainage System				MZ-3
RP3	**2**	X	X	**2**
Declez	-	X	X	AF
Month Total = 216 AF	**206**	**0**	**10**	
Fiscal Year to Date Total Since July 1, 2006 = 40,750 AF	**4,770**	**32,991**	**2,989**	

SW : Storm Water, LR : Local Runoff (and GE, MVWD), MWD : MWD Imported Water, RW : Recycled Wate

- :No stormwater/local runoff, or basin not in use due to maintenance or testing.

X :Turnouts not available - to be installed within future projects.

N :No turnout planned for installation.

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Data are preliminary based on the data available at the time of this report preparation.

Printed: Jul. 09, 07

SUMMARY OF GROUNDWATER RECHARGE OPERATIONS
July 2007

Drainage System / Basin	Recharge Volume (AF)* SW/LR	MW	Recycled	Management Zone Subtotals
San Antonio Channel Drainage System				
College Heights East	-	-	N	
College Heights West	-	-	N	MZ-1
Upland	-	-	N	**16**
Montclair 1, 2, 3 & 4	-	-	N	AF
Brooks	-	-	X	
Non-replenishment** (MVWD)	-	N	N	
West Cucamonga Channel Drainage System				
7th & 8th Street	**16**	-	X	
Ely 1, 2, & 3	**26**	-	-	
Non-replenishment** (GE)	-	N	N	
Minor Drainage				
Grove	-	-	-	
Cucamonga and Deer Creek Channel Drainage Systems				
Turner 1 & 2	**4**	-	-	
Turner 3 & 4	**1**	-	-	MZ-2
Day Creek Channel Drainage System				**266**
Lower Day	**1**	-	-	AF
Etiwanda Channel Drainage System				
Etiwanda Debris	-	-	-	
Victoria	-	-	-	
San Sevaine Channel Drainage System				
San Sevaine 1, 2, 3, 4, & 5	-	-	-	
West Fontana Channel System				
Hickory	**93**	-	**141**	
Banana	-	-	-	
Declez Channel Drainage System				MZ-3
RP3	-	-	-	**0**
Declez	-	-	-	AF
Month Total = 282 AF	**141**	**0**	**141**	
Fiscal Year to Date Total Since July 1, 2007 = 282 AF	**141**	**0**	**141**	

SW : Storm Water, LR : Local Runoff (and GE, MVWD), MW : MWD Imported Water, RW : Recycled Water

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** : Non-Replenishment (deduct) is groundwater pumped from Chino Basin and recharged back into the basin.

Printed: Apr. 29, 08

SUMMARY OF CHINO BASIN GROUNDWATER RECHARGE OPERATIONS

August 2007

Drainage System / Basin	Recharge Volume (AF)* SW/LR	MW	RW	Management Zone Subtotals
San Antonio Channel Drainage System				
College Heights East	-	-	N	
College Heights West	-	-	N	MZ-1
Upland	-	-	N	**16**
Montclair 1, 2, 3 & 4	-	-	N	AF
Brooks	-	-	X	
Non-replenishment** (MVWD)	**-**	N	N	
West Cucamonga Channel Drainage System				
7th & 8th Street	**16**	X	X	
Ely 1, 2, & 3	**29**	N	-	
Non-replenishment** (GE)	**-**	N	N	
Minor Drainage				
Grove	-	X	X	
Cucamonga and Deer Creek Channel Drainage Systems				
Turner 1 & 2	**38**	-	-	
Turner 3 & 4	**10**	-	-	MZ-2
Day Creek Channel Drainage System				**250**
Lower Day	**2**	-	X	AF
Etiwanda Channel Drainage System				
Etiwanda Debris	-	-	X	
Victoria	-	X	X	
San Sevaine Channel Drainage System				
San Sevaine 1, 2, 3, 4, & 5	-	-	X	
West Fontana Channel System				
Hickory	**93**	-	**78**	
Banana	-	-	-	
Declez Channel Drainage System				MZ-3
RP-3	**3**	X	X	**9**
Declez	**6**	X	X	AF
Month Total = 275 AF	**197**	**0**	**78**	
Fiscal Year to Date Total Since July 1, 2007 = 557 AF	**338**	**0**	**219**	

SW : Storm Water, LR : Local Runoff (and GE, MVWD), MW : MWD Imported Water, RW : Recycled Water

\- : No stormwater/local runoff, or basin not in use due to maintenance or testing.

X : Turnouts not available - to be installed within future projects.

N : No turnout planned for installation.

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Printed: Apr. 29, 08

SUMMARY OF CHINO BASIN GROUNDWATER RECHARGE OPERATIONS
September 2007

Drainage System / Basin	Recharge Volume (AF)* SW/LR	MW	RW	Management Zone Subtotals
San Antonio Channel Drainage System				
College Heights East	-	-	N	
College Heights West	-	-	N	MZ-1
Upland	-	-	N	**154**
Montclair 1, 2, 3 and 4	**26**	-	N	AF
Brooks	**4**	-	X	
Non-replenishment** (MVWD)	**(21)**	N	N	
West Cucamonga Channel Drainage System				
7th & 8th Street	**17**	X	**128**	
Ely 1, 2, & 3	**34**	N	-	
Non-replenishment** (GE)	**-**	N	N	
Minor Drainage				
Grove	-	X	X	
Cucamonga and Deer Creek Channel Drainage Systems				
Turner 1 & 2	**4**	-	-	
Turner 3 & 4	**12**	-	-	MZ-2
Day Creek Channel Drainage System				**168**
Lower Day	**2**	-	X	AF
Etiwanda Channel Drainage System				
Etiwanda Debris	**2**	-	X	
Victoria	**5**	X	X	
San Sevaine Channel Drainage System				
San Sevaine 1, 2, 3, 4, & 5	**2**	-	X	
West Fontana Channel System				
Hickory	**92**	-	**15**	
Banana	**3**	-	-	
Declez Channel Drainage System				MZ-3
RP3	**3**	X	X	**39**
Declez	**33**	X	X	AF
Month Total = 361 AF	**218**	**0**	**143**	
Fiscal Year to Date Total Since July 1, 2007 = 918 AF	**556**	**0**	**362**	

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X : Turnouts not available - to be installed within future projects.

N : No turnout planned for installation.

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Printed: Apr. 29, 08

SUMMARY OF CHINO BASIN GROUNDWATER RECHARGE OPERATIONS

October 2007

Drainage System / Basin	Recharge Volume (AF)* SW/LR	MW	RW	Management Zone Subtotals
San Antonio Channel Drainage System				
College Heights East	-	-	N	
College Heights West	-	-	N	MZ-1
Upland	-	-	N	**174**
Montclair 1, 2, 3 and 4	**30**	-	N	AF
Brooks	**14**	-	X	
Non-replenishment** (MVWD)	**(21)**	N	N	
West Cucamonga Channel Drainage System				
7th & 8th Street	**42**	X	**109**	
Ely 1, 2, & 3	**34**	-	-	
Non-replenishment** (GE)	**-**	N	N	
Minor Drainage				
Grove	**-**	X	X	
Cucamonga and Deer Creek Channel Drainage Systems				
Turner 1 & 2	**62**	-	-	
Turner 3 & 4	**3**	-	-	MZ-2
Day Creek Channel Drainage System				**218**
Lower Day	**2**	-	X	AF
Etiwanda Channel Drainage System				
Etiwanda Debris	**7**	-	X	
Victoria	**8**	X	X	
San Sevaine Channel Drainage System				
San Sevaine 1, 2, 3, 4, & 5	**6**	-	X	
West Fontana Channel System				
Hickory	**73**	-	**23**	
Banana	**2**	-	-	
Declez Channel Drainage System				MZ-3
RP3	**9**	X	X	**25**
Declez	**14**	X	X	AF
Month Total = 417 AF	**285**	**0**	**132**	
Fiscal Year to Date Total Since July 1, 2007 = 1,257 AF	**763**	**0**	**494**	

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Printed: Mar. 01, 08

SUMMARY OF CHINO BASIN GROUNDWATER RECHARGE OPERATIONS November 2007				
Drainage System	**Recharge Volume (AF)***			**Management**
Basin	**SW/LR**	**MW**	**RW**	**Zone Subtotals**
San Antonio Channel Drainage System				
College Heights East	-	-	N	
College Heights West	-	-	N	MZ-1
Upland	**3**	-	N	**342**
Montclair 1, 2, 3 and 4	**73**	-	N	AF
Brooks	**24**	-	X	
Non-replenishment** (MVWD)	**-**	N	N	
West Cucamonga Channel Drainage System				
7th & 8th Street	**81**	X	**161**	
Ely 1, 2, & 3	**274**	-	**87**	
Non-replenishment** (GE)	**(108)**	N	N	
Minor Drainage				
Grove	**10**	X	X	
Cucamonga and Deer Creek Channel Drainage Systems				
Turner 1 & 2	**96**	-	-	
Turner 3 & 4	**66**	-	-	MZ-2
Day Creek Channel Drainage System				**729**
Lower Day	**18**	-	X	AF
Etiwanda Channel Drainage System				
Etiwanda Debris	-	-	X	
Victoria	**49**	X	X	
San Sevaine Channel Drainage System				
San Sevaine 1, 2, 3, 4, & 5	**37**	-	X	
West Fontana Channel System				
Hickory	**102**	-	**98**	
Banana	**35**	-	-	
Declez Channel Drainage System				MZ-3
RP3	**47**	X	X	**190**
Declez	**108**	X	X	AF
Month Total = 1,261 AF	**915**	**0**	**346**	
Fiscal Year to Date Total Since July 1, 2007 = 2,518 AF	**1,678**	**0**	**840**	

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Printed: Mar. 01, 08

SUMMARY OF CHINO BASIN GROUNDWATER RECHARGE OPERATIONS December 2007				
Drainage System	**Recharge Volume (AF)***			**Management**
Basin	**SW/LR**	**MW**	**RW**	**Zone Subtotals**
San Antonio Channel Drainage System				
College Heights East	-	-	N	
College Heights West	-	-	N	MZ-1
Upland	**5**	-	N	**385**
Montclair 1, 2, 3 & 4	**114**	-	N	AF
Brooks	**42**	-	X	
Non-replenishment** (MVWD)	-	N	N	
West Cucamonga Channel Drainage System				
7th & 8th Street	**224**	X	-	
Ely 1, 2, & 3	**314**	-	**53**	
Non-replenishment** (GE)	**(57)**	N	N	
Minor Drainage				
Grove	**80**	X	X	
Cucamonga and Deer Creek Channel Drainage Systems				
Turner 1 & 2	**215**	-	-	
Turner 3 & 4	**62**	-	-	MZ-2
Day Creek Channel Drainage System				**942**
Lower Day	**32**	-	X	AF
Etiwanda Channel Drainage System				
Etiwanda Debris	-	-	X	
Victoria	**66**	X	X	
San Sevaine Channel Drainage System				
San Sevaine 1, 2, 3, 4, & 5	**75**	-	X	
West Fontana Channel System				
Hickory	**102**	-	-	
Banana	**22**	-	-	
Declez Channel Drainage System				MZ-3
RP3	**108**	X	X	**207**
Declez	**77**	X	X	AF
Month Total = 1,534 AF	**1,481**	**0**	**53**	
Fiscal Year to Date Total Since July 1, 2007 = 4,052 AF	**3,159**	**0**	**893**	

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Printed: Mar. 01, 08

SUMMARY OF CHINO BASIN GROUNDWATER RECHARGE OPERATIONS 2007				
Drainage System	**Recharge Volume (AF)**			**Management**
Basin	**SW/LR**	**MW**	**RW**	**Zone Subtotals**
San Antonio Channel Drainage System				
College Heights East	**1**	**154**	N	
College Heights West	-	**156**	N	MZ-1
Upland	**175**	**613**	N	**4,401**
Montclair 1, 2, 3 & 4	**535**	**1217**	N	AF
Brooks	**283**	**154**	X	
Non-replenishment** (MVWD)	**(120)**	N	N	
West Cucamonga Channel Drainage System				
7th & 8th Street	**835**	X	**398**	
Ely 1, 2, & 3	**1436**	-	**354**	
Non-replenishment** (GE)	**(237)**	N	N	
Minor Drainage				
Grove	**217**	X	X	
Cucamonga and Deer Creek Channel Drainage Systems				
Turner 1 & 2	**498**	**3**	**267**	
Turner 3 & 4	**190**	-	**133**	MZ-2
Day Creek Channel Drainage System				**6,158**
Lower Day	**95**	**150**	X	AF
Etiwanda Channel Drainage System				
Etiwanda Debris	**9**	-	X	
Victoria	**272**	X	X	
San Sevaine Channel Drainage System				
San Sevaine 1, 2, 3, 4, & 5	**301**	**1166**	X	
West Fontana Channel System				
Hickory	**837**	**7**	**460**	
Banana	**247**	**339**	**10**	
Declez Channel Drainage System				MZ-3
RP3	**226**	X	X	**1,417**
Declez	**595**	X	X	AF
Year Total = 11,976 AF	**6,395**	**3,959**	**1,622**	

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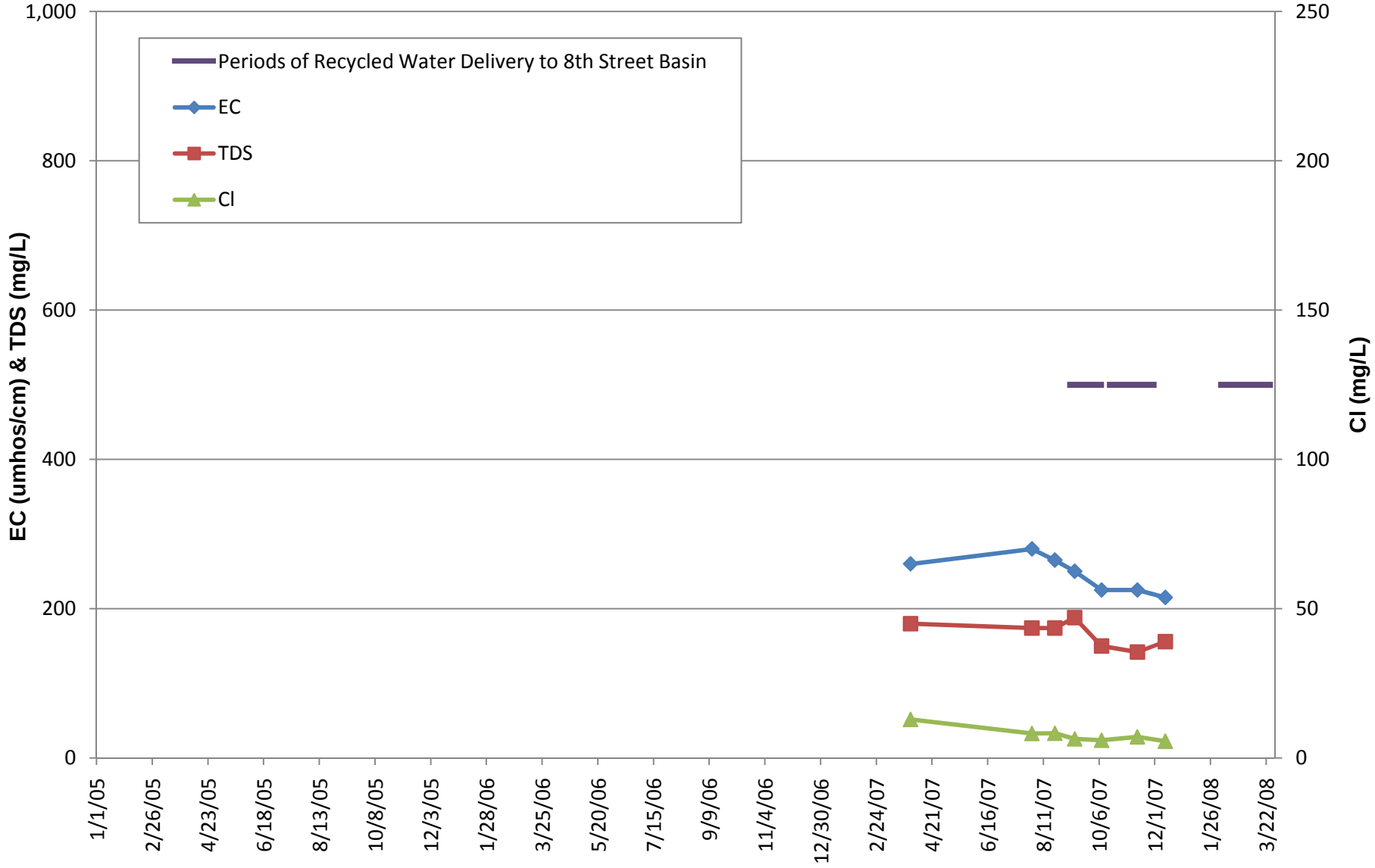
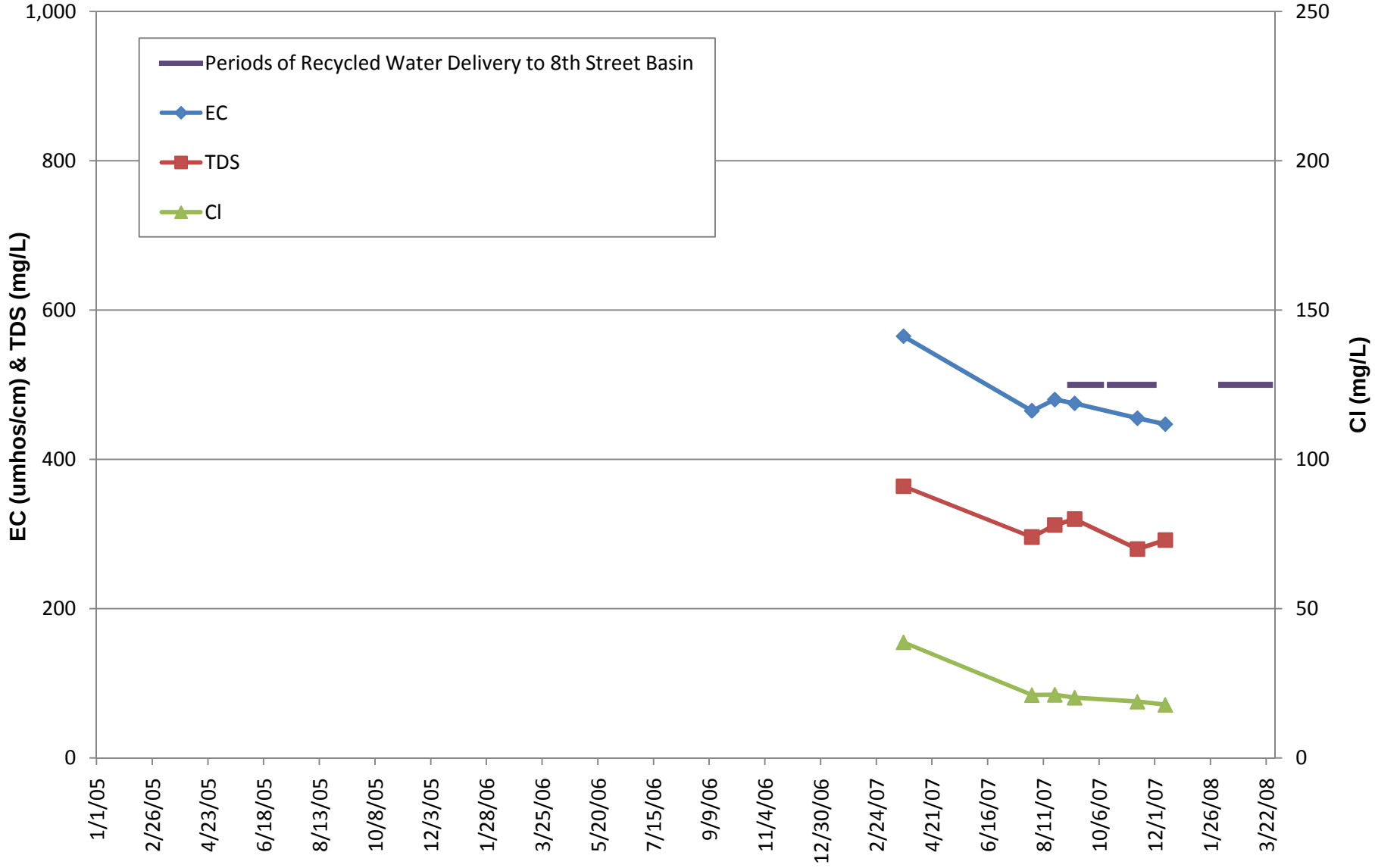
APPENDIX B

EVIDENCE FOR BLENDING:

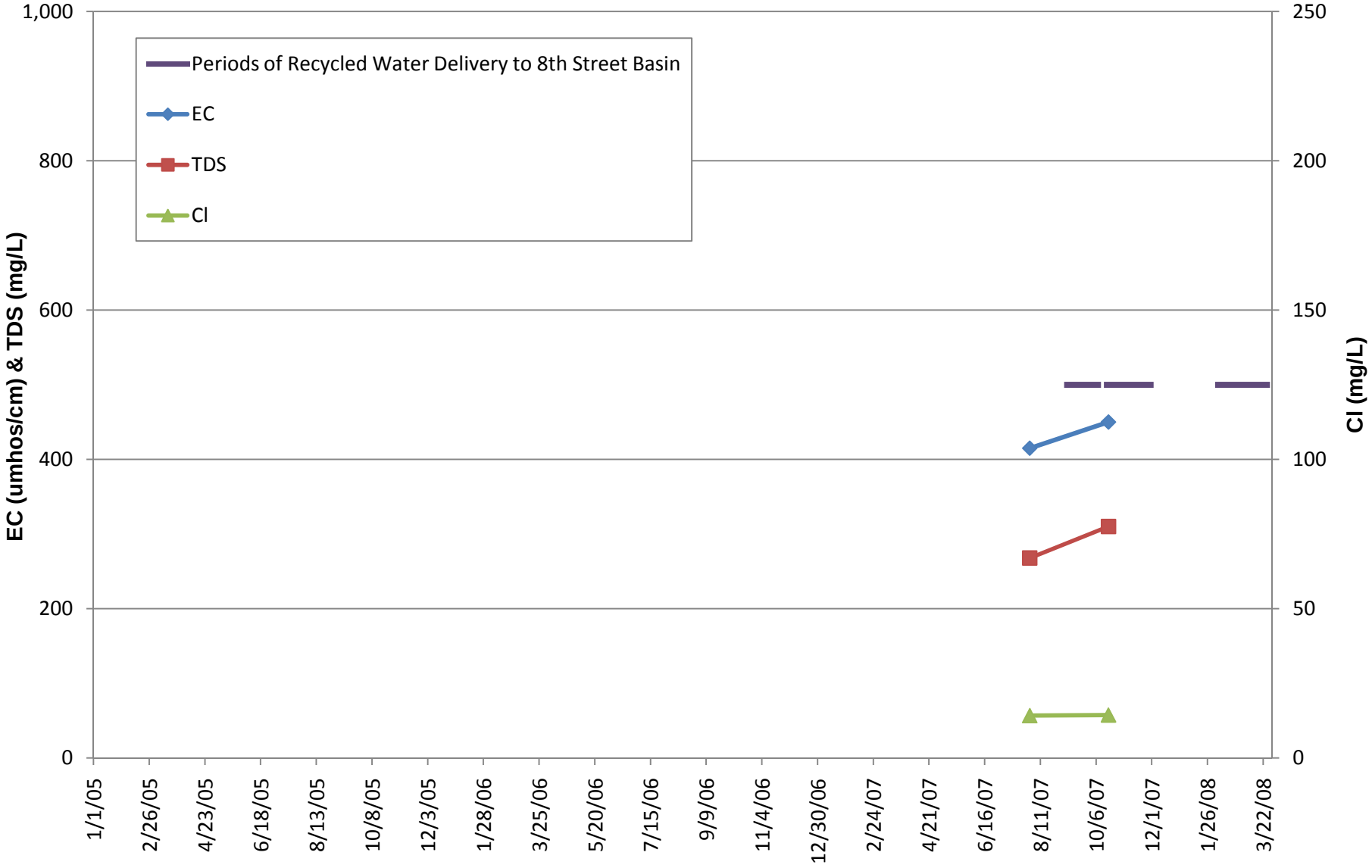
EC, TDS, CHLORIDE TIME-SERIES GRAPHS



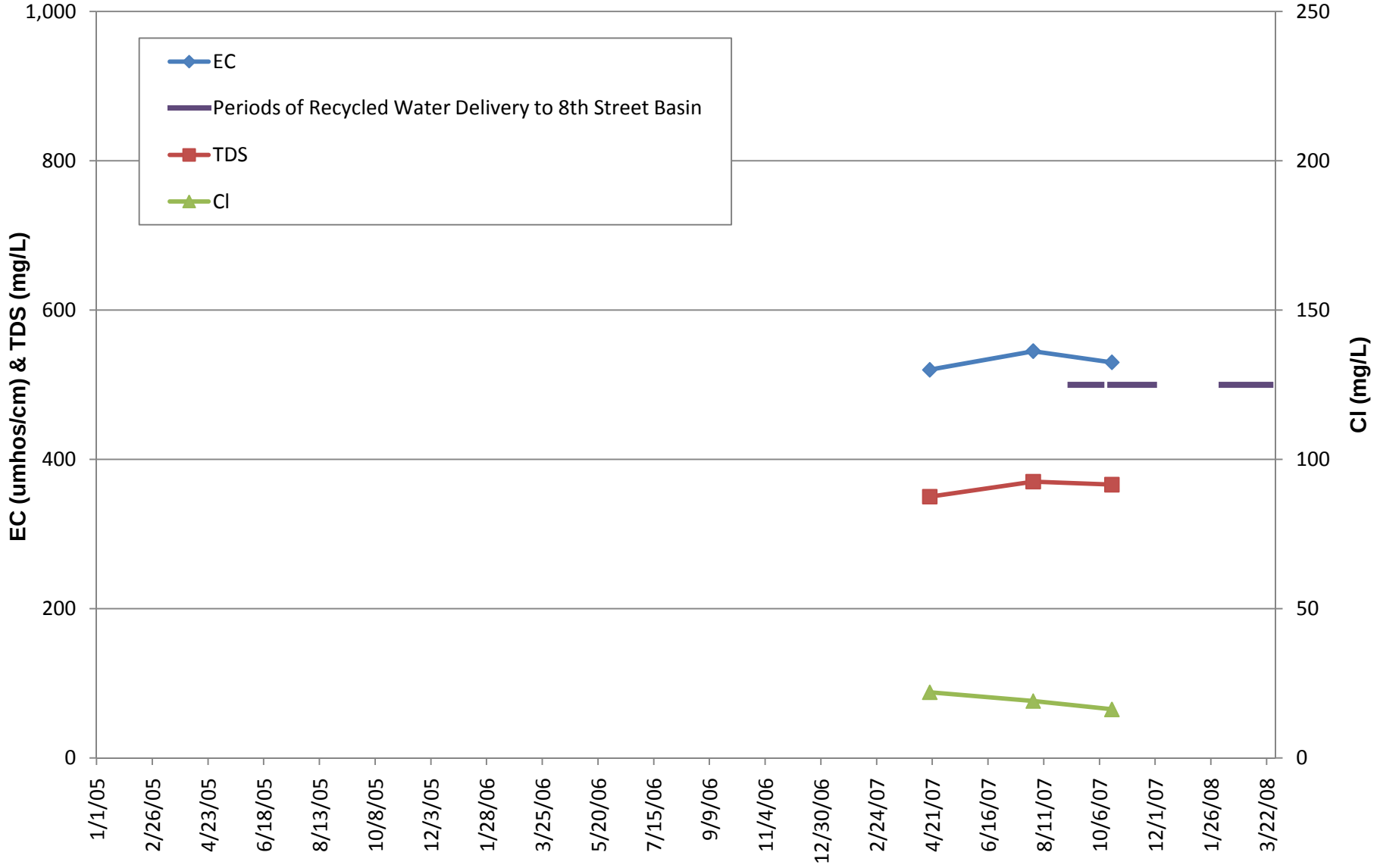
EC, TDS, CL TRENDS
8TH STREET BASIN
MW 8TH-1/1



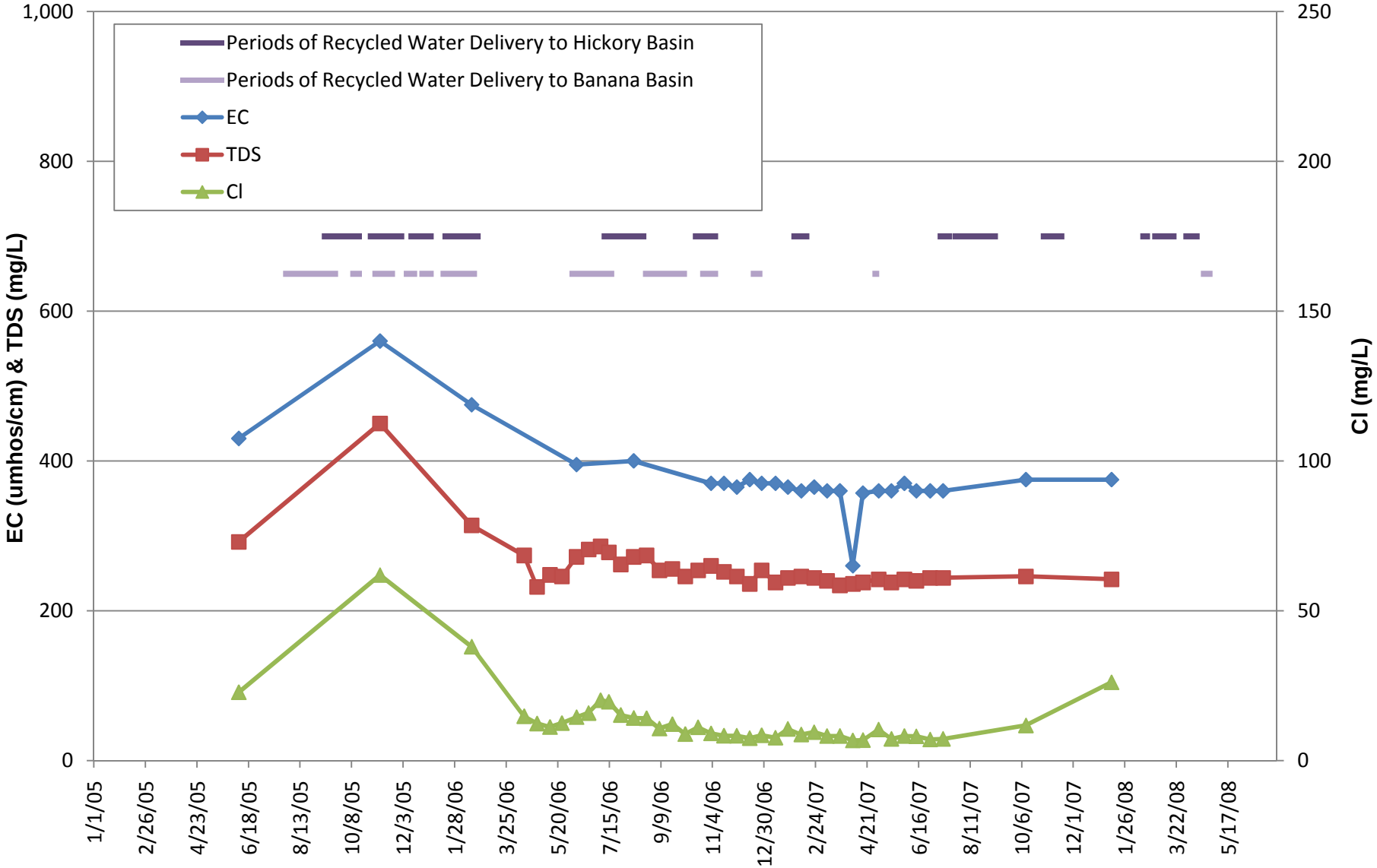
EC, TDS, CL TRENDS
8TH STREET BASIN
MW 8TH-1/2



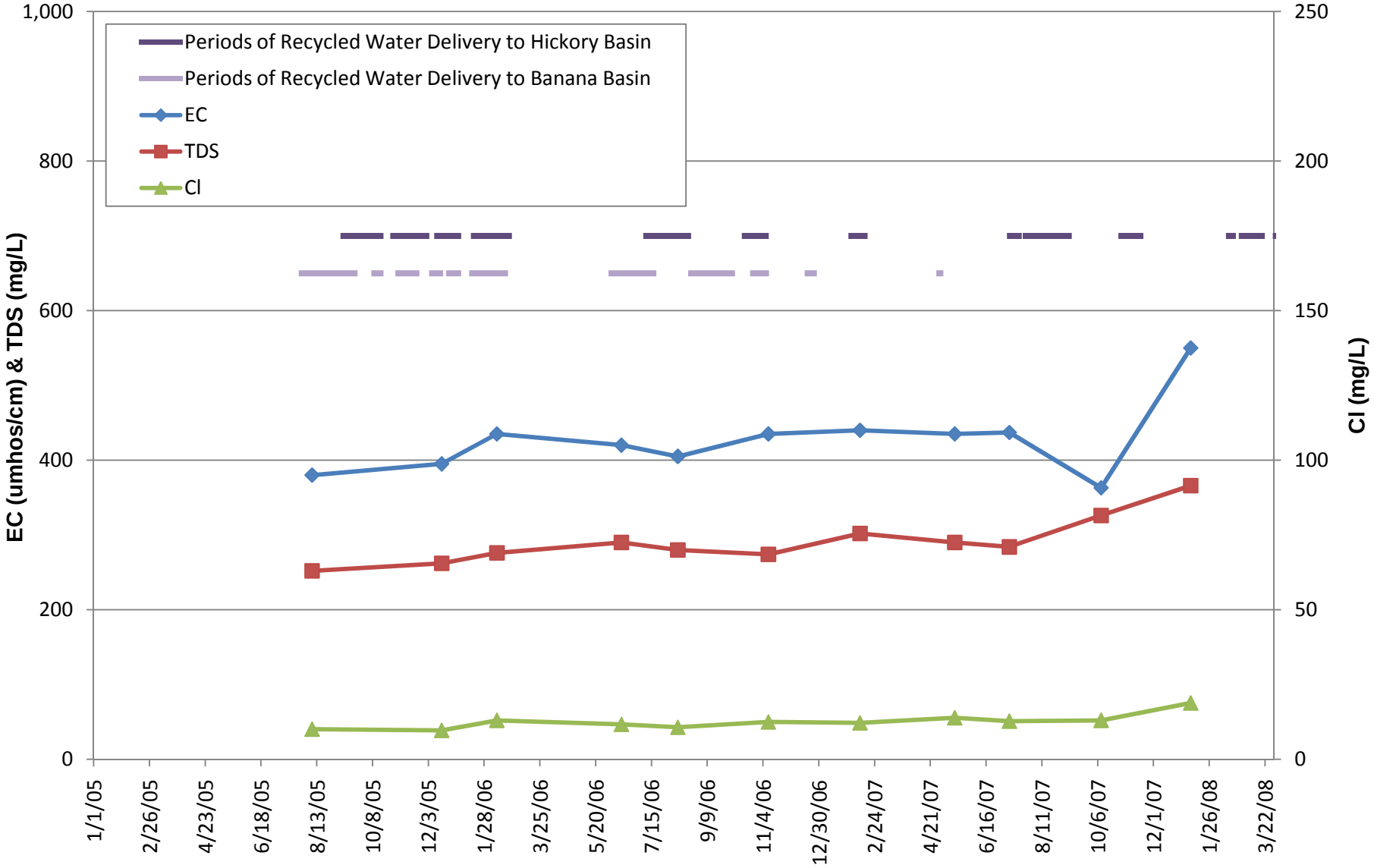
EC, TDS, CL TRENDS
8TH STREET BASIN
MW 8TH-2/1



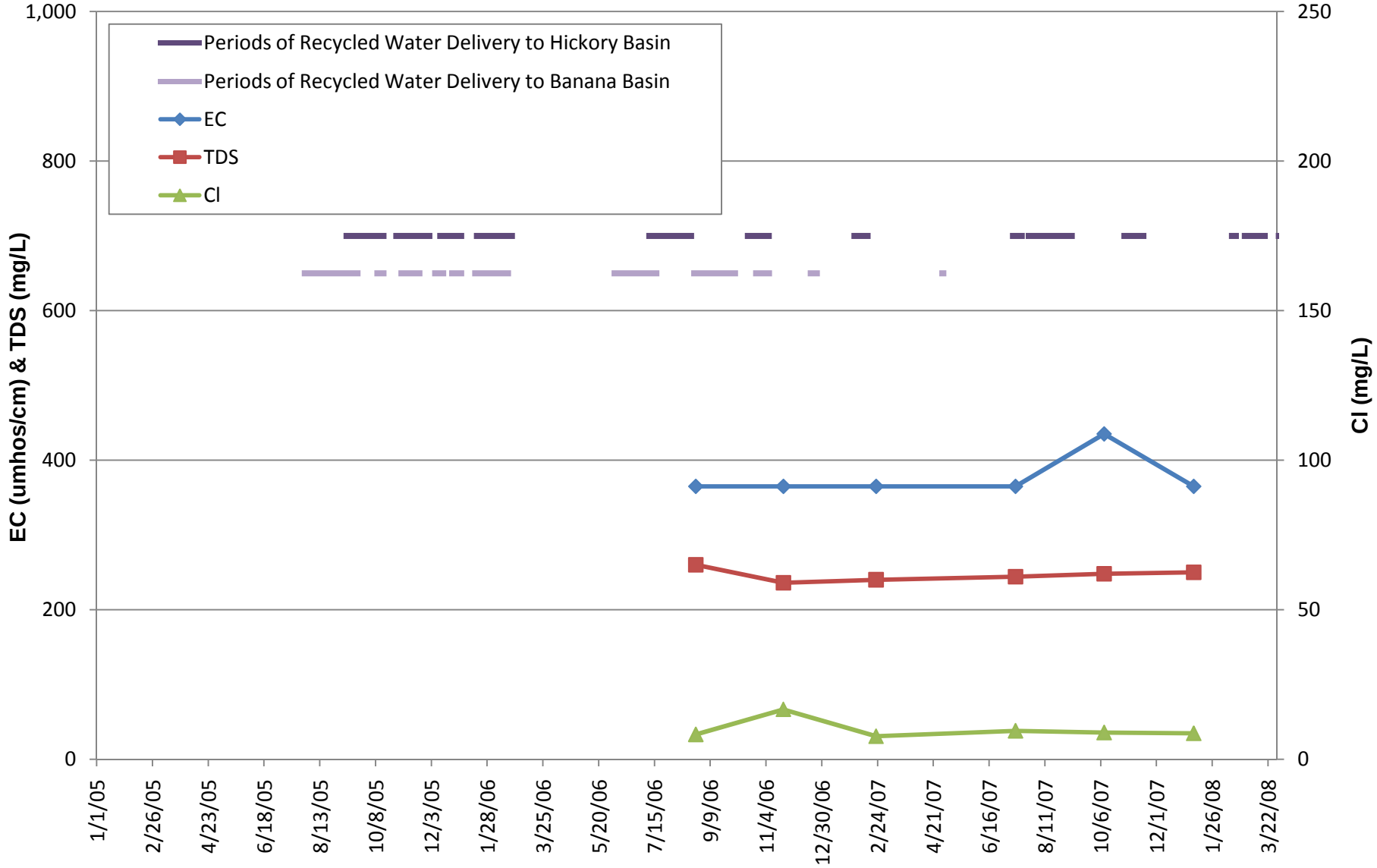
EC, TDS, CL TRENDS
8TH STREET BASIN
MW 8TH-2/2



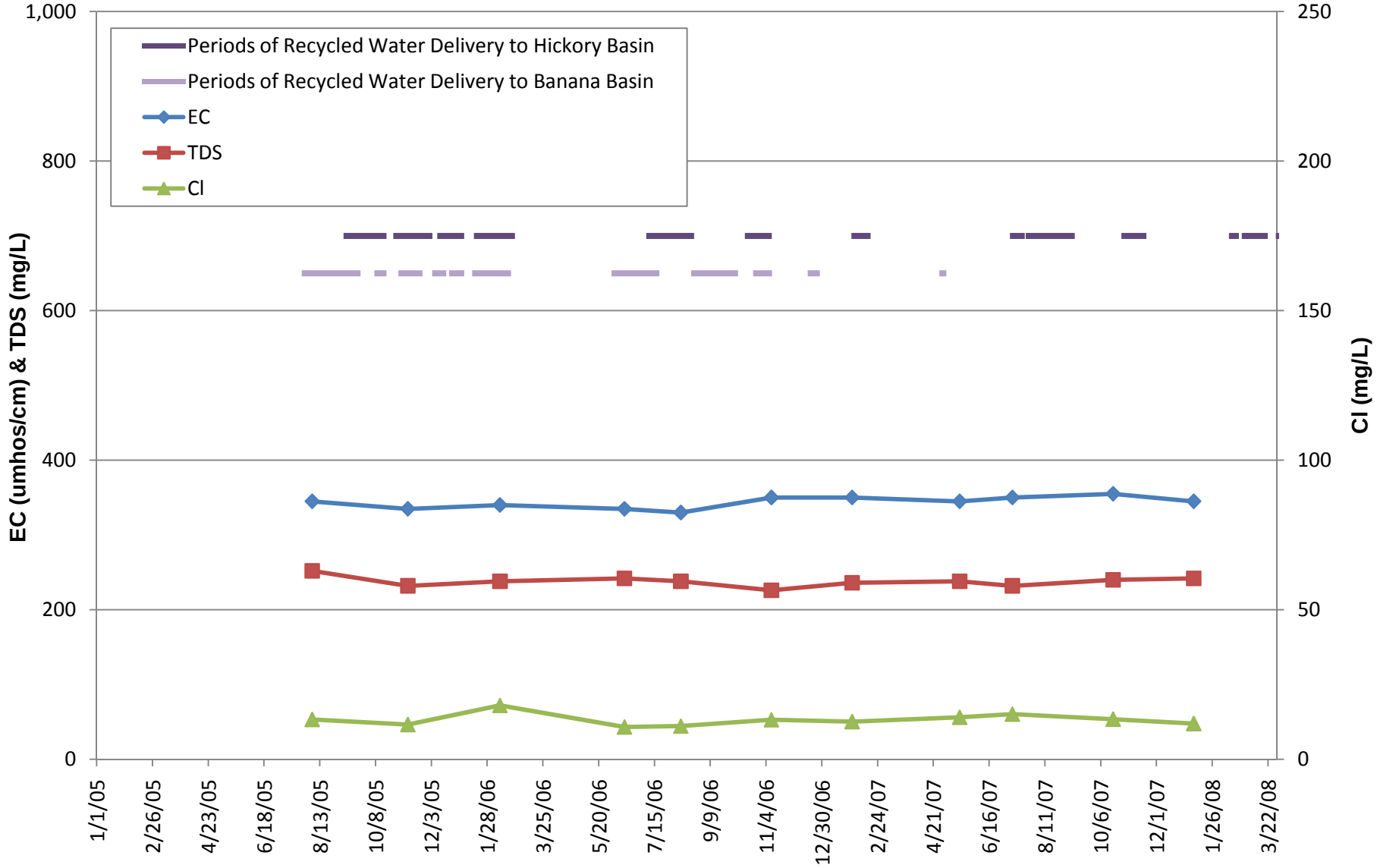
EC, TDS, CL TRENDS
HICKORY BANANA BASINS
MW BH-1/2



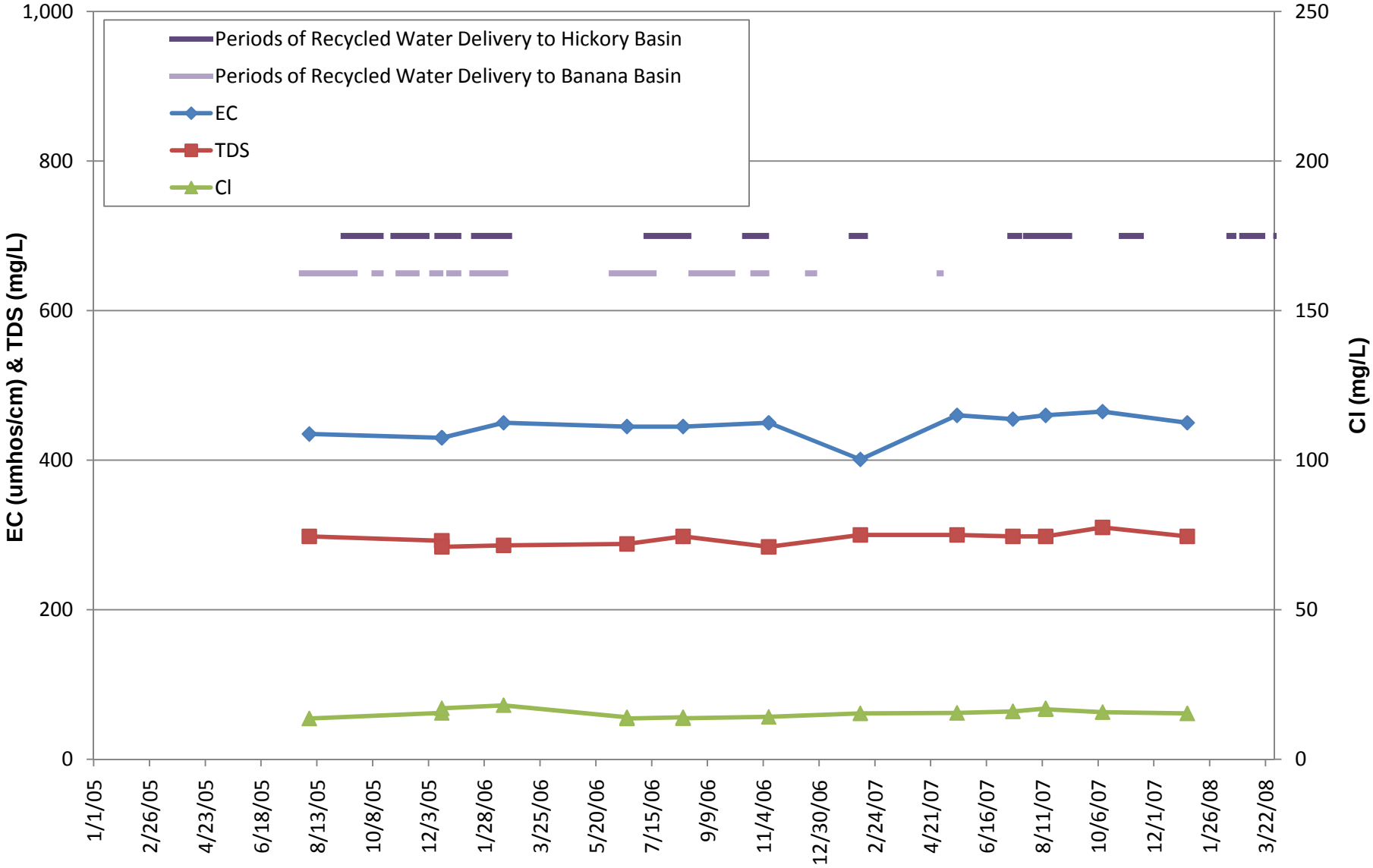
EC, TDS, CL TRENDS
BANANA-HICKORY BASINS
CALIFORNIA SPEEDWAY INFIELD WELL



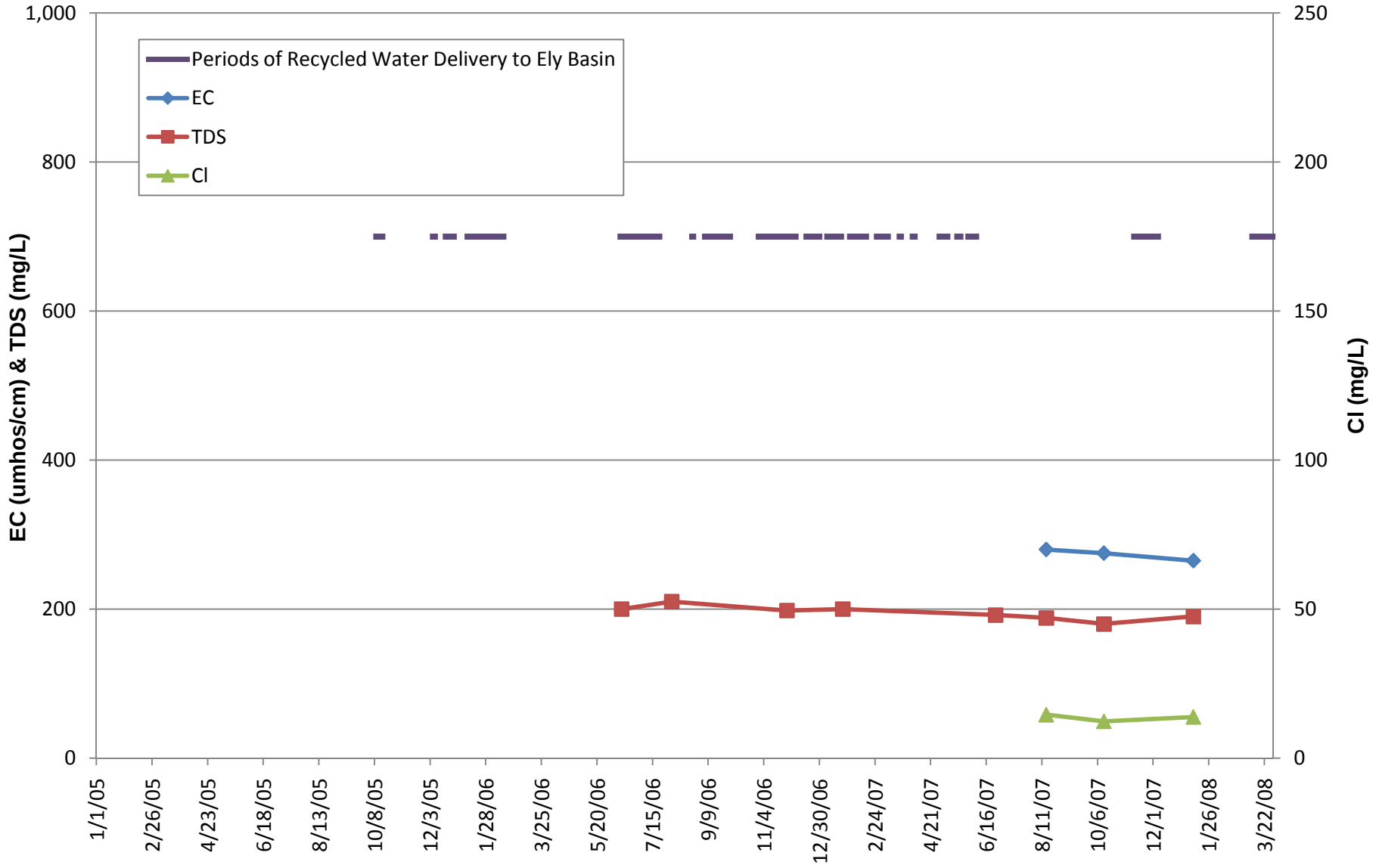
EC, TDS, CL TRENDS
BANANA-HICKORY BASINS
CALIFORNIA SPEEDWAY NO. 2



EC, TDS, CL TRENDS
BANANA-HICKORY BASINS
RELIANT EAST WELL

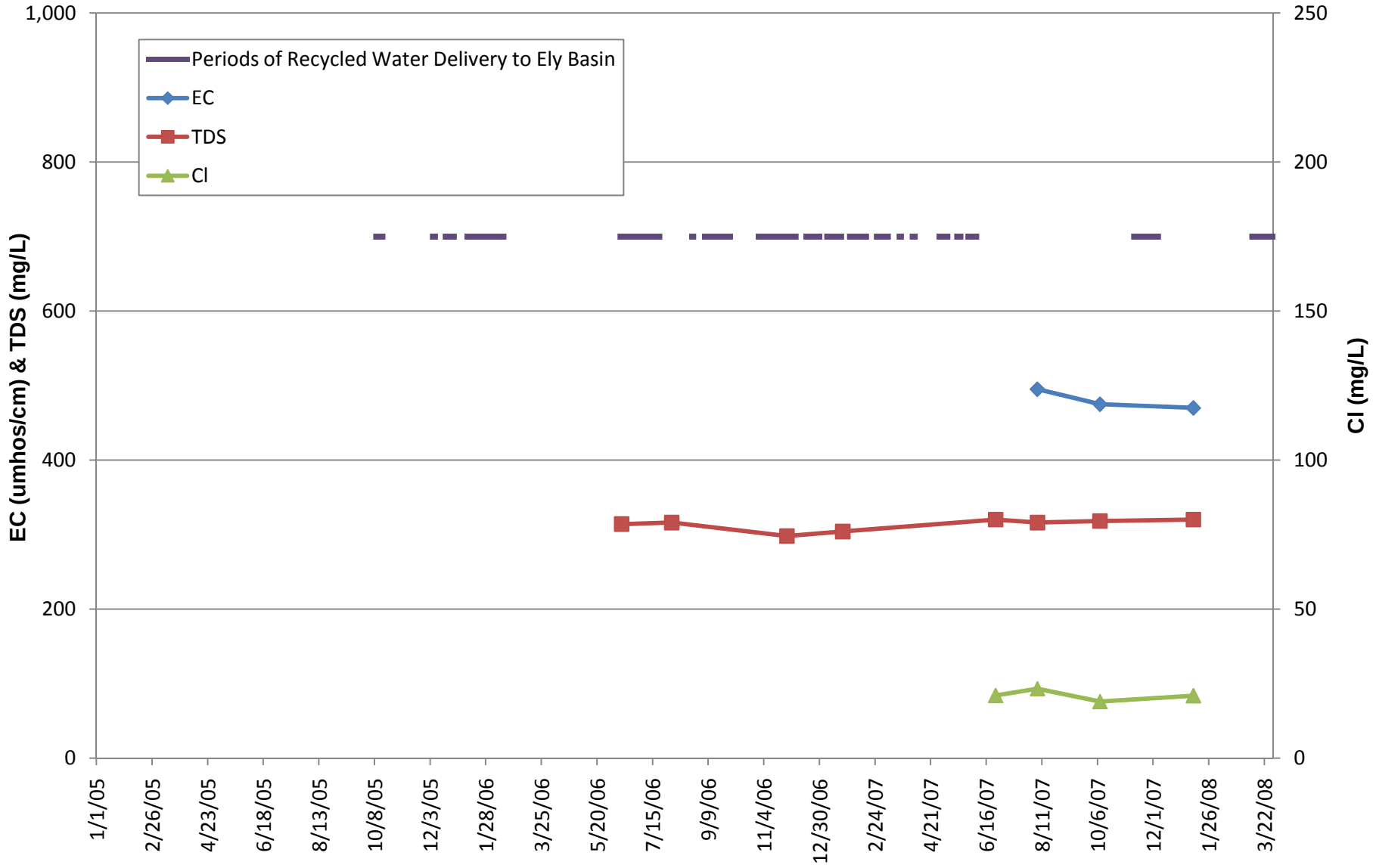


EC, TDS, CL TRENDS
BANANA-HICKORY BASINS
FONTANA WATER CO. 37A

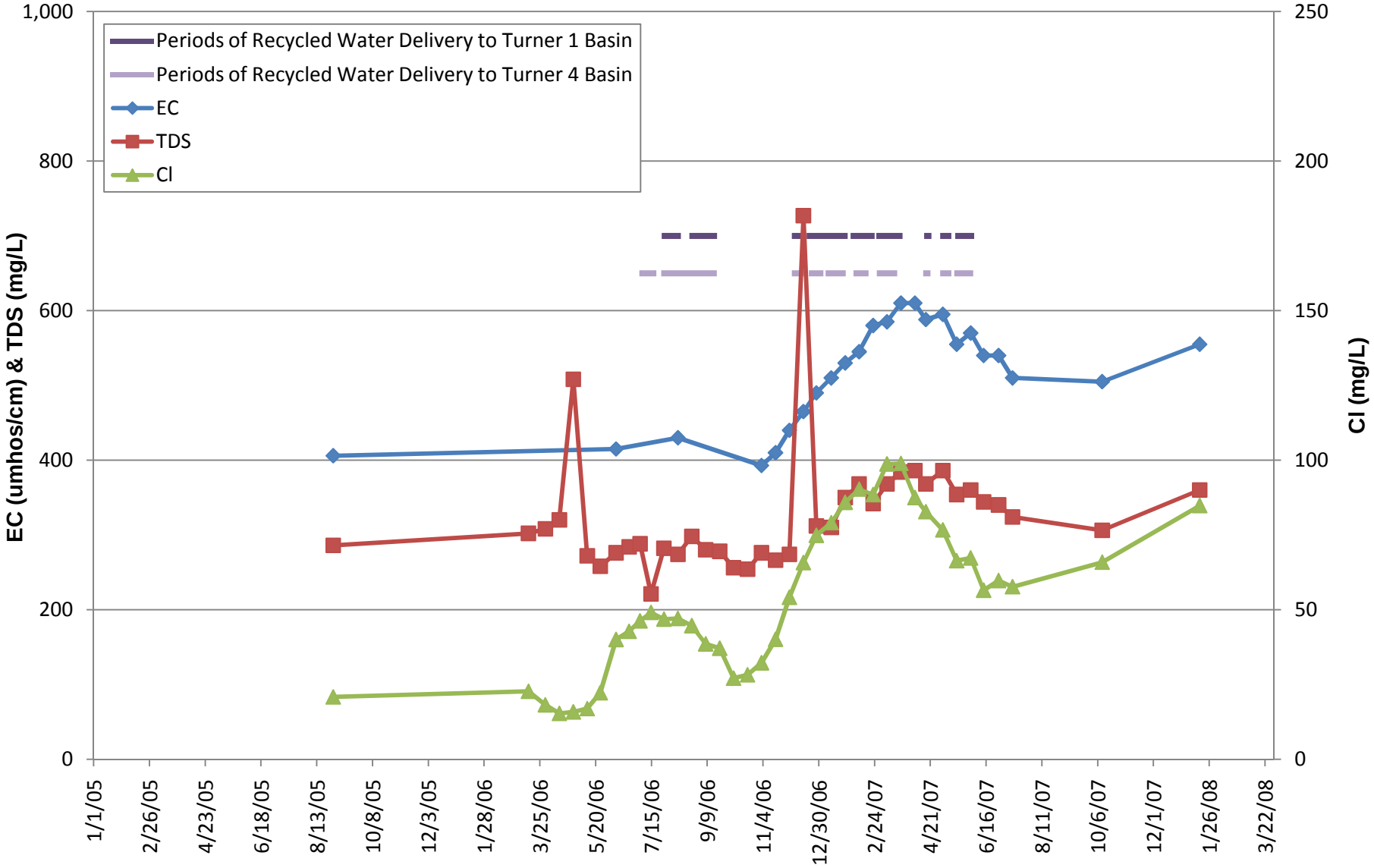


EC, TDS, CL TRENDS
ELY BASIN
PHILADELPHIA WELL

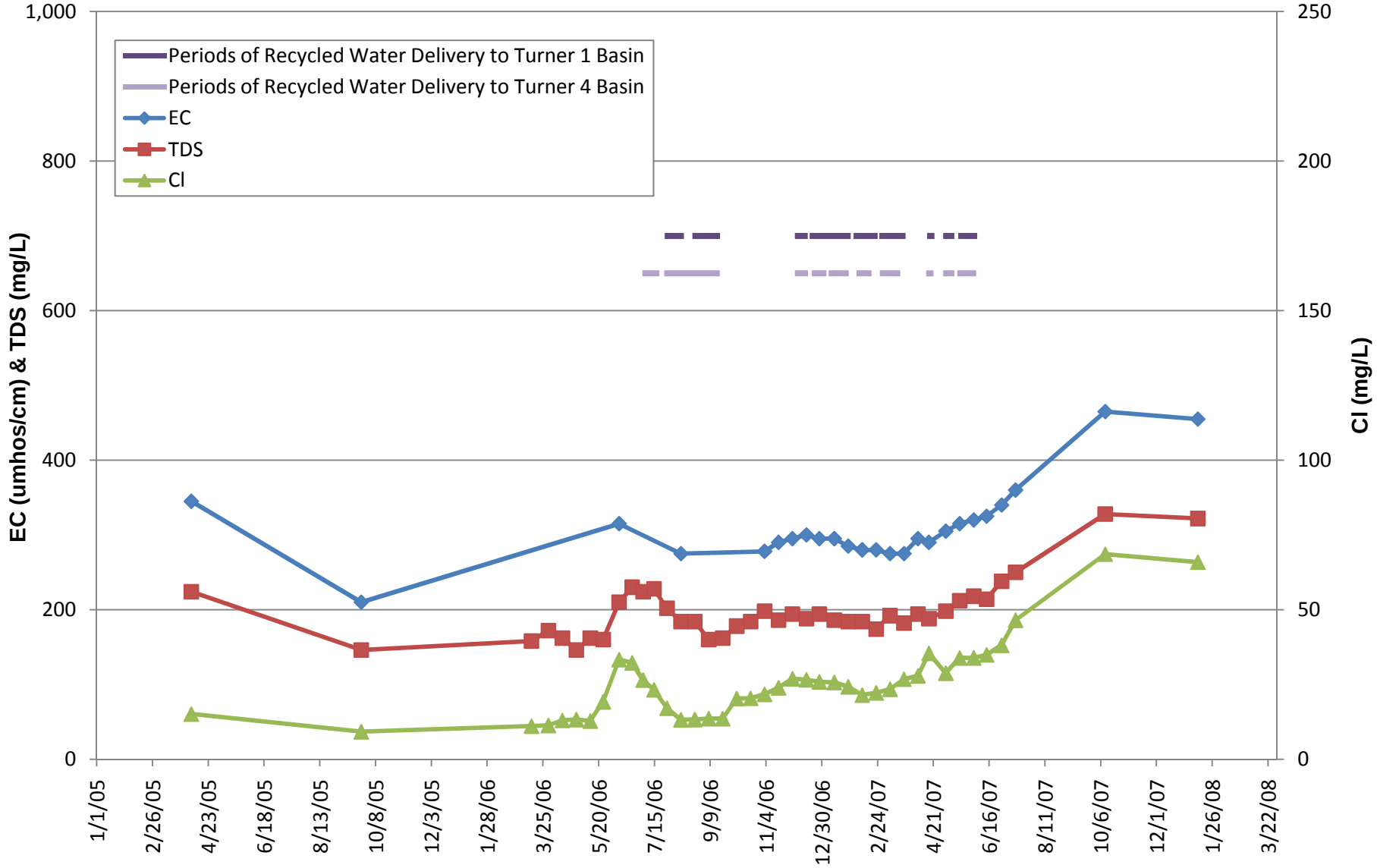
EC, TDS, CL TRENDS
ELY BASIN
WALNUT WELL



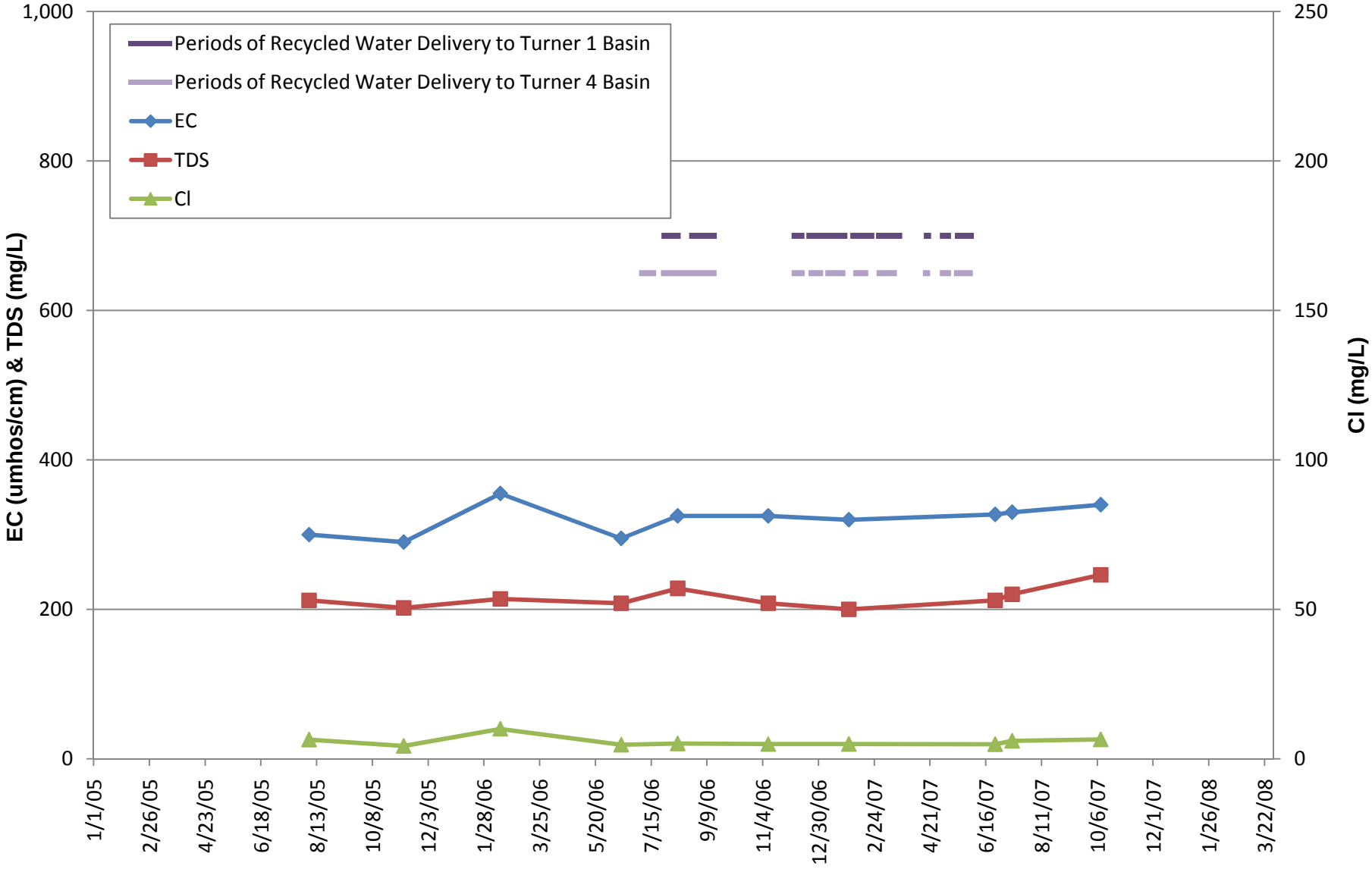
EC, TDS, CL TRENDS
ELY BASIN
RIVERSIDE WELL



EC, TDS, CL TRENDS
TURNER BASINS
MW TRN-1/2



EC, TDS, CL TRENDS
TURNER BASINS
MW TRN-2/2



EC, TDS, CL TRENDS
TURNER BASINS
ONTARIO NO. 20

APPENDIX C

RWC MANAGEMENT PLANS

RWC Management Plan for 8th Street Basins

Calculation of Recycled Water Contribution (RWC) from Historical Diluent Water (DW) and Recycled Water (RW) Deliveries

Date		No. Mos. Since Initial RW Delivery	DW (AF)	DW 60-Month Total (AF)	RW (AF)	RW 60-Month Total (AF)	DW + RW 60-Month Total (AF)	RWC	Source
2002/03	Jul-02	-62	1		0.				HISTORICAL DILUENT MODELED
	Aug-02	-61	0		0.				
	Sep-02	-60	5		0.				
	Oct-02	-59	11		0.				
	Nov-02	-58	6		0.				
	Dec-02	-57	9		0.				
	Jan-03	-56	11		0.				
	Feb-03	-55	25		0.				
	Mar-03	-54	22		0.				
	Apr-03	-53	20		0.				
	May-03	-52	6		0.				
	Jun-03	-51	4		0.				
2003/04	Jul-03	-50	1		0.				
	Aug-03	-49	0		0.				
	Sep-03	-48	5		0.				
	Oct-03	-47	11		0.				
	Nov-03	-46	6		0.				
	Dec-03	-45	9		0.				
	Jan-04	-44	11		0.				
	Feb-04	-43	25		0.				
	Mar-04	-42	22		0.				
	Apr-04	-41	20		0.				
	May-04	-40	6		0.				
	Jun-04	-39	4		0.				
2004/05	Jul-04	-38	1		0.				
	Aug-04	-37	0		0.				
	Sep-04	-36	5		0.				
	Oct-04	-35	11		0.				
	Nov-04	-34	6		0.				
	Dec-04	-33	9		0.				
	Jan-05	-32	11		0.				
	Feb-05	-31	25		0.				
	Mar-05	-30	22		0.				
	Apr-05	-29	20		0.				
	May-05	-28	6		0.				
	Jun-05	-27	4		0.				
2005/06	Jul-05	-26	0.		0.				MEASURED
	Aug-05	-25	0.		0.				
	Sep-05	-24	60.		0.				
	Oct-05	-23	132.6		0.				
	Nov-05	-22	60.		0.				
	Dec-05	-21	60.		0.				
	Jan-06	-20	116.		0.				
	Feb-06	-19	242.4		0.				
	Mar-06	-18	325.9		0.				
	Apr-06	-17	229.5		0.				
	May-06	-16	50.2		0.				
	Jun-06	-15	15.		0.				

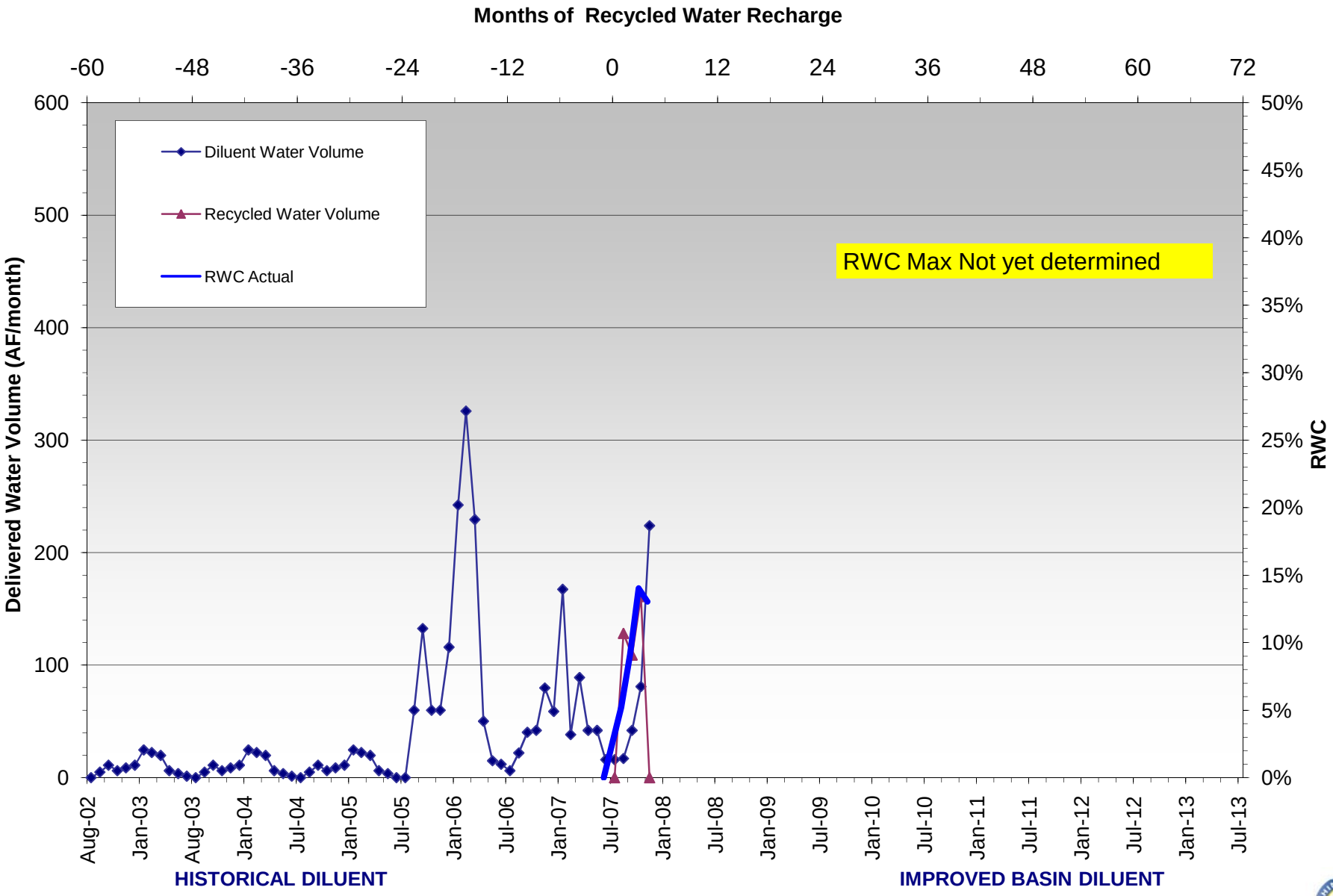
RWC Management Plan for 8th Street Basins

Calculation of Recycled Water Contribution (RWC) from Historical Diluent Water (DW) and Recycled Water (RW) Deliveries

Date		No. Mos. Since Initial RW Delivery	DW (AF)	DW 60-Month Total (AF)	RW (AF)	RW 60-Month Total (AF)	DW + RW 60-Month Total (AF)	RWC	Source
2006/07	Jul-06	-14	11.9	1664	0.				
	Aug-06	-13	6.2	1670	0.				
	Sep-06	-12	22.	1692	0.				
	Oct-06	-11	40.3	1732	0.				
	Nov-06	-10	42.	1774	0.				
	Dec-06	-9	79.8	1854	0.				
	Jan-07	-8	58.8	1913	0.				
	Feb-07	-7	167.4	2080	0.				
	Mar-07	-6	38.3	2118	0.				
	Apr-07	-5	89.	2207	0.				
	May-07	-4	42.	2249	0.				
	Jun-07	-3	42.	2291	0.				
2007/08	Jul-07	-2	16.	2306	0.				
	Aug-07	-1	16.	2322	0.	0	2322	0%	START-UP
	Sep-07	1	17.	2334	128.1	128	2462	5%	
	Oct-07	2	42.	2365	109.	237	2602	9%	
	Nov-07	3	81.	2440	161.	398	2838	14%	
	Dec-07	4	224.	2655	0.	398	3053	13%	

RWC = 60-month running total of recycled water / 60-month running total of all recharged water.
All recharged water includes recycled water and diluent water (imported and storm water)
RWC Limit = 0.5 mg/L / the Running Average of Total Organic Carbon (TOC)

RWC Management Plan for 8th Street Basins



RWC Management Plan for Banana Basin

Calculation of Recycled Water Contribution (RWC) from Historical Diluent Water (DW) and Recycled Water (RW) Deliveries

Date		No. Mos. Since Initial RW Delivery	DW (AF)	DW 60-Month Total (AF)	RW (AF)	RW 60-Month Total (AF)	DW + RW 60-Month Total (AF)	RWC	Source
2002/03	Jul-02	-36	0.		0.				MODELED
	Aug-02	-35	0.		0.				
	Sep-02	-34	0.		0.				
	Oct-02	-33	0.		0.				
	Nov-02	-32	38.9		0.				
	Dec-02	-31	59.3		0.				
	Jan-03	-30	0.		0.				
	Feb-03	-29	80.5		0.				
	Mar-03	-28	38.9		0.				
	Apr-03	-27	86.9		0.				
	May-03	-26	61.7		0.				
	Jun-03	-25	0.		0.				
2003/04	Jul-03	-24	0.		0.				
	Aug-03	-23	0.		0.				
	Sep-03	-22	0.		0.				
	Oct-03	-21	0.		0.				
	Nov-03	-20	34.2		0.				
	Dec-03	-19	37.1		0.				
	Jan-04	-18	4.5		0.				
	Feb-04	-17	83.5		0.				
	Mar-04	-16	28.2		0.				
	Apr-04	-15	0.3		0.				
	May-04	-14	0.		0.				
	Jun-04	-13	0.		0.				
2004/05	Jul-04	-12	0.		0.				
	Aug-04	-11	0.		0.				
	Sep-04	-10	0.		0.				
	Oct-04	-9	62.8		0.				
	Nov-04	-8	17.		0.				
	Dec-04	-7	25.3		0.				
	Jan-05	-6	93.6		0.				
	Feb-05	-5	110.8		0.				
	Mar-05	-4	24.9		0.				
	Apr-05	-3	19.3		0.				
	May-05	-2	14.6		0.				
	Jun-05	-1	0.	1,496.1	0.	0.	1496	0%	
2005/06	Jul-05	1	192.3	1,688.4	19.8	19.8	1708	1%	MEASURED
	Aug-05	2	0.	1,688.4	253.9	273.7	1962	14%	
	Sep-05	3	0.	1,688.4	128.7	402.4	2091	19%	
	Oct-05	4	28.8	1,688.9	25.3	427.7	2117	20%	
	Nov-05	5	0.	1,676.2	8.	435.7	2112	21%	
	Dec-05	6	19.	1,695.2	10.2	445.9	2141	21%	
	Jan-06	7	6.	1,614.3	50.3	496.2	2111	24%	
	Feb-06	8	22.3	1,514.4	55.2	551.4	2066	27%	
	Mar-06	9	55.1	1,491.	0.	551.4	2042	27%	
	Apr-06	10	35.7	1,465.6	0.	551.4	2017	27%	
	May-06	11	57.	1,522.6	0.	551.4	2074	27%	
	Jun-06	12	0.	1,522.6	47.	598.4	2121	28%	

RWC Management Plan for Banana Basin

Calculation of Recycled Water Contribution (RWC) from Historical Diluent Water (DW) and Recycled Water (RW) Deliveries

Date		No. Mos. Since Initial RW Delivery	DW (AF)	DW 60-Month Total (AF)	RW (AF)	RW 60-Month Total (AF)	DW + RW 60-Month Total (AF)	RWC	Source
2006/07	Jul-06	13	0.	1,510.4	64.2	662.6	2173	30%	MEA
	Aug-06	14	0.	1,510.4	85.	747.6	2258	33%	
	Sep-06	15	0.	1,510.4	378.3	1,125.8	2636	43%	
	Oct-06	16	74.1	1,584.5	49.4	1,175.3	2760	43%	
	Nov-06	17	234.6	1,779.8	7.2	1,182.5	2962	40%	
	Dec-06	18	201.2	1,964.3	49.6	1,232.1	3196	39%	
	Jan-07	19	331.5	2,245.7	0.	1,232.1	3478	35%	
	Feb-07	20	73.7	*2,298.5*	0.	*1,232.1*	*3531*	*35%*	
	Mar-07	21	53.1	*2,320.6*	0.	*1,232.1*	*3553*	*35%*	
	Apr-07	22	29.	*2,336.5*	4.	*1,236.1*	*3573*	*35%*	
	May-07	23	37.	*2,372.7*	6.	*1,242.1*	*3615*	*34%*	
	Jun-07	24	0.	*2,372.7*	0.	*1,242.1*	*3615*	*34%*	
2007/08	Jul-07	25	0.	*2,372.7*	0.	*1,242.1*	*3615*	*34%*	
	Aug-07	26	0.	*2,372.7*	0.	*1,242.1*	*3615*	*34%*	
	Sep-07	27	3.	*2,375.7*	0.	*1,242.1*	*3618*	*34%*	
	Oct-07	28	2.	*2,377.7*	0.	*1,242.1*	*3620*	*34%*	
	Nov-07	29	35.	*2,373.8*	0.	*1,242.1*	*3616*	*34%*	
	Dec-07	30	22.	*2,336.5*	0.	*1,242.1*	*3579*	*35%*	
	Jan-08	31	130.	*2,466.5*	0.	*1,242.1*	*3709*	*33%*	
	Feb-08	32	75.	*2,461.*	0.	*1,242.1*	*3703*	*34%*	
	Mar-08	33	*35.*	*2,457.1*	*45.*	*1,287.1*	*3744*	*34%*	PLANNED
	Apr-08	34	*35.*	*2,405.2*	*45.*	*1,332.1*	*3737*	*36%*	
	May-08	35	*80.*	*2,423.5*	*0.*	*1,332.1*	*3756*	*35%*	
	Jun-08	36	*0.*	*2,423.5*	*0.*	*1,332.1*	*3756*	*35%*	
2008/09	Jul-08	37	*30.*	*2,453.5*	*0.*	*1,332.1*	*3786*	*35%*	
	Aug-08	38	*0.*	*2,453.5*	*0.*	*1,332.1*	*3786*	*35%*	
	Sep-08	39	*0.*	*2,453.5*	*0.*	*1,332.1*	*3786*	*35%*	
	Oct-08	40	*20.*	*2,473.5*	*30.*	*1,362.1*	*3836*	*36%*	
	Nov-08	41	*50.*	*2,489.3*	*30.*	*1,392.1*	*3881*	*36%*	
	Dec-08	42	*50.*	*2,502.2*	*0.*	*1,392.1*	*3894*	*36%*	
	Jan-09	43	*90.*	*2,587.7*	*0.*	*1,392.1*	*3980*	*35%*	
	Feb-09	44	*70.*	*2,574.2*	*0.*	*1,392.1*	*3966*	*35%*	
	Mar-09	45	*40.*	*2,586.*	*0.*	*1,392.1*	*3978*	*35%*	
	Apr-09	46	*40.*	*2,625.7*	*0.*	*1,392.1*	*4018*	*35%*	
	May-09	47	*20.*	*2,645.7*	*0.*	*1,392.1*	*4038*	*34%*	
	Jun-09	48	*0.*	*2,645.7*	*0.*	*1,392.1*	*4038*	*34%*	
2009/10	Jul-09	49	*30.*	*2,675.7*	*0.*	*1,392.1*	*4068*	*34%*	
	Aug-09	50	*0.*	*2,675.7*	*0.*	*1,392.1*	*4068*	*34%*	
	Sep-09	51	*0.*	*2,675.7*	*0.*	*1,392.1*	*4068*	*34%*	
	Oct-09	52	*20.*	*2,632.9*	*30.*	*1,422.1*	*4055*	*35%*	
	Nov-09	53	*50.*	*2,665.9*	*30.*	*1,452.1*	*4118*	*35%*	
	Dec-09	54	*50.*	*2,690.6*	*0.*	*1,452.1*	*4143*	*35%*	
	Jan-10	55	*90.*	*2,687.*	*0.*	*1,452.1*	*4139*	*35%*	
	Feb-10	56	*70.*	*2,646.2*	*0.*	*1,452.1*	*4098*	*35%*	
	Mar-10	57	*40.*	*2,661.3*	*0.*	*1,452.1*	*4113*	*35%*	
	Apr-10	58	*40.*	*2,682.*	*0.*	*1,452.1*	*4134*	*35%*	
	May-10	59	*20.*	*2,687.4*	*0.*	*1,452.1*	*4139*	*35%*	
	Jun-10	60	*0.*	*2,687.4*	*0.*	*1,452.1*	*4139*	*35%*	

RWC Management Plan for Banana Basin

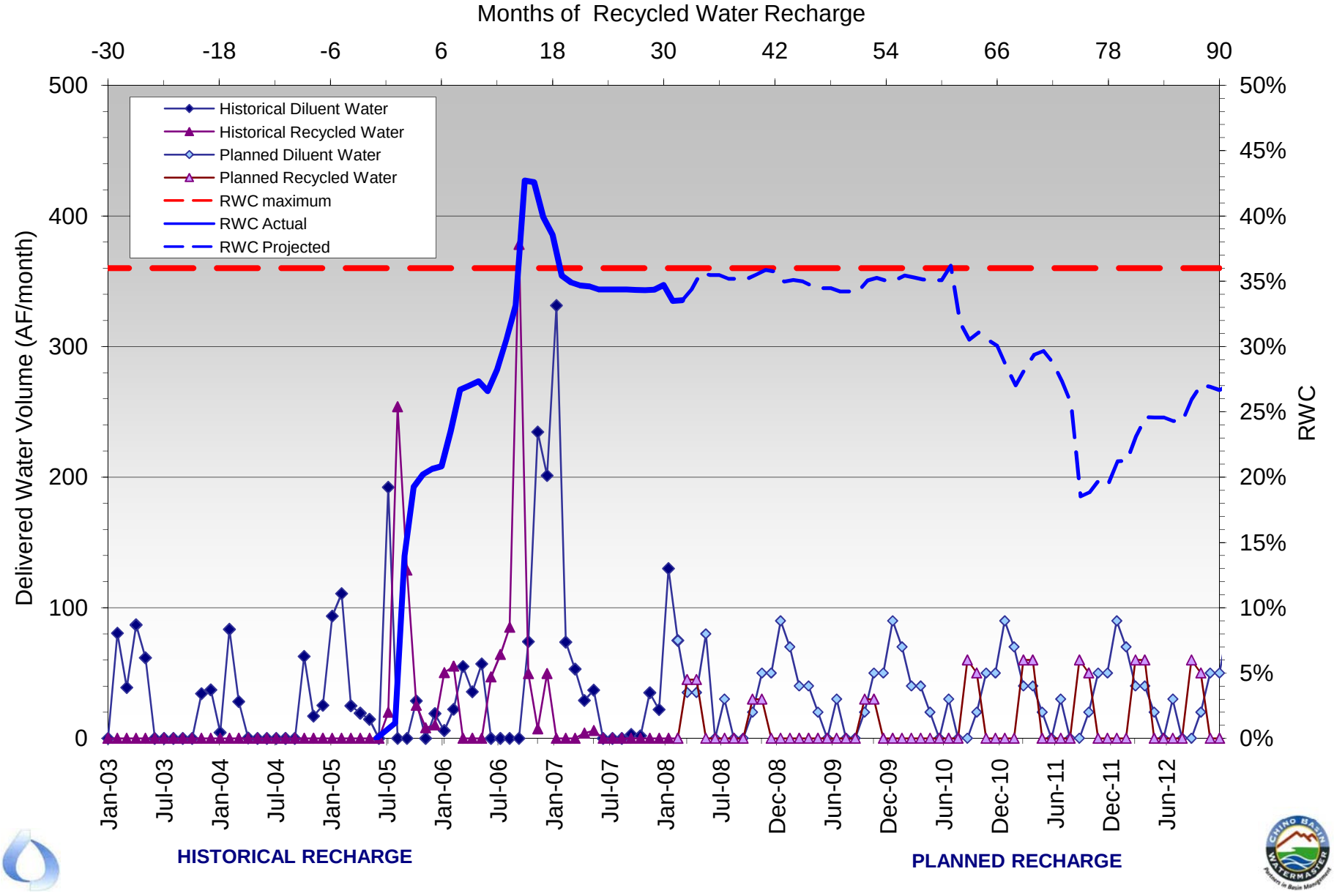
Calculation of Recycled Water Contribution (RWC) from Historical Diluent Water (DW) and Recycled Water (RW) Deliveries

Date		No. Mos. Since Initial RW Delivery	DW (AF)	DW 60-Month Total (AF)	RW (AF)	RW 60-Month Total (AF)	DW + RW 60-Month Total (AF)	RWC	Source
2010/11	Jul-10	61	30.	2,525.1	0.	1,432.2	3957	36%	POST 60 MOS
	Aug-10	62	0.	2,525.1	0.	1,178.4	3703	32%	
	Sep-10	63	0.	2,525.1	60.	1,109.6	3635	31%	
	Oct-10	64	20.	2,516.3	50.	1,134.3	3651	31%	
	Nov-10	65	50.	2,566.3	0.	1,126.3	3693	31%	
	Dec-10	66	50.	2,597.3	0.	1,116.1	3713	30%	
	Jan-11	67	90.	2,681.3	0.	1,065.8	3747	28%	
	Feb-11	68	70.	2,729.	0.	1,010.6	3740	27%	
	Mar-11	69	40.	2,713.9	60.	1,070.6	3785	28%	
	Apr-11	70	40.	2,718.2	60.	1,130.6	3849	29%	
	May-11	71	20.	2,681.2	0.	1,130.6	3812	30%	
	Jun-11	72	0.	2,681.2	0.	1,083.6	3765	29%	
2011/12	Jul-11	73	30.	2,711.2	0.	1,019.5	3731	27%	PLANNED
	Aug-11	74	0.	2,711.2	0.	934.5	3646	26%	
	Sep-11	75	0.	2,711.2	60.	616.2	3327	19%	
	Oct-11	76	20.	2,657.1	50.	616.8	3274	19%	
	Nov-11	77	50.	2,472.5	0.	609.6	3082	20%	
	Dec-11	78	50.	2,321.2	0.	560.	2881	19%	
	Jan-12	79	90.	2,079.8	0.	560.	2640	21%	
	Feb-12	80	70.	2,076.1	0.	560.	2636	21%	
	Mar-12	81	40.	2,063.	60.	620.	2683	23%	
	Apr-12	82	40.	2,074.	60.	676.	2750	25%	
	May-12	83	20.	2,057.	0.	670.	2727	25%	
	Jun-12	84	0.	2,057.	0.	670.	2727	25%	
2012/13	Jul-12	85	30	2,087	0	670	2,757	24%	
	Aug-12	86	0	2,087	0	670	2,757	24%	
	Sep-12	87	0	2,084	60	730	2,814	26%	
	Oct-12	88	20	2,102	50	780	2,882	27%	
	Nov-12	89	50	2,117	0	780	2,897	27%	
	Dec-12	90	50	2,145	0	780	2,925	27%	
	Jan-13	91	90	2,105	0	780	2,885	27%	
	Feb-13	92	70	2,100	0	780	2,880	27%	
	Mar-13	93	40	2,105	60	795	2,900	27%	
	Apr-13	94	40	2,110	60	810	2,920	28%	
	May-13	95	20	2,050	0	810	2,860	28%	
	Jun-13	96	0	2,050	0	810	2,860	28%	

Notes:

RWC = 60-month running total of recycled water / 60-month running total of all recharged water.
For Hickory Basin the RWC max is 36% as determined from the basin's start-up period.
All recharged water includes recycled water and diluent water (imported and storm water)
RWC Limit = 0.5 mg/L / the Running Average of Total Organic Carbon (TOC)

RWC Management Plan for Banana Basin



RWC Management Plan for Ely Basin

Calculation of Recycled Water Contribution (RWC) from Historical Diluent Water (DW) and Recycled Water (RW) Deliveries

Date		No. Mos. Since Initial RW Delivery	DW (AF)	DW 60-Month Total (AF)	RW (AF)	RW 60-Month Total (AF)	DW + RW 60-Month Total (AF)	RWC	Source
2002/2003	Jul-02	35	116	8,879	0	1,512	10,390	15%	MEASURED
	Aug-02	36	136	9,004	0	1,512	10,515	14%	
	Sep-02	37	97	8,970	0	1,512	10,482	14%	
	Oct-02	38	179	9,042	0	1,512	10,553	14%	
	Nov-02	39	330	9,045	0	1,512	10,557	14%	
	Dec-02	40	330	9,045	0	1,512	10,557	14%	
	Jan-03	41	176	8,892	0	1,512	10,403	15%	
	Feb-03	42	330	8,892	0	1,512	10,403	15%	
	Mar-03	43	330	8,892	0	1,512	10,403	15%	
	Apr-03	44	330	8,925	0	1,512	10,437	14%	
	May-03	45	330	8,925	30	1,542	10,467	15%	
	Jun-03	46	112	8,876	154	1,696	10,572	16%	
2003/2004	Jul-03	47	105	8,830	0	1,696	10,526	16%	
	Aug-03	48	32	8,753	0	1,696	10,449	16%	
	Sep-03	49	11	8,636	0	1,696	10,332	16%	
	Oct-03	50	11	8,586	0	1,696	10,282	16%	
	Nov-03	51	105	8,605	0	1,696	10,301	16%	
	Dec-03	52	193	8,686	0	1,696	10,382	16%	
	Jan-04	53	33	8,508	0	1,696	10,204	17%	
	Feb-04	54	330	8,700	0	1,696	10,396	16%	
	Mar-04	55	174	8,712	0	1,696	10,408	16%	
	Apr-04	56	69	8,466	0	1,696	10,162	17%	
	May-04	57	17	8,385	5	1,701	10,085	17%	
	Jun-04	58	13	8,360	44	1,745	10,104	17%	
2004/2005	Jul-04	59	14	8,360	46	1,791	10,151	18%	
	Aug-04	60	94	8,380	48	1,839	10,219	18%	
	Sep-04	61	179	8,484	41	1,793	10,277	17%	
	Oct-04	62	330	8,751	23	1,652	10,403	16%	
	Nov-04	63	330	9,075	0	1,536	10,611	14%	
	Dec-04	64	330	9,368	0	1,423	10,791	13%	
	Jan-05	65	330	9,578	0	1,396	10,975	13%	
	Feb-05	66	330	9,578	0	1,396	10,975	13%	
	Mar-05	67	238	9,497	0	1,396	10,893	13%	
	Apr-05	68	176	9,367	0	1,396	10,763	13%	
	May-05	69	140	9,375	0	1,396	10,772	13%	
	Jun-05	70	3	9,262	0	1,396	10,658	13%	
2005/2006	Jul-05	71	0	9,203	0	1,331	10,534	13%	
	Aug-05	72	0	9,197	0	1,186	10,382	11%	
	Sep-05	73	0	9,187	0	1,051	10,238	10%	
	Oct-05	74	198	9,236	32	957	10,193	9%	
	Nov-05	75	15	9,165	0	957	10,122	9%	
	Dec-05	76	107	9,157	35	992	10,149	10%	
	Jan-06	77	190	9,017	21	1,013	10,030	10%	
	Feb-06	78	268	8,955	74	1,087	10,041	11%	
	Mar-06	79	338	9,183	0	1,087	10,270	11%	
	Apr-06	80	362	9,271	0	1,087	10,357	10%	
	May-06	81	35	9,203	0	1,087	10,289	11%	
	Jun-06	82	26	9,215	26	1,084	10,299	11%	

RWC Management Plan for Ely Basin

Calculation of Recycled Water Contribution (RWC) from Historical Diluent Water (DW) and Recycled Water (RW) Deliveries

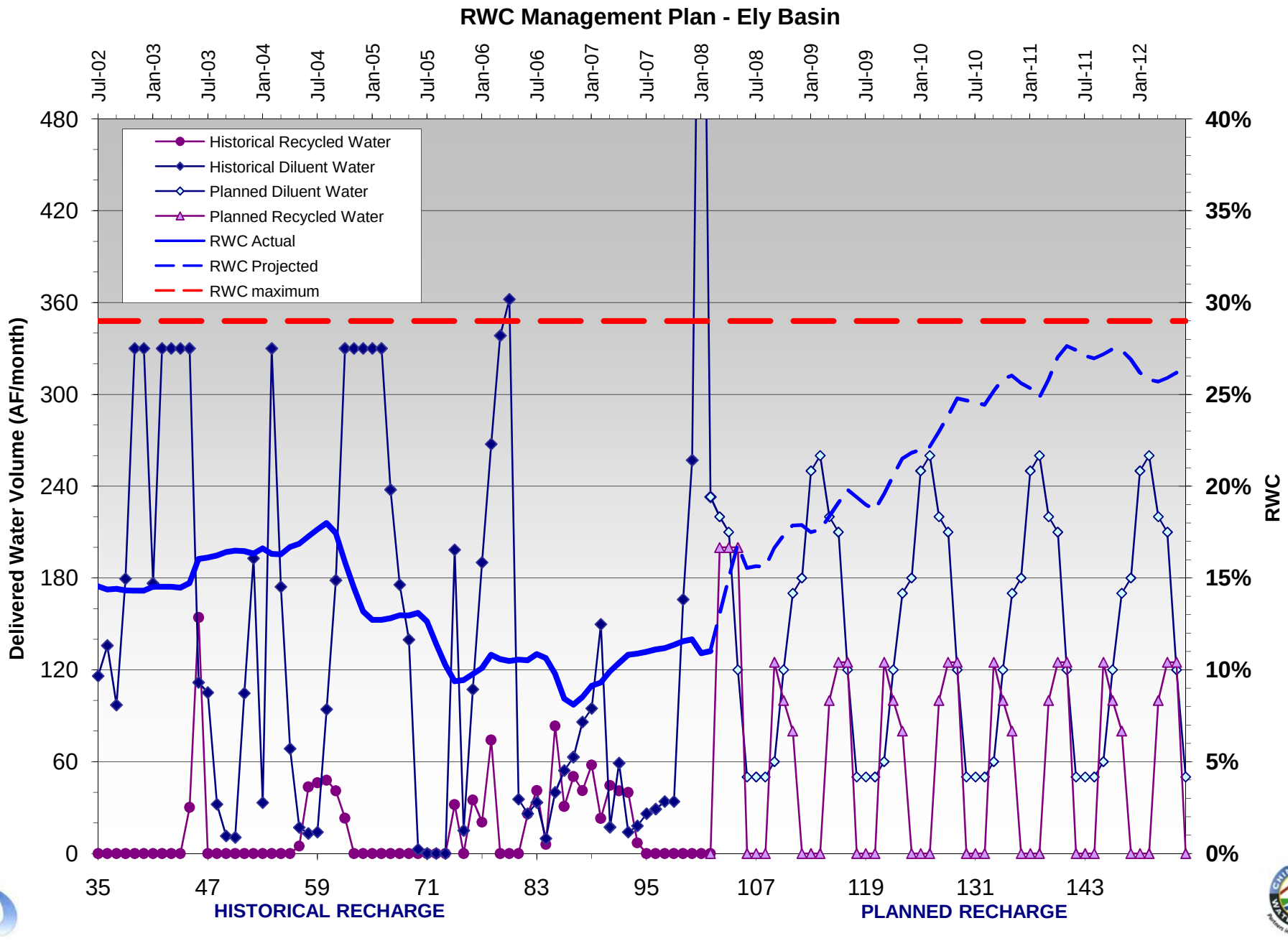
Date		No. Mos. Since Initial RW Delivery	DW (AF)	DW 60-Month Total (AF)	RW (AF)	RW 60-Month Total (AF)	DW + RW 60-Month Total (AF)	RWC	Source
2006/2007	Jul-06	83	33	9,235	41	1,125	10,360	11%	MEASURED
	Aug-06	84	10	9,234	6	1,100	10,334	11%	
	Sep-06	85	40	9,248	83	1,005	10,253	10%	
	Oct-06	86	54	9,226	31	850	10,076	8%	
	Nov-06	87	63	8,960	50	791	9,751	8%	
	Dec-06	88	86	8,933	41	832	9,765	9%	
	Jan-07	89	95	8,850	58	890	9,740	9%	
	Feb-07	90	150	8,894	23	913	9,807	9%	
	Mar-07	91	17	8,692	45	957	9,650	10%	
	Apr-07	92	59	8,630	41	998	9,629	10%	
	May-07	93	14	8,558	40	1,038	9,597	11%	
	Jun-07	94	18	8,561	7	1,045	9,606	11%	
2007/2008	Jul-07	95	26	8,471	0	1,045	9,516	11%	
	Aug-07	96	29	8,364	0	1,045	9,410	11%	
	Sep-07	97	34	8,301	0	1,045	9,346	11%	
	Oct-07	*98*	34	*8,156*	0	*1,045*	*9,201*	*11%*	
	Nov-07	*99*	166	*7,992*	0	*1,045*	*9,037*	*12%*	
	Dec-07	*100*	257	*7,919*	0	*1,045*	*8,964*	*12%*	
	Jan-08	*101*	793	*8,535*	0	*1,045*	*9,581*	*11%*	
	Feb-08	*102*	233	*8,438*	0	*1,045*	*9,484*	*11%*	
	Mar-08	*103*	*220*	*8,328*	*200*	*1,245*	*9,574*	*13%*	PROJECTED
	Apr-08	*104*	*210*	*8,208*	*200*	*1,445*	*9,654*	*15%*	
	May-08	*105*	*120*	*7,998*	*200*	*1,615*	*9,613*	*17%*	
	Jun-08	*106*	*50*	*7,936*	*0*	*1,461*	*9,397*	*16%*	
2008/2009	Jul-08	*107*	*50*	*7,881*	*0*	*1,461*	*9,342*	*16%*	
	Aug-08	*108*	*50*	*7,899*	*0*	*1,461*	*9,360*	*16%*	
	Sep-08	*109*	*60*	*7,948*	*125*	*1,586*	*9,534*	*17%*	
	Oct-08	*110*	*120*	*8,057*	*100*	*1,686*	*9,743*	*17%*	
	Nov-08	*111*	*170*	*8,122*	*80*	*1,766*	*9,888*	*18%*	
	Dec-08	*112*	*180*	*8,109*	*0*	*1,766*	*9,875*	*18%*	
	Jan-09	*113*	*250*	*8,326*	*0*	*1,766*	*10,092*	*17%*	
	Feb-09	*114*	*260*	*8,256*	*0*	*1,766*	*10,022*	*18%*	
	Mar-09	*115*	*220*	*8,302*	*100*	*1,866*	*10,168*	*18%*	
	Apr-09	*116*	*210*	*8,444*	*125*	*1,991*	*10,435*	*19%*	
	May-09	*117*	*120*	*8,547*	*125*	*2,111*	*10,658*	*20%*	
	Jun-09	*118*	*50*	*8,583*	*0*	*2,067*	*10,651*	*19%*	
2009/2010	Jul-09	*119*	*50*	*8,620*	*0*	*2,021*	*10,641*	*19%*	
	Aug-09	*120*	*50*	*8,575*	*0*	*1,973*	*10,549*	*19%*	
	Sep-09	*121*	*60*	*8,457*	*125*	*2,057*	*10,514*	*20%*	
	Oct-09	*122*	*120*	*8,247*	*100*	*2,134*	*10,381*	*21%*	
	Nov-09	*123*	*170*	*8,087*	*80*	*2,214*	*10,301*	*21%*	
	Dec-09	*124*	*180*	*7,937*	*0*	*2,214*	*10,151*	*22%*	
	Jan-10	*125*	*250*	*7,857*	*0*	*2,214*	*10,071*	*22%*	
	Feb-10	*126*	*260*	*7,787*	*0*	*2,214*	*10,001*	*22%*	
	Mar-10	*127*	*220*	*7,769*	*100*	*2,314*	*10,083*	*23%*	
	Apr-10	*128*	*210*	*7,804*	*125*	*2,439*	*10,243*	*24%*	
	May-10	*129*	*120*	*7,784*	*125*	*2,564*	*10,348*	*25%*	
	Jun-10	*130*	*50*	*7,831*	*0*	*2,564*	*10,395*	*25%*	

RWC Management Plan for Ely Basin

Calculation of Recycled Water Contribution (RWC) from Historical Diluent Water (DW) and Recycled Water (RW) Deliveries

Date		No. Mos. Since Initial RW Delivery	DW (AF)	DW 60-Month Total (AF)	RW (AF)	RW 60-Month Total (AF)	DW + RW 60-Month Total (AF)	RWC	Source
2010/2011	Jul-10	*131*	*50*	*7,881*	*0*	*2,564*	*10,445*	*25%*	PROJECTED
	Aug-10	*132*	*50*	*7,931*	*0*	*2,564*	*10,495*	*24%*	
	Sep-10	*133*	*60*	*7,991*	*125*	*2,689*	*10,680*	*25%*	
	Oct-10	*134*	*120*	*7,913*	*100*	*2,757*	*10,670*	*26%*	
	Nov-10	*135*	*170*	*8,068*	*80*	*2,837*	*10,905*	*26%*	
	Dec-10	*136*	*180*	*8,141*	*0*	*2,802*	*10,943*	*26%*	
	Jan-11	*137*	*250*	*8,201*	*0*	*2,782*	*10,982*	*25%*	
	Feb-11	*138*	*260*	*8,193*	*0*	*2,707*	*10,900*	*25%*	
	Mar-11	*139*	*220*	*8,075*	*100*	*2,807*	*10,882*	*26%*	
	Apr-11	*140*	*210*	*7,922*	*125*	*2,932*	*10,855*	*27%*	
	May-11	*141*	*120*	*8,007*	*125*	*3,057*	*11,064*	*28%*	
	Jun-11	*142*	*50*	*8,031*	*0*	*3,031*	*11,062*	*27%*	
2011/2012	Jul-11	*143*	*50*	*8,048*	*0*	*2,990*	*11,038*	*27%*	
	Aug-11	*144*	*50*	*8,088*	*0*	*2,984*	*11,072*	*27%*	
	Sep-11	*145*	*60*	*8,108*	*125*	*3,026*	*11,134*	*27%*	
	Oct-11	*146*	*120*	*8,174*	*100*	*3,095*	*11,269*	*27%*	
	Nov-11	*147*	*170*	*8,281*	*80*	*3,125*	*11,405*	*27%*	
	Dec-11	*148*	*180*	*8,375*	*0*	*3,083*	*11,458*	*27%*	
	Jan-12	*149*	*250*	*8,530*	*0*	*3,026*	*11,555*	*26%*	
	Feb-12	*150*	*260*	*8,640*	*0*	*3,003*	*11,643*	*26%*	
	Mar-12	*151*	*220*	*8,843*	*100*	*3,058*	*11,901*	*26%*	
	Apr-12	*152*	*210*	*8,994*	*125*	*3,142*	*12,136*	*26%*	
	May-12	*153*	*120*	*9,100*	*125*	*3,227*	*12,327*	*26%*	
	Jun-12	*154*	*50*	*9,132*	*0*	*3,220*	*12,352*	*26%*	

RWC = 60-month running total of recycled water / 60-month running total of all recharged water.
All recharged water includes recycled water and diluent water (imported, storm water, and local runoff)
RWC Limit = 0.5 mg/L / the Running Average of Total Organic Carbon (TOC)


RWC Management Plan - Ely Basin
Jul-02
Jan-03
Jul-03
Jan-04
Jul-04
Jan-05
Jul-05
Jan-06
Jul-06
Jan-07
Jul-07
Jan-08
Jul-08
Jan-09
Jul-09
Jan-10
Jul-10
Jan-11
Jul-11
Jan-12
Historical Recycled Water
Historical Diluent Water
Planned Diluent Water
Planned Recycled Water
RWC Actual
RWC Projected
RWC maximum
Delivered Water Volume (AF/month)
RWC
480
420
360
300
240
180
120
60
0
40%
35%
30%
25%
20%
15%
10%
5%
0%
35
47
59
71
83
95
107
119
131
143
HISTORICAL RECHARGE
PLANNED RECHARGE

RWC Management Plan for Hickory Basin

Calculation of Recycled Water Contribution (RWC) from Historical Diluent Water (DW) and Recycled Water (RW) Deliveries

Date		No. Mos. Since Initial RW Delivery	DW (AF)	DW 60-Month Total (AF)	RW (AF)	RW 60-Month Total (AF)	DW + RW 60-Month Total (AF)	RWC	Source
2002/03	Jul-02	-38	0.						MODELED
	Aug-02	-37	0.						
	Sep-02	-36	0.						
	Oct-02	-35	0.						
	Nov-02	-34	81.7						
	Dec-02	-33	121.5						
	Jan-03	-32	0.						
	Feb-03	-31	146.3						
	Mar-03	-30	105.6						
	Apr-03	-29	89.						
	May-03	-28	7.						
	Jun-03	-27	0.						
2003/04	Jul-03	-26	0.						
	Aug-03	-25	0.						
	Sep-03	-24	0.						
	Oct-03	-23	0.						
	Nov-03	-22	4.5						
	Dec-03	-21	35.2						
	Jan-04	-20	0.5						
	Feb-04	-19	128.8						
	Mar-04	-18	54.9						
	Apr-04	-17	0.						
	May-04	-16	0.						
	Jun-04	-15	0.						
2004/05	Jul-04	-14	0.						
	Aug-04	-13	0.						
	Sep-04	-12	0.						
	Oct-04	-11	117.6						
	Nov-04	-10	2.						
	Dec-04	-9	39.						
	Jan-05	-8	149.8						
	Feb-05	-7	127.5						
	Mar-05	-6	27.						
	Apr-05	-5	4.1						HISTORICAL
	May-05	-4	0.						
	Jun-05	-3	0.						
2005/06	Jul-05	-2	265.3						
	Aug-05	-1	487.1	2137	0.	0.	2137	0%	
	Sep-05	1	130.4	2267	138.8	138.8	2406	6%	
	Oct-05	2	21.8	2287	92.7	231.6	2519	9%	
	Nov-05	3	0.	2287	92.2	323.8	2611	12%	
	Dec-05	4	7.8	2295	31.6	355.4	2650	13%	
	Jan-06	*5*	12.6	2297	82.9	438.3	2735	16%	
	Feb-06	*6*	34.6	2319	79.2	517.5	2837	18%	
	Mar-06	*7*	26.7	2340	0.	517.5	2857	18%	
	Apr-06	*8*	43.5	2377	0.	517.5	2895	18%	
	May-06	*9*	83.2	2460	0.	517.5	2978	17%	
	Jun-06	*10*	30.	2490	0.	517.5	3008	17%	

RWC Management Plan for Hickory Basin

Calculation of Recycled Water Contribution (RWC) from Historical Diluent Water (DW) and Recycled Water (RW) Deliveries

Date		No. Mos. Since Initial RW Delivery	DW (AF)	DW 60-Month Total (AF)	RW (AF)	RW 60-Month Total (AF)	DW + RW 60-Month Total (AF)	RWC	Source
2006/07	Jul-06	*11*	129.1	2618	182.8	700.3	3318	21%	HISTORICAL
	Aug-06	*12*	47.	2665	180.	880.3	3545	25%	
	Sep-06	*13*	89.	2754	0.	880.3	3634	24%	
	Oct-06	*14*	43.2	2797	143.6	1023.9	3821	27%	
	Nov-06	*15*	58.5	2795	35.4	1059.3	3854	27%	
	Dec-06	*16*	84.4	2877	0.	1059.3	3936	27%	
	Jan-07	*17*	16.3	2858	0.	1059.3	3917	27%	
	Feb-07	*18*	40.3	2898	42.	1101.3	3999	28%	
	Mar-07	*19*	34.6	2929	0.	1101.3	4030	27%	
	Apr-07	*20*	50.	2978	63.	1164.3	4142	28%	
	May-07	*21*	58.	3035	0.	1164.3	4200	28%	
	Jun-07	*22*	90.	3125	0.	1164.3	4290	27%	
2007/08	Jul-07	*23*	93.	3218	141.	1305.3	4524	29%	
	Aug-07	*24*	93.	3311	78.	1383.3	4695	29%	
	Sep-07	*25*	92.	3403	15.	1398.3	4802	29%	
	Oct-07	*26*	73.	3476	22.8	1421.1	4898	29%	
	Nov-07	*27*	102.	3497	98.	1519.1	5016	30%	
	Dec-07	*28*	102.	*3477*	0.	*1519.1*	*4996*	*30%*	
	Jan-08	*29*	126.	*3603*	0.	*1519.1*	*5122*	*30%*	
	Feb-08	*30*	97.	*3554*	39.	*1558.1*	*5112*	*30%*	
	Mar-08	*31*	*30.*	*3478*	*80.*	*1638.1*	*5116*	*32%*	PLANNED
	Apr-08	*32*	*30.*	*3419*	*100.*	*1738.1*	*5157*	*34%*	
	May-08	*33*	*20.*	*3432*	*0.*	*1738.1*	*5170*	*34%*	
	Jun-08	*34*	*20.*	*3452*	*0.*	*1738.1*	*5190*	*33%*	
2008/09	Jul-08	*35*	*120.*	*3572*	*0.*	*1738.1*	*5310*	*33%*	
	Aug-08	*36*	*160.*	*3732*	*0.*	*1738.1*	*5470*	*32%*	
	Sep-08	*37*	*80.*	*3812*	*0.*	*1738.1*	*5550*	*31%*	
	Oct-08	*38*	*60.*	*3872*	*0.*	*1738.1*	*5610*	*31%*	
	Nov-08	*39*	*40.*	*3908*	*60.*	*1798.1*	*5706*	*32%*	
	Dec-08	*40*	*60.*	*3933*	*0.*	*1798.1*	*5731*	*31%*	
	Jan-09	*41*	*80.*	*4012*	*0.*	*1798.1*	*5810*	*31%*	
	Feb-09	*42*	*70.*	*3953*	*0.*	*1798.1*	*5751*	*31%*	
	Mar-09	*43*	*20.*	*3918*	*60.*	*1858.1*	*5777*	*32%*	
	Apr-09	*44*	*30.*	*3948*	*60.*	*1918.1*	*5867*	*33%*	
	May-09	*45*	*50.*	*3998*	*0.*	*1918.1*	*5917*	*32%*	
	Jun-09	*46*	*40.*	*4038*	*0.*	*1918.1*	*5957*	*32%*	
2009/10	Jul-09	*47*	*120.*	*4158*	*0.*	*1918.1*	*6077*	*32%*	
	Aug-09	*48*	*160.*	*4318*	*0.*	*1918.1*	*6237*	*31%*	
	Sep-09	*49*	*80.*	*4398*	*0.*	*1918.1*	*6317*	*30%*	
	Oct-09	*50*	*60.*	*4341*	*60.*	*1978.1*	*6319*	*31%*	
	Nov-09	*51*	*40.*	*4379*	*60.*	*2038.1*	*6417*	*32%*	
	Dec-09	*52*	*60.*	*4400*	*0.*	*2038.1*	*6438*	*32%*	
	Jan-10	*53*	*80.*	*4330*	*0.*	*2038.1*	*6368*	*32%*	
	Feb-10	*54*	*70.*	*4273*	*0.*	*2038.1*	*6311*	*32%*	
	Mar-10	*55*	*20.*	*4266*	*60.*	*2098.1*	*6364*	*33%*	
	Apr-10	*56*	*30.*	*4291*	*60.*	*2158.1*	*6450*	*33%*	
	May-10	*57*	*50.*	*4341*	*0.*	*2158.1*	*6500*	*33%*	
	Jun-10	*58*	*40.*	*4381*	*0.*	*2158.1*	*6540*	*33%*	

RWC Management Plan for Hickory Basin

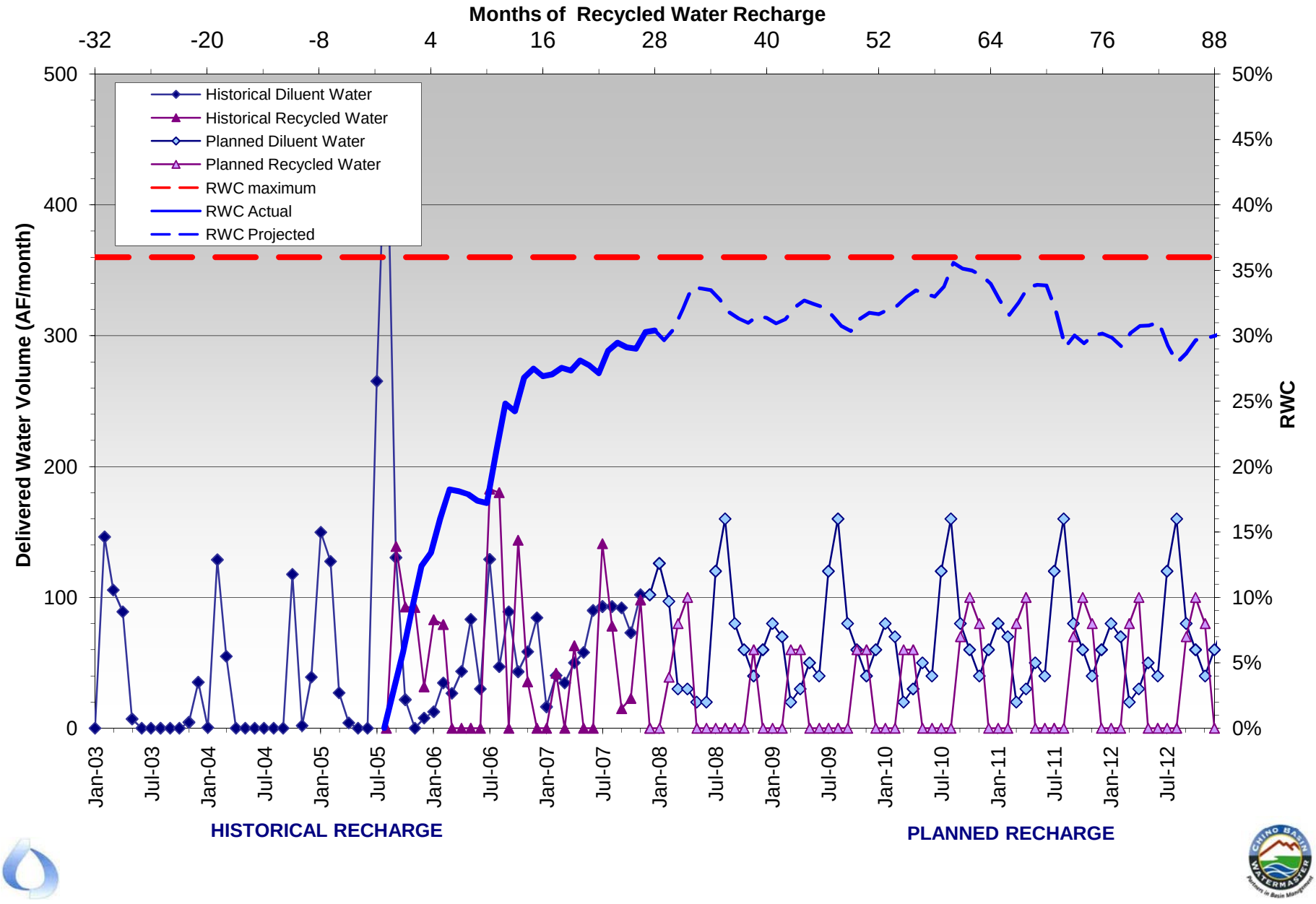
Calculation of Recycled Water Contribution (RWC) from Historical Diluent Water (DW) and Recycled Water (RW) Deliveries

Date		No. Mos. Since Initial RW Delivery	DW (AF)	DW 60-Month Total (AF)	RW (AF)	RW 60-Month Total (AF)	DW + RW 60-Month Total (AF)	RWC	Source
2010/11	Jul-10	59	120.	4236	0.	2158.1	6394	34%	post in 60m
	Aug-10	60	160.	3909	0.	2158.1	6067	36%	
	Sep-10	61	80.	3859	70.	2089.3	5948	35%	
	Oct-10	62	60.	3897	100.	2096.6	5993	35%	
	Nov-10	63	40.	3937	80.	2084.3	6021	35%	
	Dec-10	64	60.	3989	0.	2052.7	6042	34%	
	Jan-11	65	80.	4056	0.	1969.8	6026	33%	
	Feb-11	66	70.	4092	0.	1890.6	5982	32%	
	Mar-11	67	20.	4085	80.	1970.6	6056	33%	
	Apr-11	68	30.	4072	100.	2070.6	6142	34%	
	May-11	69	50.	4038	0.	2070.6	6109	34%	
	Jun-11	70	40.	4048	0.	2070.6	6119	34%	
2011/12	Jul-11	71	120.	4039	0.	1887.9	5927	32%	
	Aug-11	72	160.	4152	0.	1707.9	5860	29%	
	Sep-11	73	80.	4143	70.	1777.9	5921	30%	
	Oct-11	74	60.	4160	100.	1734.2	5894	29%	
	Nov-11	75	40.	4142	80.	1778.8	5920	30%	
	Dec-11	76	60.	4117	0.	1778.8	5896	30%	
	Jan-12	77	80.	4181	0.	1778.8	5960	30%	
	Feb-12	78	70.	4211	0.	1736.8	5947	29%	
	Mar-12	79	20.	4196	80.	1816.8	6013	30%	
	Apr-12	80	30.	4176	100.	1853.8	6030	31%	
	May-12	81	50.	4168	0.	1853.8	6022	31%	
	Jun-12	82	40.	4118	0.	1853.8	5972	31%	
2012/13	Jul-12	83	120.	4145	0.	1712.8	5858	29%	PLANNED
	Aug-12	84	160.	4212	0.	1634.8	5847	28%	
	Sep-12	85	80.	4200	70.	1689.8	5890	29%	
	Oct-12	86	60.	4187	100.	1767.	5954	30%	
	Nov-12	87	40.	4125	80.	1749.	5874	30%	
	Dec-12	88	60.	4083	0.	1749.	5832	30%	
	Jan-13	89	80.	4037	0.	1749.	5786	30%	
	Feb-13	90	70.	4010	0.	1710.	5720	30%	
	Mar-13	91	20.	4000	80.	1710.	5710	30%	
	Apr-13	92	30.	4000	100.	1710.	5710	30%	
	May-13	93	50.	4030	0.	1710.	5740	30%	
	Jun-13	94	40.	4050	0.	1710.	5760	30%	

Notes:

RWC = 60-month running total of recycled water / 60-month running total of all recharged water.
For Hickory Basin the RWC max is 36% as determined from the basin's start-up period.
All recharged water includes recycled water and diluent water (imported and storm water)
RWC Limit = 0.5 mg/L / the Running Average of Total Organic Carbon (TOC)

RWC Management Plan for Hickory Basin



RWC Management Plan for Turner Basins

Calculation of Recycled Water Contribution (RWC) from Historical Diluent Water (DW) and Recycled Water (RW) Deliveries

Date		No. Mos. Since Initial RW Delivery	DW (AF)	DW 60-Month Total (AF)	RW (AF)	RW 60-Month Total (AF)	DW + RW 60-Month Total (AF)	RWC	Source
2001/02	Jul-01	-60	0.						HISTORICAL DILUENT MODELED
	Aug-01	-59	0.						
	Sep-01	-58	0.						
	Oct-01	-57	0.						
	Nov-01	-56	19.9						
	Dec-01	-55	18.7						
	Jan-02	-54	19.6						
	Feb-02	-53	24.1						
	Mar-02	-52	13.1						
	Apr-02	-51	3.						
	May-02	-50	1.6						
	Jun-02	-49	0.						
2002/03	Jul-02	-48	0.						
	Aug-02	-47	0.						
	Sep-02	-46	0.						
	Oct-02	-45	0.						
	Nov-02	-44	10.						
	Dec-02	-43	30.6						
	Jan-03	-42	0.						
	Feb-03	-41	29.4						
	Mar-03	-40	32.2						
	Apr-03	-39	37.7						
	May-03	-38	52.3						
	Jun-03	-37	0.						
2003/04	Jul-03	-36	0.						
	Aug-03	-35	0.						
	Sep-03	-34	0.						
	Oct-03	-33	0.						
	Nov-03	-32	0.						
	Dec-03	-31	0.						
	Jan-04	-30	0.						
	Feb-04	-29	0.						
	Mar-04	-28	0.						
	Apr-04	-27	0.						
	May-04	-26	0.						
	Jun-04	-25	0.						
2004/05	Jul-04	-24	0.						
	Aug-04	-23	0.						
	Sep-04	-22	0.						
	Oct-04	-21	48.1						
	Nov-04	-20	79.1						
	Dec-04	-19	49.1						
	Jan-05	-18	102.						
	Feb-05	-17	112.7						
	Mar-05	-16	80.7						
	Apr-05	-15	65.8						
	May-05	-14	67.5						
	Jun-05	-13	0.						

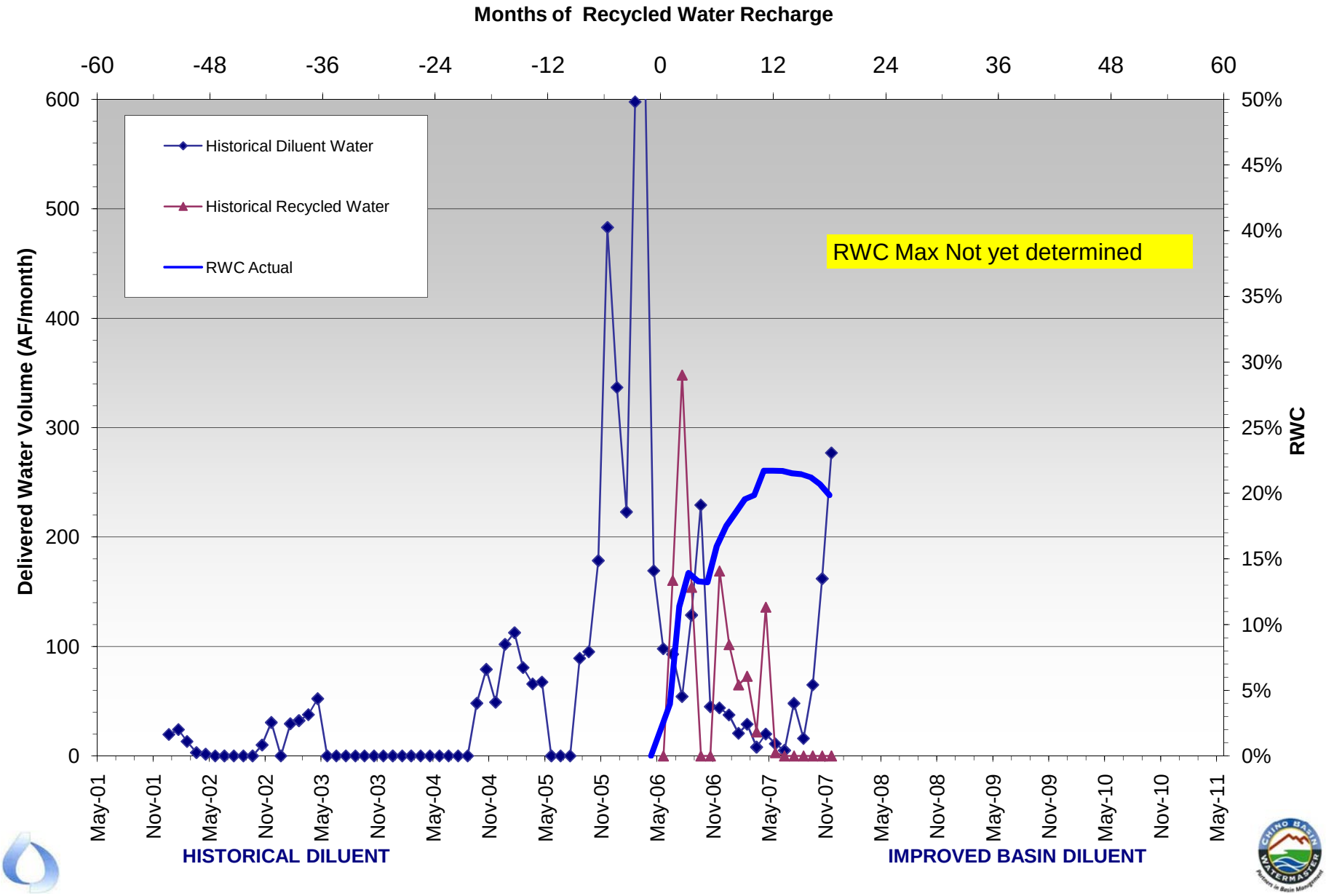
RWC Management Plan for Turner Basins

Calculation of Recycled Water Contribution (RWC) from Historical Diluent Water (DW) and Recycled Water (RW) Deliveries

Date		No. Mos. Since Initial RW Delivery	DW (AF)	DW 60-Month Total (AF)	RW (AF)	RW 60-Month Total (AF)	DW + RW 60-Month Total (AF)	RWC	Source
2005/06	Jul-05	-12	0.		0.				MEASURED
	Aug-05	-11	0.		0.				
	Sep-05	-10	89.3		0.				
	Oct-05	-9	95.2		0.				
	Nov-05	-8	178.5		0.				
	Dec-05	-7	483.		0.				
	Jan-06	-6	336.9		0.				
	Feb-06	-5	223.		0.				
	Mar-06	-4	597.8		0.				
	Apr-06	-3	650.2		0.				
	May-06	-2	169.2		0.				
	Jun-06	-1	98.		0.			0%	
2006/07	Jul-06	1	93.	3911	160.4	160	4071	4%	START-UP
	Aug-06	2	54.2	3965	348.	508	4474	11%	
	Sep-06	3	128.7	4094	154.2	663	4756	14%	
	Oct-06	4	229.3	4323	0.	663	4986	13%	
	Nov-06	5	45.	4348	0.	663	5011	13%	
	Dec-06	6	43.9	4373	169.	832	5205	16%	
	Jan-07	7	37.5	4391	101.6	933	5324	18%	
	Feb-07	8	20.7	4388	65.	998	5386	19%	
	Mar-07	9	28.9	4404	72.8	1071	5475	20%	
	Apr-07	10	8.	4409	22.	1093	5502	20%	
	May-07	11	20.	4427	135.9	1229	5656	22%	
	Jun-07	12	11.	4438	3.	1232	5670	22%	
2007/08	Jul-07	13	5.	4443	0.	1232	5675	22%	MEAS.
	Aug-07	14	48.	4491	0.	1232	5723	22%	
	Sep-07	15	16.	4507	0.	1232	5739	21%	
	Oct-07	16	65.	4572	0.	1232	5804	21%	
	Nov-07	17	162.	4724	0.	1232	5956	21%	
	Dec-07	18	277.	4971	0.	1232	6202	20%	

RWC = 60-month running total of recycled water / 60-month running total of all recharged water.
All recharged water includes recycled water and diluent water (imported and storm water)
RWC Limit = 0.5 mg/L / the Running Average of Total Organic Carbon (TOC)

RWC Management Plan for Turner Basin



APPENDIX D

GROUNDWATER ELEVATION CONTOUR MAPS

117°40'0"W

117°20'0"W

34°0'0"N

San Gabriel Mountains

Fault Zone

Cucamonga Basin

Claremont Basin

Pomona Basin

Rialto-Colton Basin

Puente Hills

Chino Hills

Prado Flood Control Basin

La Sierra Hills

Arlington Basin

Temescal Basin

El Sobrante de San Jacinto

Riverside Basins

Jurupa Mountains

San Bernardino County

Riverside County

Orange County

Los Angeles Co

Cucamonga

San Antonio Ck

Red Hill Fault

Indian Hill Fault

San Jose Fault

Chino Fault

Barrier J

Lytle Ck

Loma Linda Fault

Rialto-Colton Fault

San Jacinto Fault

Day Ck

Etiwanda Ave

Euclid Ave

Central Ave

Holt Blvd

Foothill Blvd

Riverside Dr

Mission Blvd

Cucamonga Ck

Chino Ck

Limonite Ave

Bellegrave Ave

Van Buren Blvd

Victoria Ave

Santa Ana River

15

210

215

10

60

71

91

1100

1000

800

775

725

700

650

625

600

575

550

525

500

Groundwater Elevation Contours
(feet above mean sea-level)

Other Features

- Chino Desalter Well
- Flood Control and Conservation Basins

Geology

Water-Bearing Sediments

- Quaternary Alluvium

Consolidated Bedrock

- Plio-Pleistocene Sedimentary Rocks
- Cretaceous to Miocene Sedimentary Rocks
- Pre-Tertiary Igneous and Metamorphic Rocks

Faults

- Location Certain
- Location Approximate
- Location Concealed
- Location Uncertain

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File: Figure_3-18.mxd

0 1 2 3 4 5 Miles

0 2 4 6 8 KM

DRAFT - 2007 CBWM Groundwater Model Documentation and Evaluation of the Peace II Project Description

Hydrogeologic Setting

Groundwater Elevation Contours

Fall 2006 -- Chino Basin

Figure 2-7a

117°40'0"W

117°20'0"W

34°0'0"N

San Gabriel Mountains

Cucamonga Fault Zone

Red Hill Fault

Indian Hill Fault

San Jose Fault

Central Ave

Euclid Ave

Haven Ave

Etiwanda Ave

Foothill Blvd

Holt Blvd

Mission Blvd

Riverside Dr

Bellegrave Ave

Limonite Ave

Puente Hills

LA County

Chino Fault

Chino Hills

San Bernardino County
Orange County

Prado Flood Control Basin

La Sierra Hills

Main St

6th St

Van Buren Blvd

Victoria Ave

El Sobrante de San Jacinto

Barrier J

Sierra Ave

Barrier H

Riverside Ave

Lona Linda Fault

Barrier G

San Andreas Fault

Waterman Ave

San Jacinto Fault

Rialto-Colton Fault

Jurupa Mountains

San Bernardino County
Riverside County

Box Springs Mtns

Mission Blvd

1000
800
775
750
725
700
675
650
625
600
575
550
540
530
525
500
590
560

15
10
60
215
91

Main Features

800
775 Groundwater Elevation Contours (feet above mean sea-level)

Chino-I Desalter Well

Chino Basin Hydrologic Boundary

Geology

Water-Bearing Sediments

Quaternary Alluvium

Consolidated Bedrock

Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks

Faults & Groundwater Divides

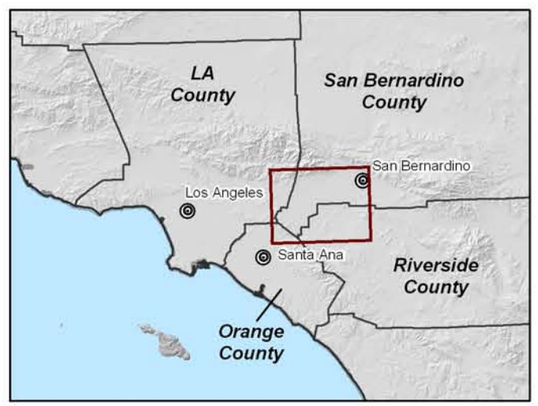
Location Certain

Location Approximate

Location Concealed

Location Uncertain

Groundwater Divide



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File: Figure_3-6.mxd

0 1 2 3 4 Miles

0 2 4 6 KM

State of the Basin Report -- 2004
Groundwater Basin Operation and Response

Groundwater Elevation Contours

Fall 2003 -- Chino Basin

Figure 3-6

117°40'0"W

117°20'0"W

34°0'0"N

San Gabriel Mountains

Fault Zone

Cucamonga

San Antonio Ck

Indian Hill Fault

San Jose Fault

Red Hill Fault

Barrier J

Sierra Ave

Lytle Ck

Loma Linda Fault

Riverside Ave

Waterman Ave

Foothill Blvd

Haven Ave

Day Ck

Etiwanda Ave

Euclid Ave

Central Ave

Holt Blvd

Mission Blvd

Riverside Dr

Cucamonga Ck

Bellegrave Ave

Limonite Ave

Chino Ck

Chino Fault

Central Avenue Fault

Rialto-Colton Fault

San Jacinto Fault

Shallow Aquifer-System unsaturated north of this line during Fall 2000

MZ-1

MZ-2

MZ-3

MZ-4

MZ-5

1000

800

775

750

725

700

675

650

625

600

575

550

525

500

585

565

Puente Hills

Los Angeles Co.

Chino Hills

San Bernardino County
Orange County

Prado Flood Control Basin

La Sierra Hills

Jurupa Mountains

San Bernardino County
Riverside County

Santa Ana River

Box Springs Mtns

Van Buren Blvd

Victoria Ave

El Sobrante de San Jacinto

15

10

60

71

91

215

Main Features

800 / 775 — Groundwater Elevation Contours -- Fall 2000 (feet above mean sea level)

Geology

Water-Bearing Sediments

- Quaternary Alluvium

Consolidated Bedrock

- Plio-Pleistocene Sedimentary Rocks
- Cretaceous to Miocene Sedimentary Rocks
- Pre-Tertiary Igneous and Metamorphic Rocks

Faults

- Location Certain
- Location Approximate
- Location Concealed
- Location Uncertain

Other Features

- Flood Control and Conservation Basins

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Author: AEM
Update: WEL
Date: 20050714
File: Figure 8-03.mxd

0 1 2 3 4 Miles

0 2 4 6 KM

Inland Empire Utilities Agency

Phase II Recycled Water Groundwater Recharge Project

Groundwater Elevation Map Fall 2000

Figure 8-3

117°40'0"W

34°0'0"N

Recharge Basins (Symbolized by Improvements)

- Chino Basin Facilities Improvement Program
- Improvement By Others
- No Improvements

Main Features

- Water Supply Well
- Depth to Water (ft)

Other Features

- Rivers, Creeks, and Flood Control Channels
- Chino Basin

Geology

- Unconsolidated Water-Bearing Sediments
- Consolidated Bedrock

Faults

- Location Certain
- Location Approximate
- Location Concealed
- Location Uncertain

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Author: AEM, WW
Date: 20050706
File: DTW2005.mxd

0 1 2 3 Miles
0 2 4 KM

Inland Empire Utilities Agency

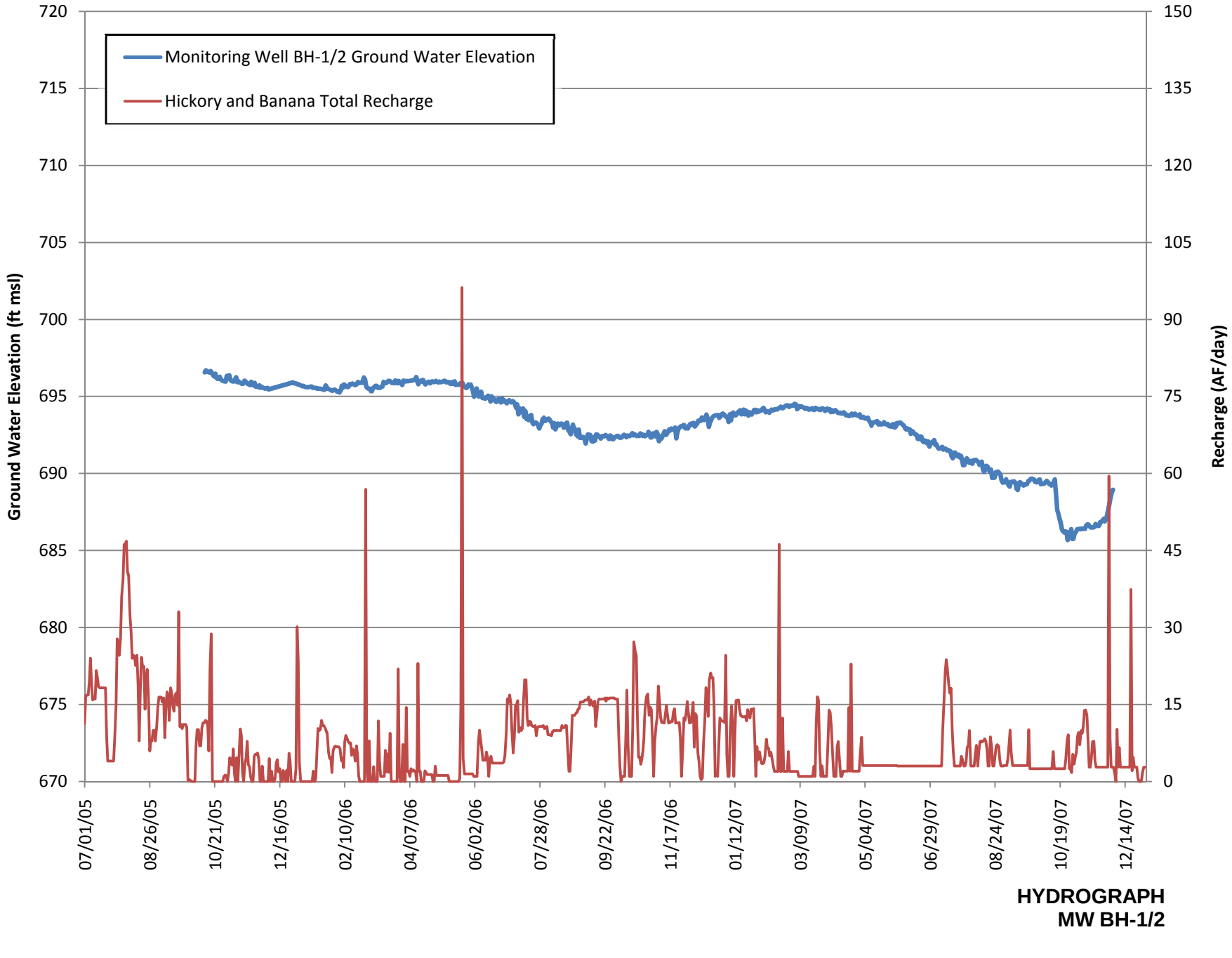
Phase II Recycled Water Groundwater Recharge Project

Projected Depth to Water Five Years After Phase II Recharge Starts

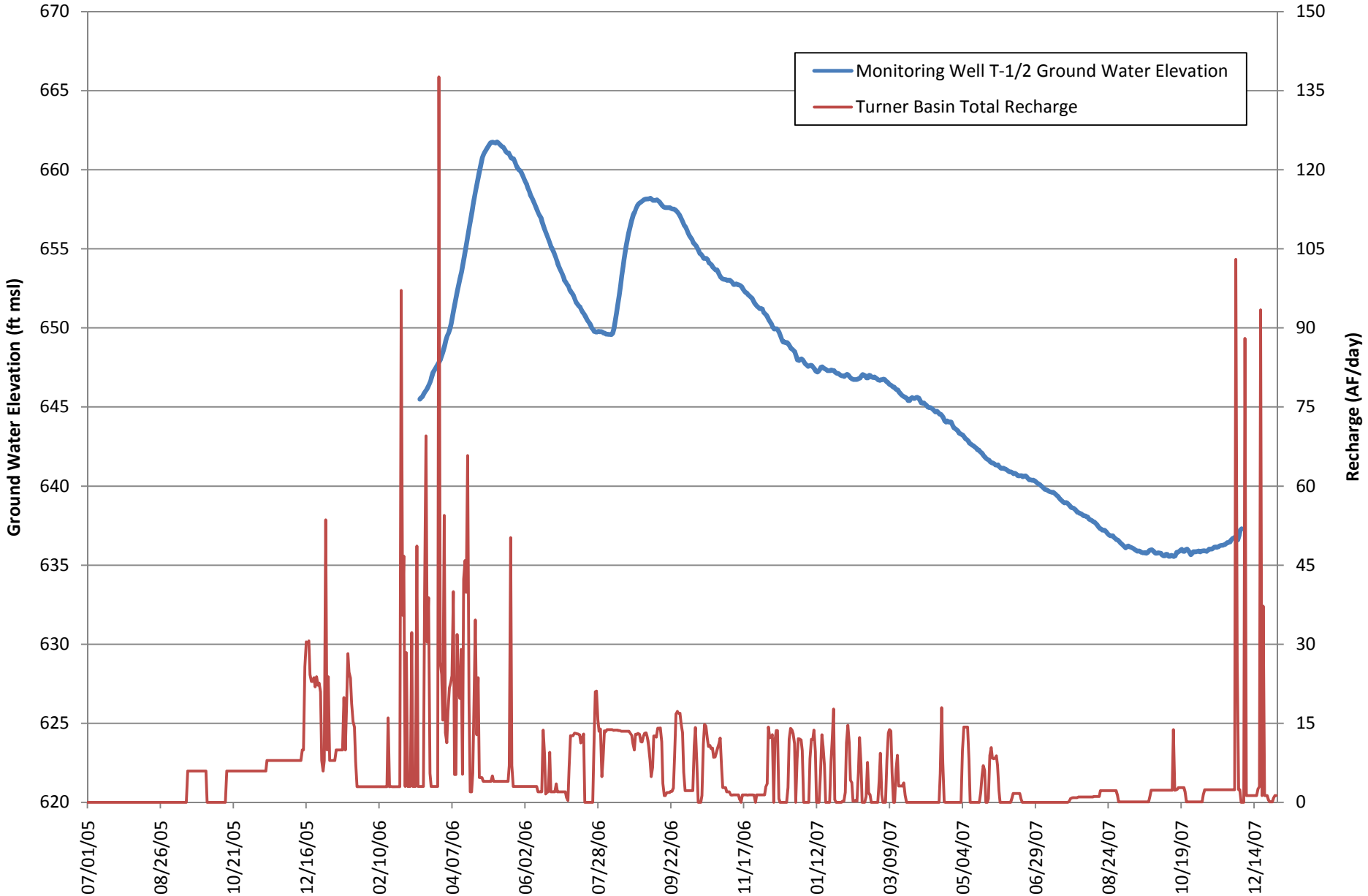
Figure 8-19

APPENDIX E

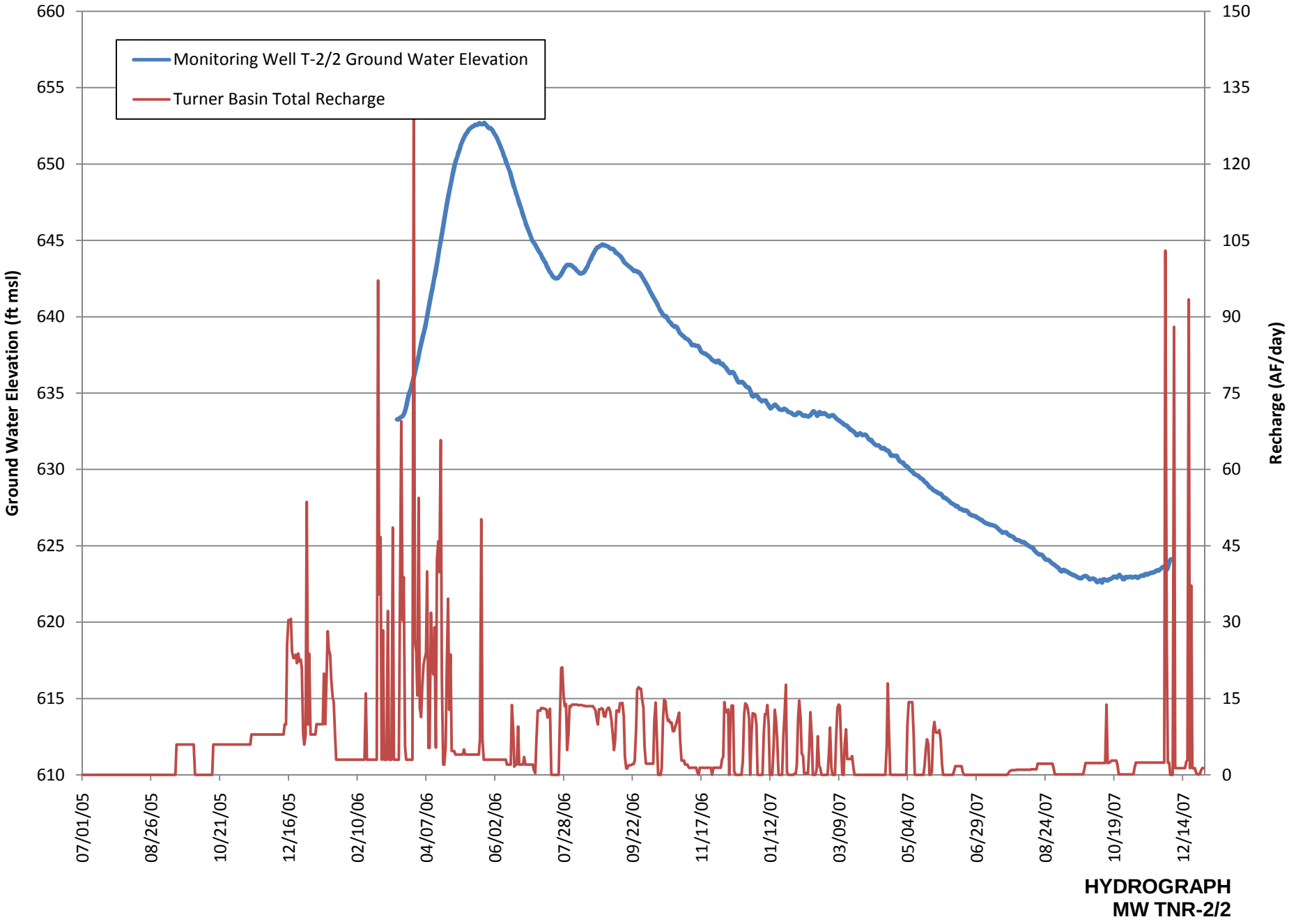
MONITORING WELL HYDROGRAPHS



HYDROGRAPH
MW BH-1/2



HYDROGRAPH
MW TRN-1/2



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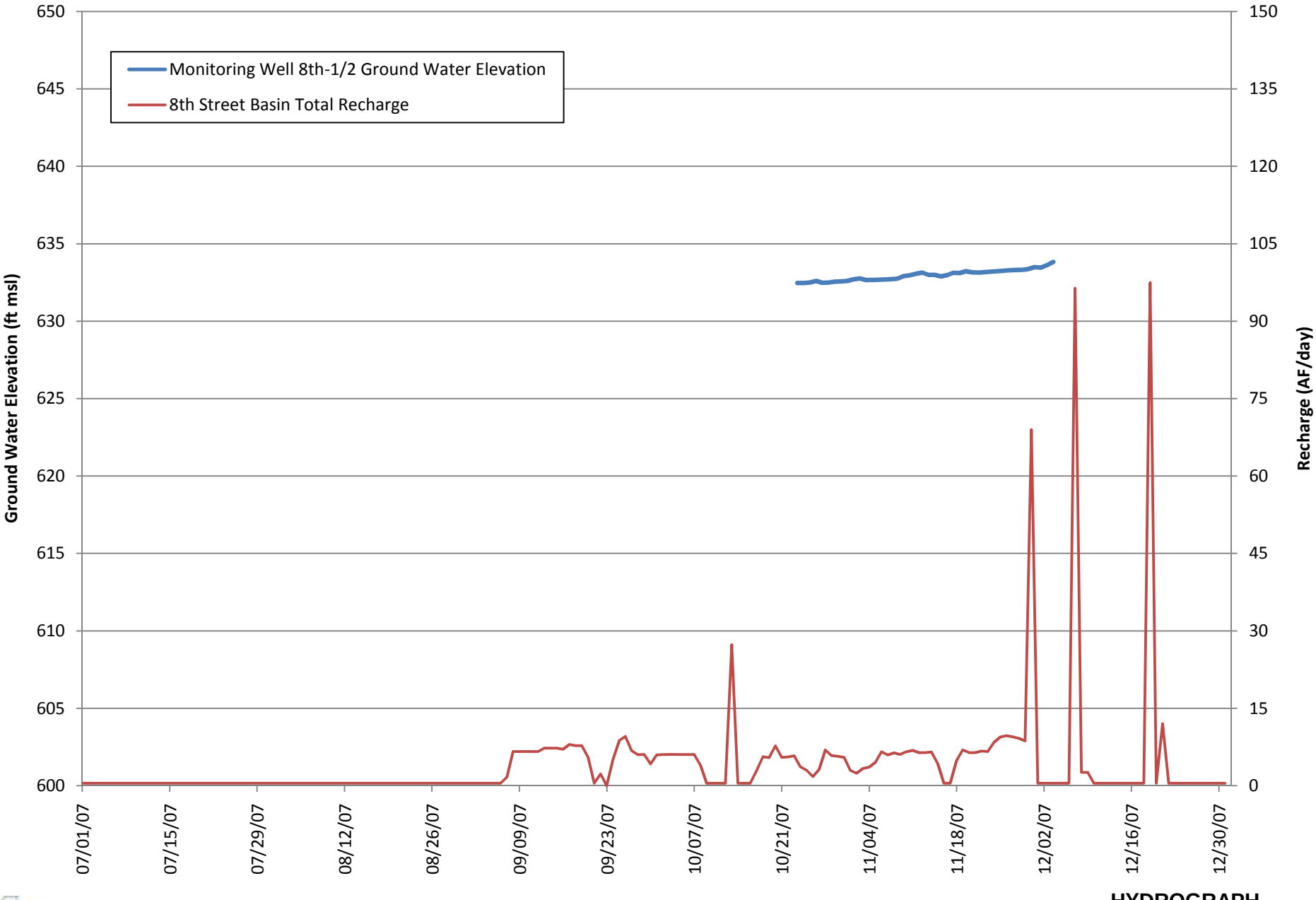
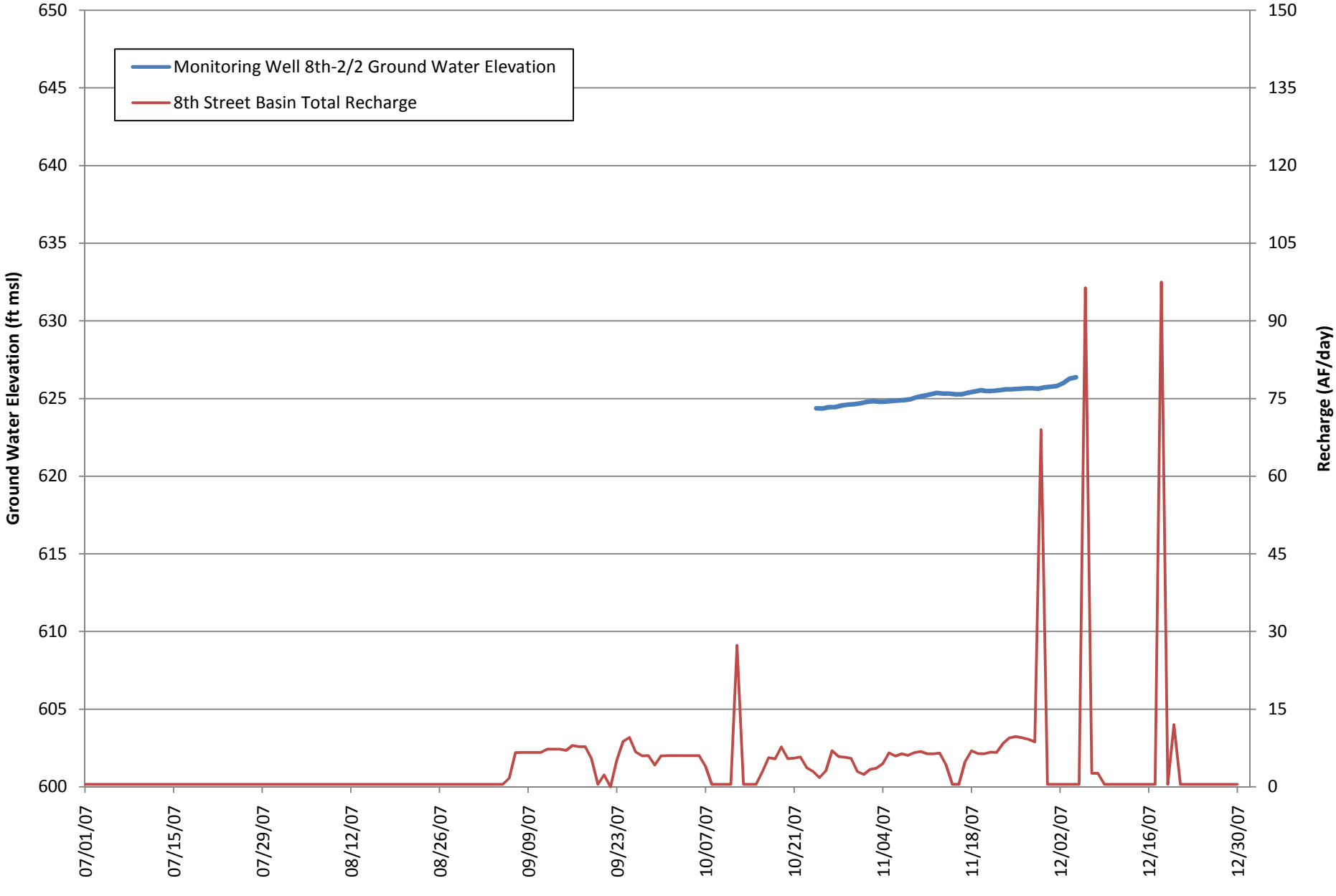
MW TNR-2/2



HYDROGRAPH
MW 8TH-1/2



HYDROGRAPH
MW 8TH-2/2