
Addendum to the 2008 Santa Ana River Wasteload Allocation Model Report: Scenario 8

Final Memorandum

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Background and Introduction

The Water Quality Control Plan for the Santa Ana River Basin (Basin Plan) states the need to develop and periodically update the wasteload allocation for the upper Santa Ana River Watershed:

Wasteload allocations for regulating discharges of TDS and total inorganic nitrogen (TIN) to the Santa Ana River, and thence to groundwater management zones recharged by the River, are an important component of salt management for the Santa Ana Basin. As described earlier, the Santa Ana River is a significant source of recharge to groundwater management zones underlying the River and, downstream, to the Orange County groundwater basin. The quality of the River thus has a significant effect on the quality of the Region's groundwater, which is used by more than 5 million people. Control of River quality is appropriately one of the Regional Board's highest priorities.

Sampling and modeling analyses conducted in the 1980's and early 1990's [sic] indicated that the TDS and total nitrogen water quality objectives for the Santa Ana River were being violated or were in danger of being violated. Under the Clean Water Act (Section 303(d)(1)(c); 33 USC 466 et seq.), violations of water quality objectives for surface waters must be addressed by the calculation of the maximum wasteloads that can be discharged to achieve and maintain compliance. Accordingly, TDS and nitrogen wasteload allocations were developed and included in the 1983 Basin Plan. The nitrogen wasteload allocation was updated in 1991; an updated TDS wasteload allocated [sic] was included in the 1995 Basin Plan when it was adopted and approved in 1994/1995.

The wasteload allocations distribute a share of the total TDS and TIN wasteloads to each of the discharges to the River or its tributaries. The allocations are implemented principally through TDS and nitrogen limits in waste discharge requirements issued to municipal wastewater treatment facilities (Publicly Owned Treatment Works or POTWs) that discharge to the River, either directly or indirectly. Nonpoint source inputs of TDS and nitrogen to the River are also considered in the development of these

wasteload allocations [...].

Because of the implementation of these wasteload allocations, the Orange County Water District wetlands and other measures, the TDS and TIN water quality objectives for the Santa Ana River at Prado Dam are no longer being violated, as shown by annual sampling of the River at the Dam by Regional Board staff. However, as part of the Nitrogen/TDS Task Force studies to update the TDS/nitrogen management plan for the Santa Ana Basin, a review of the TDS and TIN wasteload allocations initially contained in this Basin Plan was conducted [in 2002]. In part, this review was necessary in light of the new groundwater management zones and TDS and nitrate-nitrogen objectives for those zones recommended by the N/TDS Task Force (and now incorporated in Chapters 3 and 4). The wasteload allocations were evaluated and revised to ensure that the POTW discharges would assure compliance with established surface water objectives and would not cause or contribute to violation of the groundwater management zone objectives [...].

RWQCB, 2011, p. 5-27 to 5-31

In 2002, Wildermuth Environmental, Inc. (WEI) conducted the wasteload allocation analysis (WEI, 2002). To conduct the analysis, WEI developed and used the Wasteload Allocation Model (WLAM)—a numerical computer-simulation model of surface-water discharge and quality. The WLAM simulates the discharge and quality (TDS and TIN) of the Santa Ana River (SAR) and its tributaries on a daily time-step as waters commingle from POTW discharge, rainfall/runoff, and rising groundwater. The WLAM also simulates the volume and quality of streambed recharge of the SAR and its tributaries to the underlying groundwater management zones (GMZ). Nitrogen losses are simulated in surface water as a travel-time-dependent, first-order decay function and in streambed recharge by applying the 25 percent and 50 percent nitrogen-loss coefficients. The daily WLAM results are then post-processed to develop volume-weighted TDS and TIN concentration statistics for surface water and streambed recharge to the GMZs. These statistics are then compared to the relevant surface and groundwater quality objectives (and to the current ambient quality) to determine whether any changes are necessary in TDS and TIN regulation.

In the 2002 effort, the WLAM was used to evaluate two scenarios, representing a reasonable range for future (2010) POTW wastewater production, reuse, and discharge. POTW discharges were held constant during each simulation. To account for variations in rainfall/runoff, the WLAM was run over a 50-year historical period of daily precipitation (1950-1999). TDS and TIN concentrations in POTW discharges were held constant during each simulation and were generally based on the wasteload allocation in the 1995 Basin Plan. Analysis of the WLAM results for both scenarios demonstrated that the TDS and TIN concentrations, monitored at the USGS gaging station located below Prado Dam (SAR below Prado Dam), would not exceed the surface-water objectives at Prado Dam and that the TDS and TIN concentrations of streambed recharge to the Chino-South and Riverside-A GMZs would not exceed the objectives. The analysis did, however, indicate that the TDS and TIN concentrations of streambed recharge to the San Timoteo and Beaumont GMZs would be higher than the objectives, causing stakeholders in these regions to propose less stringent groundwater-quality objectives

for those GMZs based on a “maximum benefit” argument.

In 2008, the Basin Monitoring Program Task Force (Task Force) contracted with WEI to update the wasteload allocation to account for changing plans and conditions in the watershed. Additional data and information had been collected since 2002 and were used to improve the model and its calibration. Six scenarios were developed to represent a reasonable range of future (2010 and 2020) POTW wastewater production, reuse, and discharge, as well as the storm-water conservation measures being contemplated at the Seven Oaks Dam.

WEI ran the WLAM for these six scenarios and, in May 2009, completed the final *2008 Santa Ana River Wasteload Allocation Model Report* (WEI, 2009). The report concluded that the nitrate-nitrogen concentration of streambed recharge to the Chino-South GMZ would exceed its objective under the then-existing wasteload allocation in the Basin Plan. Since no assimilative capacity exists for nitrate-nitrogen in the Chino-South GMZ, the Regional Board and the Task Force desired additional WLAM simulations under an adjusted wasteload allocation to explore what changes were needed to comply with the nitrate-nitrogen objective in Chino-South. In addition, many POTWs wanted to use updated planning information for recycled water reuse and discharge in the new WLAM simulations.

In June 2009, the Task Force contracted with WEI to develop a new WLAM scenario (Scenario 7) and to perform a series of simulations—based on Scenario 7—that represented a reasonable range of future conditions. The results indicated that the wasteload allocation in Scenario 7 did not result in an exceedance of the nitrate-nitrogen objective for streambed recharge to Chino-South, but that the volume-weighted TDS and nitrate-nitrogen concentrations in streambed recharge to the Riverside-A GMZ would exceed the current ambient concentrations in Riverside-A (WEI, 2010).

The Task Force has since questioned the assumptions used in Scenario 7 for the operation of the Seven Oaks Dam and associated storm-water diversions. In January 2014, the Task Force contracted with WEI to develop a new WLAM scenario (Scenario 8) and to perform a series of simulations—based on Scenario 8—that represent the range of reasonable future conditions. The results of Scenario 8 further assess the appropriateness of the current wasteload allocation for TIN and TDS. This technical memorandum fulfills the contract and is an addendum to the *2008 Santa Ana River Wasteload Allocation Model Report*.

Scenario 8

The modeling approach, as described below, required no changes to the structure of the WLAM and no model recalibration. In the Scenario 8 simulation, updated POTW discharge planning information, updated assumptions for the operation of the Seven Oaks Dam and associated storm-water diversions, and a longer period of historical precipitation (1950-2012) were used.

Historical Period of Precipitation. The WLAM uses a historical period of daily precipitation falling onto a constant land use to compute the daily runoff of precipitation into the SAR and its tributaries. For Scenario 7, this period was 1950-2000. In Scenario 8, the historical period of precipitation was extended, spanning from 1950 through 2012. The land use mapping used for Scenario 8 is based on available Southern California

Association of Governments (SCAG) information for 2005 and remains unchanged from Scenario 7. This is a conservative assumption for storm-water runoff and is consistent with the intent of the MS4 permit to minimize storm-water runoff from new development.

Hydrology of the Seven Oaks Dam and Associated Storm-Water Diversions. In 2004, the San Bernardino Valley Municipal Water District (Valley District) and the Western Municipal Water District (WMWD) filed a water rights application with the State Water Resources Control Board to divert up to 200,000 acre-ft/yr of storm-water from the SAR (San Bernardino Municipal Water District and Western Municipal Water District, 2004). In Scenario 7, it was assumed that these rights would be exercised at a diversion facility located just downstream of the Seven Oaks Dam. It was assumed that the facility would have a maximum diversion capacity of 1,500 cfs and that this water would be conveyed to off-stream recharge facilities overlying the Bunker Hill-B GMZ.

The Valley District informed the Task Force that 1,500 cfs is an overestimate of the diversion capacity for the planning horizon associated with the wasteload allocation. The current diversion capacity is 195 cfs. The Valley District has plans to expand the diversion facilities to 500 cfs before 2020. Appropriately, the Scenario 8 simulations assumed a maximum diversion rate of 195 cfs for 2015 conditions and 500 cfs for 2020 conditions.

The Valley District has simulated Seven Oaks Dam operations and diversion activities with both the 195 cfs and 500 cfs maximum diversion rates (Geoscience, 2013). WEI coordinated and corresponded with the Valley District and its consultants to make sure the assumptions used in its simulations were consistent with the assumptions used in the Scenario 8 simulations.

The WLAM treats water released from the Seven Oaks Dam that is not diverted to off-stream recharge facilities as a boundary inflow condition. Figure 1 and Table 1 display the annual volume of un-diverted water released from Seven Oaks Dam that would occur under Scenario 7 (1,500 cfs maximum diversion rate) and Scenario 8 (195 cfs and 500 cfs maximum diversion rate). During wet years, more storm water flows past the diversion facilities in Scenario 8 than in Scenario 7.

POTW Planning Information. Each POTW provided planning information for 2015 and 2020. This planning information forms the basis for Scenario 8 and is intended to represent the range of expected POTW behavior over the next six years.

Table 2 lists the planning information for each POTW, including plant design capacity, expected plant production, the portion of the plant production to be reused, and the portion of the plant production to be discharged to the SAR or its tributaries. Table 2 also includes notes for each POTW, describing the reuse plans in more detail and how those plans will affect discharge over an annual cycle. For example, if a POTW's reuse plans are for outdoor irrigation, the demand for that recycled water will vary over the year based on evapotranspiration rates; thus, discharge will also vary. Conversely, if a POTW's reuse plans are for artificial recharge, reuse is not as dependent on evapotranspiration, and reuse and discharge will occur at relatively constant rates. Discharge locations are shown in Figure 2. Annual variations in reuse and discharge, where applicable, were included in the Scenario 8 computer simulations.

Simulation of Scenario 8. In total, 12 WLAM simulations were run to represent a

potential range of POTW discharge conditions: six simulations for 2015 and six simulations for 2020. While these simulations represent a reasonable range of possible discharge conditions, they do not capture every permutation of reuse and discharge by the POTWs. Table 3 describes how the planning information in Table 2 was used as input data for each POTW for each simulation described below:

Simulation 8a: Low Discharge for 2015. This scenario assumes the planned conditions for plant production, reuse, and discharge in 2015, as provided by the agencies and described in Table 2. This represents a “low” discharge condition with full implementation of the planned reuse projects.

Simulation 8b: Intermediate Discharge for 2015. This scenario assumes planned conditions for plant production, but no “new” reuse projects are implemented by 2015. Existing reuse projects remain in full operation. This represents a slower implementation of planned reuse projects.

Simulation 8c: High Discharge for 2015. Scenario 8c is identical to 8b except existing reuse projects are assumed to operate at half their current capacities. This represents a “high” discharge condition.

Simulation 8d: Low Discharge for 2020. This scenario assumes the planned conditions for plant production, reuse, and discharge in 2020, as provided by the agencies and described in Table 2. This represents a “low” discharge condition with full implementation of the planned reuse projects.

Simulation 8e: Intermediate Discharge for 2020. This scenario assumes planned conditions for plant production, but no “new” reuse projects are implemented between 2015 and 2020. Reuse projects planned to be completed by 2015 remain in full operation. This represents a slower implementation of planned reuse projects.

Simulation 8f: High Discharge for 2020. Scenario 8f is identical to 8e except reuse projects planned to be completed by 2015 are assumed to operate at half their capacities. This represents a “high” discharge condition.

Simulations 8a’, 8b’, 8c’, 8d’, 8e’, and 8f’. In each of the above simulations, the Eastern Municipal Water District (EMWD) is assumed to discharge to Temescal Creek at Nichols Road at maximum capacity of 52.5 mgd for one month every year (January). To bracket the effect of EMWD discharge on the discharge and quality of the SAR below Prado Dam, a second series of simulations was run with the assumption that the EMWD discharges at maximum capacity for six months every year (November through April) during the wettest half of the years simulated¹ and for one month only (January) during all other years.

With one exception, the TDS and TIN concentrations associated with POTW discharges were simulated using the wasteload allocation in the current Basin Plan (RWQCB, 2008). The exception is the City of Corona’s Plant 1 discharge. The current wasteload

¹ Daily rainfall measured at the Elsinore NWD Auto (Station Number 067) rainfall gauge was used to calculate and rank total annual rainfall for each of the years simulated in WLAM Scenario 8. Of the 63 years simulated (1950-2012), the 32 years with the greatest total annual rainfall were simulated as the “wettest half” of years: 1952, 1954, 1958, 1962, 1963, 1966, 1967, 1969, 1973, 1975-1980, 1982, 1983, 1986, 1988, 1991-1995, 1998, 2001, 2003, 2005, 2008-2011.

allocation for TDS of the City of Corona's Plant 1 discharge is 700 mg/L as an annual average. As Figure 3 shows, the TDS concentration of Plant 1's summertime discharge exceeds 700 mg/L. Since 2008, the average TDS concentration of Plant 1 discharge has been 725 mg/L from May to November. And from December to April, the TDS concentration of Plant 1 discharge has typically been less than 700 mg/L. To represent both the high summertime TDS concentrations and the TDS wasteload allocation, the TDS concentration of Plant 1 discharge was assumed to be 725 mg/L from May to November and 665 mg/L from December to April. This modeling strategy was necessary to more accurately simulate the summertime TDS concentration of the SAR below Prado Dam for comparison to the TDS objective for Reach 3 of the SAR.

Scenario 8 Results

Tables 4 and 5 summarize the TDS and TIN results for the 12 WLAM Scenario 8 simulations. The results are fully documented in Appendix A with tables and time history charts. In Tables 4 and 5, the model results are summarized by the *compliance metric* for the surface water and groundwater bodies that are affected by POTW discharges.

The *compliance metric* is the method that the Task Force uses to summarize WLAM results for comparison to relevant water quality objectives and current ambient quality estimates. For example, the TDS objective for Reach 3 of the SAR is 700 mg/L, as measured by laboratory analyses of grab samples of the SAR below Prado Dam during the month of August. The WLAM generates daily estimates of discharge and quality of the SAR below Prado Dam, and these daily estimates are used to compute the monthly volume-weighted average TDS concentration for each August over the 63-year simulation. The compliance metric for the Reach 3 TDS objective is the maximum of the monthly average TDS concentration for August across the entire 63-year simulation period. The Reach 3 compliance metric was computed for all Scenario 8 simulations (see Table 4).

The compliance metrics for TDS and TIN in surface water are based on the monitoring programs and methods used by the Regional Board to determine compliance with the Reach 2 and Reach 3 objectives for the SAR. Since discharges from EMWD affect the discharge and quality in the SAR below Prado Dam, the results for both Scenarios 8a-8f and 8a'-8f' are shown in Tables 4 and 5.

The compliance metrics for groundwater are based on the 10-year, volume-weighted running average TDS and TIN concentrations in streambed recharge to each GMZ. The maximum 10-year running average concentration over the 63-year simulation is the compliance metric. The compliance metric for groundwater was agreed on by the Task Force at the November 18, 2009 Task Force meeting.

For streambed recharge to groundwater, note that the model results are only representative of those reaches of the SAR and its tributaries where wastewater discharges can flow, commingle with other waters, and percolate to groundwater. Other stream reaches, where wastewater is absent, were excluded from the computation of compliance metrics. For example, in the Beaumont GMZ, streambed recharge and quality were only computed for reaches downstream of wastewater effluent discharge locations; storm water that percolates in the unlined reaches upstream of the discharge

locations was not included in the computation of the compliance metrics.

Compliance metrics were not computed for the GMZs underlying the unlined portions of Temescal Creek, because these GMZs do not currently have objectives or estimates of current ambient quality.

Interpretations and Use of the WLAM Results

Tables 4 and 5 compare the compliance metrics—derived from the Scenario 8 results—to the water quality objectives, current ambient quality, and the magnitude of assimilative capacity, if any, for each groundwater and surface-water body affected by POTW discharge. Bold and italic values indicate where the compliance metric either (i) exceeds the objective where there is no assimilative capacity or (ii) exceeds the current ambient concentration where assimilative capacity exists. Table 6 summarizes the wasteload allocation by POTW, as derived from the results of Scenario 8, and identifies the regulatory implications.

Groundwater

The following discussion describes the results of Scenario 8 for each GMZ relative to the water-quality objectives and/or current ambient concentrations (see Tables 4 and 5).

The TDS and nitrate-nitrogen objectives for the groundwater GMZs are based on an analysis of historical groundwater quality in order to comply with the State's Antidegradation Policy (SWRCB Resolution 68-16). The objectives were reviewed by the Regional Board to ensure that they are protective of beneficial uses—the most sensitive use typically being municipal drinking water supply (MUN). The nitrate-nitrogen objectives for all GMZs are 10 mg/L (the federal drinking water Maximum Contaminant Level for nitrate-nitrogen) or less. Currently, the Regional Board recognizes the existence of assimilative capacity for TDS and nitrate-nitrogen in some of the GMZs affected by POTW discharges (see Tables 4 and 5). These assimilative capacity findings are significant from a regulatory perspective. The Basin Plan explains how the Regional Board regulates POTW discharges (and other discharges) to GMZs with assimilative capacity:

[...] If there is assimilative capacity in the receiving waters for TDS, nitrogen or other constituents, a waste discharge may be of poorer quality than the objectives for those constituents for the receiving waters, as long as the discharge does not cause violation of the objectives and provided that antidegradation requirements are met. However, if there is no assimilative capacity in the receiving waters, [...] the numerical limits in the discharge requirements cannot exceed the receiving water objectives or the degradation process would be accelerated. This rule was expressed clearly by the State Water Resources Control Board in a decision regarding the appropriate TDS discharge limitations for the Rancho Caballero Mobile Home Park located in the Santa Ana Region (Order No. 73-4, the so-called "Rancho Caballero decision") [...].

In regulating waste discharges to waters with assimilative capacity, the Regional Board will proceed as follows. (see also Section III.B.6., Special

Considerations – Subsurface Disposal Systems).

If a discharger proposes to discharge wastes that are at or below (i.e., better than) the current ambient TDS and/or nitrogen water quality, then the discharge will not be expected to result in the lowering of water quality, and no antidegradation analysis will be required. TDS and nitrogen objectives are expected to be met. Such discharges clearly implement the Basin Plan and the Board can permit them to proceed. Of course, other pertinent requirements, such as those of the California Environmental Quality Act (CEQA) must also be satisfied [...].

If a discharger proposes to discharge wastes that exceed the current ambient TDS and/or nitrogen quality, then the Board will require the discharger to conduct an appropriate antidegradation analysis. The purpose of this analysis will be to demonstrate whether and to what extent the proposed discharge would result in a lowering of ambient water quality in affected receiving waters. That is, to what extent, if any, would the discharge use available assimilative capacity. If the discharger demonstrates that no lowering of water quality would occur, then antidegradation requirements are met, water quality objectives will be achieved, and the Regional Board can permit such discharges to proceed. If the analysis indicates that a lowering of current ambient water quality would occur, other than on a minor or temporally or spatially limited basis, then the discharger must demonstrate that: (1) beneficial uses would continue to be protected and the established water quality objectives would be met; and (2) that the resultant water quality would be consistent with maximum benefit to the people of California; and, (3) that best practicable treatment or control has been implemented. Best practical treatment or control means levels that can be achieved using best efforts and reasonable control methods. For affected receiving waters, the discharger must estimate the amount of assimilative capacity that would be used by the discharger. The Regional Board would employ its discretion in determining the amount of assimilative capacity that would be allocated to the discharger. Rather than allocating assimilative capacity, the Regional Board may require the discharger to mitigate or offset discharges that would result in the lowering of water quality.

Again, discharges to waters without assimilative capacity for TDS and/or nitrogen must be held to the objectives of the affected receiving waters (with the caveat identified in footnote 3 previous page). In some cases, compliance with management zone TDS objectives for discharges to waters without assimilative capacity may be difficult to achieve. Poor quality water supplies or the need to add certain salts during the treatment process to achieve compliance with other discharge limitations (e.g., addition of ferric chloride) could render compliance with strict TDS limits very difficult. The Regional Board addresses such situations by providing dischargers with the opportunity to participate in TDS offset programs, such as the use of desalters, in lieu of compliance with numerical TDS limits. These offset provisions are incorporated into waste discharge requirements. Provided that the discharger takes all

reasonable steps to improve the quality of the waters influent to the treatment facility (such as through source control or improved water supplies), and provided that chemical additions are minimized, the discharger can proceed with an acceptable program to offset the effects of TDS discharges in excess of the permit limits.

Similarly, compliance with the nitrate-nitrogen objectives for groundwaters specified in this Plan would be difficult in many cases. Offset provisions may apply to nitrogen discharges as well. An alternative that dischargers might pursue in these circumstances is revision of the TDS or nitrogen objectives, through the Basin Plan amendment process. Consideration of less stringent objectives would necessitate comprehensive antidegradation review, including the demonstrations that beneficial uses would be protected and that water quality consistent with maximum benefit to the people of the State would be maintained. As discussed in Chapter 4 and later in this Chapter, a number of dischargers have pursued this “maximum benefit objective” approach, leading to the inclusion of “maximum benefit” objectives and implementation strategies in this Basin Plan. Discharges to areas where the “maximum benefit” objectives apply will be regulated in conformance with these implementation strategies. Any assimilative capacity created by the maximum benefit programs will be allocated to the parties responsible for implementing them.

RWQCB, 2008, p. 5-20 to 5-22

Beaumont GMZ. The TDS and nitrate-nitrogen objectives for the Beaumont GMZ are 330 mg/L and 5 mg/L, respectively. These are “maximum benefit” objectives, and they were granted to the region’s stakeholders by the Regional Board as part of the stakeholders’ “maximum benefit” demonstration. The current ambient TDS and nitrate-nitrogen concentrations are 290 mg/L and 2.9 mg/L, respectively; hence, assimilative capacity exists in Beaumont: 40 mg/L for TDS and 2.1 mg/L for nitrate-nitrogen.

The POTW discharge that primarily affects groundwater quality in the Beaumont GMZ is from the Beaumont WWTP No. 1.

In Scenarios 8e and 8f, the TIN concentration compliance metric for streambed recharge to Beaumont exceeds the current ambient nitrate-nitrogen concentration. In all Scenario 8 simulations, the TDS concentration compliance metric for streambed recharge does not exceed the TDS objective for the Beaumont GMZ.

On April 25, 2014, the Regional Board amended the Basin Plan to incorporate an updated Salt Management Plan and maximum benefit program for GMZs in the San Timoteo Watershed, which includes the Yucaipa, San Timoteo, and Beaumont GMZs. Under the new maximum benefit program, the compliance metric for groundwater is based on the 10-year volume-weighted running average TDS and nitrate concentrations in POTW discharges at the points of discharge, not the concentration of streambed recharge estimated by the WLAM. Specifically, the 10-year volume-weighted running average TDS and nitrate concentrations of Beaumont WWTP No. 1 discharges must be equal to or less than the Beaumont maximum benefit objectives (330 mg/L for TDS and 6 mg/L for nitrate, taking into account the 25 percent nitrogen-loss coefficient).

Compliance can be achieved through the desalination of recycled water, blending with low-TDS supplemental water, or net new storm-water recharge. Other requirements of the updated maximum benefit monitoring program include: the development of a salt-offset program to mitigate discharges to the Beaumont GMZ that are in excess of the compliance metric effective April 25, 2014, the management of all wastewater discharges pursuant to the DPH requirements for Groundwater Replenishment Reuse Projects (GRRPs), and the development of a contingency plan and schedule to meet the “antidegradation” objectives for the Beaumont GMZ in the event that the Regional Board finds that the “maximum benefit” is not demonstrated. All other maximum benefit participants in the Beaumont GMZ will have to comply with these requirements in order to use recycled water at the maximum benefit objective. The City of Beaumont has submitted a plan and schedule for complying with the new maximum benefit monitoring program discharge limitations. The plan is pending approval by the Regional Board.

San Timoteo GMZ. The TDS and nitrate-nitrogen objectives for the San Timoteo GMZ are 400 mg/L and 5 mg/L, respectively. These are “maximum benefit” objectives and were granted to the region’s stakeholders by the Regional Board as part of the stakeholders’ “maximum benefit” demonstration. The current ambient TDS and nitrate-nitrogen concentrations are 410 mg/L and 2.3 mg/L, respectively; hence, 2.7 mg/L of assimilative capacity exists for nitrate-nitrogen, but no assimilative capacity exists for TDS.

Discharges from the following POTWs primarily affect groundwater quality in the San Timoteo GMZ: the YVWD WWTP and Beaumont WWTP No. 1.

In all Scenario 8 simulations, the TIN concentration compliance metric for streambed recharge to San Timoteo exceeds the current ambient nitrate-nitrogen concentration. In all Scenario 8 simulations, except for Scenario 8d, the TDS concentration compliance metric for streambed recharge to San Timoteo exceeds the TDS objective. The reason that the TDS concentration in streambed recharge exceeds the TDS objective of 400 mg/L is because YVWD discharge was simulated at 540 mg/L instead of 400 mg/L as required by the Basin Plan update of April 2014 (Order No. R8-2014-0005), which is summarized below:

On April 25, 2014, the Regional Board amended the Basin Plan to incorporate an updated Salt Management Plan and maximum benefit program for GMZs in the San Timoteo Watershed, which includes the Yucaipa, San Timoteo, and Beaumont GMZs (RWQCB, 2014). Under the new maximum benefit program, the compliance metric for groundwater is based on the 10-year volume-weighted running average TDS and nitrate concentrations in POTW discharges at the points of discharge, not the concentration of streambed recharge estimated by the WLAM. Specifically, the 10-year volume-weighted running average TDS and nitrate-nitrogen concentrations of YVWD WWTP and Beaumont WWTP No. 1 discharges to San Timoteo must be equal to or less than the maximum benefit objectives (400 mg/L for TDS and 6 mg/L for nitrate, taking into account the 25 percent nitrogen-loss coefficient). The updated maximum benefit monitoring program also requires the YVWD and City of Beaumont to develop a salt-offset program to mitigate all discharges to the San Timoteo GMZ that are in excess of the compliance metric effective April 25, 2014. Finally, in the event that the Regional Board finds that the “maximum benefit” is not demonstrated, a contingency plan and schedule to meet the “antidegradation” objectives for San Timoteo is required. Both

agencies have submitted a plan and schedule for complying with the new maximum benefit monitoring program discharge limitations. These plans are pending approval by the Regional Board.

The mistake of simulating YVWD WWTP discharge in Scenario 8 with a TDS concentration of 540 mg/L instead of 400 mg/L was not identified by WEI, the Task Force, YVWD, or the Regional Board during the review and approval of Table 2 prior to the simulation of Scenario 8. The mistake is likely not significant to the results of Scenario 8 for the GMZs downstream of San Timoteo Creek or the SAR below Prado Dam because YVWD discharge typically percolates completely before entering the SAR.

Bunker Hill-B GMZ. The TDS and nitrate-nitrogen objectives for the Bunker Hill-B GMZ are 330 mg/L and 7.3 mg/L, respectively. The current ambient TDS and nitrate-nitrogen concentrations are 280 mg/L and 5.6 mg/L, respectively; hence, assimilative capacity exists in Bunker Hill-B (50 mg/L for TDS and 1.7 mg/L for nitrate-nitrogen). The POTW discharge that primarily affects groundwater quality in Bunker Hill-B is from the YVWD WWTP. In all Scenario 8 simulations, the TDS and TIN concentration compliance metrics for streambed recharge do not exceed the TDS and nitrate-nitrogen objectives for the Bunker Hill-B GMZ.

Colton GMZ. The TDS and nitrate-nitrogen objectives for the Colton GMZ are 410 mg/L and 2.7 mg/L, respectively. The current ambient TDS and nitrate-nitrogen concentrations are 440 mg/L and 2.7 mg/L, respectively; hence, no assimilative capacity exists. Discharges from upstream POTWs (YVWD WWTP and Beaumont WWTP No. 1) do not typically reach the Colton GMZ except during periods of high precipitation. In all Scenario 8 simulations, the TDS and TIN concentration compliance metrics for streambed recharge do not exceed the TDS and nitrate-nitrogen objectives for the Colton GMZ.

Riverside-A GMZ. The TDS and nitrate-nitrogen objectives for the Riverside-A GMZ are 560 mg/L and 6.2 mg/L, respectively. The current ambient TDS and nitrate-nitrogen concentrations are 420 mg/L and 5.4 mg/L, respectively; hence, assimilative capacity exists in Riverside-A (140 mg/L for TDS and 0.8 mg/L for nitrate-nitrogen). In all Scenario 8 simulations, the TDS and TIN concentration compliance metrics for streambed recharge exceeded the current ambient TDS and nitrate-nitrogen concentrations in Riverside-A.

Discharges from the following POTWs primarily affect groundwater quality in Riverside-A: the Rialto WWTP and the RIX Facility.

One of the main reasons for performing Scenario 8 was to simulate more accurately current and future Seven Oaks Dam operations and associated storm-water diversions. It was believed that Scenario 8 would simulate additional streambed recharge of high-quality storm-water in Riverside-A. While Scenario 8, compared to Scenario 7, resulted in additional storm-water recharge to Riverside-A, these additions were most significant during years with high precipitation. During normal or dry years, very little storm water released from the Seven Oaks Dam, if any, recharges Riverside-A. Since the compliance metric is the maximum 10-year volume-weighted running average TDS and TIN concentration in streambed recharge, the driest period within the simulated 63-year hydrologic period defined the compliance metrics. For this reason, the compliance metrics for TDS and TIN in Riverside-A changed very little from Scenario 7 to Scenario

8.

Chino-South GMZ. The TDS and nitrate-nitrogen objectives for the Chino-South GMZ are 680 mg/L and 4.2 mg/L, respectively. The current ambient TDS and nitrate-nitrogen concentrations in Chino-South are 990 mg/L and 28 mg/L, respectively; hence, no assimilative capacity exists in Chino-South. In all Scenario 8 simulations, the TDS concentration compliance metric for streambed recharge does not exceed the TDS objective. In all Scenario 8 simulations, the TIN concentration compliance metric for streambed recharge exceeded the nitrate-nitrogen objective for Chino-South—a change from the Scenario 7 results.

Discharges from the following POTWs affect groundwater quality in Chino-South: the Rialto WWTP, the RIX Facility, and the Riverside RWQCP.

Surface Water

The following discussion describes the results of Scenario 8 for surface water relative to the water-quality objectives for the SAR below Prado Dam.

The Reach 2 and Reach 3 objectives for the SAR protect the beneficial uses of the SAR in Orange County—the primary use being groundwater recharge (GWR). Currently, the Regional Board does not recognize the existence of assimilative capacity for TDS or nitrogen in the SAR below Prado Dam, so it cannot permit POTW discharges that will lead to an exceedance of the water quality objectives.

The Reach 3 TDS and total inorganic nitrogen (TIN) objectives are 700 mg/L and 10 mg/L, respectively, for the SAR below Prado Dam during the month of August. In all twelve Scenario 8 WLAM simulations, the maximum TIN concentration, computed as a monthly flow-weighted average of the SAR below Prado Dam in August, did not exceed the TIN objective. In scenarios 8a, 8a', 8b, 8b', 8d, and 8d', the maximum TDS concentration, computed as the monthly flow-weighted average of the SAR below Prado Dam in August, exceeded the Reach 3 TDS objective.²

The Reach 2 TDS objective is 650 mg/L for the SAR below Prado Dam as a 5-year moving average of the annual flow-weighted average TDS concentrations. Reach 2 does not have a nitrogen objective. In all twelve Scenario 8 WLAM simulations, the maximum 5-year moving average of the annual flow-weighted average TDS concentrations did not exceed the Reach 2 TDS objective (see Table 4).

The POTWs that primarily affect the discharge and quality of the SAR below Prado Dam include the Rialto WWTP; the RIX Facility; the Riverside RWQCP; the WRCRWA WTP; the Western Water Recycling Facility (which discharges at the WRCRWA WTP discharge point); IEUA plants RP-1, RP-4, RP-5, and Carbon Canyon; Corona WWTPs No. 1 and No. 3; the Lee Lake Water District WWTP; the EVMWD Regional WWRP; and EMWD discharge to Temescal Creek.

² These WLAM results for TDS are consistent with recent measured TDS concentrations of the SAR below Prado Dam. The Task Force is currently investigating the cause(s) of the recent Reach 3 TDS objective exceedance.

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Appendix A

Time series charts and tables of the WLAM results for Scenario 8 (as a separate PDF file).

Appendix B

Responses to comments by members of the Basin Monitoring Program Task Force on the draft technical memorandum.

Table 1
Annual Volume of Undiverted Storm Water Released from Seven Oaks Dam
under Various Valley District Diversion Capacities

Year	Undiverted Flow that Passes the Valley District Diversion Structure (acre-ft/yr)		
	Diversion Capacity of 195 cfs	Diversion Capacity of 500 cfs	Diversion Capacity of 1,500 cfs
1950	0	0	0
1951	0	0	0
1952	898	0	0
1953	0	0	0
1954	1,446	0	0
1955	0	0	0
1956	0	0	0
1957	0	0	0
1958	4,646	0	0
1959	0	0	0
1960	0	0	0
1961	0	0	0
1962	313	0	0
1963	0	0	0
1964	0	0	0
1965	0	0	0
1966	9,679	0	990
1967	21,694	10,909	5,803
1968	0	0	0
1969	115,611	106,611	12,393
1970	591	0	0
1971	645	0	0
1972	2,420	0	0
1973	1,676	0	0
1974	0	0	0
1975	0	0	0
1976	1,118	290	0
1977	0	0	0
1978	42,733	28,733	313
1979	30,816	16,816	0
1980	150,796	136,796	11,595
1981	0	0	0
1982	1,070	0	0
1983	74,130	57,630	0

Year	Undiverted Flow that Passes the Valley District Diversion Structure (acre-ft/yr)		
	Diversion Capacity of 195 cfs	Diversion Capacity of 500 cfs	Diversion Capacity of 1,500 cfs
1984	1,800	0	0
1985	0	0	0
1986	684	0	0
1987	0	0	0
1988	0	0	0
1989	0	0	0
1990	0	0	0
1991	0	0	0
1992	30	0	0
1993	81,855	62,855	3,081
1994	0	0	0
1995	47,963	31,463	0
1996	2,246	0	0
1997	1,970	0	0
1998	34,114	15,114	0
1999	0	0	0
2000	0	0	
2001	0	0	
2002	0	0	
2003	584	0	
2004	0	0	
2005	57,388	38,388	
2006	3,205	0	
2007	0	0	
2008	0	0	
2009	0	0	
2010	7,053	1,091	
2011	34,082	17,582	
2012	0	0	
2013	0	0	
Average	11,457	8,192	684
Median	0	0	0
Maximum	150,796	136,796	12,393
Minimum	0	0	0

Table 2
POTW Planning Information Used in Wasteload Allocation Scenario 8

Agency	Year	Design Capacity (mgd)	Permit Discharge (mgd)	Permit TDS (mg/L)	Permit TIN (mg/L)	Scenario 8					Notes on Reuse and Discharge
						TDS (mg/L)	TIN (mg/L)	Plant Production (mgd)	Reuse (mgd)	Discharge (mgd)	
San Timoteo Creek				490		400				DP001: 1.8	
	2015	4.0	4.0	330	6	330	6	3.0	0.5	DP007: 0.7	
City of Beaumont ^{A,1} Wastewater Treatment Plant #1				330		330				DP009-11: 0	Discharge will include: 1.8 mgd discharge from DP001 to Coopers Creek to support habitat in Coopers and San Timoteo Creek; 0.7 mgd discharge to DP007 to support habitat and groundwater recharge; and beginning between 2015 and 2020, variable discharge at three new discharge locations (DP009, DP010, and DP011) on the un-named tributary to Marshall Creek, Marshall Creek and Noble Creek to support habitat and for groundwater recharge; and variable discharge to DP008 and multipurpose stormwater management basins for groundwater recharge. During storm periods the City will discharge all its effluent to DP001.
	2020	8.0		330	6	330	6	4.0	1.31	DP007: 0.7	
				330		330				DP009-11: 0.19	
Yucaipa Valley Water District ^B H. N. Wochholz WTP	2015	8.5	8.5	540	6	540	6	3.8	1.1	2.7	In 2015 and 2020, reuse will be for irrigation and artificial recharge, so discharge to the creek will be constant. The recycled reuse distributed to non-potable customers peaks around 1.1 mgd in the summer in 2015, and is expected to be similar for 2020; this demand is 0 in the winter. The remaining reuse water will be artificially recharged. In 2015, reuse will be split with approximately 50% for artificial recharge and 50% for irrigation; in 2020, approximately 75% for artificial recharge and 25% for irrigation. 1.6 mgd of water is required to be discharged to San Timoteo Creek to support riparian habitat. During wet periods, if minimum flow rates in the creek are satisfied by stormwater discharge, effluent discharge could decrease and instead be artificially recharged.
Santa Ana River Reach 4											
City of Rialto ^C Rialto Wastewater Treatment Plant	2015	11.7	11.7	490	10	490	10	7.0	0.4	6.6	In 2015 and 2020, reuse is for irrigation only, so discharge to the Santa Ana River will vary based on seasonal demand. The City is currently completing its Recycled Water Master Plan and is analyzing alternative opportunities for reuse of its effluent, including allocation to other parties for recharge elsewhere.
	2020	11.7		490	10	490	10	9.0	1.0	8.0	
San Bernardino/Colton ^D RIX Facility	2015	40.0	64.0	550	10	550	10	32.1	5.0	26.6	Plant Production is RIX Effluent. Discharge includes 110% overproduction at RIX. In 2015 and 2020, virtually all reuse is for artificial recharge in the Bunker Hill A management zone, so discharge to the Santa Ana River at RIX is expected to be at a constant rate.
Santa Ana River Reach 3											
City of Riverside ^E Regional Water Quality Control Plant	2015	40.0	46.0	650	10	650	10	32.3	1.5	30.8	The City has commitments to discharge about 22 mgd pursuant to water-rights agreements. In 2015, reuse will be for power-plant cooling (peaking during the summer) and landscape irrigation, so effluent discharge to the Santa Ana River will vary based on seasonal demand. For 2020, the City has plans for additional reuse up to 5 mgd, but it may not occur. Effluent discharge to the Santa Ana River occurs only at DP-001.
	2020	46.0		650	10	650	10	33.9	5.0	28.9	
Western Municipal Water District ^G Western Water Recycling Facility	2015	3.0	0.8	550	10	550	10	0.5	0.5	0.0	There is no planned discharge from the WWRF. In 2015, reuse will be for irrigation only at a golf course and cemetery. 0.5 and 1.2 mgd represent estimated average annual reuse volumes. In 2020, recycled water that cannot be used for irrigation will be artificially recharged in the Arlington Basin. During extreme wet periods, recycled water that cannot be used for irrigation or artificial recharge will be conveyed to the WRCRWA plant for reuse and/or discharge.
	2020	3.0		550	10	550	10	1.2	1.2	0.0	
Chino Creek/Cucamonga Creek/Prado Basin											
Inland Empire Utilities Agency ^F RP1 001 Prado	2015	32.0	84.4	550	8	550	8	27.1	17.3	9.8	
	2020	32.0		550	8	550	8	28.1	24.0	4.1	
Inland Empire Utilities Agency ^F Carbon Canyon WRP	2015	14.0		550	8	550	8	6.2	2.3	3.9	
	2020	14.0		550	8	550	8	6.5	3.0	3.5	
Inland Empire Utilities Agency ^F RP-5	2015	15.0		550	8	550	8	9.6	5.2	4.4	
	2020	15.0		550	8	550	8	12.4	8.1	4.3	
Inland Empire Utilities Agency ^F RP1 002 Cucamonga and RP 4	2015	16.0		550	8	550	8	11.0	9.5	1.5	
	2020	16.0		550	8	550	8	11.7	10.3	1.4	
W. Riverside County Regional Wastewater Authority ^G WRCRWTP	2015	8.0	8.0	625	10	625	10	8.0	0.0	8.0	There will be no infrastructure for reuse in place by 2015, so all plant production will be discharged. In 2020, reuse will be for irrigation only, so discharge to the Santa Ana River will vary based on seasonal demand; 6.0 mgd represents an average annual reuse volume. During extreme wet periods, the WRCRWTA plant could receive up to 1.2 mgd from WWRF.
	2020	14.0		625	10	625	10	12.0	6.0	6.0	
Temescal Creek											
City of Corona ^H Wastewater Treatment Plant #1	2015	11.5		700	10	700	10	9.5	8.0	1.5	In 2015 and 2020, reuse is for irrigation and percolation to the Temescal management zone. Discharge to Ponds has no volumetric limit. Discharge to Butterfield Drain is 1.5 mgd at a constant rate.
	2020	16.8		700	10	700	10	11.6	10.1	1.5	
City of Corona ^H Wastewater Treatment Plant #2	2015	3.0				-	-			-	Effluent from Plant 2 is either reused or percolated to the Temescal management zone at the Lincoln/Cota Ponds. No direct discharge to Temescal Creek. Currently, 1 mgd is tertiary treated for direct reuse; 2 mgd of secondary effluent is discharged to the Ponds. Full tertiary treatment will be in place by 2016, and the effluent will be directly reused or discharged to the Ponds.
	2020	3.0				-	-			-	
City of Corona ^H Wastewater Treatment Plant #3	2015	1.0	1.0	700	10	700	10	1.0	1.0	0.0	Current influent flow is about 0.5 mgd. There is no predicted increase in influent flow. All effluent from Plant 3 is planned for reuse (no plans for discharge to Temescal Creek). Plant 3 is scheduled for closure in 2-3 years.
	2020	1.0		700	10	700	10	1.0	1.0	0.0	
Lee Lake Water District ^I Wastewater Treatment Plant	2015	1.6	1.6	650	13	650	13	1.0	1.0	0.0	In 2015 and 2020, reuse is for irrigation (0.85 mgd in 2015; 0.95 mgd in 2020) and the remainder will be percolated in the Bedford management zone. There are no plans for discharge to Temescal Creek.
	2020	2.3		650	13	650	13	1.2	1.2	0.0	
Elsinore Valley Municipal Water District ^J Regional WWRP	2015	8.0	8.0	700	13	700	13	6.3	5.8	0.5	In 2015, reuse is primarily for stabilization of water level in Lake Elsinore with some landscape irrigation. Discharge to Temescal Creek at 0.5 mgd is assumed to occur at a constant rate. During wet years, water that cannot be discharged to Lake Elsinore will be discharged to Temescal Creek.
	2020	12.0		700	13	700	13	9.3	8.8	0.5	
Eastern Municipal Water District ^K (all treatment plants combined)	2015	69.0	52.5	650	10	650	10	44.9	44.9	0.0	EMWD intends to reuse all recycled water unless wet weather leaves no option except for discharge. Discharge, if it occurs, will be to Temescal Creek and only for limited periods of time during wet winter months (November through April only). Permitted discharge is 52.5 mgd as a monthly average.
	2020	74.0		650	10	650	10	48.1	48.1	0.0	

¹ In April 2014, the Regional Board approved a Basin Plan amendment (Order No. R8-2014-0005) that modifies the maximum benefit requirements for the Beaumont and San Timoteo Management Zones (BMZ and STMZ), requiring that recycled water have TDS concentrations equal to or less than the maximum benefit objectives of the management zone receiving the discharge. The City of Beaumont's discharge at DP001 is a de facto discharge to the STMZ, while DP007-DP011 discharge and recharge completely into the BMZ. When approved by the SWRCB and OAL, the City will be issued a new permit with TDS discharge limits of 400 mg/L at DP001, and 330 mg/L at DP007 through DP011 and the new multipurpose basins.

References: A - Mark Wildermuth; B - Kristen Frankforter; C - Marcus Fuller; D - Rebecca Franklin; E - Edward Filidelfia; F - Sylvie Lee; G - Linda Garcia; H - Frank Garza; I - Jeff Page; J - Sudhir Mohleji; K - Al Javier

Table 3
Description of Wasteload Allocation Simulations for Scenario 8

POTW Facility	Year	Design Capacity (mgd)	Permit Discharge (mgd)	Permit TDS (mg/L)	Permit TIN (mg/L)	Scenario 8						Notes on Simulations
						Simulation ¹	TDS (mg/L)	TIN (mg/L)	Plant Production (mgd)	Reuse (mgd)	Discharge (mgd)	
San Timoteo Creek						400	400			DP001: 1.8		
						330	330	6	3.0	0.5	DP007: 0.7	
						330	330				DP009-11: 0	
						400	400			DP001: 1.8		
						330	330	6	3.0	0.5	DP007: 0.7	
						330	330				DP009-11: 0	
						400	400			DP001: 1.8		
						330	330	6	3.0	0.25	DP007: 0.7	
						330	330				DP009-11: 0.25	
City of Beaumont Wastewater Treatment Plant #1						400	400			DP001: 1.8		
						330	330	6	4.0	1.31	DP007: 0.7	
						330	330				DP009-11: 0.19	
						400	400			DP001: 1.8		
						330	330	6	4.0	0.5	DP007: 0.7	
						330	330				DP009-11: 1	
						400	400			DP001: 1.8		
						330	330	6	4.0	0.25	DP007: 0.7	
						330	330				DP009-11: 1.25	
YVWD H. N. Wochholz WTP						Simulation 8a	540	6	3.8	1.1	2.7	The recycled reuse demand for irrigation peaks in the summertime and is 0 during the winter. In Simulations 8a and 8d-f, reuse not distributed to non-potable customers will be artificially recharged, so discharge to the creek will be constant. In Simulations 8b and 8c, artificial recharge is assumed not to have begun, so reuse and discharge to the creek will vary seasonally.
						Simulation 8b	540	6	3.8	1.1	2.7	
						Simulation 8c	540	6	3.8	0.55	3.25	
						Simulation 8d	580	6	4.8	3.2	1.6	
						Simulation 8e	540	6	4.8	1.1	3.7	
						Simulation 8f	540	6	4.8	0.55	4.25	
Santa Ana River Reach 4						Simulation 8a	490	10	7.0	0.4	6.6	
City of Rialto Rialto Wastewater Treatment Plant	2015	11.7	11.7	490	10	Simulation 8b	490	10	7.0	0.4	6.6	
						Simulation 8c	490	10	7.0	0.2	6.8	
						Simulation 8d	490	10	9.0	1.0	8.0	
						Simulation 8e	490	10	9.0	0.4	8.6	
						Simulation 8f	490	10	9.0	0.2	8.8	
RIX Facility	2015	40.0	64.0	550	10	Simulation 8a	550	10	32.1	5.0	26.6	
						Simulation 8b	550	10	32.1	0.0	32.1	
						Simulation 8c	550	10	32.1	0.0	32.1	
						Simulation 8d	550	10	34.5	10.8	22.7	
						Simulation 8e	550	10	34.5	5.0	29.0	
						Simulation 8f	550	10	34.5	2.5	31.8	

Table 3
Description of Wasteload Allocation Simulations for Scenario 8

POTW Facility	Year	Design Capacity (mgd)	Permit Discharge (mgd)	Permit TDS (mg/L)	Permit TIN (mg/L)	Scenario 8						Notes on Simulations	
						Simulation ¹	TDS (mg/L)	TIN (mg/L)	Plant Production (mgd)	Reuse (mgd)	Discharge (mgd)		
Santa Ana River Reach 3						Simulation 8a	650	10	32.3	1.5	30.8		
City of Riverside Regional Water Quality Control Plant	2015	40.0	46.0	650	10	Simulation 8b	650	10	32.3	1.5	30.8		
						Simulation 8c	650	10	32.3	0.75	31.55		
						Simulation 8d	650	10	33.9	5.0	28.9		
	2020	46.0	NA	650	10	Simulation 8e	650	10	33.9	1.5	32.4		
						Simulation 8f	650	10	33.9	0.75	33.15		
						Simulation 8a	550	6	0.5	0.5	0.0		
WMWD Western Water Recycling Facility	2015	3.0	0.8	550	6	Simulation 8b	550	6	0.5	0.5	0.0	Discharge occurs at the WRCRWA outfall.	
						Simulation 8c	550	6	0.5	0.25	0.25		
						Simulation 8d	550	6	1.2	1.2	0.0		
	2020	5.0	NA	550	6	Simulation 8e	550	6	1.2	0.5	0.7		
						Simulation 8f	550	6	1.2	0.25	0.95		
						Simulation 8a	550	8	27.1	17.3	9.8		
IEUA RP1 001 Prado	2015	32.0	84 across all IEUA discharge points	550	8	Simulation 8b	550	8	27.1	16.6	10.5		
						Simulation 8c	550	8	27.1	8.3	18.8		
						Simulation 8d	550	8	28.1	24.0	4.1		
	2020	32.0		550	8	Simulation 8e	550	8	28.1	17.3	10.8		
						Simulation 8f	550	8	28.1	8.65	19.45		
						Simulation 8a	550	8	6.2	2.3	3.9		
IEUA Carbon Canyon WRP	2015	14.0		550	8	Simulation 8b	550	8	6.2	2.2	4.0		
						Simulation 8c	550	8	6.2	1.1	5.1		
						Simulation 8d	550	8	6.5	3.0	3.5		
	2020	14.0		550	8	Simulation 8e	550	8	6.5	2.3	4.2		
						Simulation 8f	550	8	6.5	1.15	5.35		

Table 3
Description of Wasteload Allocation Simulations for Scenario 8

POTW Facility	Year	Design Capacity (mgd)	Permit Discharge (mgd)	Permit TDS (mg/L)	Permit TIN (mg/L)	Scenario 8						Notes on Simulations	
						Simulation ¹	TDS (mg/L)	TIN (mg/L)	Plant Production (mgd)	Reuse (mgd)	Discharge (mgd)		
IEUA RP-5	2015	15.0	84 across all IEUA discharge points	550	8	Simulation 8a	550	8	9.6	5.2	4.4		
						Simulation 8b	550	8	9.6	5.0	4.6		
						Simulation 8c	550	8	9.6	2.5	7.1		
	2020	15.0		550	8	Simulation 8d	550	8	12.4	8.1	4.3		
						Simulation 8e	550	8	12.4	5.2	7.2		
						Simulation 8f	550	8	12.4	2.6	9.8		
IEUA RP1 002 Cucamonga and RP4	2015	16.0		550	8	Simulation 8a	550	8	11.0	9.5	1.5		
						Simulation 8b	550	8	11.0	9.1	1.9		
						Simulation 8c	550	8	11.0	4.55	6.45		
	2020	16.0		550	8	Simulation 8d	550	8	11.7	10.3	1.4		
						Simulation 8e	550	8	11.7	9.5	2.2		
						Simulation 8f	550	8	11.7	4.75	6.95		
WRCRWA WRCRWTP	2015	8.0	8.0	625	10	Simulation 8a	625	10	8.0	0.0	8.0		
						Simulation 8b	625	10	8.0	0.0	8.0		
						Simulation 8c	625	10	8.0	0.0	8.0		
	2020	14.0	NA	625	10	Simulation 8d	625	10	12.0	6.0	6.0		
						Simulation 8e	625	10	12.0	0.0	12.0		
						Simulation 8f	625	10	12.0	0.0	12.0		
Temescal Creek City of Corona Wastewater Treatment Plant #1	2015	11.5	NA	700	10	Simulation 8a	665, 725	10	9.5	8.0	1.5		
						Simulation 8b	665, 725	10	9.5	8.0	1.5		
						Simulation 8c	665, 725	10	9.5	4.0	5.5		
	2020	16.8	NA	700	10	Simulation 8d	665, 725	10	11.6	10.1	1.5		
						Simulation 8e	665, 725	10	11.6	8.0	3.6		
						Simulation 8f	665, 725	10	11.6	4.0	7.6		

Table 3
Description of Wasteload Allocation Simulations for Scenario 8

POTW Facility	Year	Design Capacity (mgd)	Permit Discharge (mgd)	Permit TDS (mg/L)	Permit TIN (mg/L)	Scenario 8						Notes on Simulations
						Simulation ¹	TDS (mg/L)	TIN (mg/L)	Plant Production (mgd)	Reuse (mgd)	Discharge (mgd)	
Corona Wastewater Treatment Plant #3	2015	1.0	1.0	700	10	Simulation 8a	700	10	1.0	1.0	0.0	
						Simulation 8b	700	10	1.0	1.0	0.0	
						Simulation 8c	700	10	1.0	0.5	0.5	
	2020	1.0	NA	700	10	Simulation 8d	700	10	1.0	1.0	0.0	
						Simulation 8e	700	10	1.0	1.0	0.0	
						Simulation 8f	700	10	1.0	0.5	0.5	
LLWD Wastewater Treatment Plant	2015	1.60	1.60	650	13	Simulation 8a	650	13	1.0	1.0	0.0	
						Simulation 8b	650	13	1.0	1.0	0.0	
						Simulation 8c	650	13	1.0	0.5	0.5	
	2020	2.3	NA	650	13	Simulation 8d	650	13	1.2	1.2	0.0	
						Simulation 8e	650	13	1.2	1.0	0.2	
						Simulation 8f	650	13	1.2	0.5	0.7	
Elsinore Valley MWD Regional WWRP	2015	8.0	8.0	700	13	Simulation 8a	700	13	6.3	5.8	0.5	
						Simulation 8b	700	13	6.3	5.8	0.5	
						Simulation 8c	700	13	6.3	2.9	3.4	
	2020	12.0	NA	700	13	Simulation 8d	700	13	9.3	8.8	0.5	
						Simulation 8e	700	13	9.3	5.8	3.5	
						Simulation 8f	700	13	9.3	2.9	6.4	
EMWD Discharge to Temescal Creek <i>(all treatment plants combined)</i>	2015	69.0	52.5	650	10	Simulation 8a'	650	10	NA	NA	52.5	
						Simulation 8b'	650	10	NA	NA	52.5	
						Simulation 8c'	650	10	NA	NA	52.5	
	2020	74.0	NA	650	10	Simulation 8d'	650	10	NA	NA	52.5	
						Simulation 8e'	650	10	NA	NA	52.5	
						Simulation 8f'	650	10	NA	NA	52.5	

¹ Simulation 8a – Low Discharge for 2015. This scenario assumes the planned conditions for plant production, reuse, and discharge in 2015, as provided by the agencies and described in Table 2. The intent here is to simulate a “low” discharge condition with full implementation of the planned reuse projects.

Simulation 8b – Intermediate Discharge for 2015. This scenario assumes planned conditions for plant production, but no “new” reuse projects are implemented by 2015. Existing reuse projects remain in full operation. The intent here is to simulate a condition of slower implementation of the planned reuse projects.

Simulation 8c – High Discharge for 2015. This scenario is the same as 8b, but existing reuse projects are assumed to operate at ½ their current capacity. The intent here is to simulate a “high” discharge condition.

Simulations 8d, 8e, and 8f repeat the same assumptions and logic as 8a, 8b, and 8c, respectively, except they use 2020 planned conditions as described in Table 2.

Table 4
Summary of TDS Wasteload Allocation Model Results for Scenario 8

Reach	Underlying Management Zone	TDS Objective (mg/L)	Ambient TDS ¹ (mg/L)	Assimilative Capacity (mg/L)	Compliance Metric	Model Results for TDS ^{2,3} (mg/L)					
						Scenario 8a Low Discharge in 2015	Scenario 8b Intermediate Discharge in 2015	Scenario 8c High Discharge in 2015	Scenario 8d Low Discharge in 2020	Scenario 8e Intermediate Discharge in 2020	Scenario 8f High Discharge in 2020
Groundwater											
San Timoteo Creek in the Beaumont MZ; Noble Creek below Beaumont DP 008; Unnamed tributary to Marshall Creek below Beaumont DP 007	Beaumont	330	290	40	Maximum of 10-year volume-weighted running average of TDS in recharge	211	211	225	214	252	258
San Timoteo Creek in the San Timoteo MZ; Cooper's Creek in the San Timoteo MZ	San Timoteo	400	410	none	Maximum of 10-year volume-weighted running average of TDS in recharge	412	420	423	385	423	428
Santa Ana River from the San Jacinto Fault to confluence with San Timoteo Creek; San Timoteo Creek overlying the Bunker Hill-B MZ	Bunker Hill B	330	280	50	Maximum of 10-year volume-weighted running average of TDS in recharge	215	227	233	197	239	251
Santa Ana River overlying the Colton MZ	Colton	410	440	none	Maximum of 10-year volume-weighted running average of TDS in recharge	164	165	165	159	161	161
Santa Ana River overlying the Riverside-A MZ	Riverside A	560	420	140	Maximum of 10-year volume-weighted running average of TDS in recharge	457	460	460	455	457	458
Santa Ana River overlying the Chino-South MZ	Chino South	680	990	none	Maximum of 10-year volume-weighted running average of TDS in recharge	620	613	622	624	619	619
Surface Water											
Santa Ana River Reach 3 at below Prado Dam - Scenarios 8a through 8f	na	700	714*	na***	Maximum of flow-weighted average TDS in August	716	702	686	737	698	680
Santa Ana River Reach 3 at below Prado Dam - Scenarios 8a' through 8f'	na	700	714*	na***	Maximum of flow-weighted average TDS in August	716	702	686	737	698	680
Santa Ana River Reach 2 at below Prado Dam - Scenarios 8a through 8f	na	650	543**	na***	Maximum of 5-year moving average of annual flow-weighted average TDS	554	554	553	555	554	554
Santa Ana River Reach 2 at below Prado Dam - Scenarios 8a' through 8f'	na	650	543**	na***	Maximum of 5-year moving average of annual flow-weighted average TDS	559	559	557	560	559	559

Notes

* As measured from grab samples from the Santa Ana River below Prado Dam in August 2013.

** 5-year moving average of the annual flow-weighted average TDS concentration of total flow of the Santa Ana River below Prado Dam as reported by the Santa Ana River Watermaster for water years 2008/09-2012/13.

*** Currently, the Regional Board does not recognize the existence of assimilative capacity for TDS in the Santa Ana River.

¹ Current ambient represents August 2013 conditions for Reach 3, 2009-2013 conditions for Reach 2, and 1993-2012 conditions for groundwater.

² Scenarios 8a' - 8f' were identical to Scenarios 8a - 8f except for the addition of EMWD discharge. This discharge enters the Santa Ana River within the Prado Basin MZ, and only has an effect on the model results for the Santa Ana River below Prado Dam.

³ Bolded and italicized values represent exceedances of the objective when there is no assimilative capacity, and exceedances of the current ambient concentration when there is assimilative capacity.

Table 5
Summary of TIN Wasteload Allocation Model Results for Scenario 8

Reach	Underlying Management Zone	Nitrate-Nitrogen Objective (mg/L)	Ambient NO ₃ -N ¹ (mg/L)	Assimilative Capacity (mg/L)	Compliance Metric	Model Results for TIN ^{2,3} (mg/L-N)					
						Scenario 8a Low Discharge in 2015	Scenario 8b Intermediate Discharge in 2015	Scenario 8c High Discharge in 2015	Scenario 8d Low Discharge in 2020	Scenario 8e Intermediate Discharge in 2020	Scenario 8f High Discharge in 2020
Groundwater											
San Timoteo Creek in the Beaumont MZ; Noble Creek below Beaumont DP 008; Unnamed tributary to Marshall Creek below Beaumont DP 007	Beaumont	5	2.9	2.1	Maximum of 10-year volume-weighted running average of TIN in recharge	2.51	2.51	2.75	2.56	3.19	3.28
San Timoteo Creek in the San Timoteo MZ; Cooper's Creek in the San Timoteo MZ	San Timoteo	5	2.3	2.7	Maximum of 10-year volume-weighted running average of TIN in recharge	3.62	3.67	3.69	3.48	3.72	3.76
Santa Ana River from the San Jacinto Fault to confluence with San Timoteo Creek; San Timoteo Creek overlying the Bunker Hill-B MZ	Bunker Hill-B	7.3	5.6	1.7	Maximum of 10-year volume-weighted running average of TIN in recharge	1.59	1.70	1.74	1.46	1.79	1.89
Santa Ana River overlying the Colton MZ	Colton	2.7	2.7	none	Maximum of 10-year volume-weighted running average of TIN in recharge	1.23	1.23	1.23	1.21	1.22	1.23
Santa Ana River overlying the Riverside-A MZ	Riverside-A	6.2	5.4	0.8	Maximum of 10-year volume-weighted running average of TIN in recharge	6.17	6.19	6.19	6.17	6.19	6.20
Santa Ana River overlying the Chino-South MZ	Chino-South	4.2	28	none	Maximum of 10-year volume-weighted running average of TIN in recharge	4.25	4.25	4.33	4.25	4.31	4.34
Surface Water											
Santa Ana River Reach 3 at below Prado Dam - Scenarios 8a through 8f	na	10	4.8*	na**	Maximum of flow-weighted average TIN in August	8.09	8.06	8.08	8.08	8.07	8.14
Santa Ana River Reach 3 at below Prado Dam - Scenarios 8a' through 8f'	na	10	4.8*	na**	Maximum of flow-weighted average TIN in August	8.09	8.06	8.08	8.08	8.07	8.14
Santa Ana River Reach 2 at below Prado Dam - Scenarios 8a through 8f	na	na	na	na**	Maximum of 5-year moving average of annual flow-weighted average TIN	6.60	6.65	6.81	6.49	6.70	6.91
Santa Ana River Reach 2 at below Prado Dam - Scenarios 8a' through 8f'	na	na	na	na**	Maximum of 5-year moving average of annual flow-weighted average TIN	6.65	6.70	6.87	6.55	6.77	6.97

Notes

* As measured from grab samples collected at the Santa Ana River below Prado Dam in August 2013; Total inorganic nitrogen (filtered samples)

** Currently, the Regional Board does not recognize the existence of assimilative capacity for nitrogen in the Santa Ana River.

¹ Current ambient represents August 2013 conditions for Reach 3 and 1993-2012 conditions for groundwater.

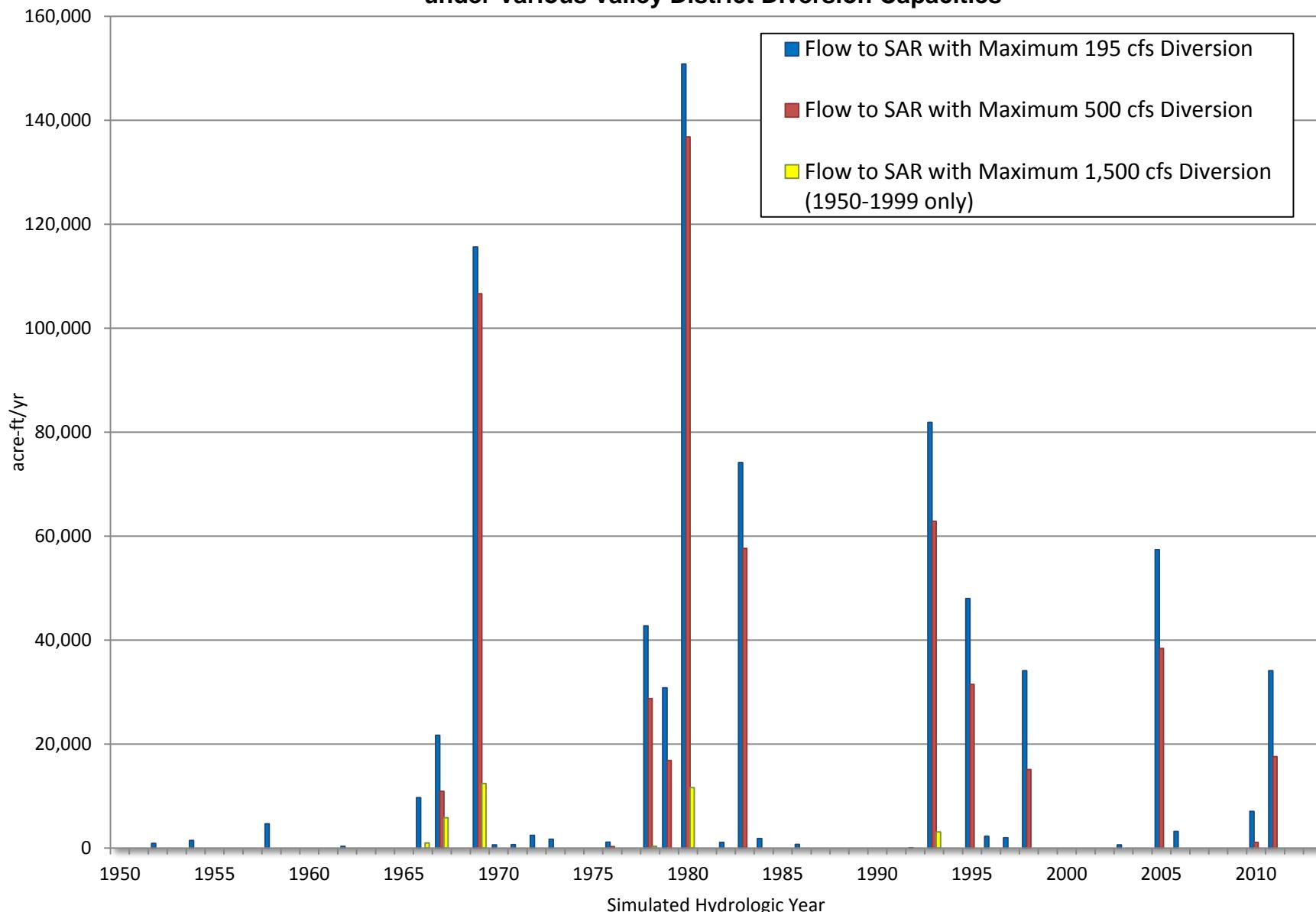
² Scenarios 8a' - 8f' were identical to Scenarios 8a - 8f except for the addition of EMWD discharge. This discharge enters the Santa Ana River within the Prado Basin MZ, and only has an effect on the model results for the Santa Ana River below Prado Dam.

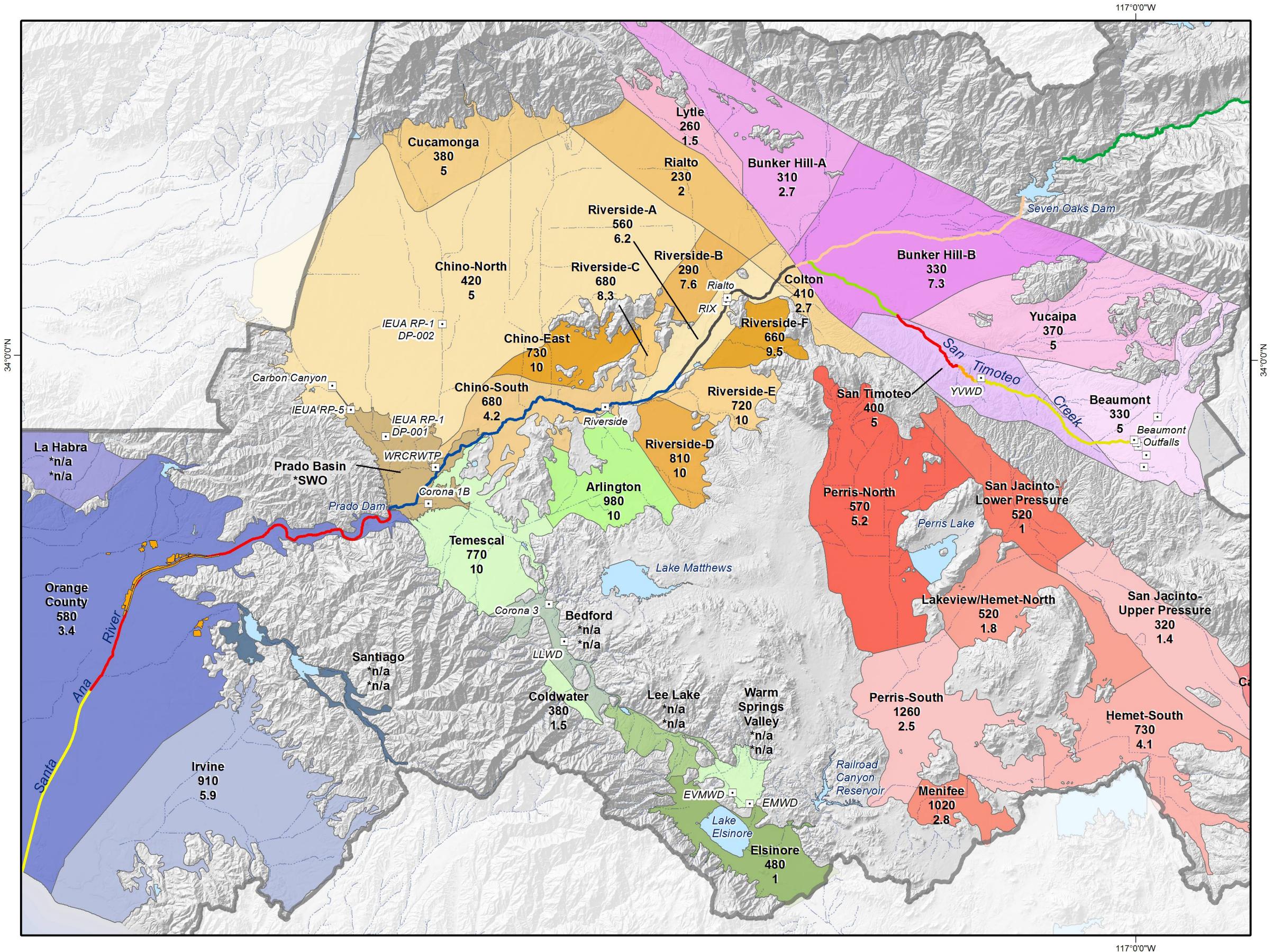
³ Bolded and italicized values represent exceedances of the objective when there is no assimilative capacity, and exceedances of the current ambient concentration when there is assimilative capacity.

Table 6
Wasteload Allocation for POTWs in the Upper Santa Ana River Watershed and Regulatory Implications

POTW	Wasteload Allocation			Receiving Waters	For Receiving Waters with No Assimilative Capacity	For Receiving Groundwaters with Assimilative Capacity
	TDS	TIN	Range of Discharge Simulated in Scenario 8		1. Does the POTW discharge contribute to flow in a surface-water reach with a compliance metric (as predicted by the WLAM) that exceeds a water quality objective? or 2. Does the POTW discharge contribute to streambed recharge to a GMZ with a compliance metric (as predicted by the WLAM) that exceeds a water quality objective?	Is an Antidegradation Analysis Required?
	mg/L	mg/L	mgd		2. Does the POTW discharge contribute to streambed recharge to a GMZ with a compliance metric (as predicted by the WLAM) that exceeds a water quality objective?	
City of Beaumont WWTP #1	DP-001: 400 DP-007: 330 DP-009-11: 330	6	DP-001: 1.8 DP-007: 0.7 DP-009-11: 0 - 1.25	DP-001: Cooper's Creek, San Timoteo Creek, San Timoteo GMZ DP-007: Marshall Creek, San Timoteo Creek, Beaumont GMZ DP-009-11: unnamed tributary to Marshall Creek, Marshall Creek, Noble Creek, Beaumont MZ, San Timoteo MZ	Yes to (2). The TDS concentration of streambed recharge to the San Timoteo GMZ exceeded the TDS objective of 400 mg/L in scenarios 8a, 8b, 8c, 8e, and 8f. The Regional Board already has a Salt Management Plan in place for City of Beaumont discharge to the San Timoteo GMZ (see R8-2014-0005).	In scenarios 8e and 8f, the TIN concentration in streambed recharge to the Beaumont GMZ exceeded the current ambient concentrations of 2.9 mg/L for nitrate-nitrogen. In all scenarios, the TIN concentration in streambed recharge to the San Timoteo GMZ exceeded the current ambient concentrations of 2.3 mg/L for nitrate-nitrogen. Antidegradation analyses are not required because the Regional Board already has a Salt Management Plan in place for the City of Beaumont discharge to the Beaumont and San Timoteo GMZs (see R8-2014-0005).
Yucaipa Valley Water District Wochholz WTP	540	6	1.6 - 4.25	San Timoteo Creek San Timoteo GMZ Bunker Hill-B GMZ	Yes to (2). The TDS concentration of streambed recharge to the San Timoteo GMZ exceeded the TDS objective of 400 mg/L in scenarios 8a, 8b, 8c, 8e, and 8f. The Regional Board already has a Salt Management Plan in place for YVWD discharge to the San Timoteo GMZ (see R8-2014-0005).	In all scenarios, the TIN concentration in streambed recharge to the San Timoteo GMZ exceeded the current ambient concentrations of 2.3 mg/L for nitrate-nitrogen. Antidegradation analyses are not required because the Regional Board already has a Salt Management Plan in place for YVWD discharge to the San Timoteo GMZ (see R8-2014-0005).
City of Rialto WWTP	490	10	6.6 - 8.8	Santa Ana River Riverside-A GMZ Chino-South GMZ	Yes to (1). The TDS concentration of the SAR below Prado Dam exceeded the Reach 3 TDS objective of 700 mg/L in scenarios 8a, 8a', 8b, 8b', 8d and 8d'. Yes to (2). The TIN concentration of streambed recharge to the Chino-South GMZ exceeded the nitrate-nitrogen objective of 4.2 mg/L in all scenarios.	Yes. In all scenarios, the TDS and TIN concentrations in streambed recharge to the Riverside-A GMZ exceeded the current ambient concentrations of 420 mg/L for TDS and 5.4 mg/L for nitrate-nitrogen.
City of San Bernardino City of Colton RIX Facility	550	10	22.7 - 31.8	Santa Ana River Riverside-A GMZ Chino-South GMZ	Yes to (1). The TDS concentration of the SAR below Prado Dam exceeded the Reach 3 TDS objective of 700 mg/L in scenarios 8a, 8a', 8b, 8b', 8d and 8d'. Yes to (2). The TIN concentration of streambed recharge to the Chino-South GMZ exceeded the nitrate-nitrogen objective of 4.2 mg/L in all scenarios.	Yes. In all scenarios, the TDS and TIN concentrations in streambed recharge to the Riverside-A GMZ exceeded the current ambient concentrations of 420 mg/L for TDS and 5.4 mg/L for nitrate-nitrogen.
City of Riverside RWQCP	650	10	28.9 - 33.15	Santa Ana River Chino-South GMZ	Yes to (1). The TDS concentration of the SAR below Prado Dam exceeded the Reach 3 TDS objective of 700 mg/L in scenarios 8a, 8a', 8b, 8b', 8d and 8d'. Yes to (2). The TIN concentration of streambed recharge to the Chino-South GMZ exceeded the nitrate-nitrogen objective of 4.2 mg/L in all scenarios.	There are no receiving waters with assimilative capacity.
Western Municipal Water District Western Water Recycling Facility	550	6	0 - 0.95	Prado Basin GMZ Santa Ana River	Yes to (1). The TDS concentration of the SAR below Prado Dam exceeded the Reach 3 TDS objective of 700 mg/L in scenarios 8a, 8a', 8b, 8b', 8d and 8d'.	There are no receiving waters with assimilative capacity.
Inland Empire Utilities Agency RP1 DP-001 RP1/RP4 DP-002 RP5 Carbon Canyon WRP	550	8	Combined: 13.36 - 41.55 4.12 - 19.45 3.46 - 5.35 4.34 - 9.8 1.44 - 6.95	Chino Creek Cucamonga Creek Prado Basin GMZ Santa Ana River	Yes to (1). The TDS concentration of the SAR below Prado Dam exceeded the Reach 3 TDS objective of 700 mg/L in scenarios 8a, 8a', 8b, 8b', 8d and 8d'.	There are no receiving waters with assimilative capacity.
Western Riverside County Regional Wastewater Authority WRCRWTP	625	10	6.0 - 12.0	Prado Basin GMZ Santa Ana River	Yes to (1). The TDS concentration of the SAR below Prado Dam exceeded the Reach 3 TDS objective of 700 mg/L in scenarios 8a, 8a', 8b, 8b', 8d and 8d'.	There are no receiving waters with assimilative capacity.
City of Corona WWTP #1	700	10	1.5 - 7.6	Prado Basin GMZ Santa Ana River	Yes to (1). The TDS concentration of the SAR below Prado Dam exceeded the Reach 3 TDS objective of 700 mg/L in scenarios 8a, 8a', 8b, 8b', 8d and 8d'.	There are no receiving waters with assimilative capacity.
City of Corona WWTP #3	700	10	0 - 0.5	Temescal Creek Prado Basin GMZ Santa Ana River	Yes to (1). The TDS concentration of the SAR below Prado Dam exceeded the Reach 3 TDS objective of 700 mg/L in scenarios 8a, 8a', 8b, 8b', 8d and 8d'.	There are no receiving waters with assimilative capacity.
Lee Lake Water District WWTP	650	13	0 - 0.7	Temescal Creek Prado Basin GMZ Santa Ana River	Yes to (1). The TDS concentration of the SAR below Prado Dam exceeded the Reach 3 TDS objective of 700 mg/L in scenarios 8a, 8a', 8b, 8b', 8d and 8d'.	There are no receiving waters with assimilative capacity.
Elsinore Valley Municipal Water District RWWRP	700	13	0.5 - 6.4	Temescal Creek Prado Basin GMZ Santa Ana River	Yes to (1). The TDS concentration of the SAR below Prado Dam exceeded the Reach 3 TDS objective of 700 mg/L in scenarios 8a, 8a', 8b, 8b', 8d and 8d'.	There are no receiving waters with assimilative capacity.
Eastern Municipal Water District Discharge at Nichols Road	650	10	0 - 52.5	Temescal Creek Prado Basin GMZ Santa Ana River	Yes to (1). The TDS concentration of the SAR below Prado Dam exceeded the Reach 3 TDS objective of 700 mg/L in scenarios 8a, 8a', 8b, 8b', 8d and 8d'.	There are no receiving waters with assimilative capacity.

Figure 1
**Annual Volume of Undiverted Storm Water Released from Seven Oaks Dam
under Various Valley District Diversion Capacities**





Groundwater Management Zones

Management Zone
TDS Objective (mg/L)
NO₃-N Objective (mg/L)

San Timoteo Creek

- Reach 1
- Reach 2
- Reach 3
- Reach 4
- Reach 5
- Reach 6

Santa Ana River

- Reach 1
- Reach 2
- Reach 3
- Reach 4
- Reach 5
- Reach 6

Other Features

- Recycled Water Discharge Location
- Santa Ana Regional Water Quality Control Board Boundary
- Rivers, Creeks, and Flood Control Channels
- OCWD Recharge Facilities
- Lakes & Reservoirs

*SWO: Surface water objectives apply

*n/a: Not enough data were available to calculate water quality objectives

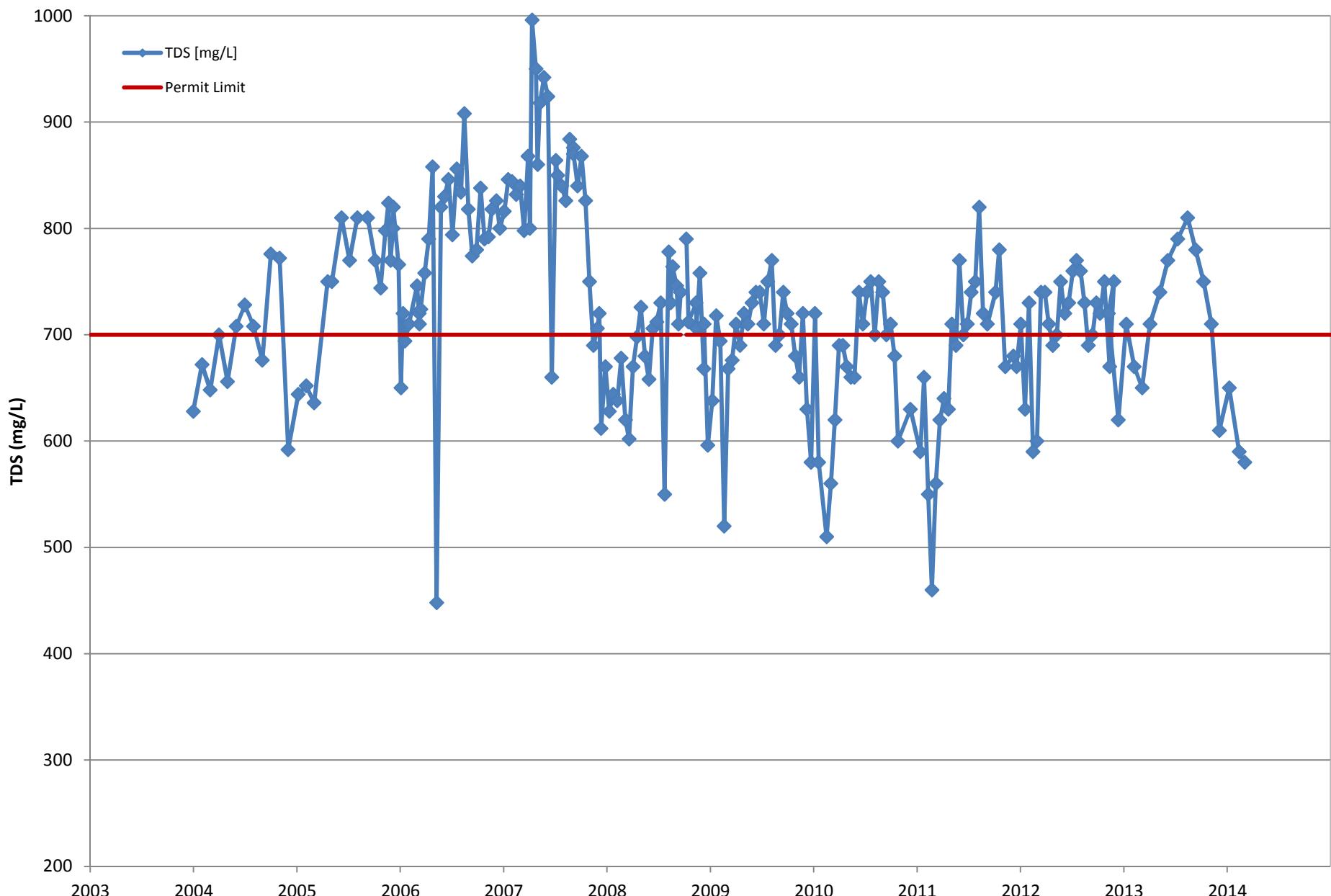


POTW Discharge Locations and Groundwater Management Zones

Santa Ana River Watershed

Figure 2

Figure 3
Historical TDS Concentration of Corona Plant #1 Discharge



Appendix B

Comments and Responses

GENERAL COMMENTS AND WEI RESPONSE:

The general theme of several comments from Task Force members is that the report should refrain from interpretations and recommendations on regulatory compliance, and focus squarely on the model results.

Consistent with our past efforts for the Task Force, our intent in the draft report was to not only report the model results, but also provide meaning, insight, guidance, and options for the Task Force members and the Regional Board staff to discuss and debate in the Task Force setting.

To respond to the comments, we have revised the draft report throughout to remove interpretations, references to “regulatory compliance,” and recommendations, and to more simply report the model results relative to the water-quality objectives and/or current ambient concentrations of the Santa Ana River and the groundwater management zones.

B-1 IEUA COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
1	Page 1, paragraph 1; throughout	1980s and 1990s do not take apostrophes unless it is meant as possessive (eg 1980's is incorrect) or if there would be confusion in meaning without it.	The text in which these errors occur was taken directly from the Basin Plan. The text has been revised to indicate that this text has been transcribed exactly, but the apostrophes were incorrectly used: <i>Sampling and modeling analyses conducted in the 1980's and early 1990's [sic] indicated that...</i>
2	Table 2	Table 2 values for IEUA discharges do not represent actual or forecast values. I understand if the intent is to show an upper range for permit purposes, but if for model potential flows based on expectations then perhaps these should be lowered. Scenario 8A is supposed to be "low 2015 discharge" but it is 7,000 AF higher than 2014 discharge. Typical discharges for IEUA in coming years will be closer to the minimum Prado Obligation of 17,000 AYF. We can do that now in a dry year and should not have trouble doing this after 2016 when the Wineville extension pipeline to RP3 basin is completed. It is unclear in the text on Page 5 in what conditions the IEUA discharges would match the values listed in Table 2. The scenario descriptions Low, Intermediate, and High discharges volumes without further explanation seem arbitrary and unrealistically high for IEUA. As the lower-than-other-POTW TDS IEUA effluent is a predominant driver of modeling results for Prado TDS allocations, these inputs should better reflect realistic scenarios with written expression of the scenarios of occurrence. The intermediate and high scenarios for IEUA seem about 33% too high. The low scenario annual volume seems about right.	The values in Table 2 for IEUA plant production, reuse, and discharge were provided to WEI by IEUA staff in an email dated June 10, 2014. The logic behind the 12 simulations of Scenario 8 is described in the report section titled "Scenario 8." The discharge volumes assumed in the "intermediate" and "high" discharge scenarios were designed to be higher than POTW planned discharge, and were meant to simulate conditions where the POTWs would either choose to discharge at higher volumes or the implementation of their reuse programs occurred slower than expected.

IEUA COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
3	Table 2	<p>Table 2 lists TDS and TN permit limits and modeled values that are identical. It should be stated somewhere that the actual discharged concentrations (at least for IEUA) have not been exceeded historically and are often significantly less than the modeled values. I can't say this will always be, but the model should footnote that the model uses conservatively high values from historical and may overestimate some components, leading to an underestimation of assimilative capacity. This is not an argument for a lower permit limit for IEUA as I believe the maximum benefit for Chino North has projections that should migrate towards these limits over long periods of time.</p>	<p>The purpose of this WLAM study is to evaluate the current wasteload allocation relative to water quality objectives and current ambient quality of the SAR, its tributaries, and the underlying GMZs. In order to perform this evaluation, the study must simulate the TDS and TIN concentrations in POTW discharge pursuant to the current wasteload allocation (i.e. at the permit limits for TDS and TIN).</p>
4	Page 6, paragraph 6	<p>Sentence stating "the purpose". I don't think the Regional Board can set minimum limits for "discharge" as in minimum volumes or minimum flow rates, just the upper limits to balance TDS and TN mass when tracking assimilative capacity. I suggest you add the word "upper" before the word "limit". Nothing in this report should imply that an agency by not discharging or by discharging lower than model flows rates is in violation of its allocation or permit or causing other to do so.</p>	<p>The paragraph has been deleted. See Comment Number 2 for the City of Riverside.</p>
5	Table 4	<p>Table 4, column "TDS Objective" does not need any footnote marks. The footnotes * and ** are for the column "Current Ambient". The column "Current Ambient" should use a date descriptor instead of "current" perhaps let the footnote speak for itself and delete "current". Footnote ** should list the range of water years used, not just state the 5-year average.</p>	<p>The footnote markers have been removed from the TDS Objective column, as requested. The date ranges used to compute current ambient concentrations have been added to the footnotes, as recommended.</p>

IEUA COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
6	Page 7, Paragraph 1; Table 6	<p>Page 7 paragraph 1, Table 6 does not “discuss” anything and I suggest “discusses” be replaced with “lists” prior to text “regulatory issues and implications”. Column 6 asks and answers two questions for each POTW. I suggest a 1) and 2) be placed prior to each answer as the responses are not clear which questions is being answered or if only one question is being answered. For IEUA, column 6-questions 1) shows Yes, when the answer is really No. IEUA’s discharge does not contribute to an exceedance; it simply contributes to a river that is already in exceedance. For question 2) IEUA discharges are not recharged until they reach the OC GMZ. While IEUA discharges enter reach 3, it is in the discharge portion of the reach, not the recharge portion. Question 2 is does discharge contribute to streambed recharge that exceeds (no for IEUA), not does discharge enter a reach having streambed recharge that exceeds (yes for IEUA). The table seems to contain blanket generic answers for all POTWs instead of consideration of actual discharges for each POTW.</p>	<p>The table has been revised to respond to the comment where appropriate.</p> <p>The questions in Column 6 of Table 6 have been changed to:</p> <ol style="list-style-type: none"> 1. Does the POTW discharge contribute to flow in a surface-water reach with a compliance metric (as predicted by the WLAM) that exceeds a water quality objective? 2. Does the POTW discharge contribute to streambed recharge to a GMZ with a compliance metric (as predicted by the WLAM) that exceeds a water quality objective? <p>In the WLAM simulations, IEUA discharge contributes only to flow in Reach 2 and Reach 3 of the SAR, and does not contribute to streambed recharge to the Chino-South GMZ. As such, Question 1 above is the only relevant question for IEUA discharge.</p>
7	Throughout	<p>Throughout many parts of the report the phrase “at Below Prado” is used. “Below Prado” is the USGS gauging site so at Below Prado makes sense. However, at some point the use is dropped and just “at Prado” or “at Prado Dam” is used. I recommend the term “at Below Prado” be defined and then used consistently. The other terms can have alternate meanings if not used correctly.</p>	<p>Comment noted. The USGS nomenclature for the gaging station below Prado Dam is “Santa Ana River below Prado Dam.” All references to the gaging station in this report have been changed to “Santa Ana River below Prado Dam,” “SAR below Prado Dam,” or “below Prado Dam.”</p>

IEUA COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
8	Page 7, Footnote 1	Will the results of the investigation be included in the report (or appended) and will the Task Force have the opportunity to comment prior to the report and investigation being finalized?	The investigation— <i>Investigation and Characterization of the Cause(s) of Recent Exceedances of the TDS Concentration Objective for Reach 3 of the Santa Ana River</i> —will be published in a separate report. The Task Force will have the opportunity to comment on the investigation before it is finalized.
9	Page 10, Paragraph 2 of Riverside-A GMZ	Please provide a brief summary and reference for the “current and future Seven Oaks Dam operations” that were used in the model.	The brief summary of our efforts to more accurately simulate current and future Seven Oaks Dam operations and associated storm-water diversions in Scenario 8 is on Page 4 of the report, and in Table 1 and Figure 1. The references used were added to the text on Page 4.
10	Throughout	N/TDS vs. TIN/TDS studies – both are used in the report. Are they the same? If so use one term and if different, please clarify.	Historically, the acronyms N/TDS vs. TIN/TDS have both been used by the Task Force to describe these studies. All references to these studies in this report are N/TDS, except in the References section.
11	Page 13, Paragraph 4	Page 13, paragraph 4, last sentence states “will likely require data collection”. Do you mean sampling and analyses or asking OCWD for data from their database? Each has a difference level of expectation. When the quoted statement is used here and elsewhere in the recommendations, please be more specific of the missing data and general intended means of collection.	The Recommendations section has been removed from the report at the request of some Task Force members. However, this was a generic statement that recognized that an effort to establish new objectives at the SAR below Prado Dam may include sampling and analysis and/or collection and compilation of historical data.
12	Page 14, first bullet #3	If assimilative capacity is found to exist, it should be with the proper (lower) assumptions of IEUA discharges. As overestimated in five of the six modeled scenarios, any assimilative capacity may also be overestimated.	See response to IEUA Comment 2.

IEUA COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
13	Page 14 second bullet #1	Mention should be made of recharge in Reach 3 that flows to the Chino Desalter in addition to the lost flows to the Pacific Ocean. These losses especially during summer and the August compliance data seem more important than wintertime discharge lost to the ocean or blended with stormwater held behind Prado Dam.	The Recommendations section has been removed from the report at the request of some Task Force members. But to respond to the comment: We agree that there are many factors upstream of Prado Dam that influence the discharge and quality of the SAR below Prado Dam. That said, this bullet more simply recommends that the SAR discharge that passes Prado Dam and is not recharged in the Orange County GMZ should be considered by the Task Force as part of any process to revise the surface-water objectives for TDS and TIN at below Prado Dam.
14	Page 14, second bullets #2, #3, #4	Please explain why any issue solely sourced within the OC GMZ is of any concern for the Task Force to investigate. With regard to #3, flows are to the Santa Ana River and then immediately flow through the golf course and into the concrete-lined river channel and on to the ocean – thus there is no significant recharge in the Santa Ana River downstream of it being joined by flows of Santiago Creek.	The Recommendations section has been removed from the report at the request of some Task Force members. But to respond to the comment: The Task Force may or may not be interested in the hydrology downstream of Prado Dam. The methodology of the recent WLAM studies has been to estimate the volume and quality of streambed recharge to GMZs. If the Task Force were to pursue revision of the surface-water quality objectives for the SAR below Prado Dam, it may want to account for the diluent inflows that may occur downstream from Prado Dam. In general, this section contains recommendations, and includes phrases like “The Task Force should decide if and how...” to qualify the recommendations as suggestions for future discussion at Task Force meetings.

IEUA COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
15	Page 15, Paragraph 4	A statement needs to be made of the potential increase of TDS tradeoff for such action similar to that measured when Santa Ana river flows are routed through the OCWD wetlands for TIN removal. There should also be mention of the existence and impact of the OCWD Prado Wetlands on TIN/TDS somewhere in the report such that it is known that these actions by OCWD can increase the TDS of the August samples taken at Below Prado. OCWD has a reference for this going back to the internal report master's thesis of James Reilly (an engineer at OCWD in the late 1980s and early 1990s).	The Recommendations section has been removed from the report at the request of some Task Force members. But to respond to the comment: We agree that diversion of surface water through constructed wetlands will increase the TDS concentration of the surface water via ET losses of water. That said, we did not simulate the diversion of Riverside's effluent to the Hidden Valley Wetlands in Scenario 8. The influence of the OCWD Prado Wetlands on TDS and TIN concentration of the SAR are not simulated by the WLAM in projection mode, because this diversion is a discretionary action of OCWD (but the influence was simulated during calibration of the WLAM).

B-2 SAN BERNARDINO MUNICIPAL WATER DEPARTMENT COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
1	Page 1	<p>Line 37-39: <i>The nitrogen wasteload allocation was updated in 1991; an updated TDS wasteload allocated was included in the 1995 Basin Plan when it was adopted and approved in 1994/1995.</i></p> <p>After “TDS wasteload allocated,” add “[sic].”</p>	<p>The text has been updated as suggested. The sentence now reads:</p> <p><i>The nitrogen wasteload allocation was updated in 1991; an updated TDS wasteload allocated [sic] was included in the 1995 Basin Plan when it was adopted and approved in 1994/1995.</i></p>
2	Page 3	<p>Line 112-114: <i>The results indicated that the wasteload allocation Scenario 7 complied with the nitrate nitrogen objective...</i></p> <p>Change “compiled with” to “did not exceed.”</p> <p>Comment: Language regarding compliance makes it appear as if this report was generated to assist the Regional Board in developing regulations. The purpose of this modeling was to assist Task Force member agencies in working with the Regional Board, not in determining compliance.</p>	<p>The text throughout the report has been revised as suggested to remove references to “regulatory compliance,” and to report model results relative to the water-quality objectives and/or current ambient concentrations.</p>
3	Page 3	<p>Line 122-123: <i>The results of Scenario 8 further assess the appropriateness of the current wasteload allocation for TIN and TDS, particularly with regard to Riverside A.</i></p> <p>Delete “particularly with regard to Riverside A.”</p> <p>Comment: Since the model was run for the entire watershed, this language is not necessary.</p>	<p>The Riverside-A GMZ was specifically referenced in this paragraph because the results of Scenario 7 for Riverside-A were the primary reason for conducting Scenario 8. That said, we agree that Riverside-A is adequately discussed in the remainder of the report. The phrase has been deleted as suggested.</p>

SBMWD COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
4	Page 4	<p>Lines 166-168: <i>This planning information forms the basis for Scenario 8 and is intended to represent the range of expected POTW behavior over the next six years, which may span one additional cycle of NPDES permit renewals.</i></p> <p>Delete "...which may span one additional cycle of NPDES permit renewals."</p> <p>Comment: Adding language regarding permit renewal cycles is unnecessary. The purpose of this report should be to present modeling results for the benefit of Task Force member agencies.</p>	The phrase has been deleted as suggested.
5	Page 5	<p>Lines 209-216: Paragraph describing the modeling of the City of Corona's Plant 1 discharge.</p> <p>Comment: Why was this necessary? The fact that the City of Corona Plant #1 discharge was modeled differently from other discharges may be bringing unnecessary attention on this agency from the Regional Board. Instead, this modeling could be used to help the Task Force examine the appropriateness of a single-sample TDS basin plan objective, considering the fact that all agencies are regulated for TDS as a 12-month average.</p>	This modeling strategy was necessary to more accurately simulate the summertime TDS concentration of the SAR below Prado Dam for comparison to the TDS objective for Reach 3 of the SAR. The methodology for simulating TDS concentration of the City of Corona's Plant 1 discharge was discussed and agreed upon by the Task Force at its meeting on August 26, 2014.

SBMWD COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
6	Page 6	<p>Lines 256-260: <i>The purpose of this wasteload allocation study is to assist the Regional Board in setting appropriate effluent limits for TDS, TIN, and discharge when updating POTW waste discharge requirements (e.g. NPDES permits) through 2020. The wasteload allocation consists of maximum TDS and TIN concentration limits and a range of acceptable discharge for each POTW.</i></p> <p>Comment: This is new language that was not in the Scenario 7 Technical Memorandum, and the way it is worded suggests that this modeling was performed for the Regional Board.</p>	The paragraph has been deleted. See Comment Number 2 for the City of Riverside.
7	Page 6	<p>Line 264-265: <i>Bold and italic values indicate regulatory compliance issues: where the compliance metric...</i></p> <p>Delete “regulatory compliance issues”</p> <p>The results of the modeling should be included in an objective manner that is helpful to the Task Force, and leaving compliance determinations to the Regional Board.</p>	The phrase has been deleted as suggested. See response to SBMWD Comment 2.
8	Page 7	<p>Lines 269-274: <i>For some POTWs, the wasteload allocation approval from the Regional Board may come with certain requirements, such as the need to conduct appropriate antidegradation analyses, conduct certain studies, implement approved offset programs, or revise water quality objectives through the Basin Plan amendment process. If a POTW proposes to discharge outside the range of acceptable discharge, the Regional Board may request further analysis through additional WLAM simulations.</i></p> <p>Delete paragraph.</p>	The paragraph has been deleted as suggested. See response to SBMWD Comment 2.

SBMWD COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
		Comment: This is new language that was not included in the Scenario 7 Technical Memorandum. This language appears to suggest further regulatory actions from the Regional Board.	
9	Page 7	<p>Lines 300-303: <i>The Regional Board may require a revised wasteload allocation to achieve compliance with the Reach 3 TDS objective, a new offset program, or a revision to the objective through the Basin Plan amendment process</i></p> <p>Delete text.</p> <p>Comment: It may be helpful to suggest whether the 700 mg/L objective should be examined, as it is a compliance metric that may not be appropriate given that all agencies are regulated for TDS as 12-month averages.</p>	<p>The phrase has been deleted as suggested. See response to SBMWD Comment 2.</p> <p>The Recommendations section has been removed from the report at the request of some Task Force members. But to respond to the comment: Please see response to OCWD Comment 3.</p>
10	Page 8	<p>Lines 307-309: The objectives were reviewed by the Regional Board to ensure that they are protective of beneficial uses – the most sensitive use typically being municipal drinking water supply (MUN).</p> <p>Comment: Since the objective for MUN is 10mg/L TIN, this would be an opportunity for WEI to mention that all current basin objectives are well below this value.</p>	<p>The text has been revised as suggested to read immediately following this sentence:</p> <p>“The nitrate-nitrogen objectives for all GMZs were set to 10 mg/L (the federal drinking water Maximum Contaminant Level for nitrate-nitrogen) or less.”</p>

SBMWD COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
11	Page 10	<p>Lines 411-412, in reference to the discontinued diversions to the Hidden Valley Wetlands: <i>This is the likely cause of the nitrate-nitrogen objective exceedance.</i></p> <p>Comment: Considering the fact that the scope of the wasteload allocation model is limited, it is unclear how WEI can make this statement without performing additional analysis on effects of prolonged drought, groundwater overdraft, or any of a number of other potential factors. Therefore, this statement is unsubstantiated and should be removed.</p>	In this paragraph, we are reporting and interpreting on a model result, not measured data. We note that the main difference in the results for TIN in streambed recharge to the Chino-South GMZ between Scenario 7 and Scenario 8 is because of the discontinuation of diversions of a portion of Riverside's effluent through the Hidden Valley Wetlands in the Scenario 8 simulation (and the discontinuation of the associated nitrogen-loss). This interpretation is based on our professional judgment as the modelers, and not on additional model simulations. We feel this is a valid interpretation. That said, we have been asked by the City of Riverside and the SBMWD to delete these interpretations from the final report, and we have done so.
12	Page 10	<p>Lines 422-425: <i>In all Scenario 8 simulations, the TDS and TIN concentration compliance metrics for streambed recharge exceeded the current ambient TDS and nitrate-nitrogen concentrations in Riverside-A, which is an antidegradation regulatory compliance issue.</i></p> <p>Delete: "...which is an antidegradation regulatory compliance issue."</p> <p>Comment: The report should be focused on presenting modeling results, not determining regulatory compliance issues. The Regional Board should be making these determinations.</p>	The phrase has been deleted as suggested. See response to SBMWD Comment 2.

SBMWD COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
13	Page 11	<p>Lines 462-475: <i>And in all Scenario 8 simulations, except for Scenario 8d, the TDS concentration compliance metric for streambed recharge to San Timoteo exceeds the TDS objective; this is because the TDS concentration in streambed recharge exceeds the TDS objective of 400 mg/L is because YVWD discharge, which was simulated at 540 mg/L.</i></p> <p>Comment: This sentence needs clarification.</p>	The text has been revised to fix typographical errors and better describe that the YVWD WWTP discharge should have been simulated in Scenario 8 with a TDS concentration of 400 mg/L (pursuant to the new Basin Plan amendment of April 2014) instead of 540 mg/L. This mistake was not identified by WEI, the Task Force, YVWD, or the Regional Board during the review and approval of Table 2 prior to the simulation of Scenario 8. The mistake is likely not significant to the results of Scenario 8 for the GMZs downstream of San Timoteo Creek or the SAR below Prado Dam.
14	Page 12	<p>Line 486-487: <i>The updated maximum benefit monitoring program also requires the YVWD and City of Beaumont develop a salt-offset program develop a salt-offset program...</i></p> <p>Change the sentence to read: "...requires the YVWD and City of Beaumont to develop..."</p>	The text has been revised as suggested.
15	Page 12	<p>Line 488-489: <i>...all discharges to the San Timoteo GMZ that are in excess of the compliance metric effective April 25, 2014.</i></p> <p>Comment: Is "effective" the correct word to use here?</p>	This is the effective date of the Basin Plan amendment and its requirements.

SBMWD COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
16	Page 13	<p>Lines 553-555: <i>The current wasteload allocation methodology utilizing the WLAM renders the Reach 3 TDS objective obsolete.</i></p> <p>Comment: This finding should be the focus of previous discussion in this document, rather than the ongoing discussion of exceedances. It is unclear why, earlier in this document, exceedances of this objective were noted, while now determining that the objective is obsolete.</p>	<p>The Recommendations section has been removed from the report at the request of some Task Force members. But to respond to the comment:</p> <ul style="list-style-type: none"> (i) At the request of some Task Force members, the previous sections of the report focus on the results of the WLAM Scenario 8 relative to water quality objectives and current ambient quality, and not on the merits of the objectives. (ii) Until the Reach 3 TDS objective is removed from the Basin Plan through the amendment process, it remains in effect, and should be reported on in wasteload allocation studies. We believe the Reach 3 TDS objective may no longer be necessary, and that its merit should be discussed in the Task Force setting (see response to OCWD Comment 3).
17	Page 13	<p>Line 565: <i>Additional analyses should be performed.</i></p> <p>Change “should” to “could.”</p> <p>Comment: The focus of this document should be presenting modeling results, not advising the Regional Board on future regulatory actions.</p>	<p>The Recommendations section has been removed from the report at the request of some Task Force members.</p>

SBMWD COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
18	Page 14	<p>Lines 580-582: <i>To achieve a technical foundation for such a finding (or not), the Task force should review the present objectives and their actual regulator implications.</i></p> <p>Change “actual regulatory implications” to “appropriateness”</p> <p>Comment: The results of this study substantiate reviewing basin objectives and whether or not they are appropriate, not just whether or not they present compliance issues.</p>	The Recommendations section has been removed from the report at the request of some Task Force members. But to respond to the comment: We agree that a review of water quality objectives for surface water and groundwater are prudent efforts for the Task Force.
19	Page 14	<p>Lines 593-595: <i>A new measure of compliance for the Santa Ana River at Prado Dam that may include monitoring and modeling to estimate the volume-weighted TDS and TIN concentrations of the Santa Ana River recharge to the Orange County GMZ.</i></p> <p>Comment: Or simply that could be based on a 12-month average TDS value, based on monthly grab samples.</p>	The Recommendations section has been removed from the report at the request of some Task Force members. But to respond to the comment: We agree that a review of water quality objectives for surface water and groundwater are prudent efforts for the Task Force. There are many alternatives for this review (including the suggestion stated in this comment) that should be discussed in the Task Force setting.

SBMWD COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
20	Page 15	<p>Lines 622-626: <i>The Regional Board may require a revised wasteload allocation to achieve compliance with the nitrate-nitrogen objective for Chino South, nitrogen-loss studies, the implementation of an approved offset program, or revision to the objective through the Basin Plan amendment process.</i></p> <p>Comment: Why aren't all of these alternatives, such as revising the objective, outlined below? This report could easily explain that a higher basin objective would still be protective of the MUN beneficial use.</p>	<p>The Recommendations section has been removed from the report at the request of some Task Force members. But to respond to the comment: We agree that an outline of a process to revise objectives through the Basin Plan amendment process could have been included. That said, we contend: (i) this process is not quick and easy, (ii) that the protection of downstream beneficial uses would need to be technically demonstrated, and (iii) that this demonstration is one of several demonstrations that would need to be made as part of the Basin Plan amendment process.</p>
21	Page 15	<p>Line 627-628: <i>As a first step to address the regulatory-compliance issue for TIN in the Chino-South GMZ, the Task Force should review the reach-specific nitrogen-loss coefficient...</i></p> <p>Change "should" to "could."</p>	<p>The Recommendations section has been removed from the report at the request of some Task Force members.</p>
22	Page 15	<p>Lines 644-648: Paragraph discussing the use of the Hidden Valley Wetlands as a mitigation strategy.</p> <p>Comment: Is a different nitrogen loss coefficient used for modeling flow through the wetlands? With a 50% loss coefficient, it is unclear how this would change predicted outcomes. Perhaps instead of the current suggestion regarding Hidden Valley, this would be a good place to discuss the fact that the objective for Chino South is well below potential impairment of the MUN beneficial use, so the objective itself should be revisited by the Task Force.</p>	<p>The Recommendations section has been removed from the report at the request of some Task Force members. But to respond to the comment: Yes, the surface water flowing through the Hidden Valley Wetlands was simulated in past WLAM efforts to experience an additional nitrogen loss separate and apart from the nitrogen loss that occurs during streambed recharge in the Chino-South GMZ.</p> <p>For streambed recharge in the Chino-South GMZ, if a nitrogen-loss coefficient greater than 50% can be demonstrated, then the Regional Board would approve the higher nitrogen-loss coefficient, and it could be used in the WLAM. Hence, this would change the results of the WLAM.</p>

SBMWD COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
			<p>Our recommendations focused on what we perceived to be the surest and quickest methods to address the nitrogen issue in the Chino-South GMZ—nitrogen-loss coefficients and the Hidden Valley Wetlands. Both of these methods have empirical data that demonstrates their validity. That said, we agree that an outline of a process to revise objectives through the Basin Plan amendment process should have been included.</p>

B-3 CITY OF RIVERSIDE COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
1	Pages 10 and 15	<p>Non-operation of Hidden Valley Wetlands (HVW) should not increase nitrogen in the effluent because a denitrification system was installed at Riverside RWQCP after conveyance to HVW was washed away during a storm event in 2010. We believe that the Scenario 8 is not accounting for this new denitrification and thus reaching a wrong conclusion (first paragraph on page 10) that discontinuation of HVW is the likely cause of the nitrogen/nitrate exceedance.</p> <p>The City is meeting all its compliance requirements for nitrogen/nitrate by denitrifying the effluent in-lieu of the HVW and we believe that your recommendation for restarting diversions to HVW (page 15) is not taking into account the new denitrification.</p>	<p>In this paragraph, we are reporting and interpreting on a model result, not measured data. We note that the main difference in the results for TIN in streambed recharge to the Chino-South GMZ between Scenario 7 and Scenario 8 is because of the discontinuation of diversions of a portion of Riverside's effluent through the Hidden Valley Wetlands <i>in the Scenario 8 simulation</i> (and the discontinuation of the associated nitrogen-loss). This interpretation is based on our professional judgment as the modelers, and not on additional model simulations. We feel this is a valid interpretation. That said, we have been asked by the City of Riverside and the SBMWD to delete these interpretations from the final report, and we have done so.</p> <p>We are simulating the TIN concentration for all effluent discharged from the RWQCP at 10 mg/L in Scenario 8, which accounts for the City's new denitrification system.</p>
2	Page 6	<p>Lines 256-260: <i>The purpose of this wasteload allocation study is to assist the Regional Board in setting appropriate effluent limits for TDS, TIN, and discharge when updating POTW waste discharge requirements (e.g. NPDES permits) through 2020. The wasteload allocation consists of maximum TDS and TIN concentration limits and a range of acceptable discharge for each POTW.</i></p> <p>Comment: Did not see this in previous reports, should be removed</p>	<p>The paragraph has been deleted as requested.</p>
3	Page 6	<p>Line 264-265: <i>Bold and italic values indicate regulatory compliance issues: where the compliance metric...</i></p> <p>Delete “regulatory compliance”</p>	<p>The text throughout the report has been revised as suggested to remove references to “regulatory compliance,” and to report model results relative to the water-quality objectives and/or current ambient concentrations.</p>

CITY OF RIVERSIDE COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
4	Page 7	<p>Lines 269-274: <i>For some POTWs, the wasteload allocation approval from the Regional Board may come with certain requirements, such as the need to conduct appropriate antidegradation analyses, conduct certain studies, implement approved offset programs, or revise water quality objectives through the Basin Plan amendment process.</i> If a POTW proposes to discharge outside the range of acceptable discharge, the Regional Board may request further analysis through additional WLAM simulations.</p> <p>Delete paragraph.</p> <p>Comment: All POTW are aware of tools available to address these issues. These are items of future discussion for the Task Force. The report should stay focused on the results.</p>	<p>The paragraph has been deleted as requested. See City of Riverside Comment 3.</p>
5	Page 7	<p>Lines 300-303: <i>The Regional Board may require a revised wasteload allocation to achieve compliance with the Reach 3 TDS objective, a new offset program, or a revision to the objective through the Basin Plan amendment process.</i></p> <p>Delete text.</p> <p>Comment: All POTW are aware of tools available to address these issues. These are items of future discussion for the Task Force. The report should stay focused on the results.</p>	<p>The paragraph has been deleted as requested. See City of Riverside Comment 3.</p>

CITY OF RIVERSIDE COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
6	Page 8	<p>Lines 307-309: <i>The objectives were reviewed by the Regional Board to ensure that they are protective of beneficial uses – the most sensitive use typically being municipal drinking water supply (MUN)</i></p> <p>Comment: Add the MUN standard and comment that all POTW are permitted at 10 or lower.</p>	<p>The text has been revised to read immediately following this sentence:</p> <p>“The nitrate-nitrogen objectives for all GMZs were set to 10 mg/L (the federal drinking water Maximum Contaminant Level for nitrate-nitrogen) or less.”</p> <p>It is not a true statement that all POTWs are permitted at 10 mg/L or less for TIN concentration is discharge.</p>
7	Page 10	<p>Lines 403-405: <i>In all Scenario 8 simulations, the TDS concentration compliance metric for streambed recharge does not exceed the TDS objective.</i></p> <p>Change “the TDS concentration compliance metric for streambed recharge” to “predicts the TDS concentration for streambeds recharge”</p>	<p>The “compliance metric” is a term used by the Task Force for summarizing the daily results of the WLAM over a 63-year hydrologic period into one value for TDS or TIN concentration. The compliance metric is then compared to the appropriate water quality objectives and/or current ambient quality concentrations to assess the appropriateness of the current wasteload allocation. Therefore, the comment is suggesting a major change to the terminology of the Task Force, and should be discussed and agreed upon at a Task Force meeting before changing the text in the report.</p>
8	Page 10	<p>Lines 405-406 <i>In all Scenario 8 simulations, the TIN concentration compliance metric for streambed recharge exceeded the nitrate-nitrogen objective...</i></p> <p>Change “the TIN concentration compliance metric for streambed recharge” to “predicts the TIN concentration for streambeds recharge.”</p>	<p>See response to City of Riverside Comment 7.</p>
9	Page 10	<p>Lines 408-412:...<i>the effluent flowing through the Hidden Valley Wetlands experienced a nitrogen loss and TDS increase; this was based on measured data from the wetlands. The City of Riverside has discontinued effluent diversions to the Hidden Valley Wetlands; these effluent diversions were excluded from Scenario 8. This is the likely cause of the nitrate-nitrogen objective</i></p>	<p>In this paragraph, we are reporting and interpreting on a model result, not measured data. We note that the main difference in the results for TIN in streambed recharge to the Chino-South GMZ between Scenario 7 and Scenario 8 is because of the discontinuation of diversions of a portion of Riverside’s effluent through the Hidden Valley Wetlands in</p>

CITY OF RIVERSIDE COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
		<p><i>exceedance.</i></p> <p>Delete text.</p> <p>Comment: The purpose of this report is to provide the result of the model run based on the approved parameters. Not speculate on the cause of the numbers. That would be addressed if directed by the task force or the individual POTW.</p>	<p>the Scenario 8 simulation (and the discontinuation of the associated nitrogen-loss). This interpretation is based on our professional judgment as the modelers, and not on additional model simulations. We feel this is a valid interpretation. That said, we have been asked by the City of Riverside and the SBMWD to delete these interpretations from the final report, and we have done so.</p>
10	Page 10	<p>Lines 413-418: Paragraph describing regulatory implications of the modeled exceedances of water quality objectives.</p> <p>Delete text.</p> <p>Comment: All POTWs are aware of tools available to address these issues. These are items of future discussion for the Task Force. The report should stay focused on the results.</p>	<p>The paragraph has been deleted as requested. See City of Riverside Comment 3.</p>
11	Page 10	<p>Lines 422-425: <i>In all Scenario 8 simulations, the TDS and TIN concentration compliance metrics for streambed recharge exceeded the current ambient TDS and nitrate-nitrogen concentrations in Riverside-A, which is an antidegradation regulatory compliance issue.</i></p> <p>Delete “which is an antidegradation regulatory compliance issue.”</p> <p>Comment: This should be removed. The report should stay focused on the results of the model run.</p>	<p>The phrase has been deleted as requested. See City of Riverside Comment 3.</p>

CITY OF RIVERSIDE COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
12	Page 10	<p>Lines 428-430: <i>It was believed that Scenario 8 would result in additional streambed recharge of high-quality storm-water in Riverside-A that could mitigate the antidegradation regulatory compliance issue.</i></p> <p>Change “the antidegradation regulatory compliance issue” to “a projected antidegradation issue.”</p>	The text has been revised as requested. See City of Riverside Comment 3.
		<p>Overall this report should stay away from discussion on what is and not compliance. It should stay focus on the results and the relationship to the projections falling above or below the objectives.</p> <p>SARDA is aware of all the tools currently available to address antidegradation , including the need of additional data the WLA projections could use to accurately address nitrogen uptake. I recommend that those type of compliance and planning discussion should be removed from this technical report and addressed in an appropriate venue, future SARDA and Task Force meetings.</p>	The text has been revised as requested. See City of Riverside Comment 3.

B-4 EASTERN MUNICIPAL WATER DISTRICT COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
1	Page 2	<p>Line 71-72: <i>Nitrogen losses are simulated in surface water as a travel-time-dependent, first-order decay function and in streambed recharge by applying the 25 and 50 percent nitrogen-loss coefficients</i></p> <p>Comment: May need to clarify</p>	Clarification on nitrogen loss in the WLAM is in the main report (WEI, 2008).
2	Page 4	<p>Line 169: Table 2</p> <p>Comment: Where? Not included. Was this the newest?</p>	Table 2 was included in the full draft report, which was distributed via the FTP site to the Task Force on November 14, 2014.
3	Page 5	<p>Lines 209-216: Paragraph describing the modeling of the City of Corona's Plant 1 discharge.</p> <p>Comment: Was this identified by Corona? Is this their future plan? Or is WEI decision? Are other discharges in a similar condition?</p>	See response to SBMWD Comment 5.
4	Page 6	<p>Lines 228-229: <i>The maximum of the 63 August-only monthly averages for TDS is the compliance metric.</i></p> <p>Comment: Explain</p>	The WLAM simulates daily discharge and quality (TDS and TIN concentration) of the SAR below Prado Dam. The compliance metric for the Reach 3 TDS objective is the maximum of the monthly average TDS concentration for August across the entire 63-year simulation period.
5	Page 13	<p>Lines 551-553: <i>Regional Board staff assumed that storm-water would dilute the wastewater discharge pursuant to the discharge limits established in the wasteload allocation</i></p> <p>Comment: MS4 affect</p>	No. This assumption pre-dates MS4 regulations. This paragraph is referring to the diluent effect from storm-water runoff that occurs downstream from Prado Dam.

EMWD COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
6	Page 13	<p>Lines 566-568: <i>The WLAM results for Scenario 8 indicate that for all simulations, the TDS compliance metrics for Reach 2 of the Santa Ana River (553-560 mg/L) are lower than the Reach 2 objective (650 mg/L) (see Table 3).</i></p> <p>Comment: Slippery slope</p>	
7	Page 14	<p>Lines 581-582: <i>Such a review may result in the following recommendations for consideration by the Regional Board</i></p> <p>Comment: Consider benefit and appropriately set objective such 10 mg/L for drinking water and recycled water recharge</p>	Comment noted. The objectives for the SAR below Prado Dam should be protective of the beneficial uses of the SAR in the Orange County GMZ.
8	Page 14	<p>Line 595: <i>This Task Force review [of current objectives] will have to account for the following:</i></p> <p>Comment: Consider study for River N uptake to change from 25% to 50% throughout the SAR</p>	We agree that nitrogen loss coefficients may be higher than the current 25-50% for GMZs.
9	Page 7	<p>Paragraph about the results of the prime scenarios</p> <p>Comment: Would EMWD's discharge even affect the August only results? NO...</p>	The results of Scenario 8 indicate that EMWD discharge, as simulated in Scenario 8 during the summer months, had no effect on the compliance metrics for Reach 3 of the SAR.

B-5 CITY OF CORONA COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
1	Page 6	In paragraphs 4 and 5, it is stated that there are no water quality objectives for the unlined portion of the creeks. Is it possible that the water quality objective of the lined portion of the creek could be different from the unlined portion of the same creek?	Surface-water quality and the objectives on Temescal Creek are not the focus of the WLAM Scenario 8.
2	Page 7	<p>In the last sentence of paragraph 6 “<i>The Regional Board may require a revised wasteload allocation to achieve compliance with Reach 3 TDS objective, a new offset program, or a revision to the objective through the Basin Plan amendment process</i>”.</p> <p>I suggest that the Regional Board take into consideration that due to drought, some agencies have withheld millions of gallons of low TDS water for irrigation purposes, also take into consideration the known rising groundwater of high TDS that enter into the Reach three (3) of the Santa Ana River, thus causing increased TDS and Nitrate Nitrogen in the receiving water. This would hold true as well for paragraph 3 on page 9.</p>	Comment noted. The WLAM includes the discharge and quality of rising groundwater in the SAR.

B-6 ORANGE COUNTY WATER DISTRICT COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
1	Page 5	<p><i>...that the EMWD discharges at maximum capacity for six months every year (November through April) during the wettest half of the years simulated and for one month only (January) during all other years</i></p> <p>Comment: The text needs more explanation – suggest adding more text to explain in additional detail and listing what the ‘wettest half of the years simulated’ are.</p>	A footnote has been added to explain in additional detail the “wettest half of the years simulated.”
2	Page 12, Paragraph 4	<p>Paragraph 4 states that the “TDS and TIN objectives for the Santa Ana River at Prado Dam should be revised based on a technical demonstration of their protectiveness of groundwater quality in the Orange County GMZ.”</p> <p>Comment: OCWD agrees that these objectives should be reviewed and may need to be revised to protect groundwater quality. Embarking on such an effort would be a major undertaking. This will require extensive discussions amongst Task Force members. Stakeholders will need to reach agreement on a work plan and extensive studies will need to be conducted. This will be an effort that will take several years.</p>	The Recommendations section has been removed from the report at the request of some Task Force members. But to respond to the comment: We concur that this effort will require extensive discussions amongst Task Force members, but the extent of the necessary studies would need to be determined by the Task Force.
3	Page 13, paragraph 2	<p>The statement that the Reach 3 TDS objective is redundant to the Reach 2 TDS objective is not entirely accurate as these two objectives measure flow consisting of different components and consequently different water quality. The Reach 3 objective measures only baseflow while Reach 2 objective is a flow-weighted average of all flows in the river that reach the OCWD recharge facilities in Anaheim.</p>	<p>The Recommendations section has been removed from the report at the request of some Task Force members. But to respond to the comment: We concur that the Reach 3 TDS objective is meant to be a base flow objective.</p> <p>Our opinion that the Reach 3 TDS objective is redundant to the Reach 2 TDS objective is based on our historical understanding of the purposes for the Reach 3 TDS objective:</p> <ol style="list-style-type: none"> 1. The Reach 3 TDS objective of 700 mg/L in the

OCWD COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
			<p>summertime was meant to comply with a groundwater TDS objective of 600 mg/L for the Santa Ana Forebay sub-basin in Orange County (1995 Basin Plan and earlier versions)—the thought being that storm-water runoff would dilute the base flow of the SAR below Prado Dam over the long term to meet the lower TDS objective of the Forebay.</p> <p>2. The data collected in August of each year to measure compliance with the Reach 3 TDS objective could be used to verify the accuracy of the wasteload allocation, since the base flow at this time consists primarily of municipal wastewater.</p> <p>Similar to the Reach 3 TDS objective, the Reach 2 TDS objective of 650 mg/L for total flow of the SAR below Prado Dam over 5-year running average is meant to comply with the Forebay TDS objective. In addition, the current wasteload allocation methodology is capable of simulating daily discharge and quality of the SAR over long hydrologic periods, which now allows for the computation of a compliance metric for the Reach 2 TDS objective. For these reasons, we believe the Reach 3 TDS objective is unnecessary.</p> <p>The major assumption here is that an upper limit on the summertime TDS concentration of base flow of the SAR below Prado Dam is not needed to protect the beneficial uses of SAR in Reach 2. This assumption deserves debate in the Task Force setting.</p>

OCWD COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
4	Page 13, paragraph 3	<p>Page 13 of 19, paragraph 3 contains an explanation concerning the Regional Board's assumptions that the Reach 2 and 3 objectives are protective of the Orange County GMZ. Please add to this discussion a comment on the results of the Scenario 8 model run. Suggested language is as follows.</p> <p>This assumption is supported by the following empirical evidence... since the historical time period used to set the objectives (1954-1973). <u>However, the results of the Scenario 8 model run indicate exceedances of the Reach 3 objective for TDS in the Santa Ana River at Prado Dam and the flow-weighted average TDS of August and September data indicate an increasing trend since the 1990s. Therefore, this the evidence alone does not provide a conclusive technical foundation for the protective nature of the Reach 2 and 3 objectives with respect to the Orange County GMZ objectives. Additional analyses should be performed.</u></p>	<p>The Recommendations section has been removed from the report at the request of some Task Force members. But to respond to the comment: We concur with the suggested edits.</p>
5	Page 13, Paragraph 4	<p>SAWPA's 2013 annual report for Santa Ana River water quality dated June 2014 lists the 5-year moving average TDS as 533 mg/L, which is a little different than the SAR Watermaster calculated value. Please make the following changes to paragraph 4 on page 13 of 19.</p> <p>WLAM results for Scenario 8 indicate that for all simulations, the TDS compliance metrics for Reach 2 of the Santa Ana River (553-560 mg/L) are lower than the Reach 2 objective (650 mg/L) <u>but higher than the current</u></p>	<p>The Recommendations section has been removed from the report at the request of some Task Force members. But to respond to the comment: We concur with the suggested edits.</p>

OCWD COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
		<p><u>ambient of 533 mg/L.</u> (see Table 3). These results <u>Some stakeholders</u> suggest that the TDS wasteload allocation for POTW upstream could be relaxed to some degree and still comply with the Reach 2 objective.</p>	

B-7 SANTA ANA WATERSHED PROJECT AUTHORITY COMMENTS AND RESPONSES

Comment Number	Reference	Comment	Response
1	Page 1	<p>Lines 24-26: <i>The quality of the River thus has a significant effect on the quality of the Region's groundwater, which is used by more than 5 million people.</i></p> <p>Comment: The current SAR watershed population from the 2010 census is 5.9 million people so 6 million would be a better estimate at this time.</p>	Comment noted. This text was referenced directly from the Basin Plan, so we have not modified the text.
2	Page 6	<p>Lines 241-242: <i>The compliance metric for groundwater was agreed on by the Task Force and the Regional Board at the November 18, 2009 Task Force meeting.</i></p> <p>Comment: This may need further explanation as to whether it was approved by the Regional Board subsequently. Compliance metrics to be enforceable must be in the Basin Plan.</p>	To our knowledge, the compliance metric for streambed recharge to groundwater was never officially adopted by the Regional Board. We concur with the comment.
3	Page 16	<p>Section on Future Wasteload Allocation Studies.</p> <p>Comment: SAWPA suggests that the land use information data used in the WLAM also be updated from the now outdated 2005 SCAG land use coverages. It is understood that the 2005 SCAG land use was the last readily available GIS layers and may reflect conservative run-off in light of MS4 permit onsite recharge requirements for new development. However, we are not aware of any investigation to determine if this assumption is appropriate to estimate the storm runoff quantities from impermeable areas particularly since significant urban growth did occur after 2005-2008 in the upper watershed.</p>	The Recommendations section has been removed from the report at the request of some Task Force members. But to respond to the comment: We generally concur with the suggestion, but the land use data used in future WLAM studies should be a decision agreed upon by the Task Force.

Table 8a-BP
TDS and TIN in Santa Ana River Flow at Below Prado
Scenario 8a - Low Discharge for 2015

Water Year	Volume Weighted Running Average (mg/L)											
	TDS						TIN					
	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only
1950	507	474	440	431	399	716	6.01	5.60	5.18	5.06	4.63	8.08
1951	617	488	447	432	399	716	7.33	5.77	5.27	5.08	4.63	8.08
1952	298	470	412	457	399	716	3.52	5.56	4.87	5.40	4.63	8.08
1953	564	519	467	458	399	716	6.68	6.15	5.54	5.42	4.63	8.08
1954	411	479	436	440	399	715	4.85	5.68	5.17	5.20	4.63	8.07
1955	523	482	439	439	399	714	6.19	5.71	5.19	5.19	4.63	8.06
1956	378	435	405	425	399	716	4.55	5.16	4.81	5.02	4.63	8.08
1957	536	482	468	438	399	716	6.34	5.72	5.56	5.18	4.63	8.08
1958	328	435	414	439	399	672	3.82	5.15	4.90	5.19	4.63	7.57
1959	608	475	441	438	399	716	7.23	5.63	5.22	5.19	4.63	8.08
1960	559	482	445	442	399	716	6.62	5.71	5.27	5.23	4.63	8.08
1961	652	537	491	443	399	688	7.78	6.36	5.81	5.25	4.63	7.76
1962	421	514	468	468	399	716	4.98	6.09	5.53	5.54	4.63	8.08
1963	484	545	527	462	399	715	5.76	6.47	6.26	5.47	4.63	8.08
1964	557	535	520	476	399	716	6.61	6.35	6.17	5.64	4.63	8.08
1965	493	521	507	473	399	697	5.81	6.19	6.01	5.61	4.63	7.88
1966	336	458	440	464	399	716	3.93	5.42	5.20	5.48	4.63	8.08
1967	293	433	397	429	399	694	3.39	5.10	4.67	5.05	4.63	7.82
1968	461	428	395	448	399	715	5.50	5.05	4.64	5.30	4.63	8.08
1969	204	357	298	367	399	682	2.24	4.18	3.44	4.29	4.63	7.67
1970	504	360	299	365	399	714	5.97	4.21	3.44	4.26	4.63	8.06
1971	522	397	314	362	399	712	6.18	4.66	3.62	4.22	4.63	8.04
1972	508	440	341	366	399	677	6.04	5.19	3.96	4.27	4.63	7.63
1973	407	429	336	362	399	716	4.76	5.04	3.89	4.22	4.63	8.08
1974	444	477	471	357	399	716	5.27	5.64	5.57	4.16	4.63	8.08
1975	520	480	473	358	399	716	6.15	5.68	5.60	4.18	4.63	8.09
1976	518	479	473	371	399	716	6.11	5.66	5.58	4.33	4.63	8.08
1977	513	480	474	392	399	308	6.09	5.67	5.59	4.59	4.63	3.42
1978	243	447	384	358	399	716	2.75	5.27	4.50	4.16	4.63	8.08
1979	376	434	373	414	399	716	4.38	5.09	4.35	4.86	4.63	8.08
1980	257	381	316	369	399	710	2.37	4.34	3.44	4.16	4.63	8.02
1981	564	391	318	370	399	716	6.69	4.46	3.46	4.18	4.63	8.09
1982	365	361	308	362	399	713	4.30	4.10	3.35	4.08	4.63	8.06
1983	290	370	322	347	399	404	3.04	4.15	3.45	3.87	4.63	4.48
1984	507	396	332	350	399	712	6.01	4.48	3.56	3.90	4.63	8.04
1985	493	444	398	349	399	716	5.84	5.17	4.56	3.89	4.63	8.09
1986	435	418	385	346	399	714	5.12	4.86	4.41	3.85	4.63	8.06
1987	591	463	414	348	399	716	7.04	5.41	4.75	3.88	4.63	8.08
1988	488	503	496	378	399	714	5.77	5.96	5.87	4.23	4.63	8.07
1989	560	513	505	389	399	716	6.64	6.08	5.98	4.35	4.63	8.08
1990	570	529	519	447	399	716	6.78	6.27	6.15	5.20	4.63	8.08
1991	373	517	497	430	399	715	4.40	6.13	5.90	5.00	4.63	8.08
1992	395	477	459	434	399	716	4.65	5.65	5.42	5.05	4.63	8.09
1993	238	427	350	404	399	715	2.35	4.96	3.92	4.64	4.63	8.08
1994	558	427	350	406	399	716	6.60	4.96	3.91	4.67	4.63	8.09
1995	285	370	316	380	399	716	3.06	4.21	3.47	4.31	4.63	8.09
1996	463	388	324	381	399	716	5.52	4.44	3.56	4.33	4.63	8.08
1997	447	398	328	375	399	716	5.24	4.55	3.61	4.26	4.63	8.08
1998	293	409	365	357	399	688	3.40	4.76	4.20	4.05	4.63	7.76
1999	640	426	369	359	399	716	7.62	4.97	4.25	4.07	4.63	8.08
2000	561	481	432	359	399	716	6.65	5.68	5.09	4.07	4.63	8.08
2001	556	499	445	368	399	716	6.61	5.90	5.24	4.18	4.63	8.08
2002	668	544	472	379	399	716	7.98	6.45	5.58	4.31	4.63	8.08
2003	347	554	516	421	399	716	4.13	6.60	6.14	4.92	4.63	8.08
2004	575	541	508	422	399	716	6.82	6.44	6.04	4.93	4.63	8.08
2005	246	479	389	409	399	716	2.82	5.67	4.58	4.82	4.63	8.08
2006	548	477	388	414	399	716	6.47	5.64	4.57	4.88	4.63	8.08
2007	691	481	389	426	399	716	8.26	5.70	4.58	5.02	4.63	8.08
2008	538	520	422	462	399	716	6.35	6.14	4.95	5.46	4.63	8.08
2009	547	514	419	457	399	716	6.48	6.07	4.92	5.40	4.63	8.08
2010	388	542	518	441	399	716	4.56	6.42	6.13	5.21	4.63	8.08
2011	322	497	450	416	399	684	3.74	5.88	5.30	4.90	4.63	7.70
2012	609	481	444	414	399	715	7.23	5.67	5.23	4.88	4.63	8.07
Maximum	691	554	527	476	399	716	8.26	6.60	6.26	5.64	4.63	8.09

Figure 8a-TDS_Reach 3
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8a - Low Discharge for 2015

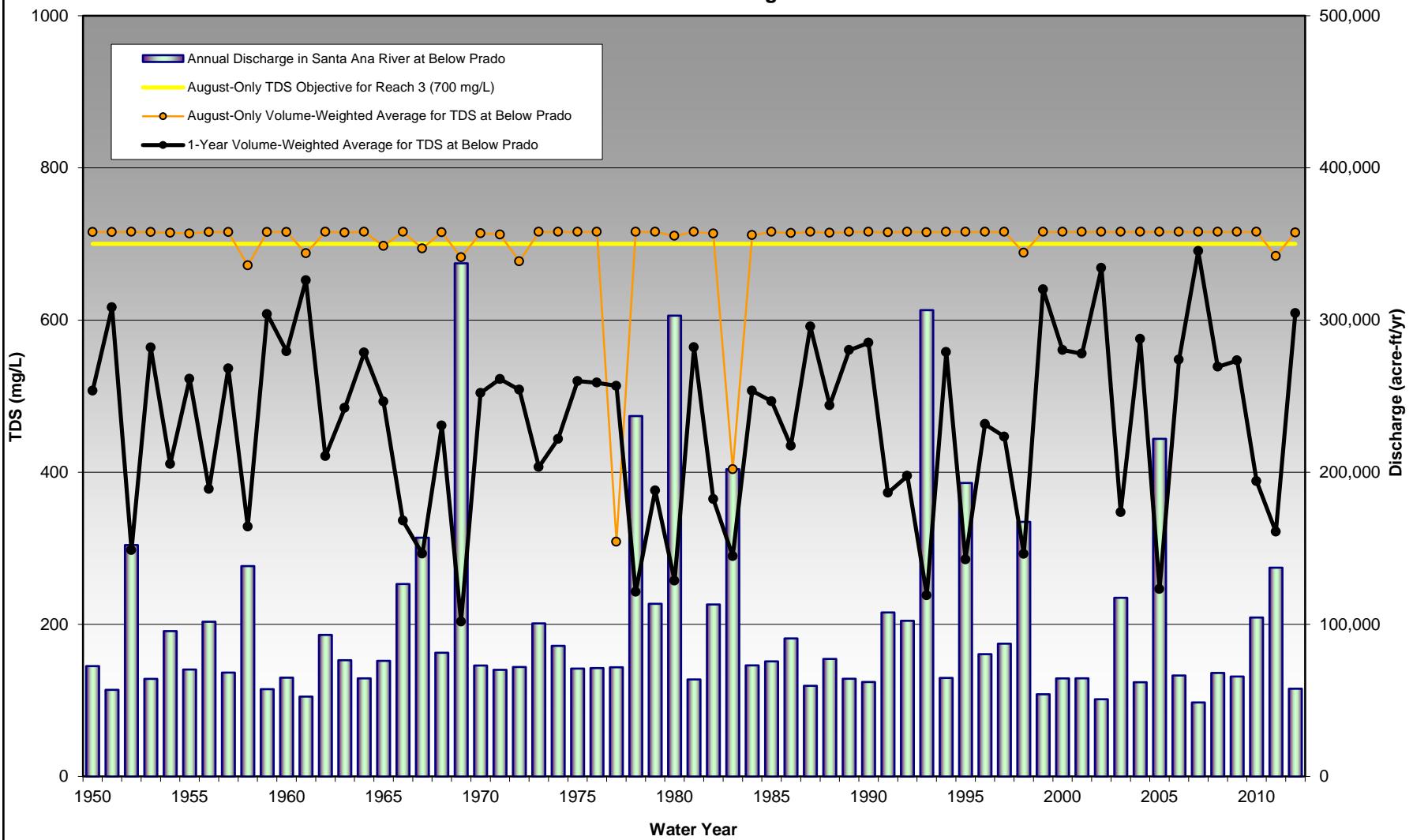


Figure 8a-TIN_BP
Estimated Annual Discharge and Volume-Weighted TIN Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8a - Low Discharge for 2015

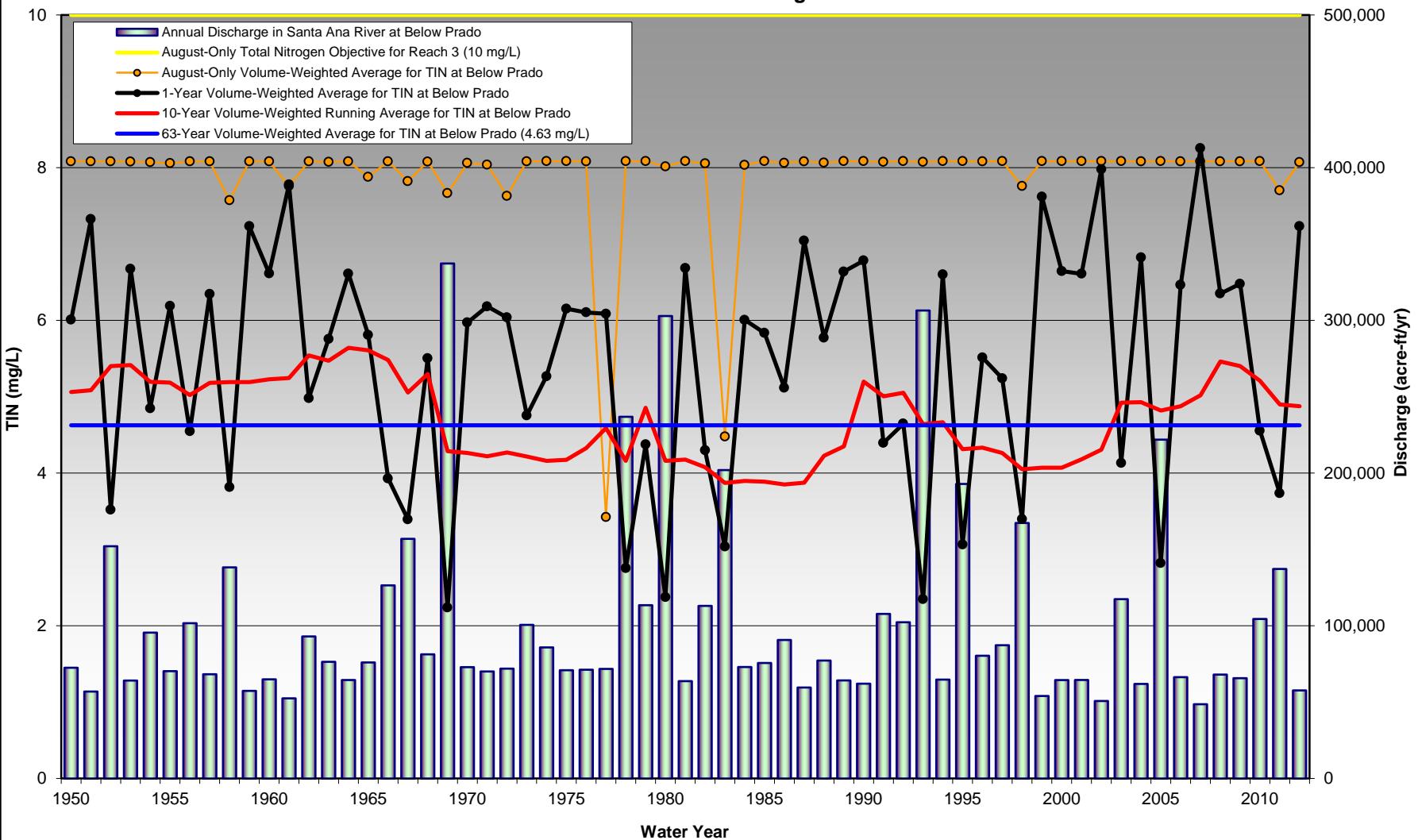


Figure 8a-TDS_Reach 2
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 2 Objective
Scenario 8a - Low Discharge for 2015

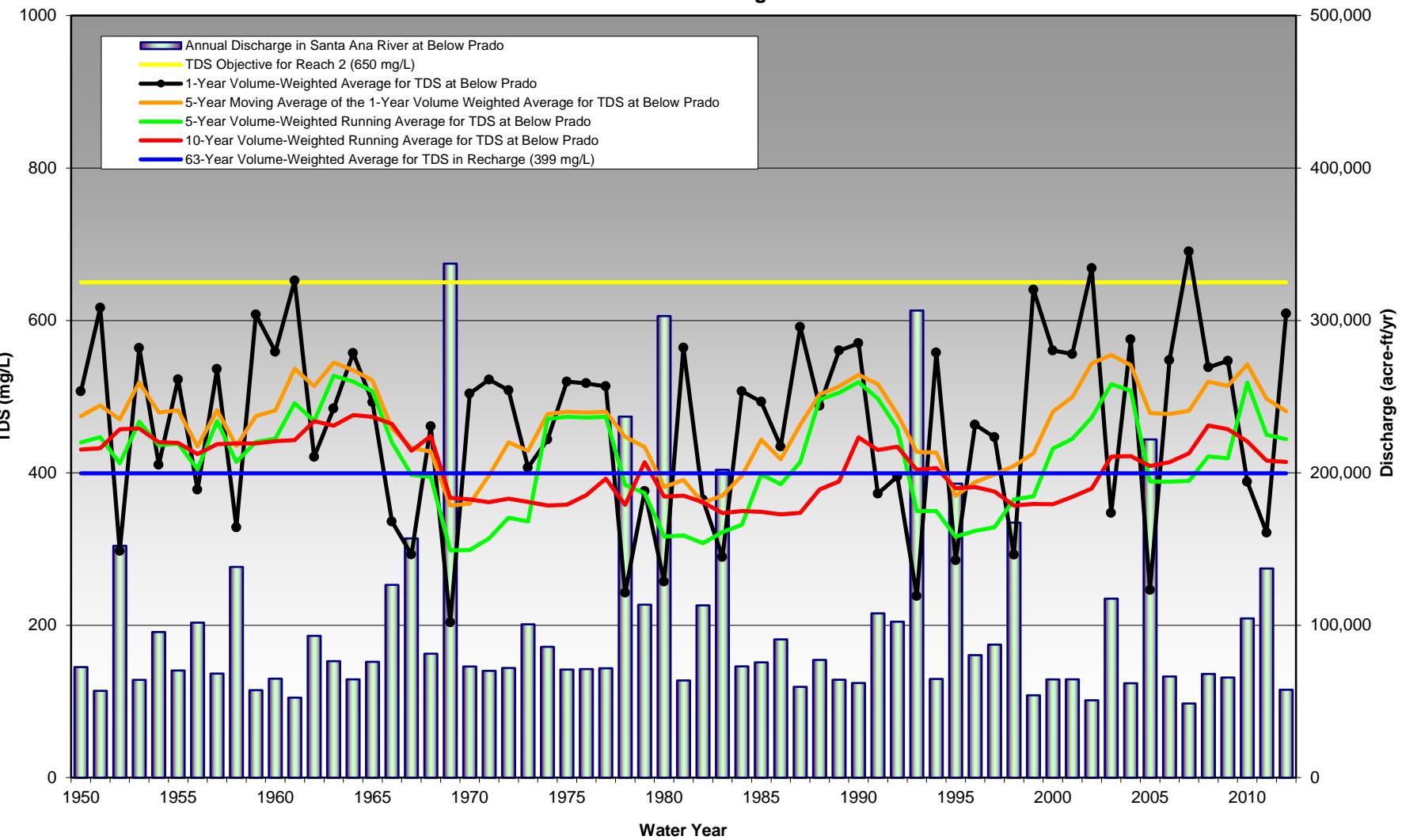


Table 8a-CS
TDS and TIN of Streambed Recharge to the Chino-South Management Zone
Scenario 8a - Low Discharge for 2015

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	625	606	590	4.29	4.15	4.02
1951	646	606	590	4.44	4.17	4.02
1952	536	615	590	3.65	4.12	4.02
1953	634	615	590	4.35	4.14	4.02
1954	593	608	590	4.06	4.13	4.02
1955	624	607	590	4.28	4.14	4.02
1956	611	605	590	4.20	4.15	4.02
1957	631	609	590	4.33	4.16	4.02
1958	539	607	590	3.66	4.13	4.02
1959	653	607	590	4.49	4.16	4.02
1960	641	608	590	4.40	4.17	4.02
1961	659	609	590	4.53	4.17	4.02
1962	599	617	590	4.10	4.23	4.02
1963	620	615	590	4.25	4.22	4.02
1964	640	620	590	4.40	4.25	4.02
1965	620	620	590	4.25	4.25	4.02
1966	563	614	590	3.84	4.21	4.02
1967	538	604	590	3.66	4.14	4.02
1968	620	613	590	4.25	4.20	4.02
1969	406	581	590	2.61	3.96	4.02
1970	630	580	590	4.32	3.95	4.02
1971	628	578	590	4.31	3.93	4.02
1972	633	581	590	4.34	3.95	4.02
1973	592	578	590	4.05	3.94	4.02
1974	610	576	590	4.18	3.92	4.02
1975	631	577	590	4.33	3.92	4.02
1976	620	582	590	4.25	3.96	4.02
1977	636	592	590	4.37	4.04	4.02
1978	457	573	590	3.04	3.89	4.02
1979	565	596	590	3.80	4.06	4.02
1980	428	570	590	2.67	3.85	4.02
1981	644	571	590	4.42	3.86	4.02
1982	570	565	590	3.89	3.82	4.02
1983	474	553	590	3.03	3.71	4.02
1984	624	554	590	4.28	3.72	4.02
1985	621	553	590	4.26	3.71	4.02
1986	608	552	590	4.16	3.71	4.02
1987	649	553	590	4.46	3.71	4.02
1988	626	571	590	4.29	3.85	4.02
1989	641	578	590	4.40	3.90	4.02
1990	637	605	590	4.38	4.12	4.02
1991	589	600	590	4.03	4.09	4.02
1992	587	602	590	4.01	4.10	4.02
1993	425	592	590	2.68	4.03	4.02
1994	633	593	590	4.34	4.03	4.02
1995	496	579	590	3.22	3.91	4.02
1996	627	581	590	4.31	3.93	4.02
1997	600	576	590	4.10	3.90	4.02
1998	501	564	590	3.38	3.81	4.02
1999	653	565	590	4.49	3.81	4.02
2000	643	565	590	4.42	3.81	4.02
2001	640	569	590	4.39	3.85	4.02
2002	662	576	590	4.55	3.89	4.02
2003	583	598	590	3.99	4.07	4.02
2004	651	600	590	4.47	4.09	4.02
2005	469	596	590	3.15	4.07	4.02
2006	632	596	590	4.33	4.08	4.02
2007	667	602	590	4.59	4.12	4.02
2008	633	617	590	4.35	4.23	4.02
2009	640	616	590	4.40	4.22	4.02
2010	585	611	590	4.00	4.18	4.02
2011	561	603	590	3.82	4.12	4.02
2012	653	602	590	4.49	4.12	4.02
Maximum	667	620		4.59	4.25	

Figure 8a-TDS_CS
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 8a - Low Discharge for 2015

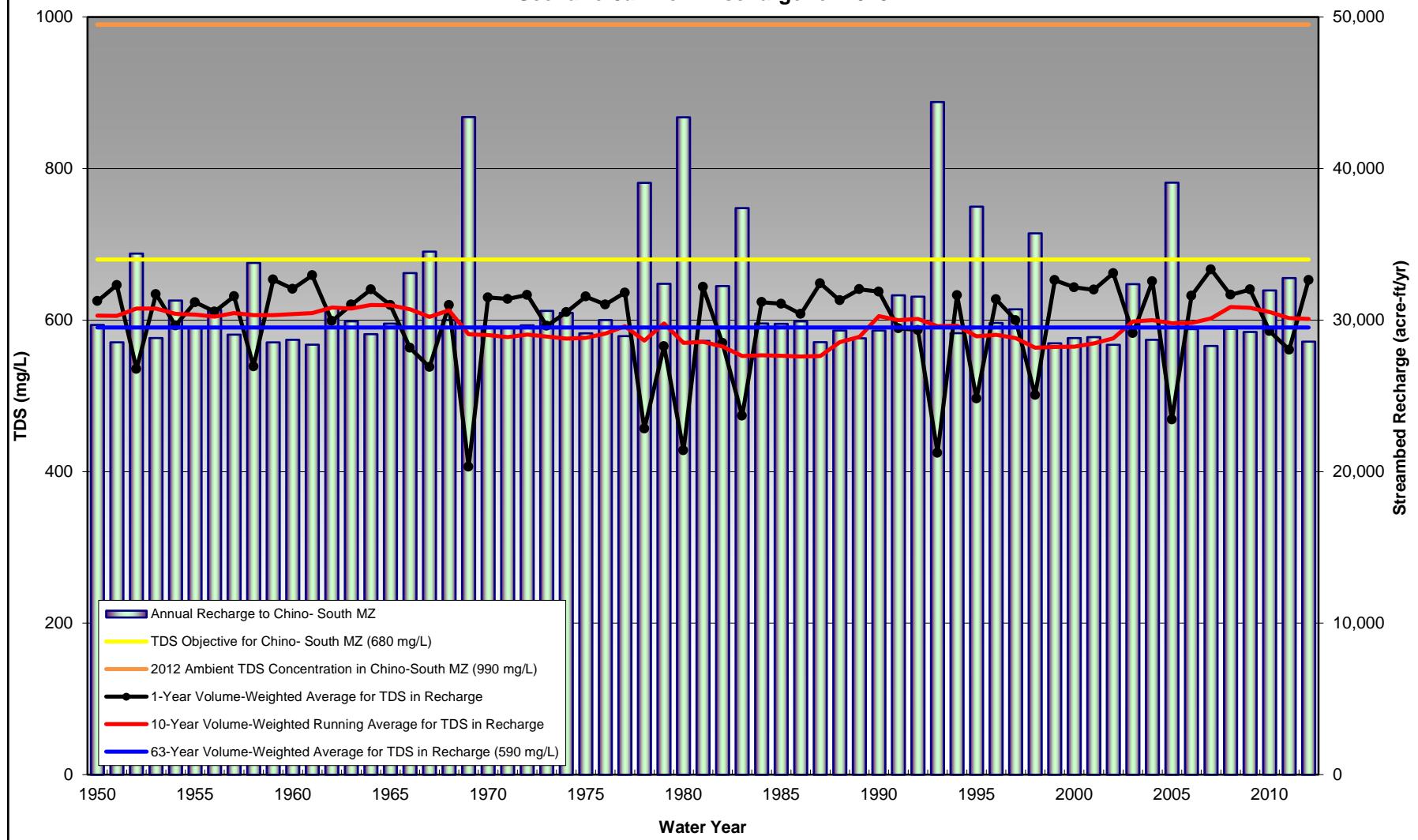


Figure 8a-TIN_CS
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 8a - Low Discharge for 2015

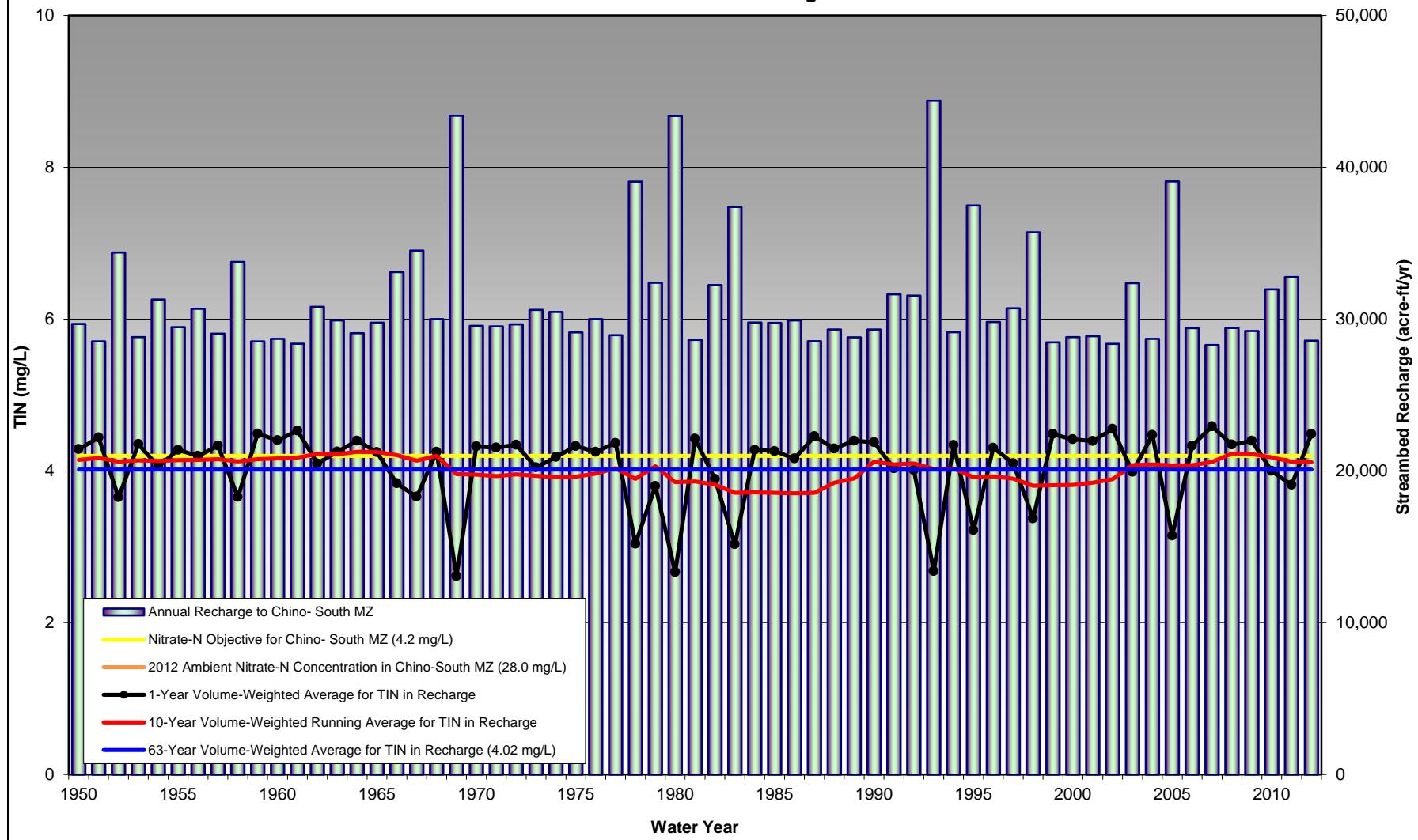


Table 8a-RA
TDS and TIN of Streambed Recharge to the Riverside-A Management Zone
Scenario 8a - Low Discharge for 2015

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	451	434	411	6.09	5.76	5.42
1951	512	434	411	7.00	5.76	5.42
1952	355	450	411	4.65	6.05	5.42
1953	488	452	411	6.63	6.08	5.42
1954	407	440	411	5.40	5.90	5.42
1955	463	440	411	6.26	5.90	5.42
1956	460	437	411	6.26	5.86	5.42
1957	483	445	411	6.56	5.98	5.42
1958	348	438	411	4.43	5.88	5.42
1959	504	437	411	6.90	5.86	5.42
1960	502	441	411	6.84	5.92	5.42
1961	522	442	411	7.18	5.93	5.42
1962	417	451	411	5.57	6.07	5.42
1963	469	449	411	6.36	6.05	5.42
1964	483	457	411	6.57	6.17	5.42
1965	447	456	411	6.00	6.15	5.42
1966	378	446	411	4.92	5.98	5.42
1967	360	432	411	4.67	5.77	5.42
1968	452	445	411	6.10	5.99	5.42
1969	250	403	411	2.75	5.28	5.42
1970	456	400	411	6.16	5.24	5.42
1971	453	396	411	6.10	5.18	5.42
1972	475	400	411	6.44	5.25	5.42
1973	416	396	411	5.50	5.18	5.42
1974	439	393	411	5.91	5.14	5.42
1975	480	395	411	6.51	5.17	5.42
1976	444	401	411	5.97	5.27	5.42
1977	482	413	411	6.55	5.44	5.42
1978	280	389	411	3.27	5.04	5.42
1979	389	417	411	5.06	5.51	5.42
1980	254	384	411	2.82	4.96	5.42
1981	500	386	411	6.82	5.00	5.42
1982	385	379	411	5.08	4.89	5.42
1983	286	364	411	3.38	4.64	5.42
1984	455	365	411	6.12	4.65	5.42
1985	467	364	411	6.32	4.64	5.42
1986	447	364	411	5.99	4.64	5.42
1987	510	365	411	6.97	4.66	5.42
1988	470	387	411	6.36	5.02	5.42
1989	480	394	411	6.52	5.13	5.42
1990	482	433	411	6.56	5.76	5.42
1991	408	424	411	5.43	5.64	5.42
1992	392	425	411	5.18	5.65	5.42
1993	254	410	411	2.80	5.39	5.42
1994	476	411	411	6.44	5.41	5.42
1995	309	393	411	3.74	5.10	5.42
1996	453	393	411	6.08	5.11	5.42
1997	409	387	411	5.39	5.01	5.42
1998	321	373	411	3.94	4.78	5.42
1999	519	375	411	7.11	4.81	5.42
2000	489	375	411	6.65	4.82	5.42
2001	502	381	411	6.85	4.90	5.42
2002	528	389	411	7.28	5.03	5.42
2003	415	423	411	5.54	5.59	5.42
2004	514	425	411	7.04	5.63	5.42
2005	288	420	411	3.40	5.54	5.42
2006	471	421	411	6.33	5.56	5.42
2007	531	431	411	7.32	5.72	5.42
2008	465	451	411	6.25	6.04	5.42
2009	494	450	411	6.75	6.02	5.42
2010	410	442	411	5.41	5.89	5.42
2011	387	431	411	4.99	5.72	5.42
2012	521	430	411	7.16	5.71	5.42
Maximum	531	457		7.32	6.17	

Figure 8a-TDS_RA
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 8a - Low Discharge for 2015

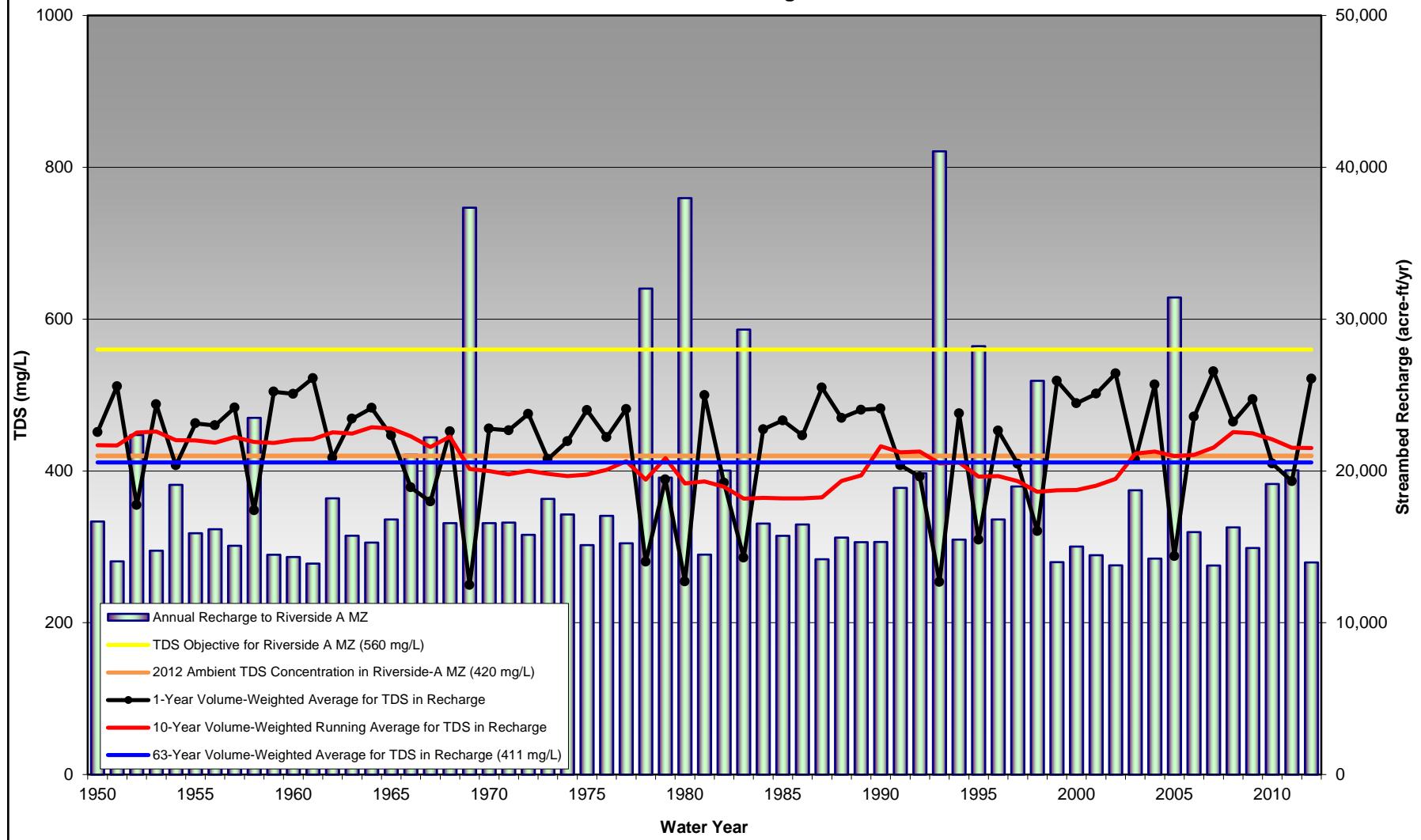


Figure 8a-TIN_RA
**Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
 of the Santa Ana River to the Riverside-A Management Zone**
Scenario 8a - Low Discharge for 2015

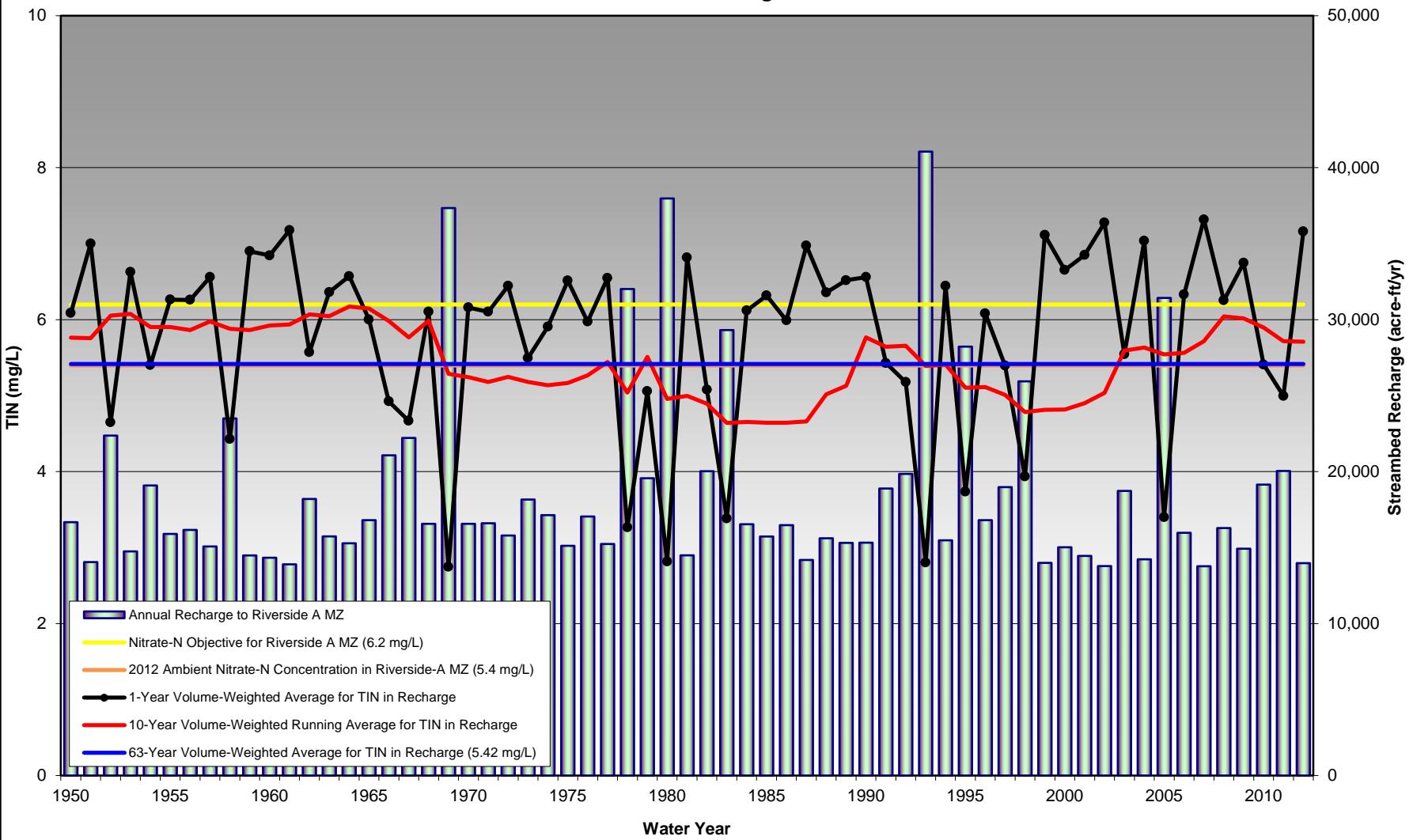


Table 8a-CO
TDS and TIN of Streambed Recharge to the Colton Management Zone
Scenario 8a - Low Discharge for 2015

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	141	164	158	1.13	1.23	1.20
1951	164	164	158	1.24	1.23	1.20
1952	139	159	158	1.12	1.21	1.20
1953	158	157	158	1.21	1.20	1.20
1954	144	155	158	1.14	1.19	1.20
1955	147	153	158	1.16	1.18	1.20
1956	126	151	158	1.04	1.17	1.20
1957	158	151	158	1.22	1.17	1.20
1958	154	148	158	1.18	1.16	1.20
1959	165	147	158	1.24	1.16	1.20
1960	154	148	158	1.20	1.16	1.20
1961	160	148	158	1.20	1.16	1.20
1962	145	150	158	1.14	1.17	1.20
1963	135	148	158	1.09	1.16	1.20
1964	152	149	158	1.18	1.16	1.20
1965	147	149	158	1.14	1.16	1.20
1966	147	151	158	1.14	1.17	1.20
1967	147	149	158	1.14	1.16	1.20
1968	141	147	158	1.11	1.15	1.20
1969	168	157	158	1.22	1.18	1.20
1970	140	156	158	1.13	1.18	1.20
1971	148	156	158	1.17	1.18	1.20
1972	154	156	158	1.19	1.18	1.20
1973	156	157	158	1.20	1.18	1.20
1974	139	156	158	1.11	1.18	1.20
1975	161	157	158	1.22	1.18	1.20
1976	139	157	158	1.09	1.18	1.20
1977	147	158	158	1.14	1.19	1.20
1978	163	160	158	1.21	1.20	1.20
1979	163	156	158	1.22	1.19	1.20
1980	166	160	158	1.21	1.20	1.20
1981	167	161	158	1.25	1.20	1.20
1982	131	159	158	1.07	1.19	1.20
1983	168	161	158	1.25	1.20	1.20
1984	162	162	158	1.22	1.21	1.20
1985	147	161	158	1.14	1.20	1.20
1986	156	162	158	1.20	1.21	1.20
1987	165	162	158	1.23	1.21	1.20
1988	151	162	158	1.17	1.21	1.20
1989	158	162	158	1.21	1.21	1.20
1990	153	159	158	1.18	1.20	1.20
1991	137	156	158	1.11	1.19	1.20
1992	136	157	158	1.09	1.19	1.20
1993	165	157	158	1.21	1.18	1.20
1994	161	157	158	1.22	1.18	1.20
1995	164	159	158	1.21	1.19	1.20
1996	160	159	158	1.21	1.19	1.20
1997	153	158	158	1.18	1.19	1.20
1998	167	160	158	1.24	1.20	1.20
1999	180	160	158	1.33	1.20	1.20
2000	156	161	158	1.20	1.20	1.20
2001	167	162	158	1.26	1.21	1.20
2002	175	164	158	1.32	1.22	1.20
2003	134	161	158	1.09	1.21	1.20
2004	169	161	158	1.26	1.21	1.20
2005	163	161	158	1.22	1.22	1.20
2006	180	162	158	1.31	1.22	1.20
2007	198	164	158	1.43	1.23	1.20
2008	170	163	158	1.27	1.23	1.20
2009	164	163	158	1.24	1.22	1.20
2010	154	162	158	1.18	1.22	1.20
2011	168	163	158	1.24	1.22	1.20
2012	181	163	158	1.34	1.22	1.20
Maximum	198	164		1.43	1.23	

Figure 8a-TDS_CO
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 8a - Low Discharge for 2015

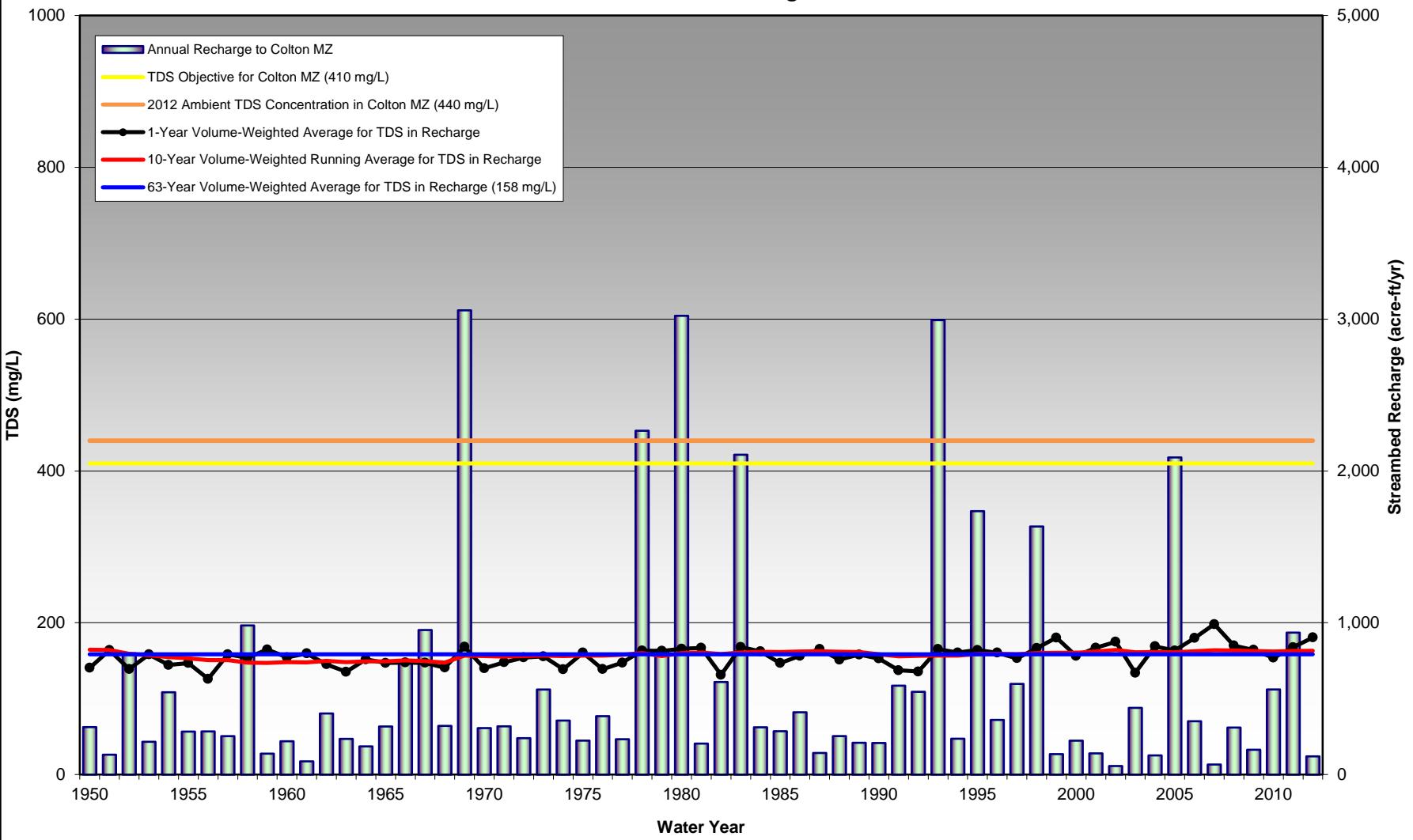


Figure 8a-TIN_CO
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 8a - Low Discharge for 2015

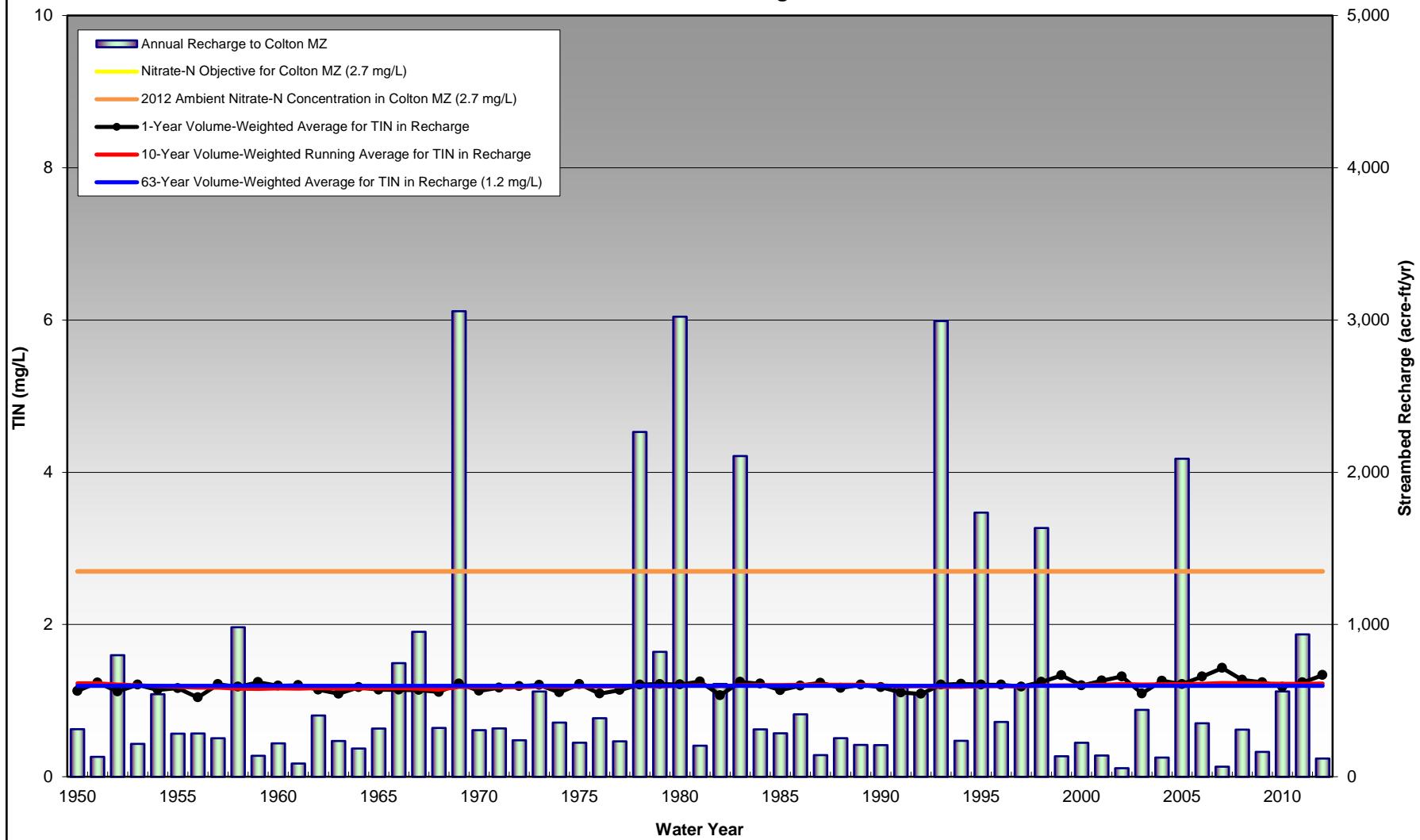


Table 8a-BH
TDS and TIN of Streambed Recharge to the Bunker Hill-B Management Zone
Scenario 8a - Low Discharge for 2015

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	204	210	202	1.54	1.55	1.49
1951	226	210	202	1.70	1.55	1.49
1952	188	211	202	1.42	1.57	1.49
1953	209	210	202	1.57	1.57	1.49
1954	191	206	202	1.45	1.54	1.49
1955	203	205	202	1.54	1.53	1.49
1956	217	204	202	1.65	1.53	1.49
1957	206	204	202	1.55	1.53	1.49
1958	184	201	202	1.39	1.51	1.49
1959	219	200	202	1.64	1.51	1.49
1960	202	200	202	1.53	1.51	1.49
1961	239	200	202	1.80	1.51	1.49
1962	195	201	202	1.48	1.52	1.49
1963	211	201	202	1.60	1.52	1.49
1964	213	204	202	1.61	1.54	1.49
1965	200	203	202	1.52	1.54	1.49
1966	195	201	202	1.46	1.52	1.49
1967	197	200	202	1.46	1.51	1.49
1968	203	204	202	1.54	1.53	1.49
1969	191	199	202	1.37	1.48	1.49
1970	206	199	202	1.56	1.48	1.49
1971	209	199	202	1.58	1.48	1.49
1972	224	200	202	1.68	1.49	1.49
1973	192	199	202	1.45	1.48	1.49
1974	204	198	202	1.54	1.47	1.49
1975	207	199	202	1.55	1.48	1.49
1976	200	199	202	1.51	1.48	1.49
1977	205	200	202	1.55	1.49	1.49
1978	186	197	202	1.36	1.46	1.49
1979	191	197	202	1.41	1.47	1.49
1980	192	196	202	1.38	1.45	1.49
1981	212	196	202	1.59	1.45	1.49
1982	189	194	202	1.44	1.44	1.49
1983	190	194	202	1.38	1.42	1.49
1984	215	194	202	1.60	1.43	1.49
1985	206	194	202	1.55	1.43	1.49
1986	199	194	202	1.50	1.43	1.49
1987	222	195	202	1.66	1.43	1.49
1988	201	197	202	1.52	1.45	1.49
1989	208	198	202	1.57	1.46	1.49
1990	221	201	202	1.66	1.50	1.49
1991	195	200	202	1.49	1.49	1.49
1992	188	200	202	1.43	1.49	1.49
1993	188	200	202	1.36	1.49	1.49
1994	212	200	202	1.59	1.49	1.49
1995	195	199	202	1.42	1.48	1.49
1996	217	200	202	1.62	1.48	1.49
1997	200	199	202	1.50	1.48	1.49
1998	195	198	202	1.43	1.46	1.49
1999	235	199	202	1.75	1.47	1.49
2000	215	199	202	1.62	1.47	1.49
2001	222	200	202	1.66	1.48	1.49
2002	275	203	202	2.07	1.50	1.49
2003	200	207	202	1.52	1.53	1.49
2004	231	207	202	1.74	1.54	1.49
2005	192	206	202	1.40	1.53	1.49
2006	219	206	202	1.61	1.53	1.49
2007	265	209	202	1.98	1.55	1.49
2008	218	215	202	1.62	1.59	1.49
2009	219	213	202	1.64	1.59	1.49
2010	205	212	202	1.53	1.58	1.49
2011	204	210	202	1.48	1.55	1.49
2012	236	210	202	1.76	1.55	1.49
Maximum	275	215		2.07	1.59	

Figure 8a-TDS_BH
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 8a - Low Discharge for 2015

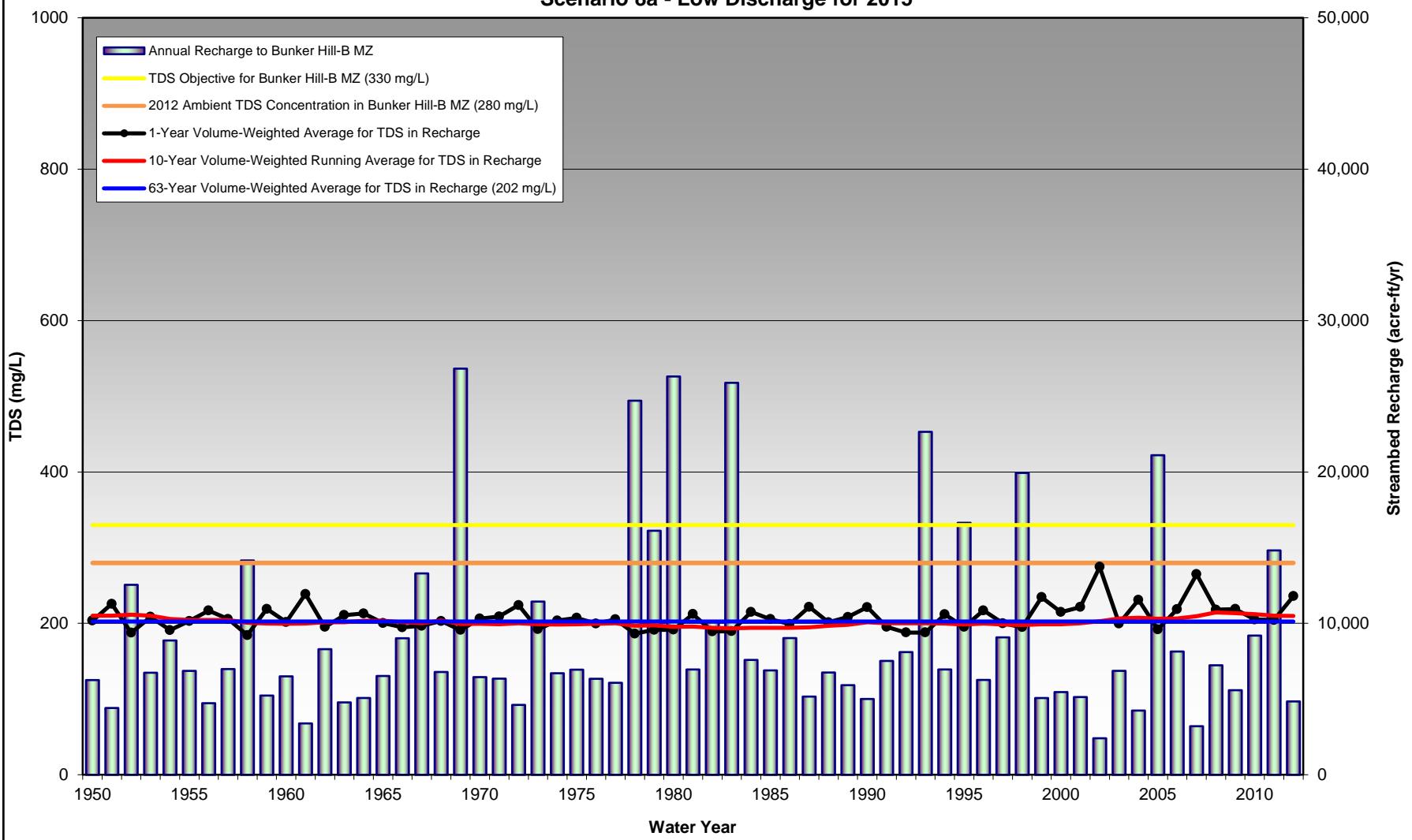


Figure 8a-TIN_BH

**Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 8a - Low Discharge for 2015**

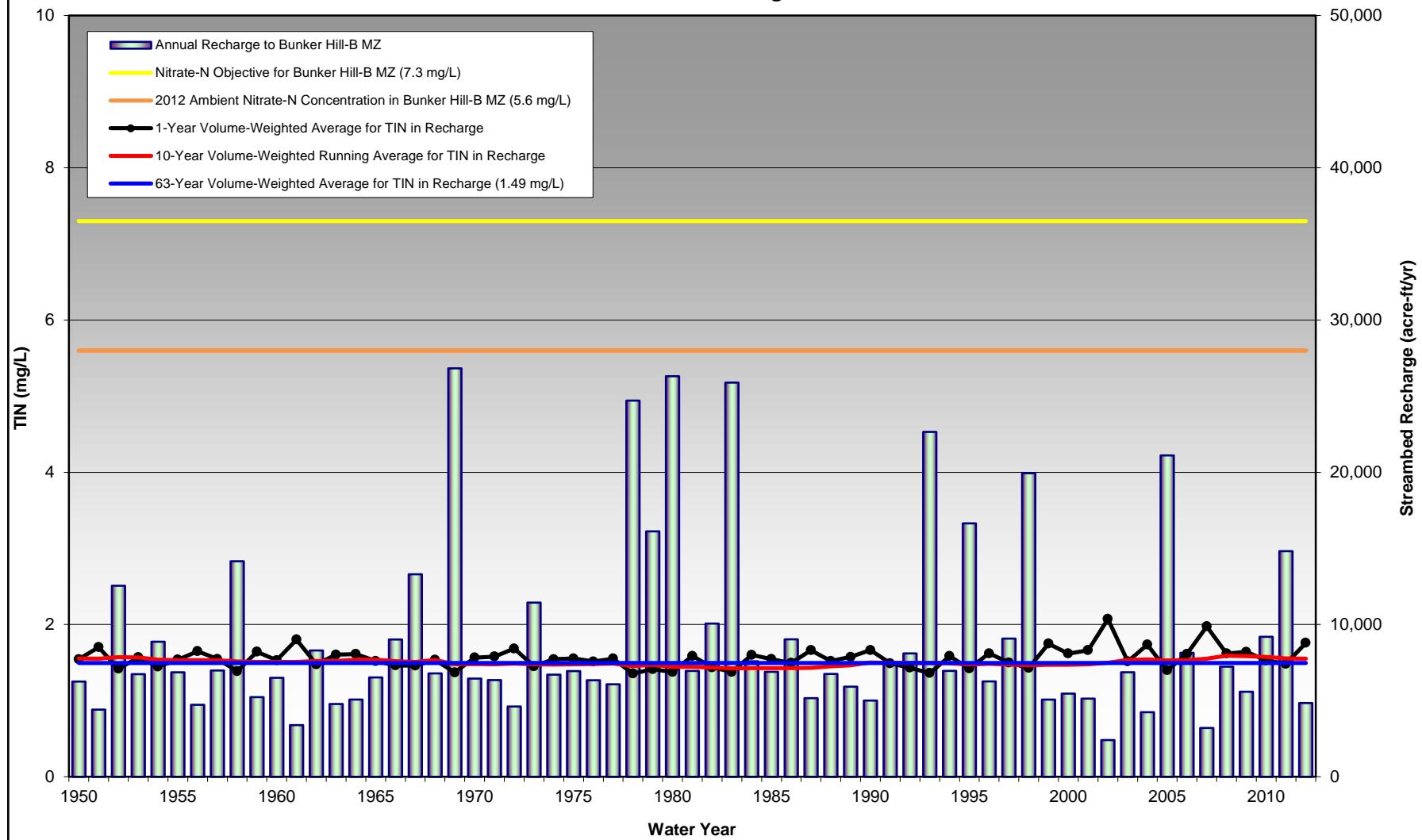


Table 8a-ST
TDS and TIN of Streambed Recharge to the San Timoteo Management Zone
Scenario 8a - Low Discharge for 2015

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	375	399	375	3.28	3.50	3.28
1951	438	399	375	3.85	3.50	3.28
1952	324	400	375	2.83	3.51	3.28
1953	395	398	375	3.45	3.49	3.28
1954	349	386	375	3.06	3.38	3.28
1955	390	384	375	3.41	3.36	3.28
1956	410	383	375	3.61	3.36	3.28
1957	394	384	375	3.44	3.37	3.28
1958	308	376	375	2.68	3.29	3.28
1959	418	374	375	3.68	3.28	3.28
1960	391	376	375	3.41	3.29	3.28
1961	444	376	375	3.91	3.29	3.28
1962	360	381	375	3.14	3.33	3.28
1963	414	382	375	3.64	3.35	3.28
1964	408	389	375	3.58	3.40	3.28
1965	380	388	375	3.32	3.39	3.28
1966	346	381	375	3.04	3.33	3.28
1967	334	374	375	2.93	3.28	3.28
1968	386	385	375	3.38	3.37	3.28
1969	287	368	375	2.51	3.23	3.28
1970	407	370	375	3.58	3.24	3.28
1971	409	367	375	3.58	3.22	3.28
1972	419	372	375	3.68	3.27	3.28
1973	337	365	375	2.92	3.20	3.28
1974	384	363	375	3.36	3.18	3.28
1975	385	363	375	3.36	3.18	3.28
1976	368	365	375	3.23	3.20	3.28
1977	395	372	375	3.46	3.26	3.28
1978	267	355	375	2.31	3.10	3.28
1979	325	360	375	2.82	3.15	3.28
1980	290	348	375	2.53	3.04	3.28
1981	412	348	375	3.62	3.04	3.28
1982	353	343	375	3.09	2.99	3.28
1983	288	337	375	2.49	2.94	3.28
1984	409	338	375	3.59	2.95	3.28
1985	393	339	375	3.44	2.96	3.28
1986	386	340	375	3.37	2.97	3.28
1987	435	343	375	3.82	2.99	3.28
1988	395	359	375	3.45	3.14	3.28
1989	419	368	375	3.68	3.22	3.28
1990	428	384	375	3.76	3.37	3.28
1991	362	380	375	3.18	3.32	3.28
1992	357	380	375	3.13	3.33	3.28
1993	337	389	375	2.92	3.41	3.28
1994	408	389	375	3.58	3.40	3.28
1995	323	380	375	2.83	3.33	3.28
1996	417	383	375	3.66	3.36	3.28
1997	360	376	375	3.15	3.29	3.28
1998	321	368	375	2.78	3.22	3.28
1999	457	370	375	4.02	3.24	3.28
2000	415	369	375	3.64	3.23	3.28
2001	417	374	375	3.65	3.27	3.28
2002	466	383	375	4.11	3.35	3.28
2003	374	388	375	3.28	3.40	3.28
2004	441	390	375	3.88	3.42	3.28
2005	318	389	375	2.77	3.41	3.28
2006	415	389	375	3.64	3.41	3.28
2007	478	400	375	4.22	3.51	3.28
2008	414	412	375	3.63	3.62	3.28
2009	423	409	375	3.72	3.60	3.28
2010	378	405	375	3.31	3.56	3.28
2011	365	400	375	3.20	3.51	3.28
2012	449	399	375	3.96	3.50	3.28
Maximum	478	412		4.22	3.62	

San Timoteo Reach 3 defined here is equivalent to San Temoteo Cr reaches 3 and 4 described in 1995 Water Quality Control Plan

Figure 8a-TDS_ST
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 8a - Low Discharge for 2015

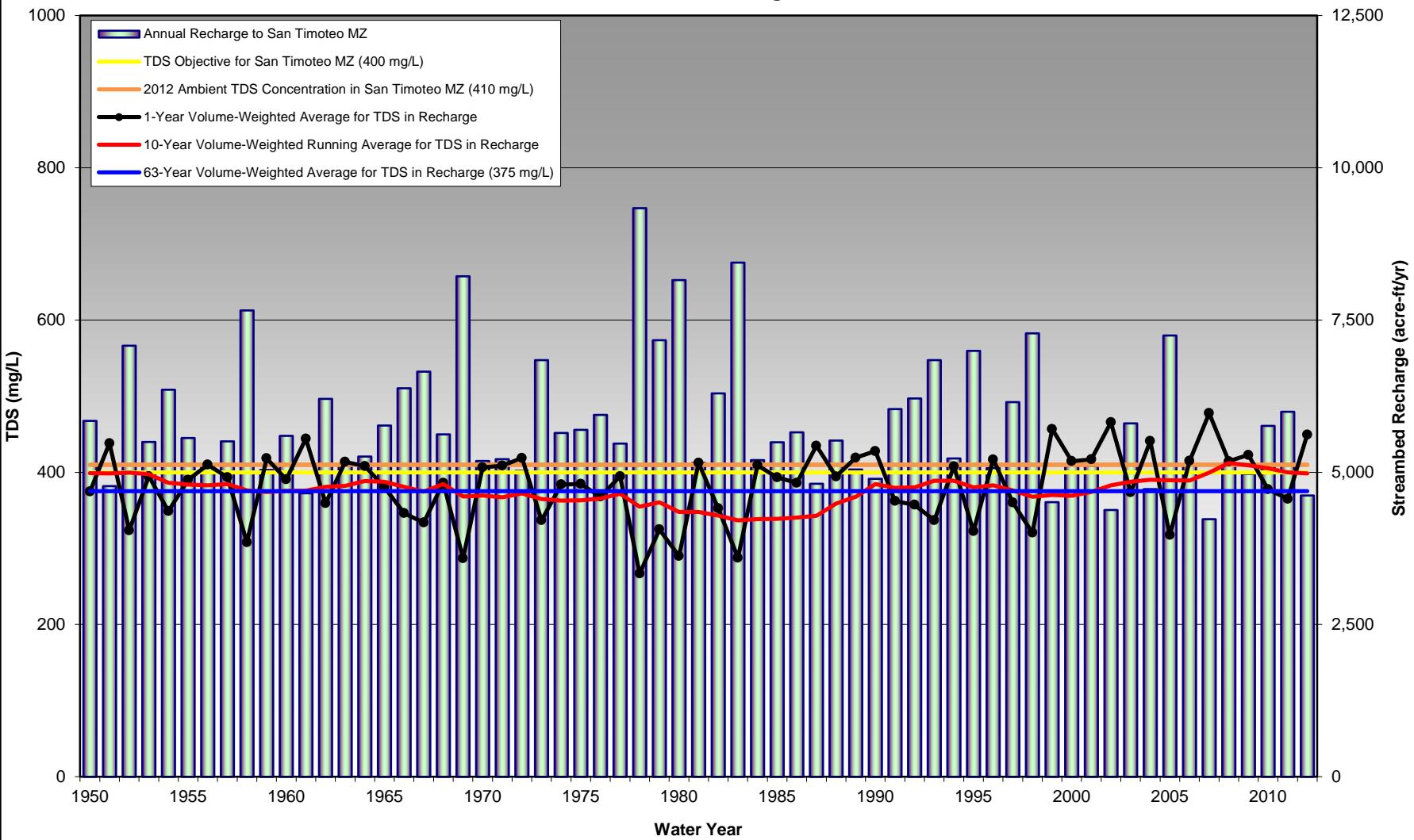


Figure 8a-TIN_ST
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 8a - Low Discharge for 2015

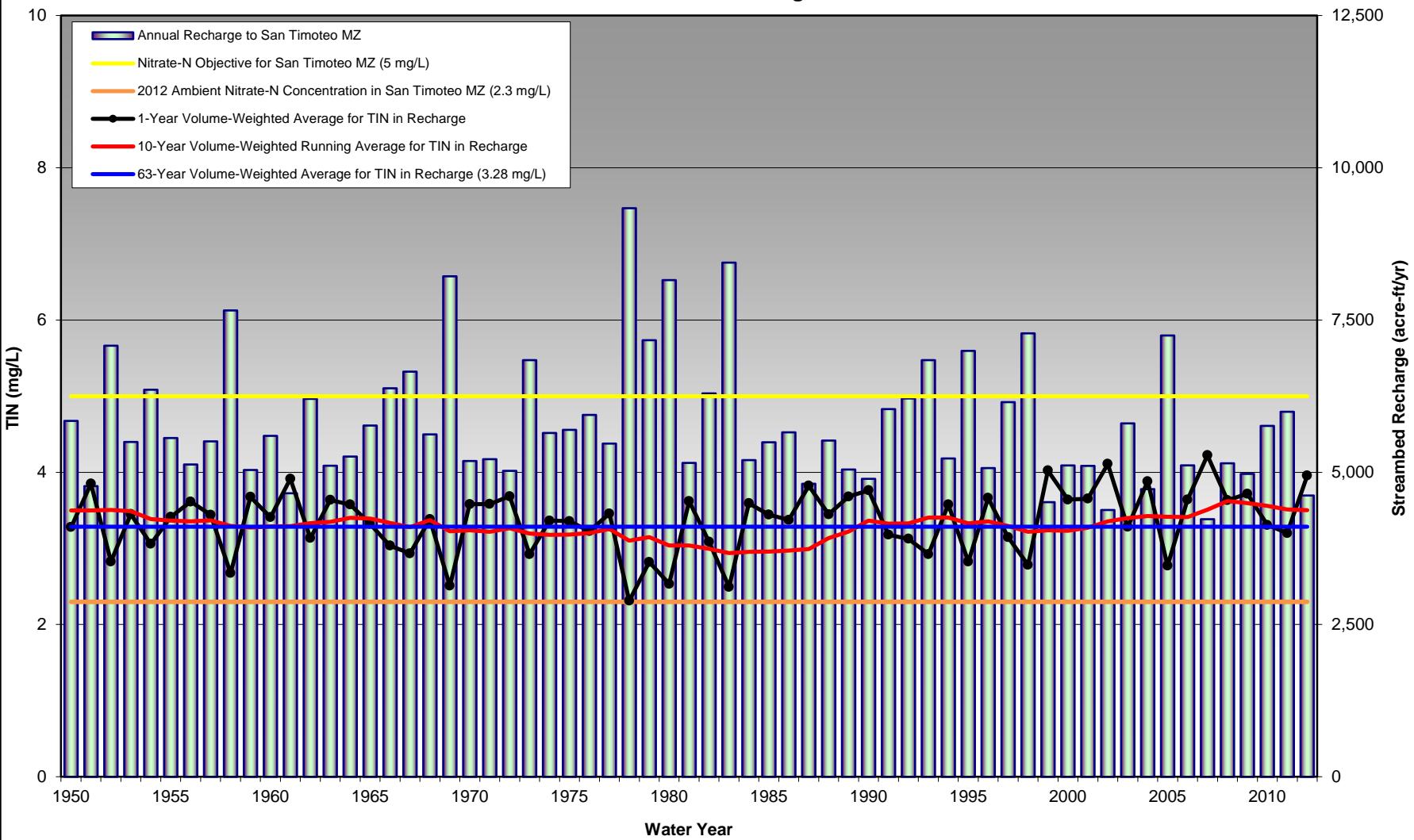


Table 8a-BU
TDS and TIN of Streambed Recharge to the Beaumont Management Zone
Scenario 8a - Low Discharge for 2015

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	189	197	175	2.15	2.30	1.98
1951	281	197	175	3.53	2.30	1.98
1952	143	200	175	1.53	2.34	1.98
1953	239	200	175	2.85	2.35	1.98
1954	147	187	175	1.61	2.15	1.98
1955	217	187	175	2.54	2.15	1.98
1956	184	183	175	2.21	2.11	1.98
1957	212	186	175	2.47	2.15	1.98
1958	139	180	175	1.44	2.05	1.98
1959	242	179	175	2.94	2.03	1.98
1960	240	182	175	2.84	2.07	1.98
1961	291	182	175	3.71	2.08	1.98
1962	171	188	175	1.87	2.15	1.98
1963	224	187	175	2.69	2.14	1.98
1964	238	198	175	2.83	2.29	1.98
1965	189	195	175	2.13	2.25	1.98
1966	148	189	175	1.63	2.16	1.98
1967	135	178	175	1.45	2.01	1.98
1968	193	187	175	2.21	2.16	1.98
1969	118	168	175	1.21	1.89	1.98
1970	188	166	175	2.22	1.86	1.98
1971	213	164	175	2.51	1.84	1.98
1972	216	166	175	2.59	1.88	1.98
1973	178	164	175	1.93	1.84	1.98
1974	188	162	175	2.15	1.81	1.98
1975	205	163	175	2.35	1.82	1.98
1976	166	165	175	1.87	1.85	1.98
1977	218	174	175	2.58	1.97	1.98
1978	129	163	175	1.28	1.80	1.98
1979	156	173	175	1.64	1.92	1.98
1980	126	163	175	1.28	1.78	1.98
1981	252	164	175	3.07	1.79	1.98
1982	153	160	175	1.66	1.74	1.98
1983	130	153	175	1.30	1.65	1.98
1984	219	154	175	2.62	1.66	1.98
1985	206	154	175	2.41	1.66	1.98
1986	194	156	175	2.20	1.68	1.98
1987	274	157	175	3.42	1.69	1.98
1988	241	167	175	2.87	1.84	1.98
1989	256	173	175	3.12	1.93	1.98
1990	242	190	175	2.97	2.18	1.98
1991	155	182	175	1.71	2.07	1.98
1992	174	186	175	1.94	2.11	1.98
1993	116	179	175	1.18	2.04	1.98
1994	227	179	175	2.70	2.04	1.98
1995	125	167	175	1.33	1.88	1.98
1996	196	167	175	2.33	1.89	1.98
1997	166	163	175	1.83	1.82	1.98
1998	153	158	175	1.60	1.75	1.98
1999	300	158	175	3.84	1.75	1.98
2000	197	157	175	2.31	1.73	1.98
2001	278	162	175	3.44	1.80	1.98
2002	310	165	175	4.05	1.86	1.98
2003	169	181	175	1.93	2.09	1.98
2004	283	183	175	3.59	2.12	1.98
2005	140	187	175	1.45	2.15	1.98
2006	234	189	175	2.81	2.18	1.98
2007	319	199	175	4.22	2.32	1.98
2008	221	211	175	2.59	2.51	1.98
2009	234	208	175	2.84	2.47	1.98
2010	180	206	175	2.04	2.43	1.98
2011	160	195	175	1.78	2.28	1.98
2012	284	194	175	3.58	2.27	1.98
Maximum	319	211		4.22	2.51	

Figure 8a-TDS_BU
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 8a - Low Discharge for 2015

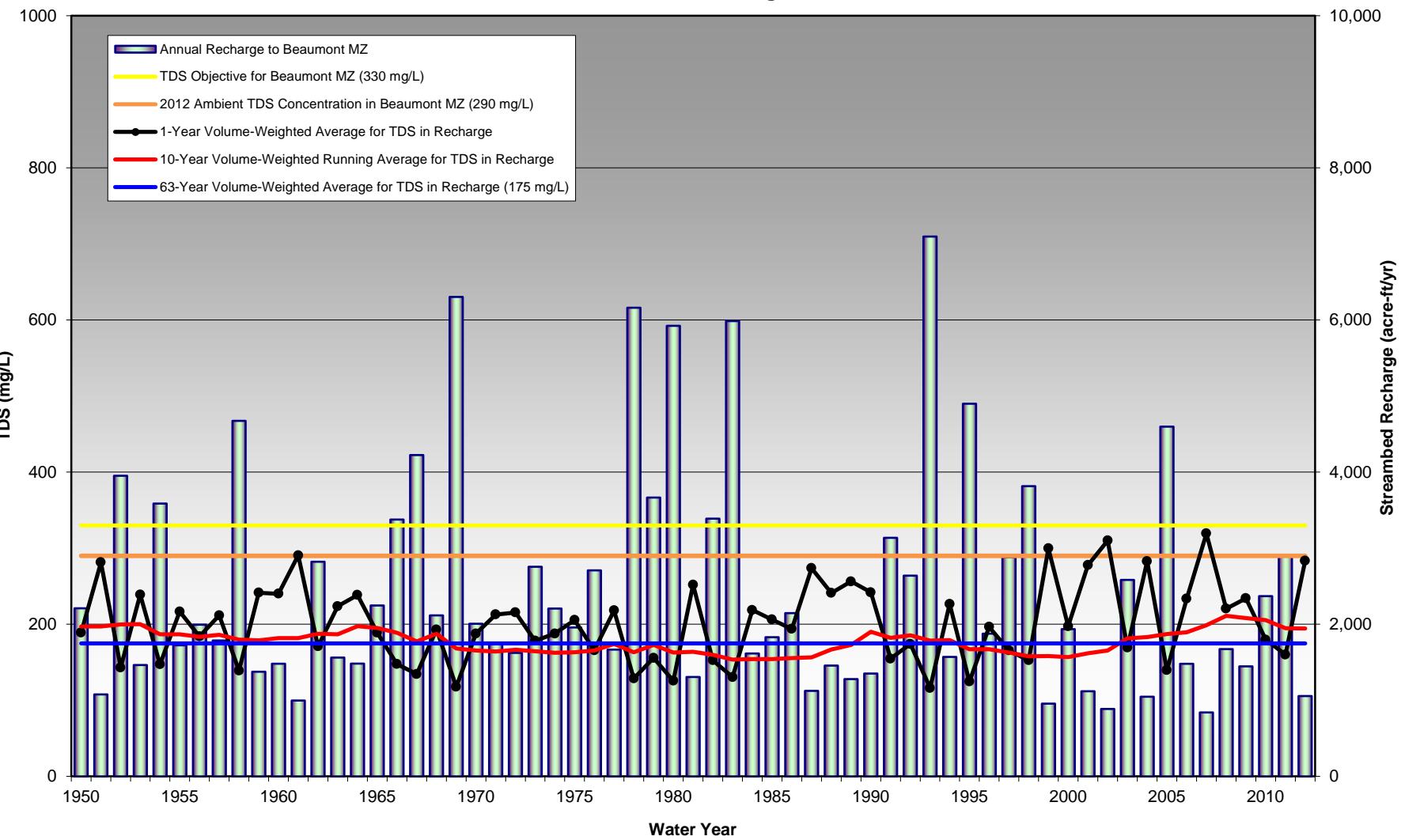


Figure 8a-TIN_BU
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 8a - Low Discharge for 2015

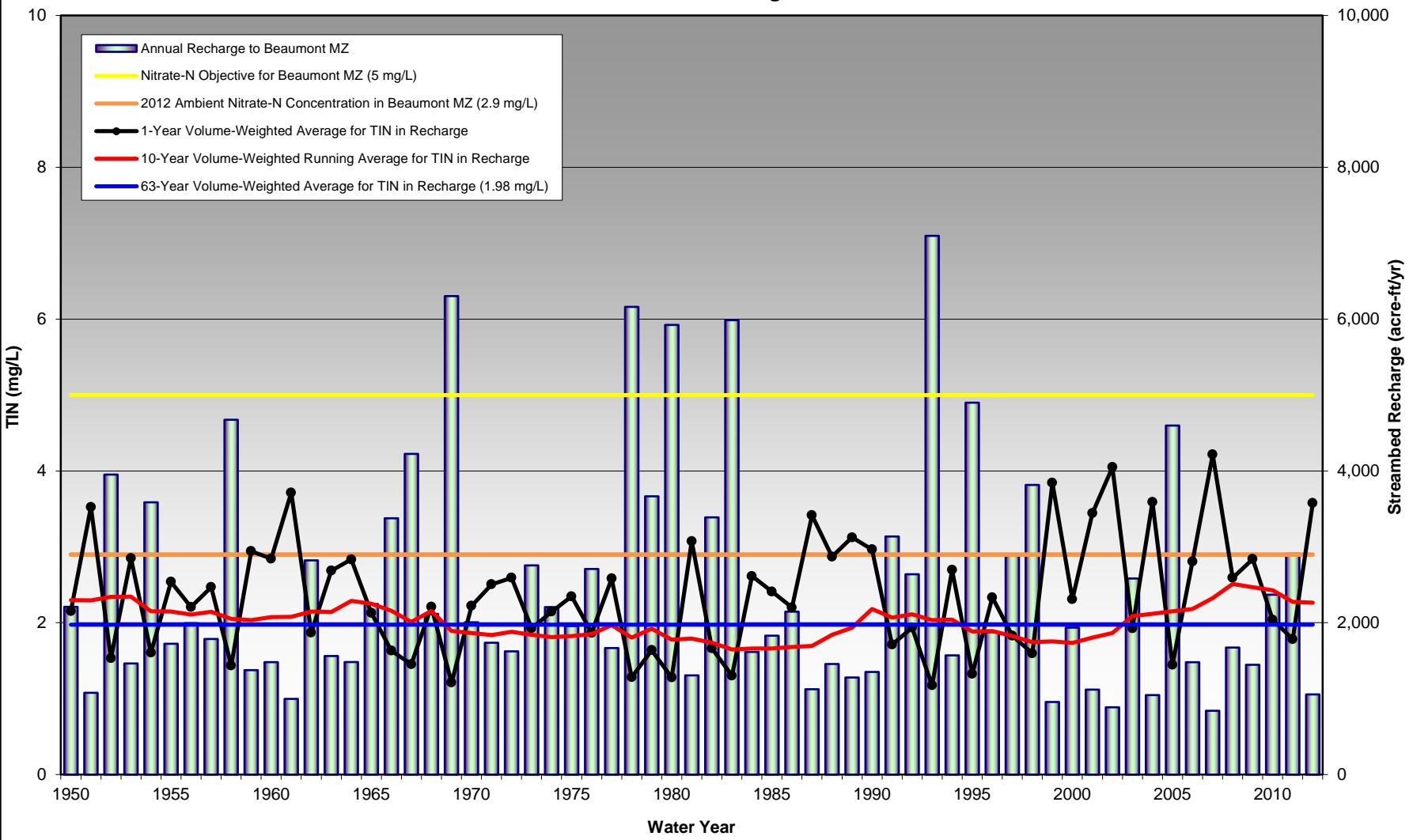


Table 8b-BP
TDS and TIN in Santa Ana River Flow at Below Prado
Scenario 8b - Intermediate Discharge for 2015

Water Year	Volume Weighted Running Average (mg/L)											
	TDS						TIN					
	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only
1950	510	478	446	436	405	702	6.10	5.69	5.29	5.17	4.74	8.06
1951	614	491	452	438	405	702	7.36	5.85	5.38	5.20	4.74	8.06
1952	304	473	418	463	405	702	3.62	5.64	4.98	5.51	4.74	8.06
1953	564	520	472	464	405	702	6.74	6.22	5.64	5.52	4.74	8.06
1954	417	482	442	446	405	701	4.96	5.76	5.28	5.31	4.74	8.05
1955	525	485	444	445	405	700	6.27	5.79	5.30	5.30	4.74	8.04
1956	385	439	411	431	405	702	4.67	5.25	4.92	5.13	4.74	8.06
1957	538	486	473	443	405	702	6.42	5.81	5.66	5.29	4.74	8.06
1958	335	440	420	444	405	663	3.92	5.25	5.01	5.30	4.74	7.60
1959	606	478	446	444	405	702	7.27	5.71	5.32	5.30	4.74	8.06
1960	560	485	451	447	405	702	6.68	5.79	5.38	5.34	4.74	8.06
1961	647	537	495	449	405	677	7.78	6.42	5.90	5.35	4.74	7.77
1962	427	515	473	473	405	702	5.09	6.15	5.63	5.64	4.74	8.06
1963	489	546	530	467	405	701	5.86	6.54	6.35	5.58	4.74	8.05
1964	558	536	523	481	405	702	6.68	6.42	6.26	5.74	4.74	8.06
1965	497	524	511	478	405	686	5.91	6.26	6.11	5.71	4.74	7.87
1966	343	463	446	469	405	702	4.04	5.52	5.31	5.59	4.74	8.06
1967	299	437	404	435	405	683	3.50	5.20	4.79	5.17	4.74	7.83
1968	466	433	401	454	405	702	5.61	5.15	4.76	5.41	4.74	8.06
1969	208	363	305	374	405	673	2.30	4.27	3.54	4.40	4.74	7.68
1970	508	365	305	372	405	701	6.07	4.30	3.55	4.38	4.74	8.04
1971	525	401	320	368	405	699	6.27	4.75	3.73	4.33	4.74	8.02
1972	512	444	348	373	405	668	6.13	5.27	4.07	4.39	4.74	7.65
1973	413	433	343	368	405	702	4.87	5.13	4.00	4.33	4.74	8.06
1974	449	481	476	364	405	702	5.38	5.74	5.67	4.28	4.74	8.06
1975	523	484	478	365	405	702	6.24	5.78	5.70	4.29	4.74	8.06
1976	520	483	477	377	405	702	6.19	5.76	5.69	4.44	4.74	8.06
1977	517	484	478	399	405	318	6.18	5.77	5.69	4.70	4.74	3.58
1978	248	451	391	365	405	702	2.83	5.36	4.61	4.27	4.74	8.06
1979	382	438	380	420	405	702	4.48	5.18	4.47	4.97	4.74	8.06
1980	261	386	322	375	405	697	2.44	4.42	3.54	4.27	4.74	8.00
1981	565	394	324	376	405	702	6.75	4.54	3.56	4.29	4.74	8.06
1982	371	365	313	368	405	700	4.41	4.18	3.45	4.19	4.74	8.04
1983	295	375	328	353	405	413	3.12	4.24	3.55	3.98	4.74	4.65
1984	510	400	338	356	405	698	6.10	4.56	3.66	4.01	4.74	8.02
1985	497	448	404	355	405	702	5.93	5.26	4.67	4.00	4.74	8.06
1986	440	423	391	352	405	701	5.23	4.96	4.52	3.96	4.74	8.04
1987	591	467	420	354	405	702	7.09	5.49	4.86	3.98	4.74	8.06
1988	492	506	500	384	405	701	5.87	6.04	5.97	4.34	4.74	8.05
1989	561	516	509	395	405	702	6.71	6.16	6.07	4.46	4.74	8.06
1990	570	531	522	452	405	702	6.85	6.35	6.24	5.31	4.74	8.06
1991	380	519	501	436	405	702	4.51	6.21	5.99	5.12	4.74	8.06
1992	401	481	464	440	405	702	4.76	5.74	5.53	5.16	4.74	8.06
1993	242	431	356	410	405	702	2.41	5.05	4.03	4.75	4.74	8.05
1994	559	431	356	412	405	702	6.67	5.04	4.03	4.78	4.74	8.06
1995	291	375	322	386	405	702	3.16	4.30	3.58	4.43	4.74	8.06
1996	468	392	330	388	405	702	5.62	4.52	3.66	4.45	4.74	8.06
1997	452	402	335	382	405	702	5.35	4.64	3.71	4.38	4.74	8.06
1998	299	414	371	364	405	678	3.49	4.86	4.31	4.16	4.74	7.77
1999	636	429	376	365	405	702	7.63	5.05	4.36	4.18	4.74	8.06
2000	561	483	438	365	405	702	6.71	5.76	5.20	4.18	4.74	8.06
2001	557	501	450	375	405	702	6.68	5.97	5.35	4.29	4.74	8.06
2002	662	543	477	386	405	702	7.97	6.50	5.69	4.42	4.74	8.06
2003	355	554	519	427	405	702	4.25	6.65	6.23	5.03	4.74	8.06
2004	575	542	511	428	405	702	6.88	6.50	6.13	5.04	4.74	8.06
2005	252	480	395	415	405	702	2.90	5.74	4.69	4.93	4.74	8.06
2006	550	479	395	420	405	702	6.54	5.71	4.68	4.99	4.74	8.06
2007	683	483	396	432	405	702	8.23	5.76	4.70	5.13	4.74	8.06
2008	541	520	428	467	405	702	6.43	6.20	5.06	5.57	4.74	8.06
2009	549	515	425	463	405	702	6.55	6.13	5.03	5.51	4.74	8.06
2010	395	543	521	447	405	702	4.67	6.48	6.22	5.32	4.74	8.06
2011	328	499	455	422	405	674	3.84	5.95	5.41	5.01	4.74	7.72
2012	607	484	450	421	405	701	7.27	5.75	5.34	4.99	4.74	8.05
Maximum	683	554	530	481	405	702	8.23	6.65	6.35	5.74	4.74	8.06

Figure 8b-TDS_Reach 3
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8b - Intermediate Discharge for 2015

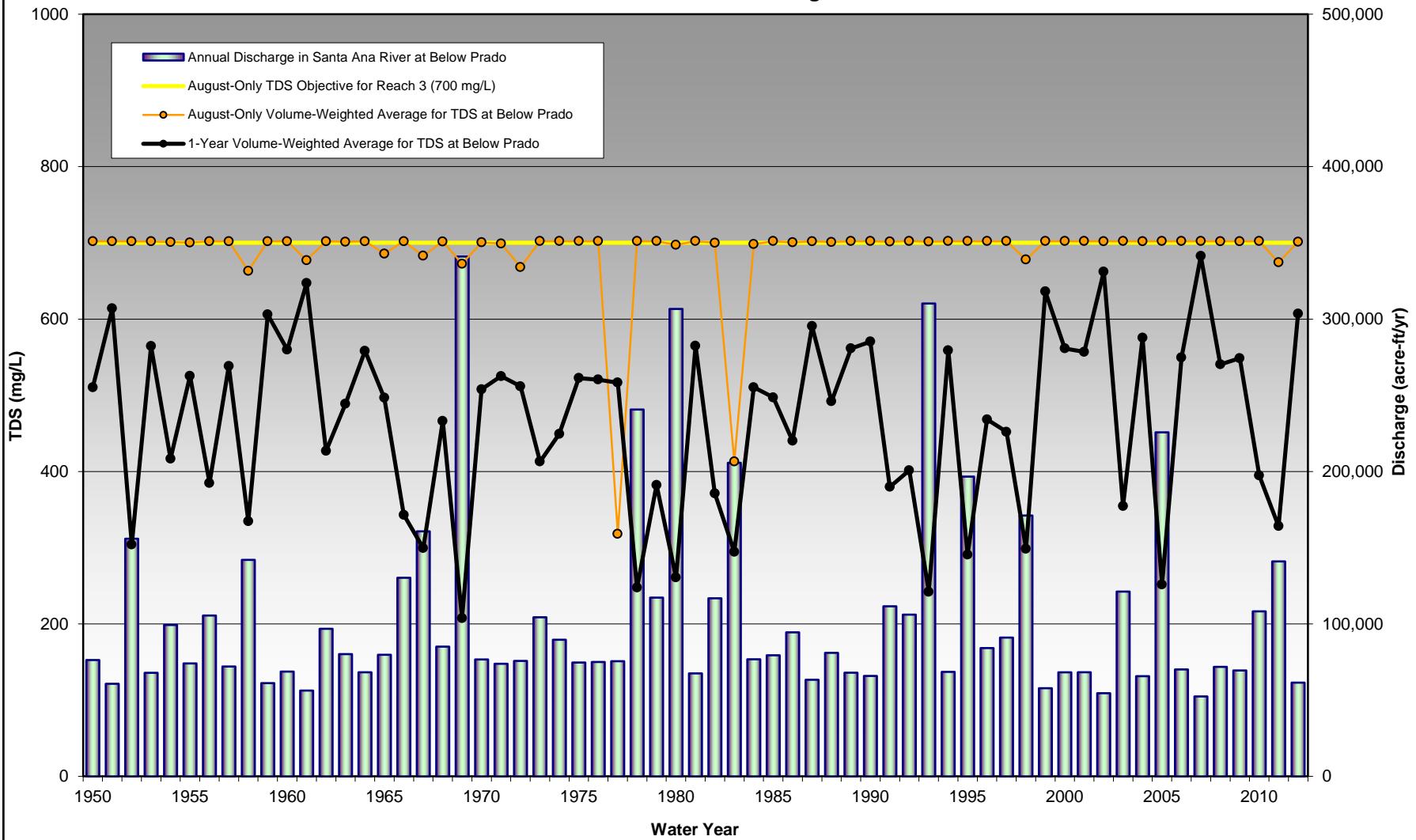


Figure 8b-TIN_BP
Estimated Annual Discharge and Volume-Weighted TIN Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8b - Intermediate Discharge for 2015

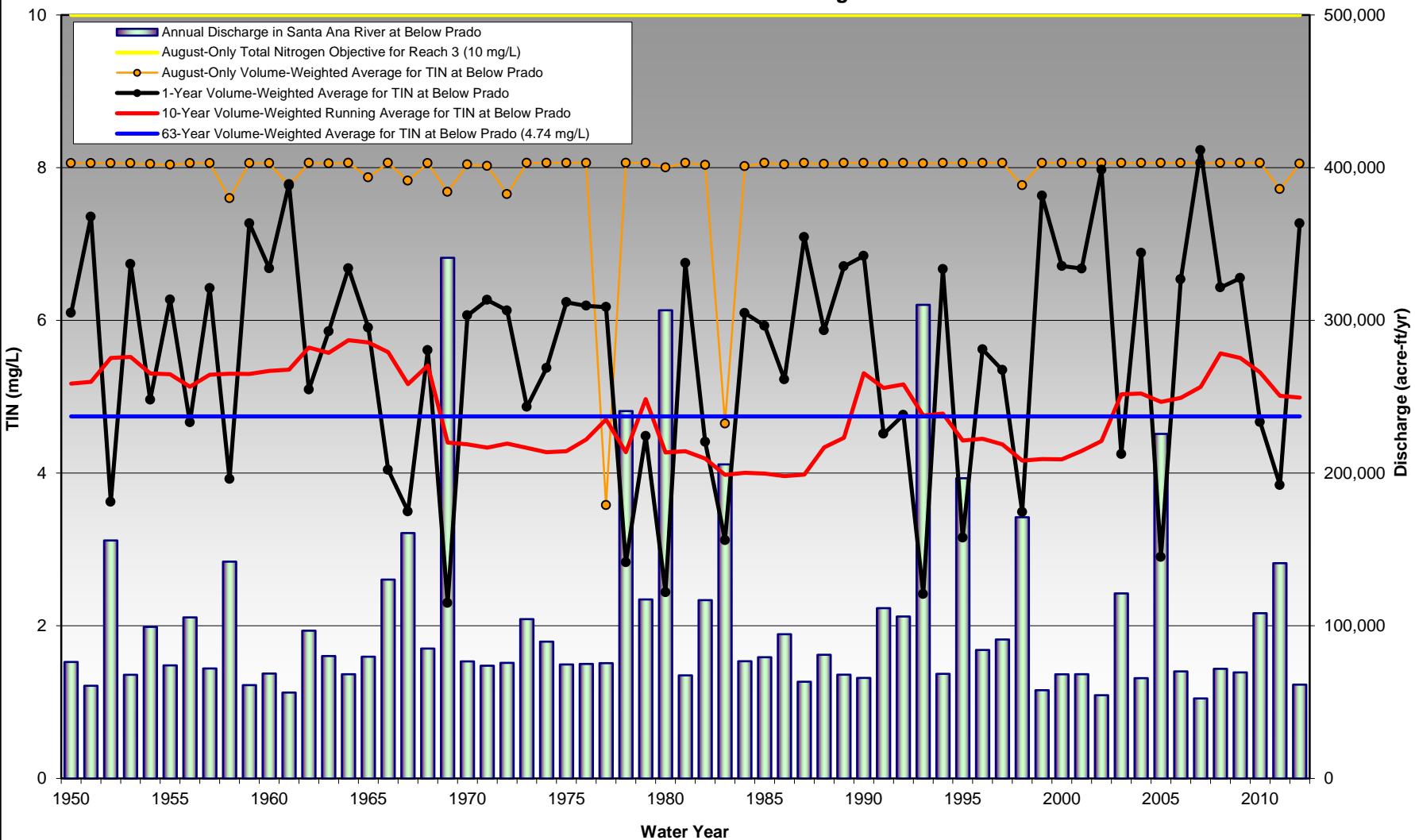


Figure 8b-TDS_Reach 2
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 2 Objective
Scenario 8b - Intermediate Discharge for 2015

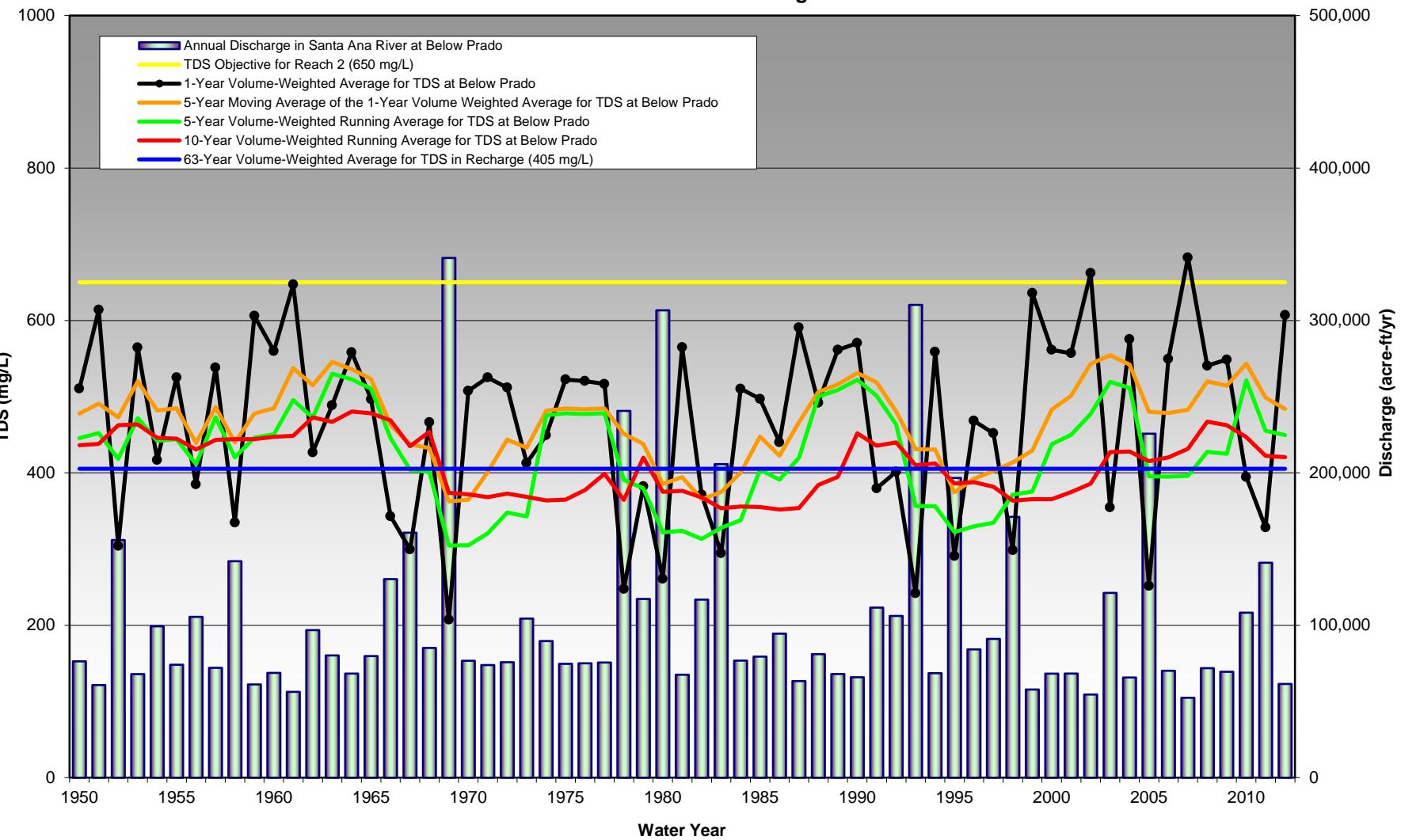


Table 8b-CS
TDS and TIN of Streambed Recharge to the Chino-South Management Zone
Scenario 8b - Intermediate Discharge for 2015

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	617	599	583	4.28	4.15	4.02
1951	638	598	583	4.44	4.17	4.02
1952	530	608	583	3.66	4.12	4.02
1953	627	608	583	4.35	4.14	4.02
1954	586	601	583	4.06	4.13	4.02
1955	616	600	583	4.28	4.14	4.02
1956	604	597	583	4.19	4.15	4.02
1957	624	602	583	4.33	4.16	4.02
1958	533	599	583	3.66	4.13	4.02
1959	645	599	583	4.49	4.16	4.02
1960	633	601	583	4.40	4.17	4.02
1961	650	602	583	4.53	4.17	4.02
1962	591	609	583	4.10	4.23	4.02
1963	613	608	583	4.25	4.22	4.02
1964	632	613	583	4.39	4.25	4.02
1965	612	612	583	4.25	4.25	4.02
1966	557	607	583	3.84	4.21	4.02
1967	532	597	583	3.66	4.13	4.02
1968	612	606	583	4.25	4.20	4.02
1969	404	575	583	2.63	3.96	4.02
1970	622	574	583	4.32	3.95	4.02
1971	620	571	583	4.31	3.93	4.02
1972	625	574	583	4.34	3.96	4.02
1973	586	572	583	4.05	3.94	4.02
1974	603	569	583	4.18	3.92	4.02
1975	623	570	583	4.33	3.93	4.02
1976	613	576	583	4.25	3.97	4.02
1977	628	585	583	4.37	4.04	4.02
1978	453	567	583	3.05	3.90	4.02
1979	560	589	583	3.80	4.06	4.02
1980	425	564	583	2.68	3.85	4.02
1981	636	565	583	4.42	3.86	4.02
1982	563	559	583	3.90	3.82	4.02
1983	471	547	583	3.04	3.71	4.02
1984	616	548	583	4.28	3.72	4.02
1985	614	547	583	4.26	3.72	4.02
1986	601	546	583	4.16	3.71	4.02
1987	640	547	583	4.45	3.72	4.02
1988	618	565	583	4.29	3.85	4.02
1989	633	572	583	4.40	3.90	4.02
1990	629	598	583	4.37	4.12	4.02
1991	582	593	583	4.03	4.09	4.02
1992	580	595	583	4.01	4.10	4.02
1993	422	585	583	2.69	4.03	4.02
1994	625	586	583	4.34	4.03	4.02
1995	492	572	583	3.23	3.92	4.02
1996	619	574	583	4.30	3.93	4.02
1997	593	570	583	4.10	3.90	4.02
1998	497	557	583	3.38	3.81	4.02
1999	644	558	583	4.48	3.81	4.02
2000	635	559	583	4.41	3.82	4.02
2001	632	563	583	4.39	3.85	4.02
2002	653	569	583	4.55	3.89	4.02
2003	576	591	583	3.99	4.07	4.02
2004	643	593	583	4.47	4.09	4.02
2005	465	589	583	3.15	4.07	4.02
2006	624	589	583	4.33	4.08	4.02
2007	658	595	583	4.58	4.12	4.02
2008	625	610	583	4.34	4.23	4.02
2009	632	609	583	4.39	4.22	4.02
2010	578	603	583	4.00	4.18	4.02
2011	555	595	583	3.82	4.12	4.02
2012	645	595	583	4.49	4.12	4.02
Maximum	658	613		4.58	4.25	

Figure 8b-TDS_CS
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 8b - Intermediate Discharge for 2015

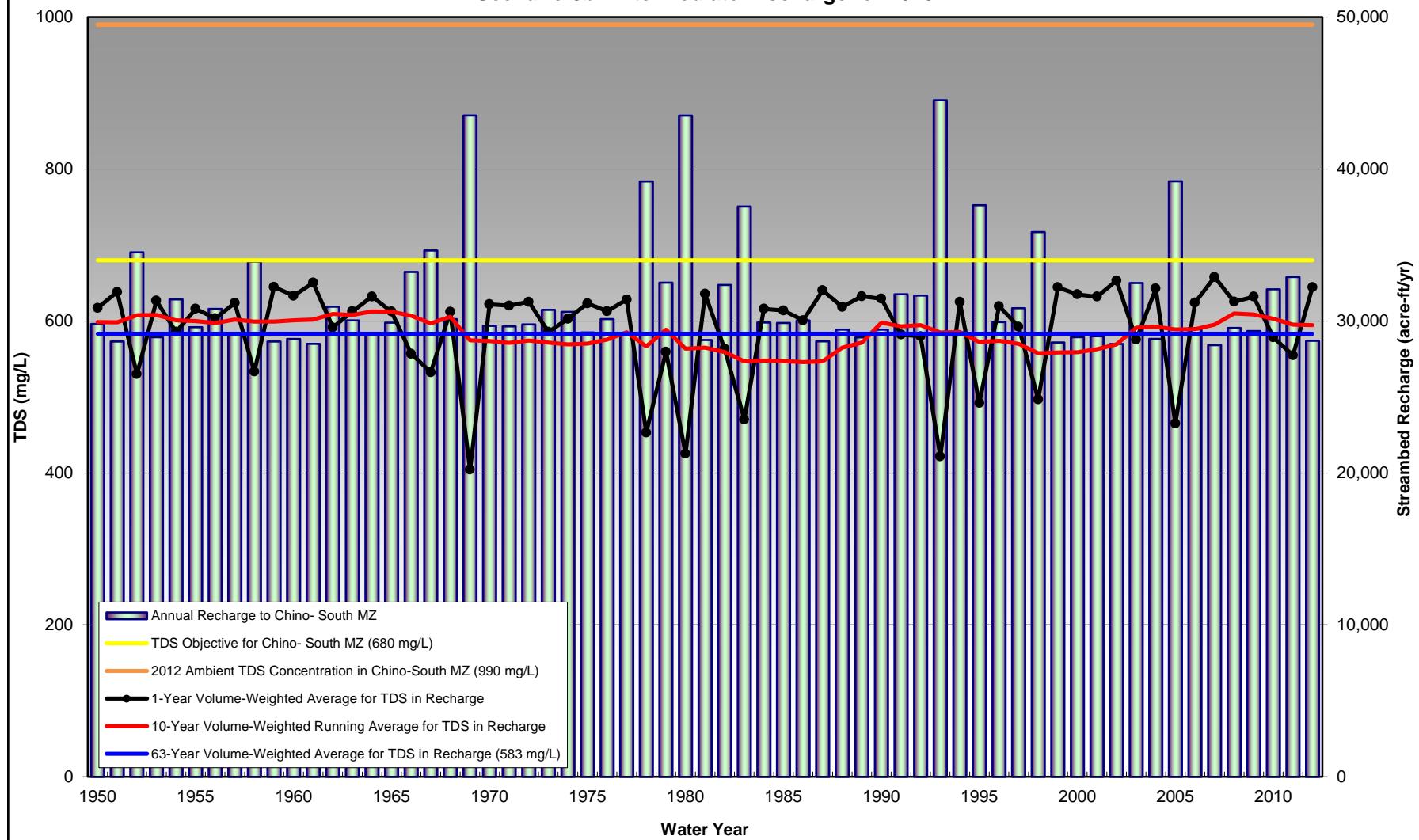


Figure 8b-TIN_CS
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 8b - Intermediate Discharge for 2015

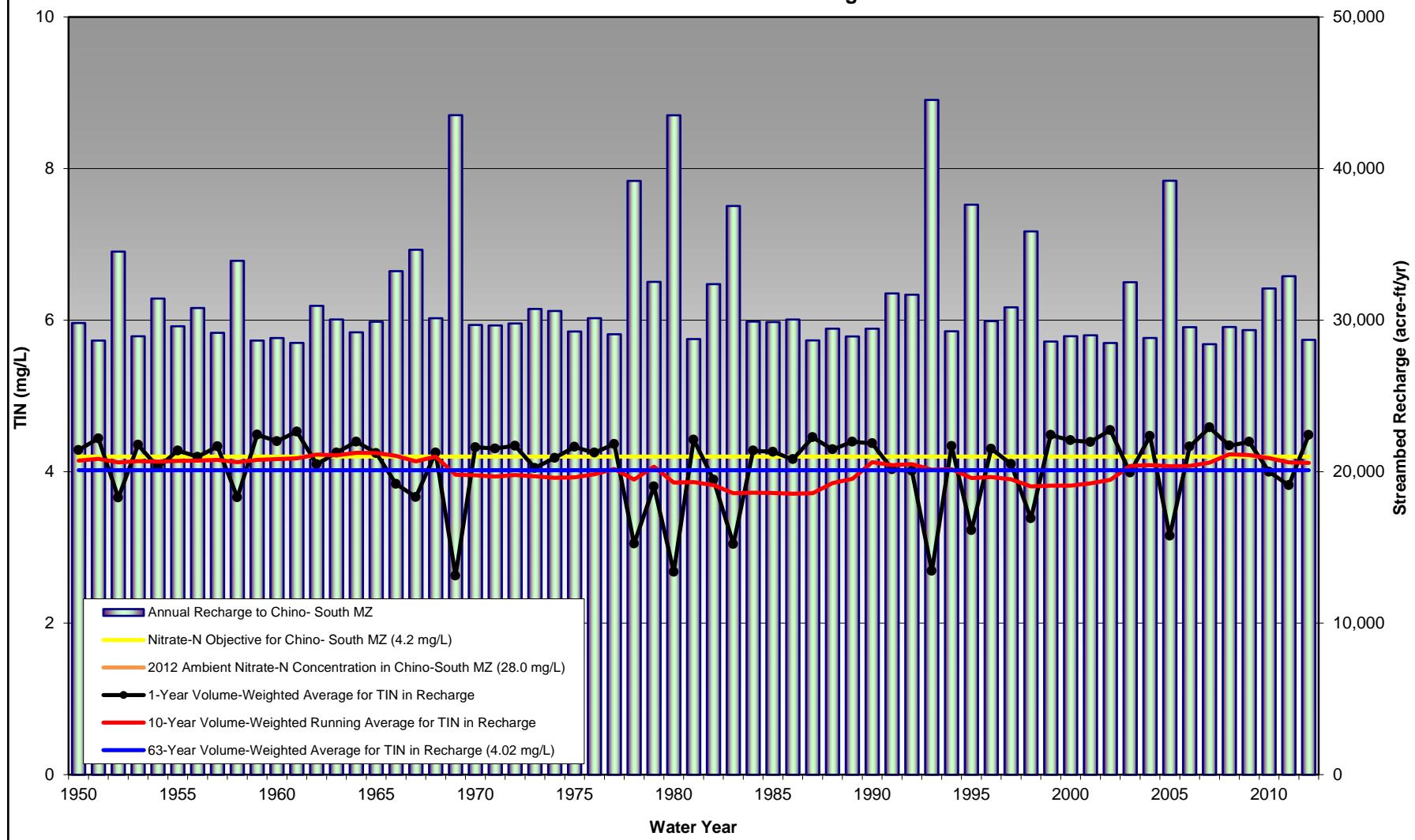


Table 8b-RA
TDS and TIN of Streambed Recharge to the Riverside-A Management Zone
Scenario 8b - Intermediate Discharge for 2015

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	453	436	414	6.10	5.78	5.44
1951	514	436	414	7.02	5.78	5.44
1952	358	453	414	4.67	6.07	5.44
1953	490	454	414	6.65	6.09	5.44
1954	410	443	414	5.42	5.92	5.44
1955	465	443	414	6.28	5.92	5.44
1956	462	440	414	6.28	5.88	5.44
1957	486	447	414	6.58	6.00	5.44
1958	351	441	414	4.46	5.90	5.44
1959	506	439	414	6.91	5.88	5.44
1960	503	443	414	6.85	5.94	5.44
1961	524	444	414	7.19	5.95	5.44
1962	420	453	414	5.59	6.09	5.44
1963	471	452	414	6.38	6.06	5.44
1964	485	460	414	6.58	6.19	5.44
1965	449	458	414	6.02	6.16	5.44
1966	381	448	414	4.95	6.00	5.44
1967	362	434	414	4.69	5.78	5.44
1968	455	448	414	6.12	6.00	5.44
1969	253	405	414	2.79	5.31	5.44
1970	458	402	414	6.17	5.27	5.44
1971	456	398	414	6.12	5.20	5.44
1972	477	403	414	6.45	5.27	5.44
1973	418	399	414	5.51	5.20	5.44
1974	442	396	414	5.93	5.16	5.44
1975	483	398	414	6.53	5.19	5.44
1976	447	404	414	5.99	5.29	5.44
1977	484	415	414	6.56	5.46	5.44
1978	283	391	414	3.30	5.06	5.44
1979	392	419	414	5.09	5.53	5.44
1980	257	386	414	2.85	4.98	5.44
1981	502	389	414	6.83	5.02	5.44
1982	387	382	414	5.11	4.92	5.44
1983	289	366	414	3.43	4.67	5.44
1984	457	367	414	6.14	4.68	5.44
1985	469	367	414	6.33	4.67	5.44
1986	449	367	414	6.00	4.67	5.44
1987	512	368	414	6.99	4.69	5.44
1988	472	390	414	6.37	5.04	5.44
1989	483	397	414	6.53	5.16	5.44
1990	485	435	414	6.58	5.79	5.44
1991	410	427	414	5.44	5.67	5.44
1992	395	428	414	5.20	5.68	5.44
1993	256	412	414	2.84	5.41	5.44
1994	478	414	414	6.46	5.43	5.44
1995	312	395	414	3.77	5.13	5.44
1996	455	396	414	6.09	5.13	5.44
1997	412	389	414	5.41	5.03	5.44
1998	324	375	414	3.97	4.81	5.44
1999	521	377	414	7.13	4.84	5.44
2000	491	377	414	6.67	4.84	5.44
2001	504	383	414	6.86	4.92	5.44
2002	530	392	414	7.28	5.06	5.44
2003	417	425	414	5.56	5.61	5.44
2004	515	428	414	7.04	5.65	5.44
2005	291	422	414	3.44	5.56	5.44
2006	473	424	414	6.35	5.58	5.44
2007	533	433	414	7.32	5.74	5.44
2008	467	454	414	6.26	6.06	5.44
2009	496	452	414	6.75	6.03	5.44
2010	412	444	414	5.43	5.91	5.44
2011	390	433	414	5.03	5.73	5.44
2012	523	433	414	7.17	5.73	5.44
Maximum	533	460		7.32	6.19	

Figure 8b-TDS_RA
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 8b - Intermediate Discharge for 2015

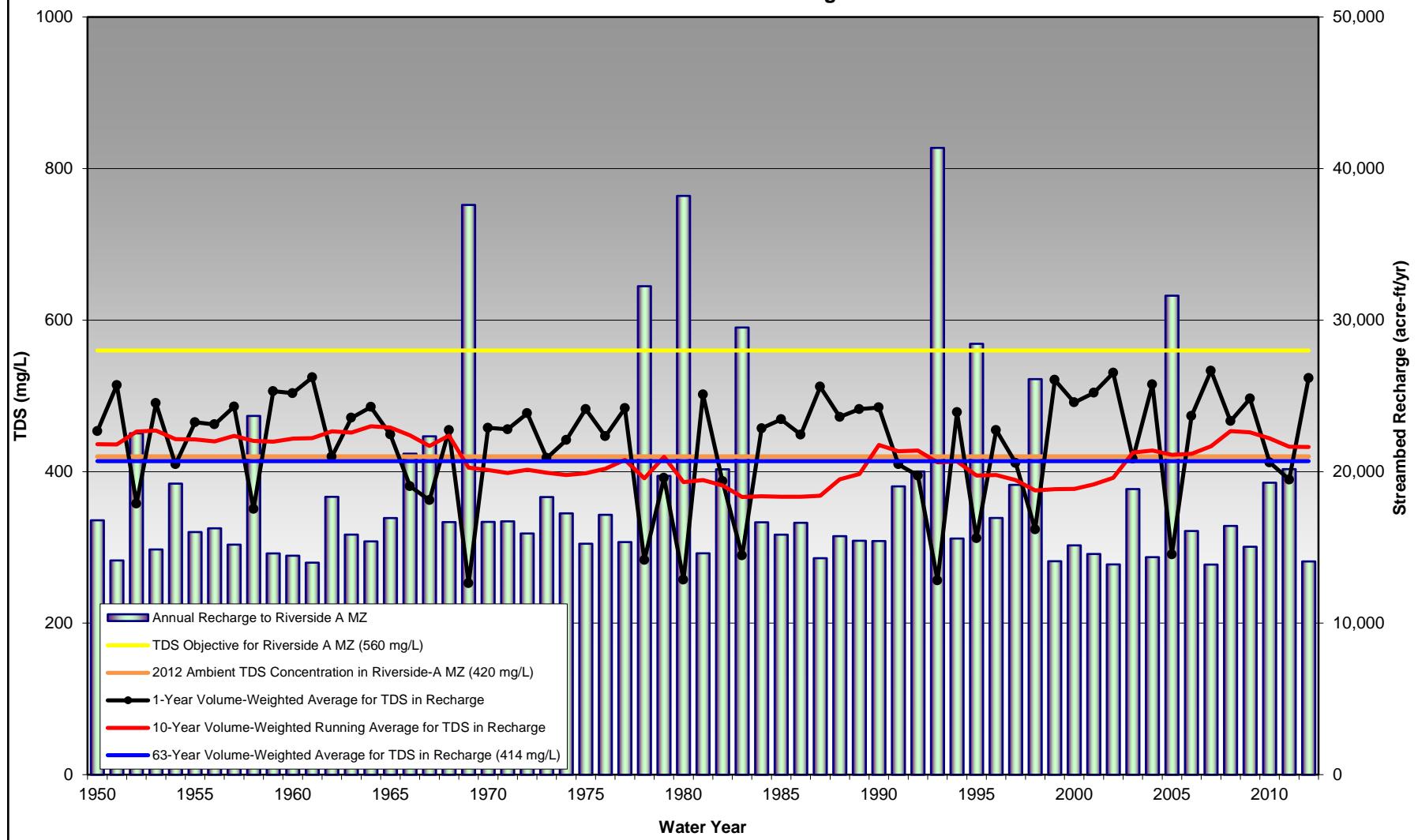


Figure 8b-TIN_RA
**Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
 of the Santa Ana River to the Riverside-A Management Zone**
Scenario 8b - Intermediate Discharge for 2015

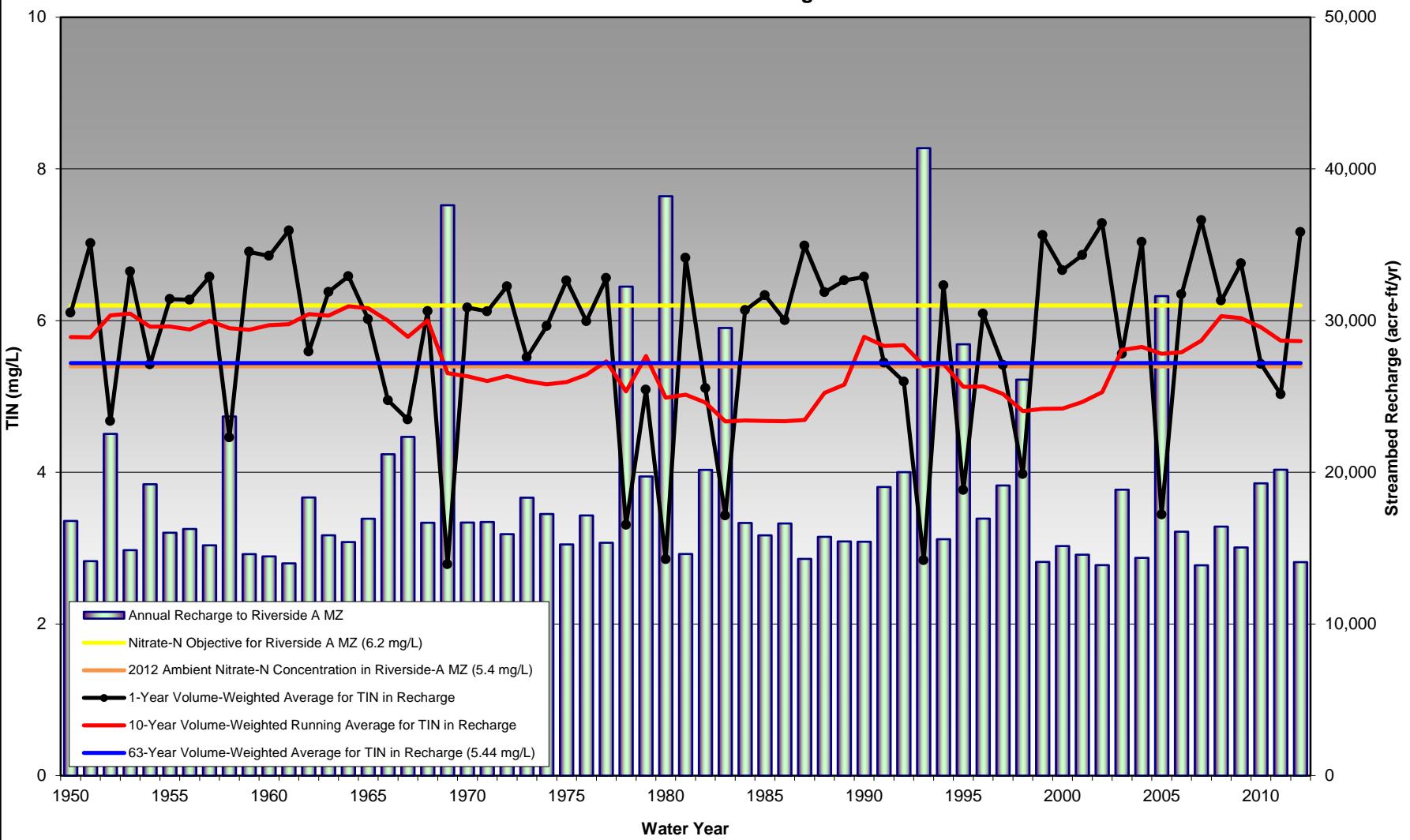


Table 8b-CO
TDS and TIN of Streambed Recharge to the Colton Management Zone
Scenario 8b - Intermediate Discharge for 2015

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	142	165	159	1.13	1.23	1.20
1951	165	165	159	1.25	1.23	1.20
1952	140	160	159	1.12	1.22	1.20
1953	159	158	159	1.22	1.21	1.20
1954	145	155	159	1.15	1.19	1.20
1955	148	154	159	1.17	1.19	1.20
1956	127	152	159	1.05	1.17	1.20
1957	159	152	159	1.22	1.18	1.20
1958	154	148	159	1.19	1.16	1.20
1959	166	148	159	1.26	1.16	1.20
1960	156	149	159	1.20	1.17	1.20
1961	161	149	159	1.22	1.16	1.20
1962	146	150	159	1.15	1.17	1.20
1963	136	149	159	1.09	1.16	1.20
1964	153	150	159	1.18	1.17	1.20
1965	148	150	159	1.15	1.17	1.20
1966	148	151	159	1.15	1.17	1.20
1967	148	150	159	1.14	1.16	1.20
1968	142	148	159	1.12	1.15	1.20
1969	168	157	159	1.23	1.18	1.20
1970	141	156	159	1.13	1.18	1.20
1971	149	156	159	1.18	1.18	1.20
1972	155	157	159	1.19	1.18	1.20
1973	156	157	159	1.21	1.19	1.20
1974	139	157	159	1.12	1.18	1.20
1975	162	157	159	1.22	1.19	1.20
1976	140	157	159	1.10	1.19	1.20
1977	148	158	159	1.15	1.19	1.20
1978	164	160	159	1.21	1.20	1.20
1979	163	157	159	1.22	1.19	1.20
1980	166	161	159	1.21	1.20	1.20
1981	168	161	159	1.26	1.20	1.20
1982	132	159	159	1.07	1.19	1.20
1983	168	161	159	1.25	1.20	1.20
1984	163	162	159	1.23	1.21	1.20
1985	148	162	159	1.14	1.21	1.20
1986	157	162	159	1.20	1.21	1.20
1987	166	163	159	1.25	1.21	1.20
1988	152	162	159	1.17	1.21	1.20
1989	159	162	159	1.21	1.21	1.20
1990	154	159	159	1.19	1.21	1.20
1991	138	156	159	1.11	1.19	1.20
1992	136	157	159	1.09	1.20	1.20
1993	165	157	159	1.21	1.19	1.20
1994	162	157	159	1.23	1.19	1.20
1995	164	159	159	1.21	1.19	1.20
1996	161	159	159	1.21	1.19	1.20
1997	154	159	159	1.19	1.19	1.20
1998	167	160	159	1.25	1.20	1.20
1999	181	161	159	1.33	1.20	1.20
2000	157	161	159	1.21	1.20	1.20
2001	169	163	159	1.28	1.21	1.20
2002	177	164	159	1.33	1.22	1.20
2003	135	162	159	1.10	1.22	1.20
2004	170	162	159	1.27	1.22	1.20
2005	164	162	159	1.22	1.22	1.20
2006	180	163	159	1.32	1.23	1.20
2007	200	164	159	1.47	1.23	1.20
2008	170	164	159	1.28	1.23	1.20
2009	165	163	159	1.25	1.23	1.20
2010	154	163	159	1.18	1.22	1.20
2011	168	163	159	1.24	1.23	1.20
2012	181	164	159	1.34	1.23	1.20
Maximum	200	165		1.47	1.23	

Figure 8b-TDS_CO
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 8b - Intermediate Discharge for 2015

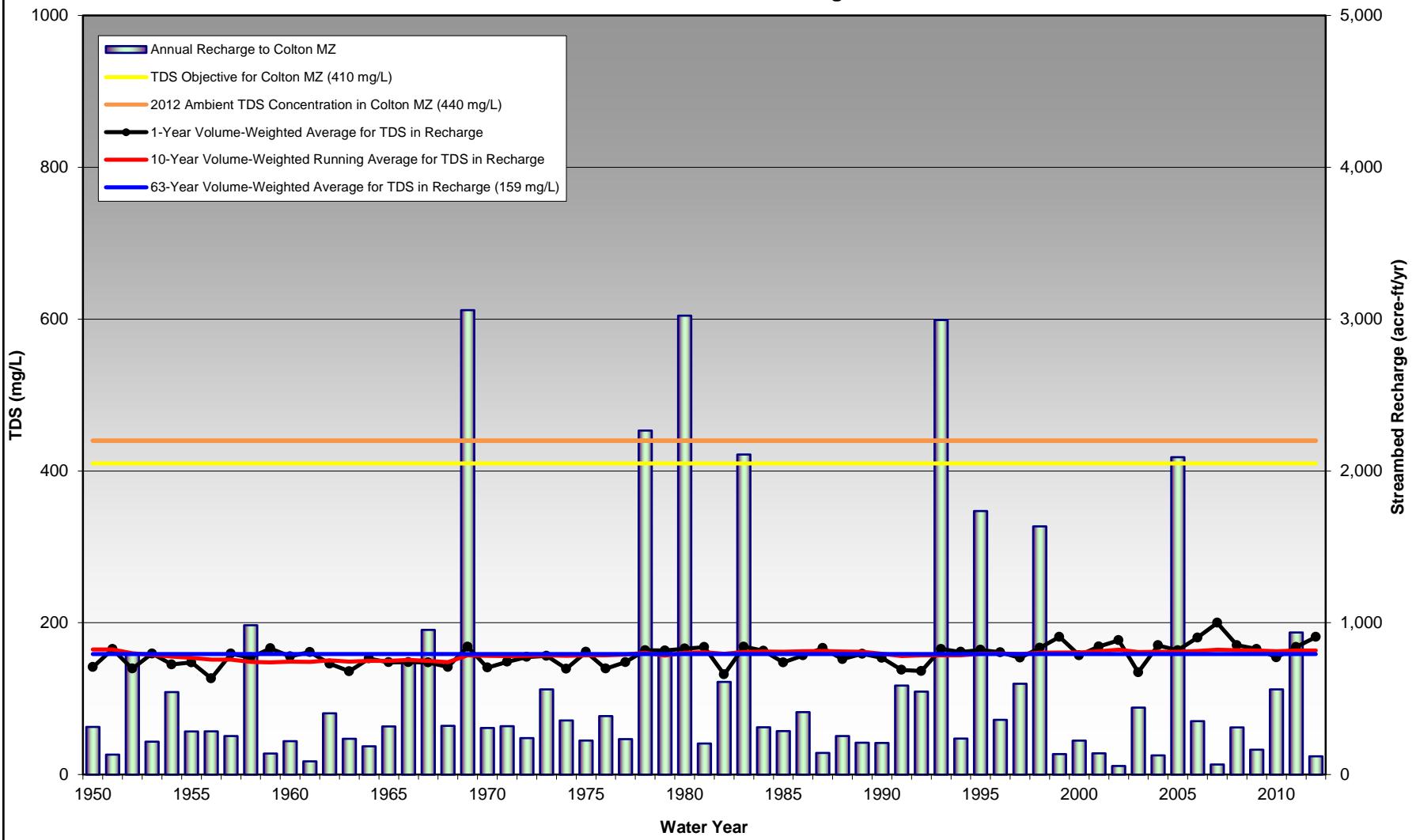


Figure 8b-TIN_CO
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 8b - Intermediate Discharge for 2015

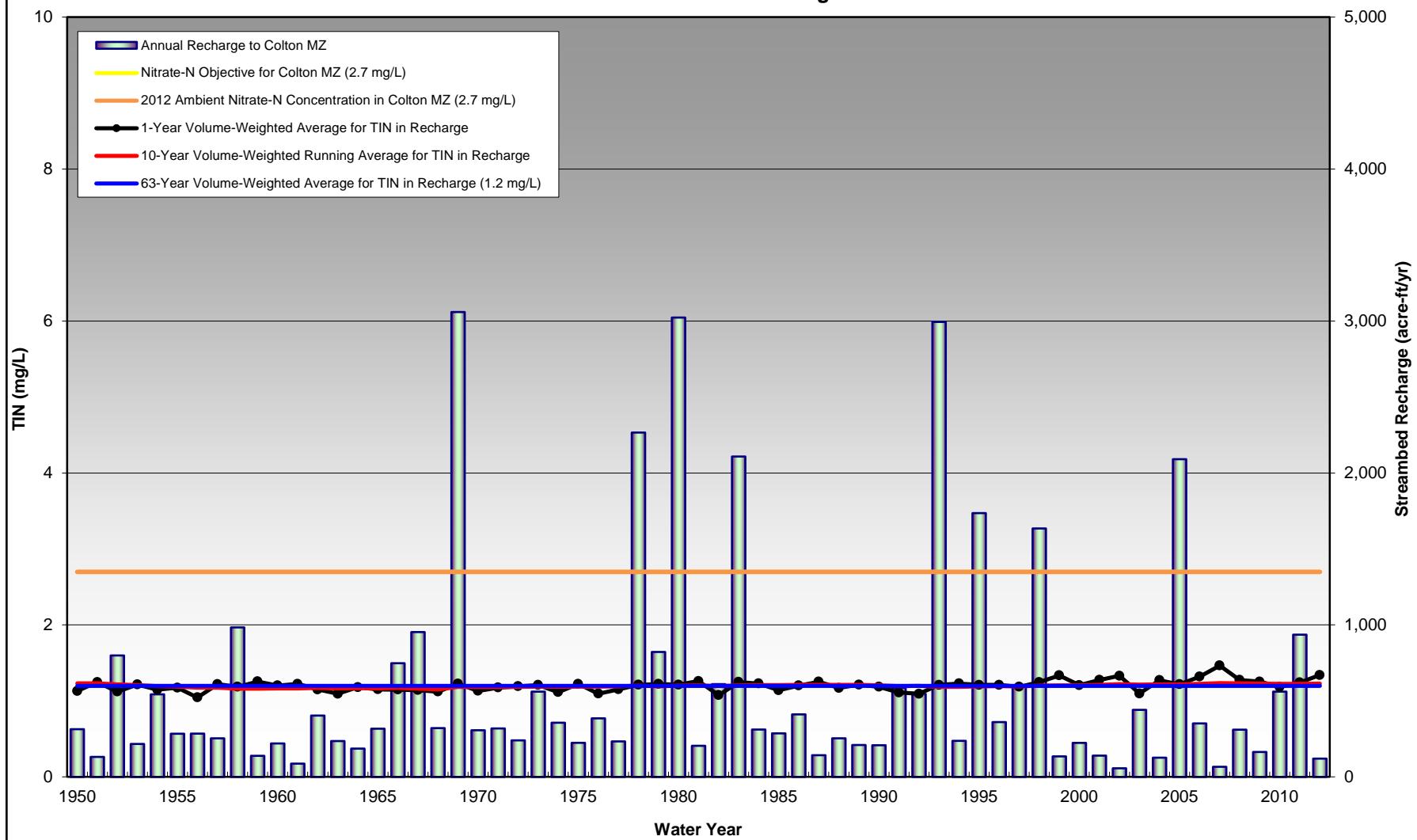


Table 8b-BH
TDS and TIN of Streambed Recharge to the Bunker Hill-B Management Zone
Scenario 8b - Intermediate Discharge for 2015

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	218	221	213	1.66	1.64	1.57
1951	245	221	213	1.85	1.64	1.57
1952	195	223	213	1.48	1.67	1.57
1953	222	222	213	1.68	1.66	1.57
1954	202	217	213	1.53	1.63	1.57
1955	217	216	213	1.64	1.62	1.57
1956	235	216	213	1.79	1.62	1.57
1957	219	216	213	1.65	1.63	1.57
1958	191	213	213	1.44	1.61	1.57
1959	236	212	213	1.78	1.60	1.57
1960	216	212	213	1.64	1.60	1.57
1961	262	212	213	1.99	1.61	1.57
1962	207	214	213	1.57	1.62	1.57
1963	229	215	213	1.75	1.63	1.57
1964	231	218	213	1.75	1.65	1.57
1965	215	217	213	1.63	1.65	1.57
1966	205	215	213	1.54	1.62	1.57
1967	204	212	213	1.52	1.60	1.57
1968	217	217	213	1.64	1.64	1.57
1969	195	209	213	1.40	1.56	1.57
1970	220	210	213	1.68	1.56	1.57
1971	223	209	213	1.69	1.56	1.57
1972	243	211	213	1.83	1.57	1.57
1973	201	208	213	1.52	1.55	1.57
1974	217	208	213	1.65	1.55	1.57
1975	220	208	213	1.66	1.55	1.57
1976	215	209	213	1.63	1.56	1.57
1977	221	211	213	1.67	1.57	1.57
1978	190	206	213	1.39	1.53	1.57
1979	197	207	213	1.46	1.55	1.57
1980	195	204	213	1.40	1.51	1.57
1981	225	204	213	1.69	1.51	1.57
1982	199	202	213	1.51	1.50	1.57
1983	193	201	213	1.41	1.48	1.57
1984	227	201	213	1.69	1.48	1.57
1985	219	201	213	1.65	1.48	1.57
1986	210	201	213	1.58	1.48	1.57
1987	239	202	213	1.79	1.49	1.57
1988	215	205	213	1.63	1.51	1.57
1989	224	207	213	1.69	1.53	1.57
1990	239	212	213	1.80	1.58	1.57
1991	208	211	213	1.59	1.58	1.57
1992	200	211	213	1.52	1.58	1.57
1993	192	211	213	1.39	1.58	1.57
1994	225	211	213	1.69	1.58	1.57
1995	201	209	213	1.47	1.55	1.57
1996	231	210	213	1.73	1.56	1.57
1997	210	208	213	1.58	1.55	1.57
1998	200	206	213	1.47	1.53	1.57
1999	251	208	213	1.88	1.54	1.57
2000	231	207	213	1.75	1.54	1.57
2001	239	209	213	1.80	1.55	1.57
2002	303	212	213	2.30	1.57	1.57
2003	213	218	213	1.62	1.62	1.57
2004	251	219	213	1.89	1.63	1.57
2005	196	217	213	1.43	1.61	1.57
2006	230	217	213	1.70	1.61	1.57
2007	288	221	213	2.16	1.64	1.57
2008	230	227	213	1.72	1.70	1.57
2009	235	226	213	1.76	1.69	1.57
2010	215	225	213	1.61	1.67	1.57
2011	211	221	213	1.53	1.64	1.57
2012	253	221	213	1.89	1.64	1.57
Maximum	303	227		2.30	1.70	

Figure 8b-TDS_BH
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 8b - Intermediate Discharge for 2015

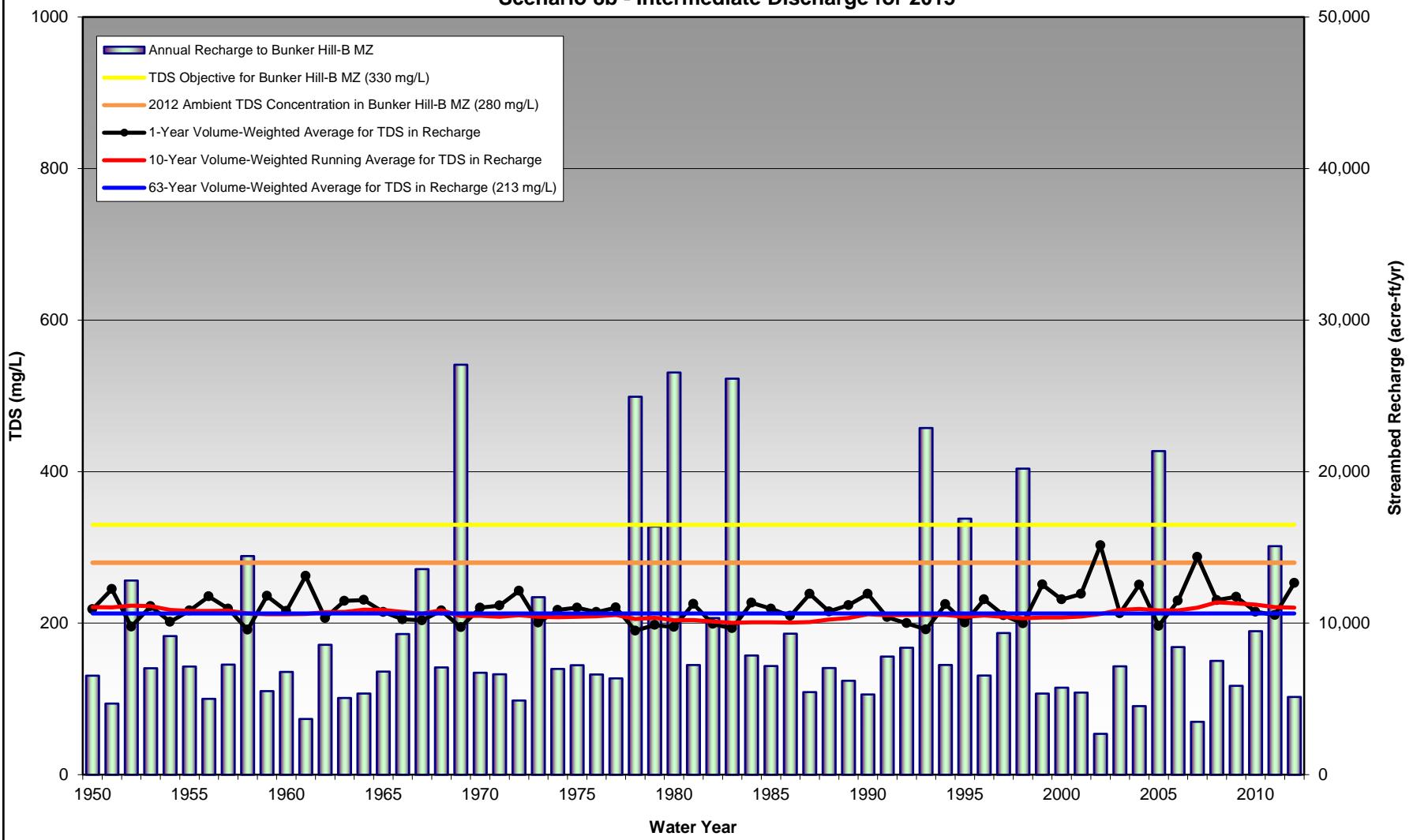


Figure 8b-TIN_BH
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 8b - Intermediate Discharge for 2015

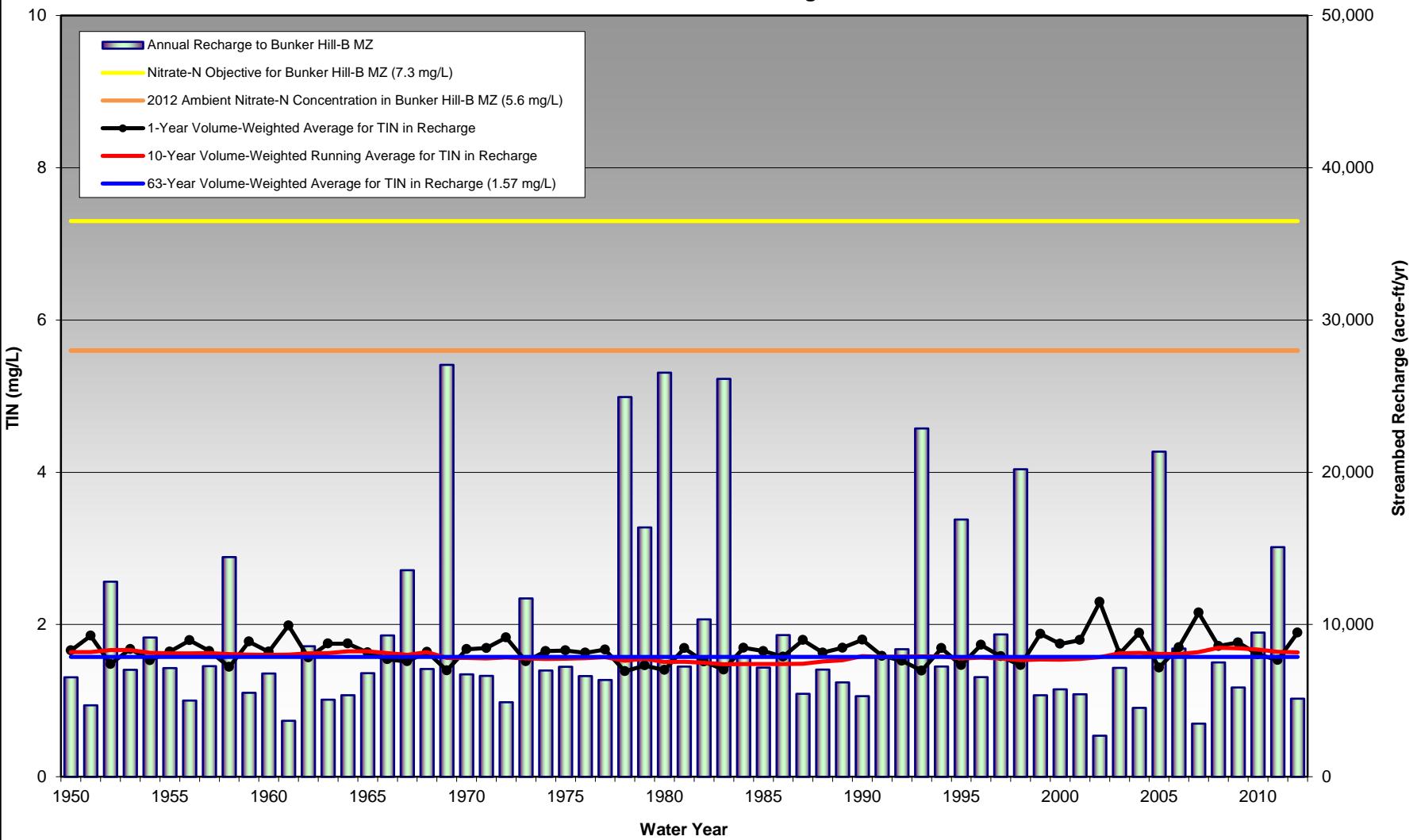


Table 8b-ST
TDS and TIN of Streambed Recharge to the San Timoteo Management Zone
Scenario 8b - Intermediate Discharge for 2015

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	384	407	384	3.34	3.55	3.34
1951	445	407	384	3.88	3.55	3.34
1952	334	408	384	2.90	3.56	3.34
1953	404	406	384	3.50	3.54	3.34
1954	359	395	384	3.12	3.44	3.34
1955	399	393	384	3.47	3.42	3.34
1956	418	392	384	3.66	3.41	3.34
1957	402	393	384	3.49	3.42	3.34
1958	318	386	384	2.75	3.35	3.34
1959	426	383	384	3.72	3.33	3.34
1960	399	385	384	3.46	3.35	3.34
1961	451	385	384	3.94	3.35	3.34
1962	369	390	384	3.20	3.39	3.34
1963	422	391	384	3.68	3.41	3.34
1964	416	397	384	3.62	3.46	3.34
1965	389	396	384	3.38	3.45	3.34
1966	356	390	384	3.10	3.39	3.34
1967	344	384	384	3.00	3.34	3.34
1968	395	394	384	3.44	3.43	3.34
1969	297	378	384	2.58	3.29	3.34
1970	415	379	384	3.63	3.30	3.34
1971	417	377	384	3.63	3.28	3.34
1972	427	382	384	3.73	3.33	3.34
1973	347	374	384	2.99	3.26	3.34
1974	393	372	384	3.42	3.24	3.34
1975	394	373	384	3.41	3.24	3.34
1976	377	375	384	3.29	3.26	3.34
1977	404	381	384	3.51	3.32	3.34
1978	276	364	384	2.38	3.17	3.34
1979	335	370	384	2.89	3.21	3.34
1980	300	357	384	2.60	3.10	3.34
1981	420	358	384	3.66	3.10	3.34
1982	362	353	384	3.15	3.06	3.34
1983	297	346	384	2.56	3.01	3.34
1984	417	348	384	3.64	3.02	3.34
1985	402	349	384	3.50	3.03	3.34
1986	395	350	384	3.43	3.04	3.34
1987	442	352	384	3.86	3.06	3.34
1988	403	368	384	3.50	3.20	3.34
1989	427	377	384	3.72	3.28	3.34
1990	435	393	384	3.80	3.42	3.34
1991	372	389	384	3.24	3.38	3.34
1992	367	389	384	3.19	3.39	3.34
1993	347	398	384	2.99	3.46	3.34
1994	416	398	384	3.62	3.46	3.34
1995	333	389	384	2.90	3.39	3.34
1996	425	392	384	3.71	3.41	3.34
1997	370	385	384	3.21	3.35	3.34
1998	330	377	384	2.85	3.28	3.34
1999	463	379	384	4.05	3.30	3.34
2000	423	379	384	3.69	3.29	3.34
2001	425	383	384	3.70	3.33	3.34
2002	471	392	384	4.13	3.41	3.34
2003	383	397	384	3.34	3.45	3.34
2004	448	399	384	3.91	3.48	3.34
2005	327	398	384	2.84	3.47	3.34
2006	423	398	384	3.68	3.47	3.34
2007	482	408	384	4.23	3.56	3.34
2008	422	420	384	3.68	3.67	3.34
2009	431	418	384	3.76	3.64	3.34
2010	387	414	384	3.37	3.61	3.34
2011	375	408	384	3.26	3.56	3.34
2012	456	407	384	3.98	3.55	3.34
Maximum	482	420		4.23	3.67	

San Timoteo Reach 3 defined here is equivalent to San Temoteo Cr reaches 3 and 4 described in 1995 Water Quality Control Plan

Figure 8b-TDS_ST
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 8b - Intermediate Discharge for 2015

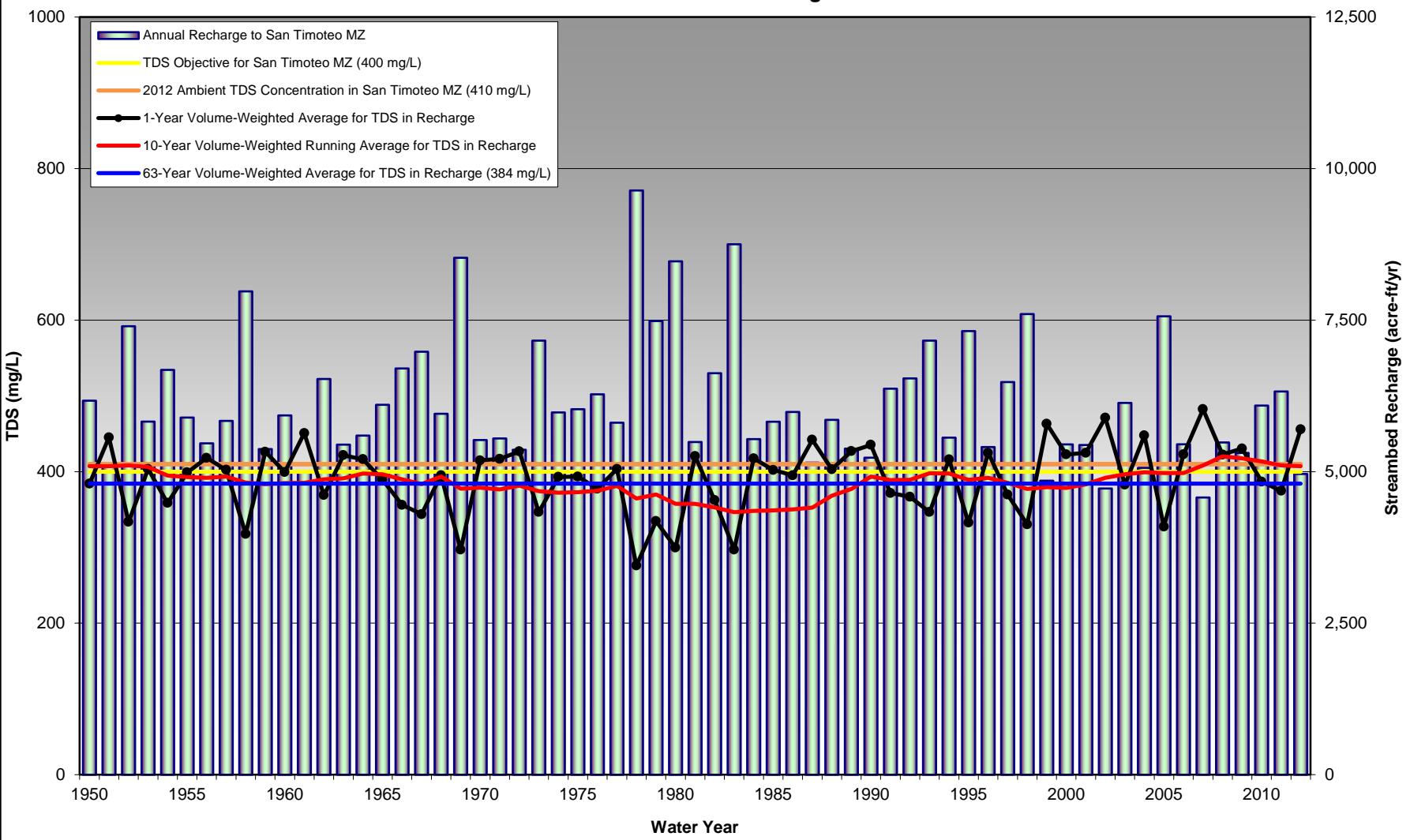


Figure 8b-TIN_ST
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 8b - Intermediate Discharge for 2015

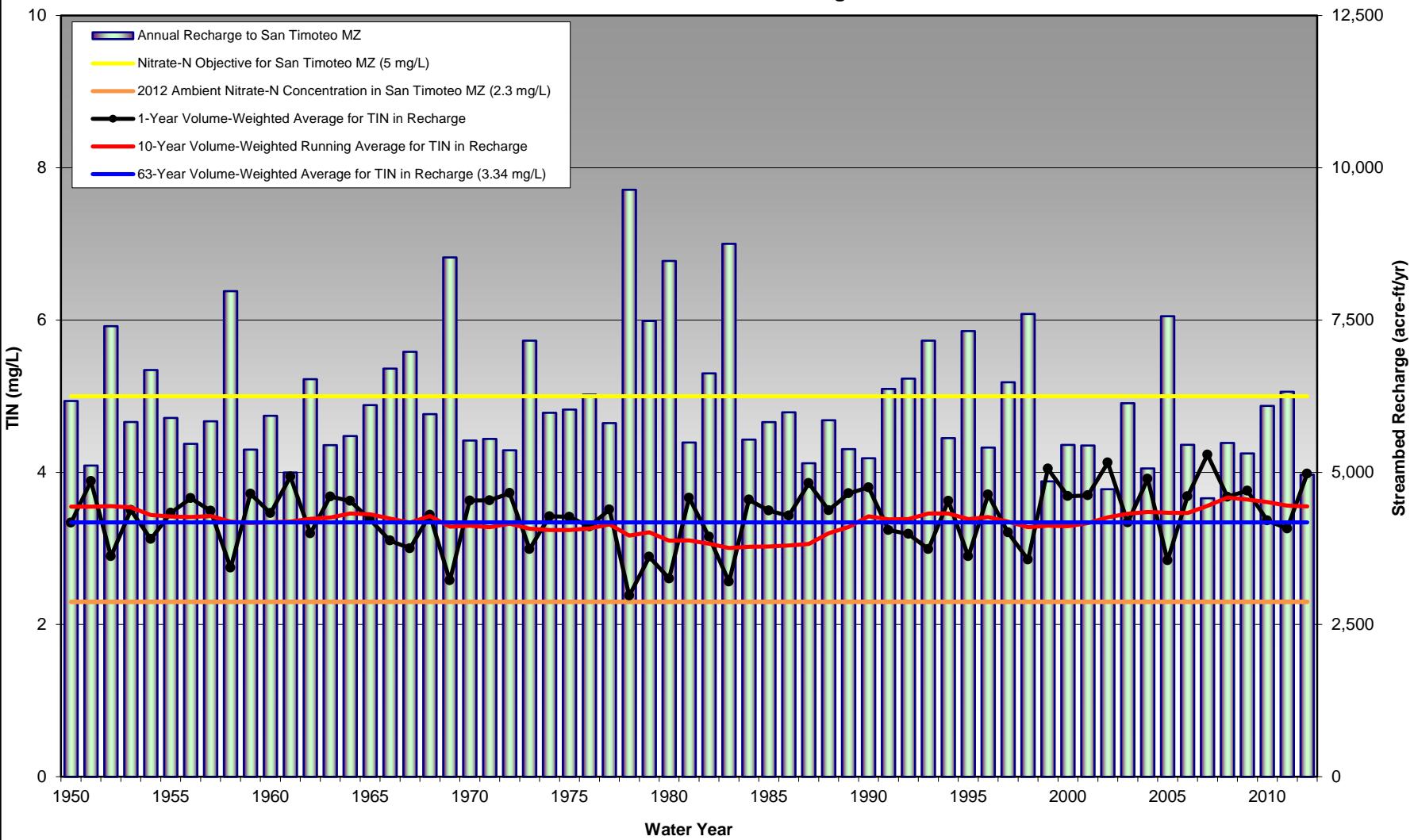


Table 8b-BU
TDS and TIN of Streambed Recharge to the Beaumont Management Zone
Scenario 8b - Intermediate Discharge for 2015

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	189	197	175	2.15	2.30	1.98
1951	281	197	175	3.53	2.30	1.98
1952	143	200	175	1.53	2.34	1.98
1953	239	200	175	2.85	2.35	1.98
1954	147	187	175	1.61	2.15	1.98
1955	217	187	175	2.54	2.15	1.98
1956	184	183	175	2.21	2.11	1.98
1957	212	186	175	2.47	2.15	1.98
1958	139	180	175	1.44	2.05	1.98
1959	242	179	175	2.94	2.03	1.98
1960	240	182	175	2.84	2.07	1.98
1961	291	182	175	3.71	2.08	1.98
1962	171	188	175	1.87	2.15	1.98
1963	224	187	175	2.69	2.14	1.98
1964	238	198	175	2.83	2.29	1.98
1965	189	195	175	2.13	2.25	1.98
1966	148	189	175	1.63	2.16	1.98
1967	135	178	175	1.45	2.01	1.98
1968	193	187	175	2.21	2.16	1.98
1969	118	168	175	1.21	1.89	1.98
1970	188	166	175	2.22	1.86	1.98
1971	213	164	175	2.51	1.84	1.98
1972	216	166	175	2.59	1.88	1.98
1973	178	164	175	1.93	1.84	1.98
1974	188	162	175	2.15	1.81	1.98
1975	205	163	175	2.35	1.82	1.98
1976	166	165	175	1.87	1.85	1.98
1977	218	174	175	2.58	1.97	1.98
1978	129	163	175	1.28	1.80	1.98
1979	156	173	175	1.64	1.92	1.98
1980	126	163	175	1.28	1.78	1.98
1981	252	164	175	3.07	1.79	1.98
1982	153	160	175	1.66	1.74	1.98
1983	130	153	175	1.30	1.65	1.98
1984	219	154	175	2.62	1.66	1.98
1985	206	154	175	2.41	1.66	1.98
1986	194	156	175	2.20	1.68	1.98
1987	274	157	175	3.42	1.69	1.98
1988	241	167	175	2.87	1.84	1.98
1989	256	173	175	3.12	1.93	1.98
1990	242	190	175	2.97	2.18	1.98
1991	155	182	175	1.71	2.07	1.98
1992	174	186	175	1.94	2.11	1.98
1993	116	179	175	1.18	2.04	1.98
1994	227	179	175	2.70	2.04	1.98
1995	125	167	175	1.33	1.88	1.98
1996	196	167	175	2.33	1.89	1.98
1997	166	163	175	1.83	1.82	1.98
1998	153	158	175	1.60	1.75	1.98
1999	300	158	175	3.84	1.75	1.98
2000	197	157	175	2.31	1.73	1.98
2001	278	162	175	3.44	1.80	1.98
2002	310	165	175	4.05	1.86	1.98
2003	169	181	175	1.93	2.09	1.98
2004	283	183	175	3.59	2.12	1.98
2005	140	187	175	1.45	2.15	1.98
2006	234	189	175	2.81	2.18	1.98
2007	319	199	175	4.22	2.32	1.98
2008	221	211	175	2.59	2.51	1.98
2009	234	208	175	2.84	2.47	1.98
2010	180	206	175	2.04	2.43	1.98
2011	160	195	175	1.78	2.28	1.98
2012	284	194	175	3.58	2.27	1.98
Maximum	319	211		4.22	2.51	

Figure 8b-TDS_BU
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 8b - Intermediate Discharge for 2015

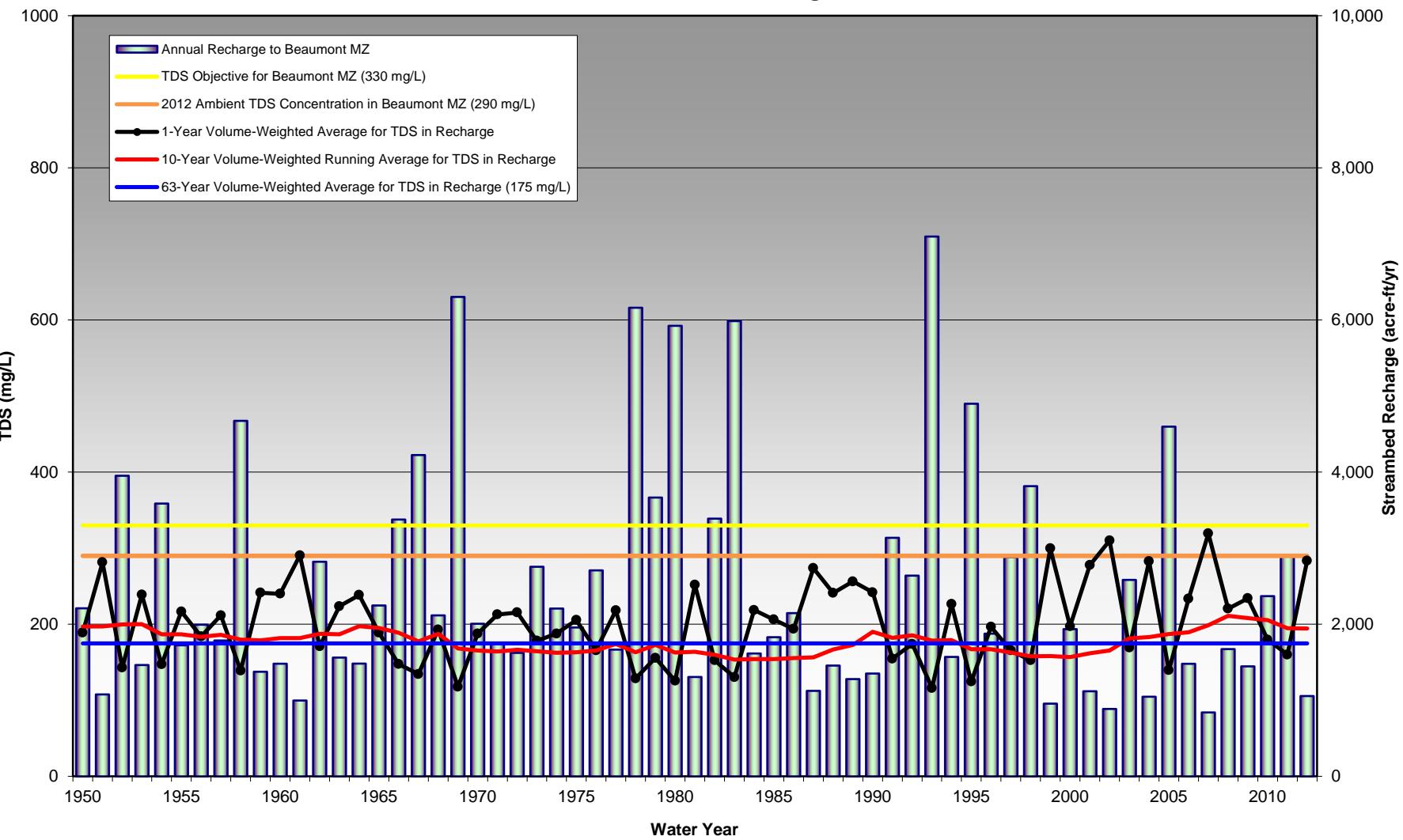


Figure 8b-TIN_BU
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 8b - Intermediate Discharge for 2015

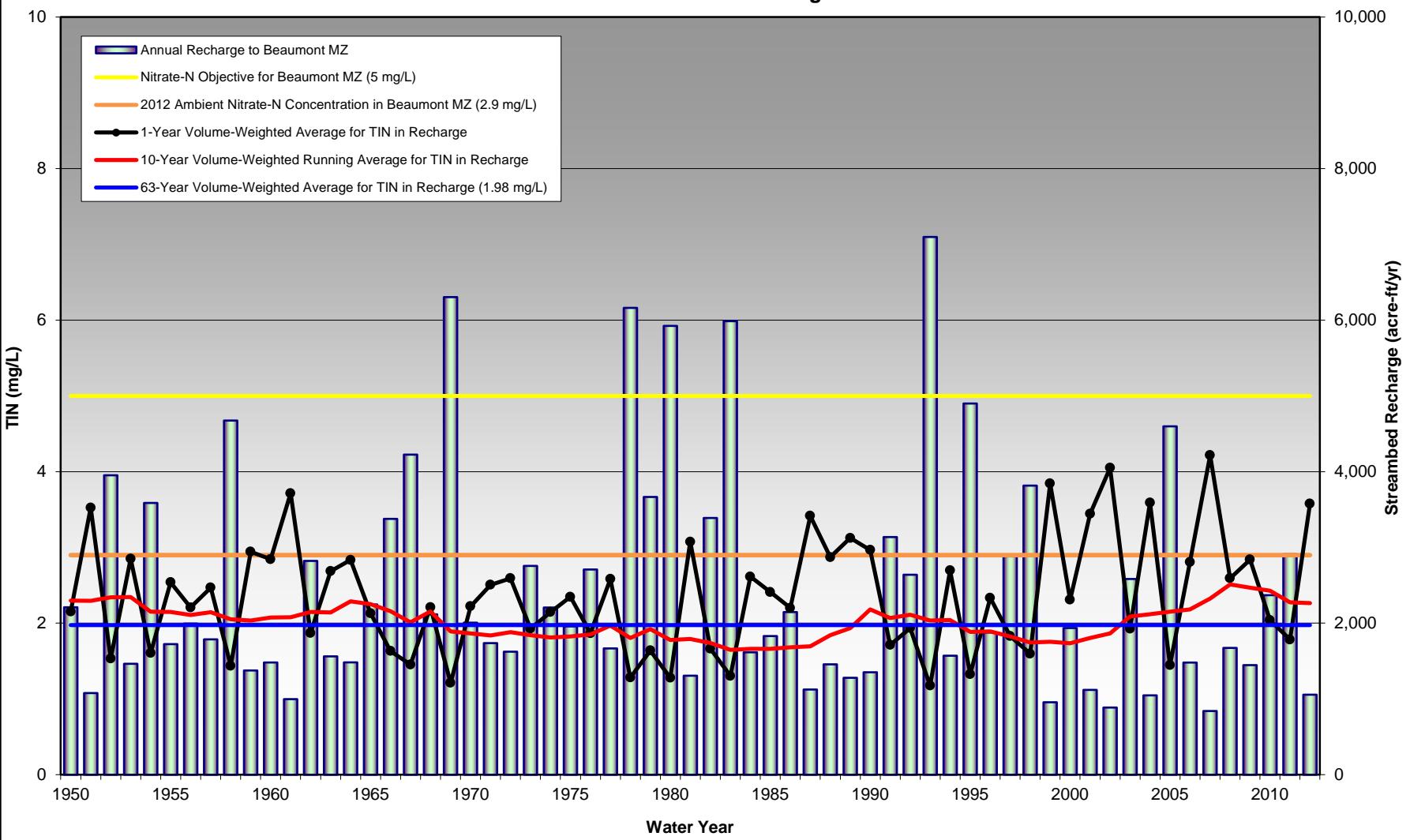


Table 8c-BP
TDS and TIN in Santa Ana River Flow at Below Prado
Scenario 8c - High Discharge for 2015

Water Year	Volume Weighted Running Average (mg/L)											
	TDS						TIN					
	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only
1950	517	485	458	450	420	686	6.35	5.93	5.59	5.48	5.06	8.08
1951	607	496	465	451	420	686	7.47	6.07	5.67	5.50	5.06	8.08
1952	321	478	433	474	420	686	3.92	5.86	5.29	5.80	5.06	8.08
1953	565	522	483	475	420	686	6.93	6.42	5.92	5.81	5.06	8.08
1954	431	488	455	458	420	685	5.27	5.99	5.58	5.61	5.06	8.07
1955	530	491	457	458	420	684	6.51	6.02	5.60	5.60	5.06	8.06
1956	402	450	426	444	420	686	4.99	5.52	5.23	5.44	5.06	8.08
1957	542	494	483	456	420	686	6.64	6.07	5.94	5.59	5.06	8.08
1958	351	451	435	457	420	653	4.22	5.53	5.32	5.60	5.06	7.68
1959	600	485	459	457	420	686	7.40	5.95	5.62	5.60	5.06	8.08
1960	561	491	463	460	420	686	6.88	6.03	5.67	5.64	5.06	8.08
1961	634	537	504	461	420	665	7.84	6.60	6.17	5.65	5.06	7.82
1962	441	517	483	483	420	686	5.40	6.35	5.91	5.93	5.06	8.08
1963	498	547	535	478	420	685	6.13	6.73	6.58	5.86	5.06	8.07
1964	559	538	528	490	420	686	6.88	6.63	6.49	6.02	5.06	8.08
1965	505	527	517	488	420	672	6.17	6.48	6.36	5.99	5.06	7.91
1966	360	473	458	480	420	686	4.36	5.79	5.61	5.87	5.06	8.08
1967	316	448	419	448	420	670	3.79	5.47	5.10	5.47	5.06	7.88
1968	477	444	416	466	420	686	5.89	5.42	5.07	5.70	5.06	8.08
1969	219	376	322	390	420	661	2.48	4.54	3.83	4.72	5.06	7.75
1970	515	378	322	388	420	685	6.32	4.57	3.84	4.69	5.06	8.06
1971	530	412	337	385	420	684	6.51	5.00	4.03	4.65	5.06	8.05
1972	518	452	365	389	420	657	6.38	5.52	4.38	4.70	5.06	7.72
1973	427	442	360	385	420	686	5.18	5.37	4.31	4.65	5.06	8.08
1974	462	491	486	380	420	686	5.67	6.01	5.95	4.59	5.06	8.08
1975	528	493	488	381	420	686	6.48	6.04	5.98	4.60	5.06	8.08
1976	526	492	487	394	420	686	6.44	6.03	5.97	4.76	5.06	8.08
1977	523	493	488	414	420	331	6.42	6.04	5.97	5.02	5.06	3.81
1978	261	460	406	381	420	686	3.06	5.61	4.92	4.59	5.06	8.08
1979	399	447	396	434	420	686	4.80	5.44	4.78	5.28	5.06	8.08
1980	273	396	338	391	420	682	2.66	4.68	3.84	4.59	5.06	8.03
1981	565	404	340	392	420	686	6.94	4.78	3.86	4.61	5.06	8.08
1982	388	377	329	384	420	684	4.73	4.44	3.74	4.50	5.06	8.06
1983	310	387	344	370	420	425	3.40	4.51	3.85	4.29	5.06	4.90
1984	517	411	354	372	420	683	6.35	4.82	3.96	4.32	5.06	8.04
1985	505	457	419	371	420	686	6.20	5.52	4.99	4.31	5.06	8.08
1986	453	435	407	368	420	685	5.53	5.24	4.84	4.27	5.06	8.06
1987	587	475	434	370	420	686	7.24	5.74	5.17	4.29	5.06	8.08
1988	501	513	508	400	420	685	6.14	6.29	6.23	4.66	5.06	8.07
1989	562	522	516	410	420	686	6.90	6.40	6.33	4.78	5.06	8.08
1990	570	534	528	464	420	686	7.03	6.57	6.48	5.61	5.06	8.08
1991	396	523	509	449	420	686	4.83	6.43	6.25	5.42	5.06	8.07
1992	417	489	475	453	420	686	5.08	6.00	5.82	5.47	5.06	8.08
1993	255	440	373	425	420	686	2.63	5.29	4.34	5.07	5.06	8.07
1994	560	439	373	427	420	686	6.87	5.29	4.34	5.10	5.06	8.08
1995	307	387	339	402	420	686	3.43	4.57	3.88	4.75	5.06	8.08
1996	479	403	346	403	420	686	5.91	4.78	3.97	4.77	5.06	8.08
1997	464	413	351	398	420	686	5.64	4.90	4.02	4.70	5.06	8.08
1998	315	425	388	380	420	666	3.77	5.13	4.63	4.48	5.06	7.83
1999	625	438	392	382	420	686	7.71	5.29	4.68	4.50	5.06	8.08
2000	562	489	451	382	420	686	6.91	5.99	5.50	4.50	5.06	8.08
2001	558	505	462	391	420	686	6.88	6.18	5.64	4.61	5.06	8.08
2002	646	541	487	401	420	686	8.00	6.65	5.96	4.74	5.06	8.08
2003	372	553	525	441	420	686	4.57	6.81	6.47	5.34	5.06	8.08
2004	574	542	518	442	420	686	7.06	6.68	6.38	5.35	5.06	8.08
2005	266	483	411	430	420	686	3.14	5.93	5.01	5.24	5.06	8.08
2006	552	482	411	434	420	686	6.75	5.91	5.00	5.30	5.06	8.08
2007	663	485	412	445	420	686	8.21	5.95	5.01	5.44	5.06	8.08
2008	544	520	441	478	420	686	6.65	6.37	5.37	5.86	5.06	8.08
2009	551	515	439	474	420	686	6.77	6.31	5.34	5.80	5.06	8.08
2010	410	544	527	460	420	686	4.98	6.67	6.46	5.62	5.06	8.08
2011	345	502	467	436	420	662	4.15	6.15	5.70	5.32	5.06	7.78
2012	601	490	462	435	420	685	7.40	5.99	5.63	5.30	5.06	8.07
Maximum	663	553	535	490	420	686	8.21	6.81	6.58	6.02	5.06	8.08

Figure 8c-TDS_Reach 3
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8c - High Discharge for 2015

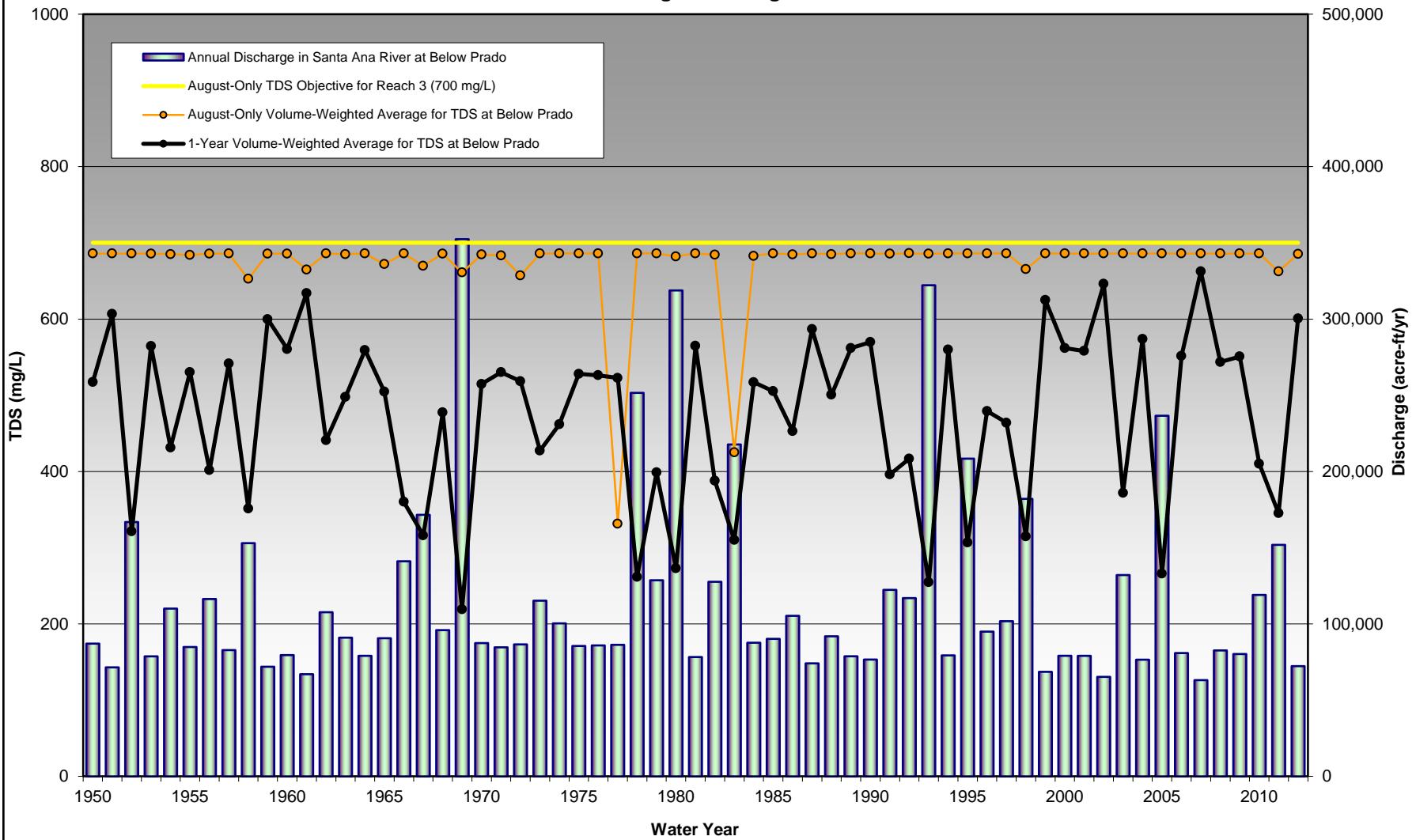


Figure 8c-TIN_BP
Estimated Annual Discharge and Volume-Weighted TIN Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8c - High Discharge for 2015

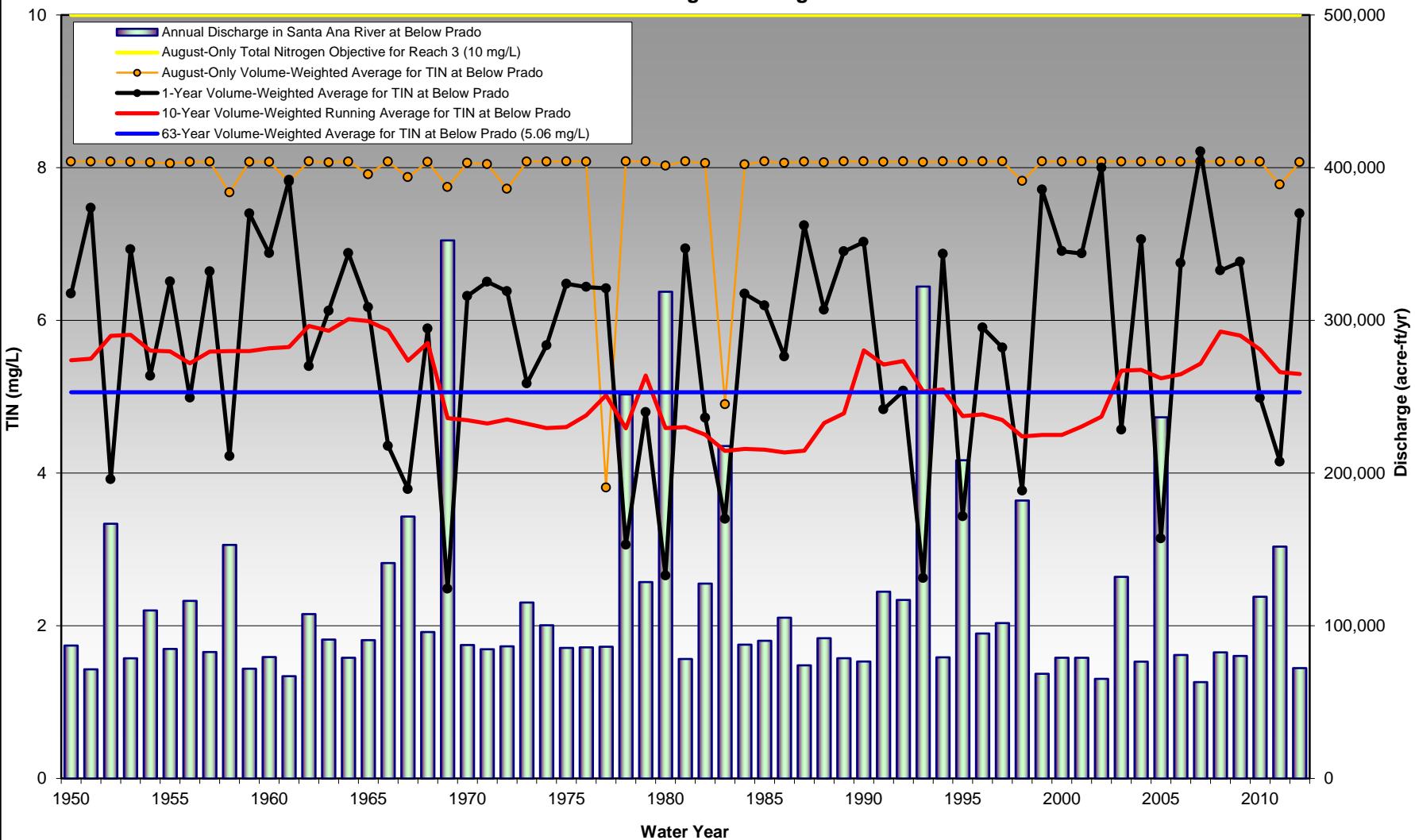


Figure 8c-TDS_Reach 2
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 2 Objective
Scenario 8c - High Discharge for 2015

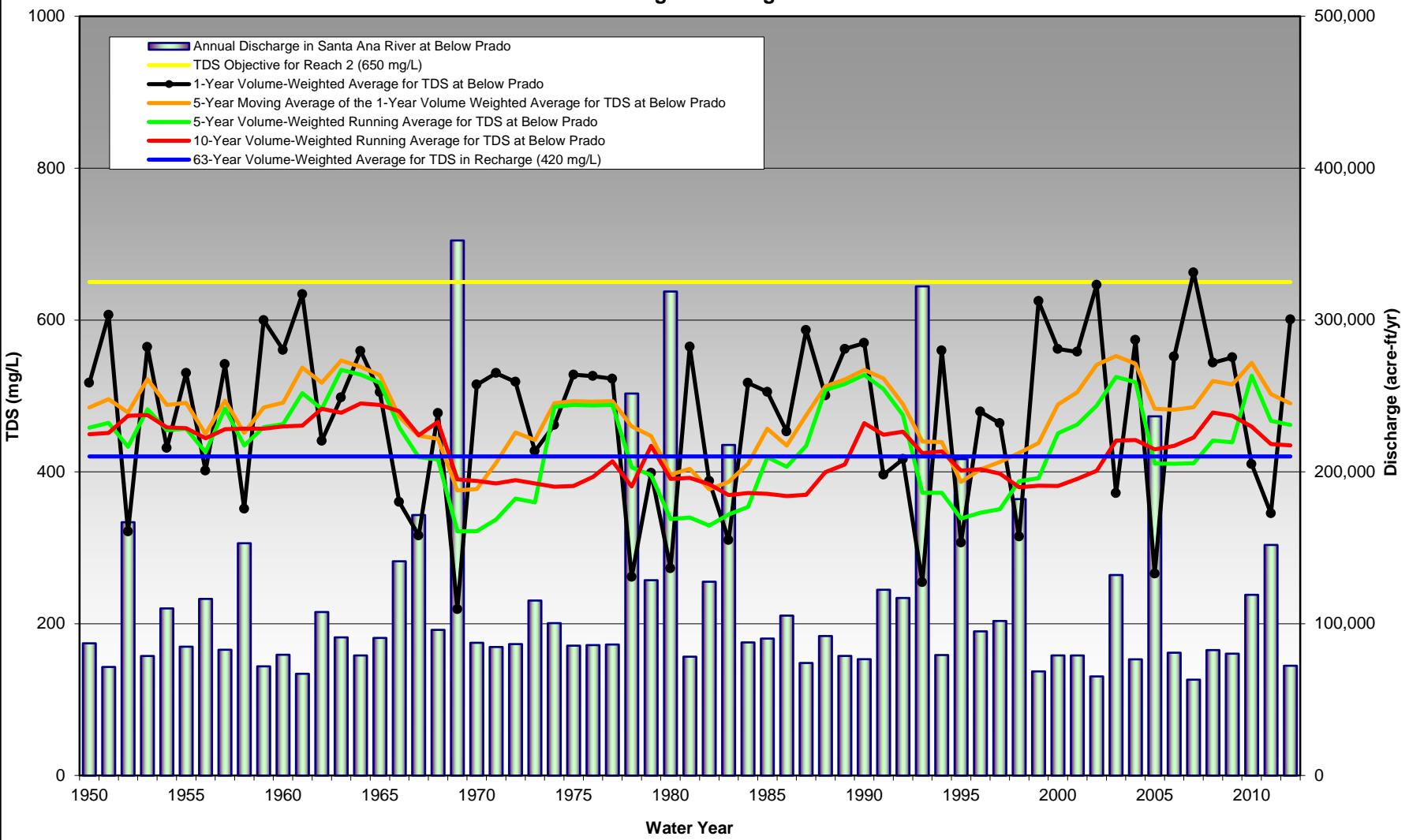


Table 8c-CS
TDS and TIN of Streambed Recharge to the Chino-South Management Zone
Scenario 8c - High Discharge for 2015

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	626	609	595	4.36	4.23	4.11
1951	645	608	595	4.50	4.25	4.11
1952	545	617	595	3.78	4.21	4.11
1953	635	617	595	4.42	4.23	4.11
1954	597	611	595	4.15	4.22	4.11
1955	625	610	595	4.35	4.23	4.11
1956	613	608	595	4.28	4.23	4.11
1957	632	612	595	4.41	4.24	4.11
1958	548	610	595	3.78	4.21	4.11
1959	651	610	595	4.54	4.24	4.11
1960	640	611	595	4.47	4.25	4.11
1961	656	612	595	4.58	4.26	4.11
1962	602	618	595	4.19	4.31	4.11
1963	622	617	595	4.33	4.30	4.11
1964	639	622	595	4.46	4.33	4.11
1965	622	621	595	4.32	4.33	4.11
1966	570	616	595	3.94	4.29	4.11
1967	547	607	595	3.78	4.22	4.11
1968	621	615	595	4.33	4.28	4.11
1969	423	587	595	2.79	4.06	4.11
1970	630	586	595	4.39	4.05	4.11
1971	629	583	595	4.38	4.04	4.11
1972	633	586	595	4.41	4.06	4.11
1973	597	584	595	4.14	4.04	4.11
1974	613	582	595	4.26	4.02	4.11
1975	632	582	595	4.40	4.03	4.11
1976	622	588	595	4.33	4.07	4.11
1977	636	596	595	4.43	4.13	4.11
1978	472	579	595	3.20	4.00	4.11
1979	572	600	595	3.91	4.16	4.11
1980	439	576	595	2.80	3.96	4.11
1981	643	577	595	4.48	3.97	4.11
1982	576	572	595	4.00	3.93	4.11
1983	484	560	595	3.17	3.83	4.11
1984	625	561	595	4.35	3.84	4.11
1985	623	560	595	4.34	3.83	4.11
1986	611	559	595	4.25	3.82	4.11
1987	647	560	595	4.51	3.83	4.11
1988	627	577	595	4.37	3.96	4.11
1989	640	583	595	4.46	4.01	4.11
1990	637	608	595	4.44	4.21	4.11
1991	593	603	595	4.12	4.18	4.11
1992	591	605	595	4.11	4.19	4.11
1993	436	596	595	2.82	4.12	4.11
1994	633	597	595	4.41	4.13	4.11
1995	506	584	595	3.36	4.02	4.11
1996	628	585	595	4.37	4.03	4.11
1997	603	582	595	4.19	4.00	4.11
1998	514	570	595	3.52	3.92	4.11
1999	651	571	595	4.54	3.92	4.11
2000	642	571	595	4.48	3.93	4.11
2001	640	575	595	4.46	3.95	4.11
2002	658	581	595	4.60	4.00	4.11
2003	587	602	595	4.08	4.17	4.11
2004	649	603	595	4.53	4.18	4.11
2005	483	600	595	3.30	4.16	4.11
2006	632	600	595	4.40	4.17	4.11
2007	662	606	595	4.63	4.21	4.11
2008	633	619	595	4.41	4.31	4.11
2009	639	618	595	4.46	4.30	4.11
2010	590	613	595	4.09	4.26	4.11
2011	568	606	595	3.93	4.21	4.11
2012	650	605	595	4.54	4.20	4.11
Maximum	662	622		4.63	4.33	

Figure 8c-TDS_CS
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 8c - High Discharge for 2015

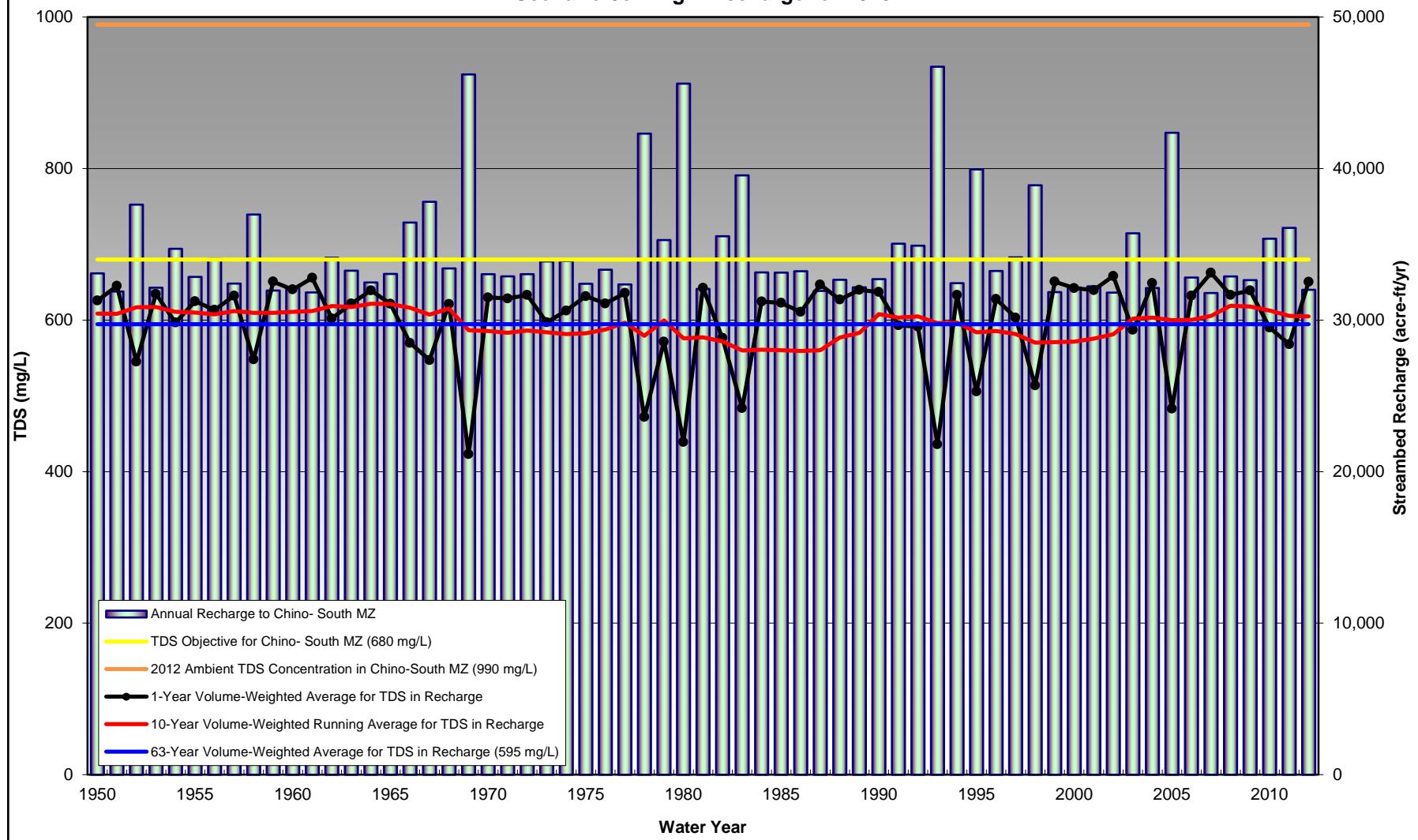


Figure 8c-TIN_CS
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 8c - High Discharge for 2015

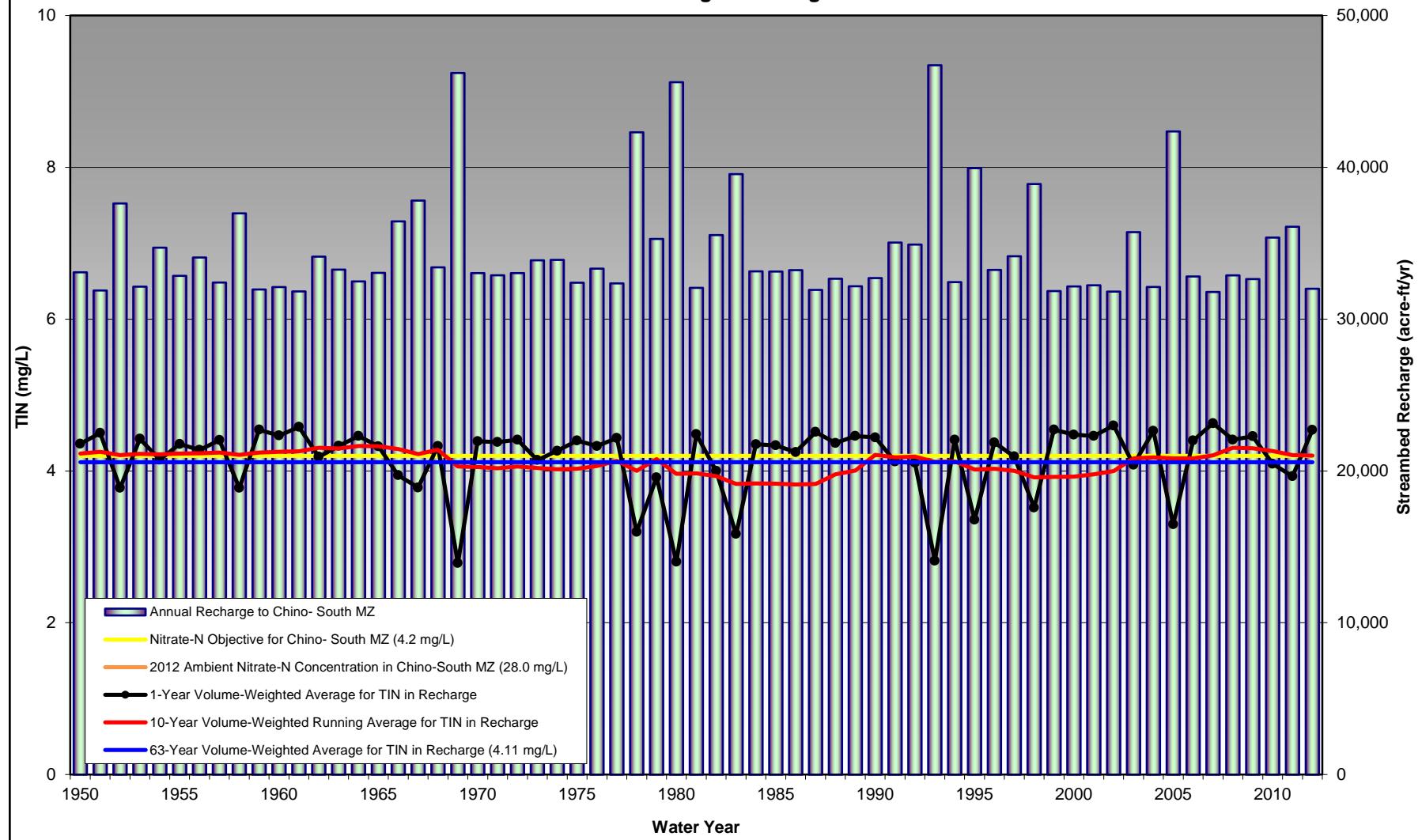


Table 8c-RA
TDS and TIN of Streambed Recharge to the Riverside-A Management Zone
Scenario 8c - High Discharge for 2015

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	453	436	414	6.10	5.78	5.44
1951	514	436	414	7.02	5.78	5.44
1952	358	453	414	4.68	6.07	5.44
1953	490	454	414	6.65	6.09	5.44
1954	410	443	414	5.42	5.92	5.44
1955	465	443	414	6.28	5.92	5.44
1956	462	440	414	6.27	5.88	5.44
1957	486	447	414	6.58	6.00	5.44
1958	351	440	414	4.46	5.90	5.44
1959	506	439	414	6.91	5.88	5.44
1960	503	443	414	6.85	5.94	5.44
1961	524	444	414	7.19	5.95	5.44
1962	420	453	414	5.59	6.09	5.44
1963	471	451	414	6.38	6.06	5.44
1964	485	460	414	6.58	6.19	5.44
1965	449	458	414	6.02	6.16	5.44
1966	381	448	414	4.95	6.00	5.44
1967	362	434	414	4.69	5.78	5.44
1968	454	447	414	6.12	6.00	5.44
1969	253	405	414	2.79	5.31	5.44
1970	458	402	414	6.17	5.27	5.44
1971	456	398	414	6.12	5.20	5.44
1972	477	402	414	6.45	5.27	5.44
1973	418	398	414	5.51	5.20	5.44
1974	441	395	414	5.93	5.16	5.44
1975	482	398	414	6.53	5.19	5.44
1976	446	404	414	5.99	5.29	5.44
1977	484	415	414	6.56	5.46	5.44
1978	283	391	414	3.31	5.07	5.44
1979	392	419	414	5.09	5.53	5.44
1980	257	386	414	2.86	4.98	5.44
1981	502	389	414	6.83	5.02	5.44
1982	387	382	414	5.11	4.92	5.44
1983	289	366	414	3.43	4.67	5.44
1984	457	367	414	6.14	4.68	5.44
1985	469	367	414	6.33	4.68	5.44
1986	449	367	414	6.00	4.67	5.44
1987	512	368	414	6.99	4.69	5.44
1988	472	390	414	6.37	5.05	5.44
1989	482	397	414	6.53	5.16	5.44
1990	484	435	414	6.58	5.79	5.44
1991	409	427	414	5.44	5.67	5.44
1992	395	428	414	5.20	5.68	5.44
1993	256	412	414	2.84	5.41	5.44
1994	478	413	414	6.46	5.43	5.44
1995	312	395	414	3.77	5.13	5.44
1996	455	395	414	6.09	5.13	5.44
1997	411	389	414	5.41	5.03	5.44
1998	324	375	414	3.98	4.81	5.44
1999	521	377	414	7.13	4.84	5.44
2000	491	377	414	6.67	4.84	5.44
2001	504	383	414	6.86	4.93	5.44
2002	530	392	414	7.28	5.06	5.44
2003	417	425	414	5.56	5.61	5.44
2004	515	428	414	7.04	5.65	5.44
2005	291	422	414	3.44	5.56	5.44
2006	473	424	414	6.35	5.58	5.44
2007	533	433	414	7.32	5.74	5.44
2008	466	453	414	6.26	6.06	5.44
2009	496	452	414	6.75	6.03	5.44
2010	412	444	414	5.43	5.91	5.44
2011	389	433	414	5.03	5.74	5.44
2012	523	432	414	7.17	5.73	5.44
Maximum	533	460		7.32	6.19	

Figure 8c-TDS_RA
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 8c - High Discharge for 2015

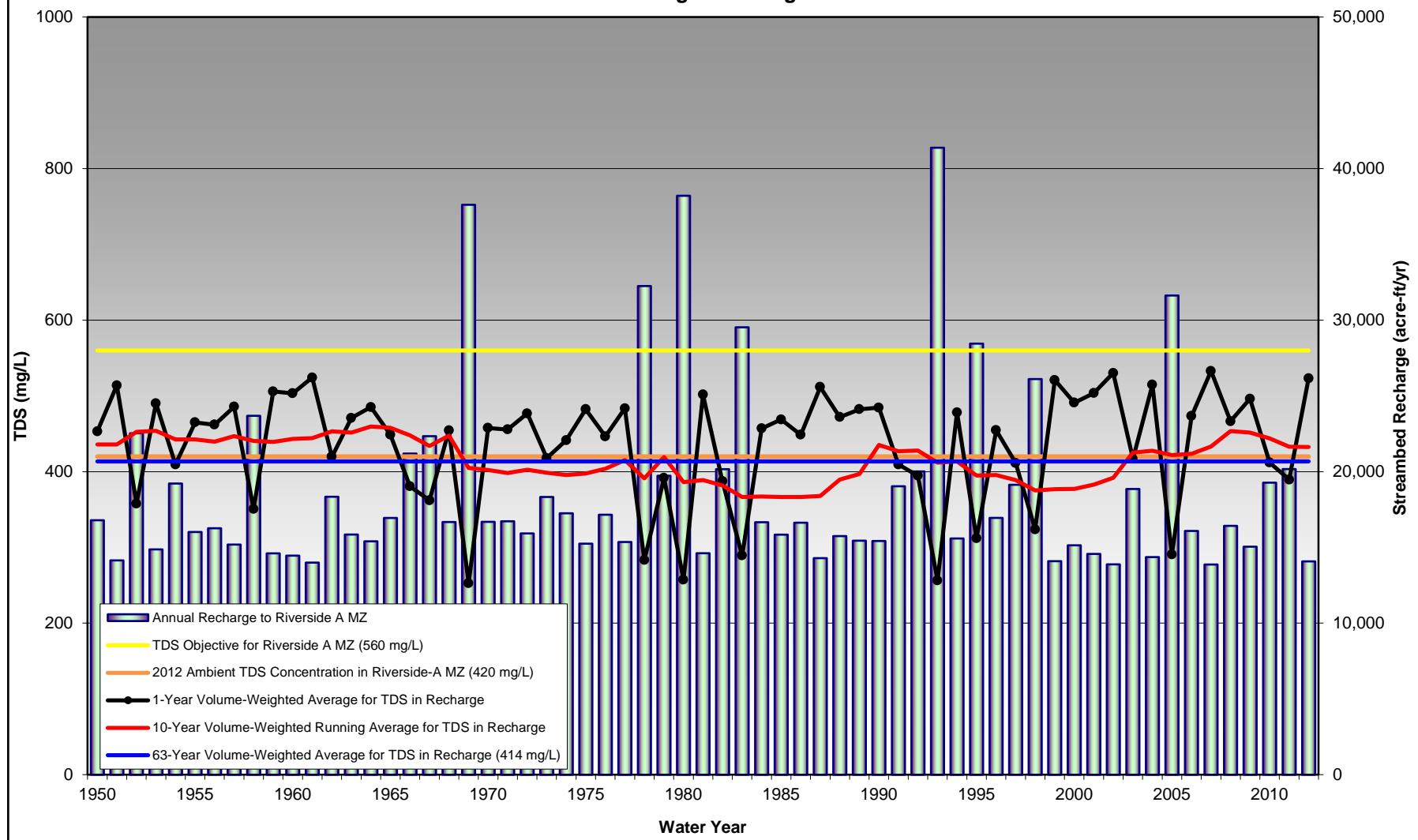


Figure 8c-TIN_RA
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 8c - High Discharge for 2015

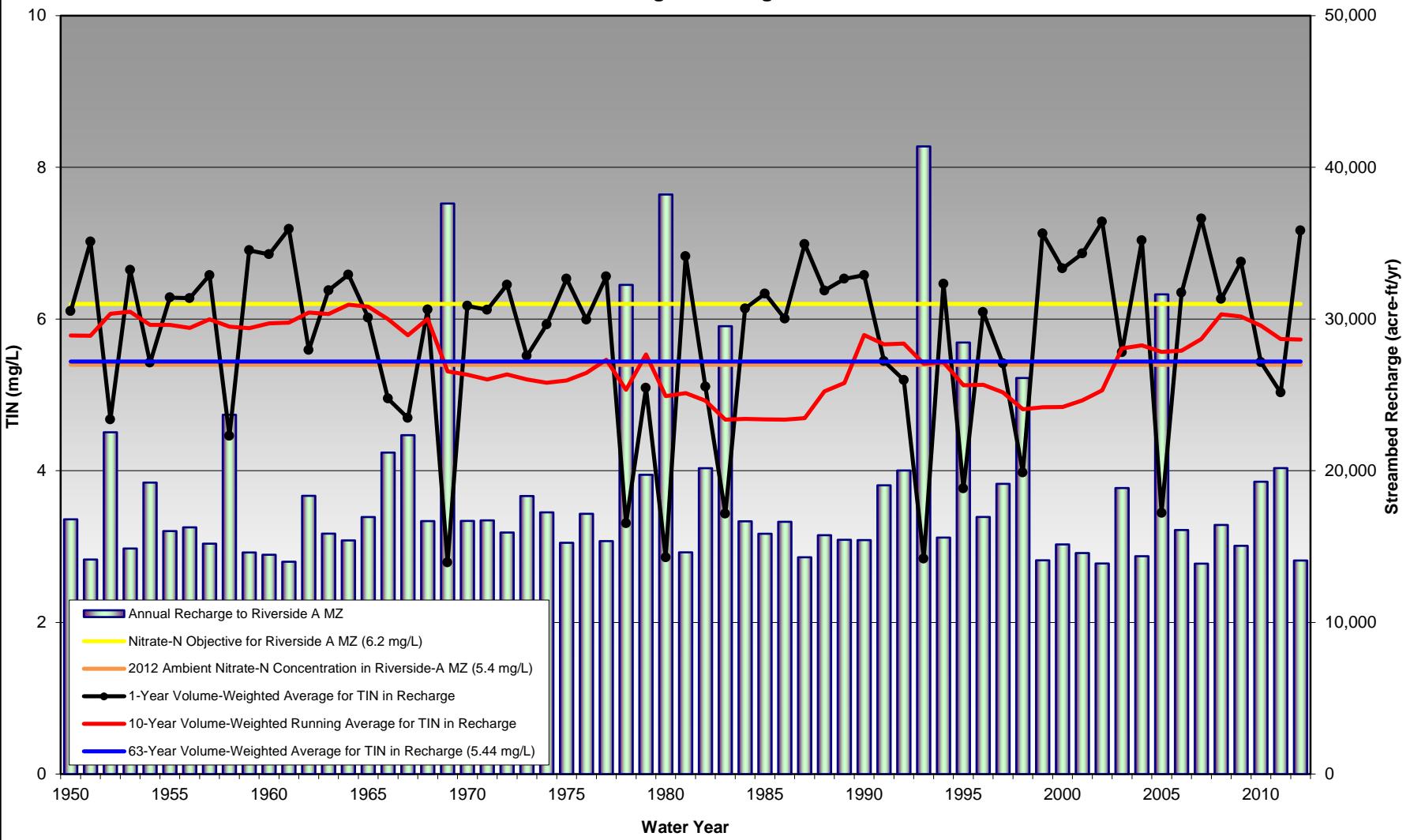


Table 8c-CO
TDS and TIN of Streambed Recharge to the Colton Management Zone
Scenario 8c - High Discharge for 2015

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	142	165	159	1.14	1.23	1.20
1951	166	165	159	1.25	1.23	1.20
1952	140	160	159	1.12	1.22	1.20
1953	160	158	159	1.22	1.21	1.20
1954	145	156	159	1.15	1.20	1.20
1955	148	154	159	1.18	1.19	1.20
1956	127	152	159	1.05	1.18	1.20
1957	160	152	159	1.22	1.18	1.20
1958	154	149	159	1.19	1.16	1.20
1959	166	148	159	1.25	1.16	1.20
1960	156	149	159	1.20	1.17	1.20
1961	162	149	159	1.23	1.17	1.20
1962	146	151	159	1.15	1.17	1.20
1963	136	149	159	1.10	1.17	1.20
1964	153	150	159	1.18	1.17	1.20
1965	148	150	159	1.15	1.17	1.20
1966	148	151	159	1.15	1.17	1.20
1967	148	150	159	1.14	1.16	1.20
1968	142	148	159	1.12	1.15	1.20
1969	168	157	159	1.23	1.19	1.20
1970	141	157	159	1.13	1.18	1.20
1971	149	156	159	1.18	1.18	1.20
1972	155	157	159	1.19	1.18	1.20
1973	157	157	159	1.21	1.19	1.20
1974	140	157	159	1.12	1.19	1.20
1975	162	157	159	1.23	1.19	1.20
1976	140	157	159	1.10	1.19	1.20
1977	148	158	159	1.16	1.19	1.20
1978	164	161	159	1.21	1.20	1.20
1979	164	157	159	1.22	1.19	1.20
1980	166	161	159	1.21	1.20	1.20
1981	168	161	159	1.26	1.20	1.20
1982	132	159	159	1.07	1.20	1.20
1983	168	161	159	1.25	1.21	1.20
1984	163	162	159	1.23	1.21	1.20
1985	148	162	159	1.14	1.21	1.20
1986	157	162	159	1.21	1.21	1.20
1987	167	163	159	1.26	1.21	1.20
1988	152	162	159	1.17	1.21	1.20
1989	159	162	159	1.22	1.21	1.20
1990	154	159	159	1.18	1.21	1.20
1991	138	156	159	1.11	1.19	1.20
1992	137	157	159	1.09	1.20	1.20
1993	165	157	159	1.21	1.19	1.20
1994	162	157	159	1.23	1.19	1.20
1995	164	159	159	1.21	1.19	1.20
1996	161	160	159	1.21	1.19	1.20
1997	154	159	159	1.19	1.19	1.20
1998	167	161	159	1.25	1.20	1.20
1999	182	161	159	1.33	1.20	1.20
2000	157	161	159	1.21	1.21	1.20
2001	169	163	159	1.27	1.21	1.20
2002	179	165	159	1.34	1.22	1.20
2003	135	162	159	1.10	1.22	1.20
2004	170	162	159	1.27	1.22	1.20
2005	164	162	159	1.22	1.22	1.20
2006	180	163	159	1.32	1.23	1.20
2007	200	165	159	1.47	1.23	1.20
2008	171	164	159	1.28	1.23	1.20
2009	166	164	159	1.26	1.23	1.20
2010	155	163	159	1.19	1.23	1.20
2011	168	164	159	1.24	1.23	1.20
2012	182	164	159	1.34	1.23	1.20
Maximum	200	165		1.47	1.23	

Figure 8c-TDS_CO
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 8c - High Discharge for 2015

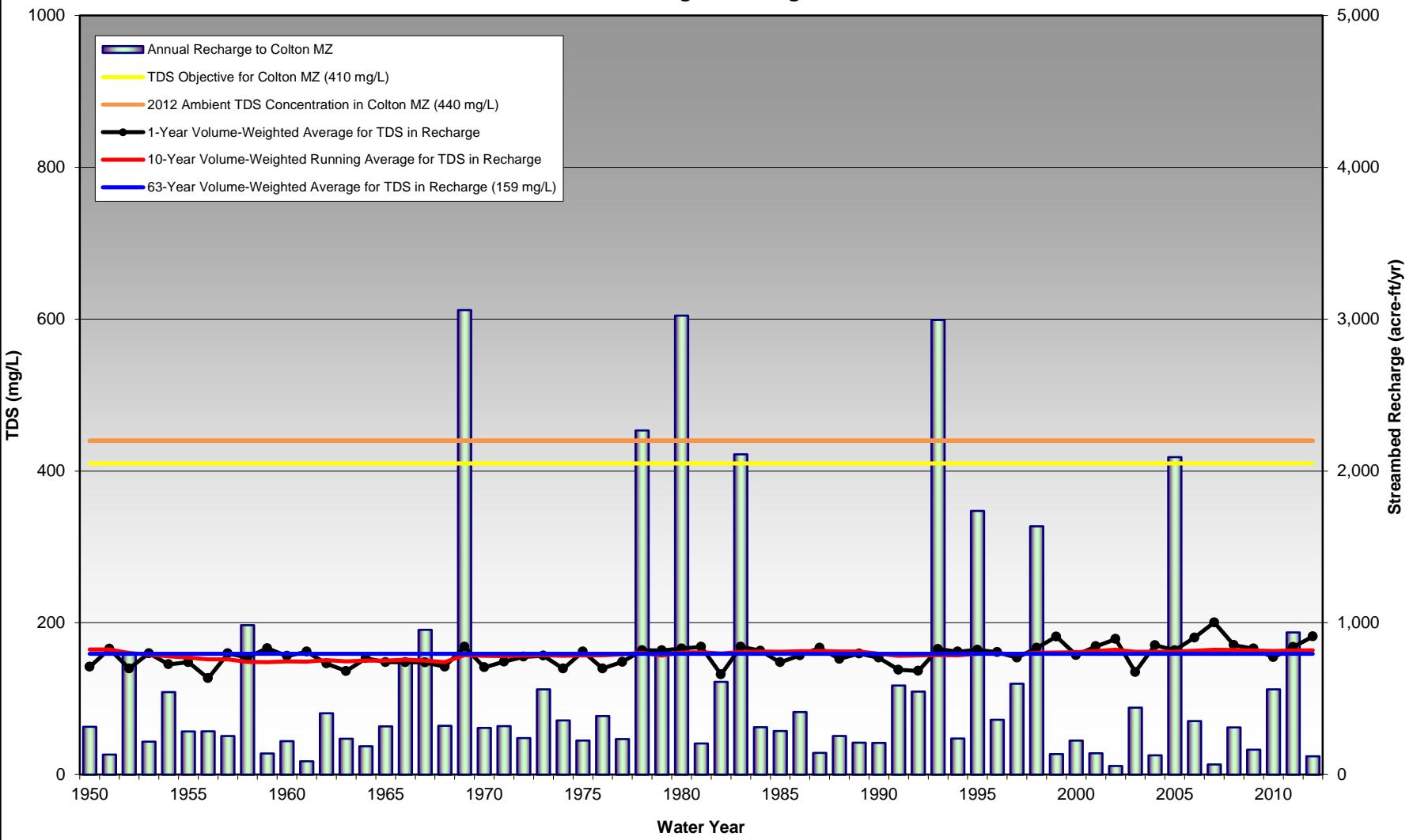


Figure 8c-TIN_CO
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 8c - High Discharge for 2015

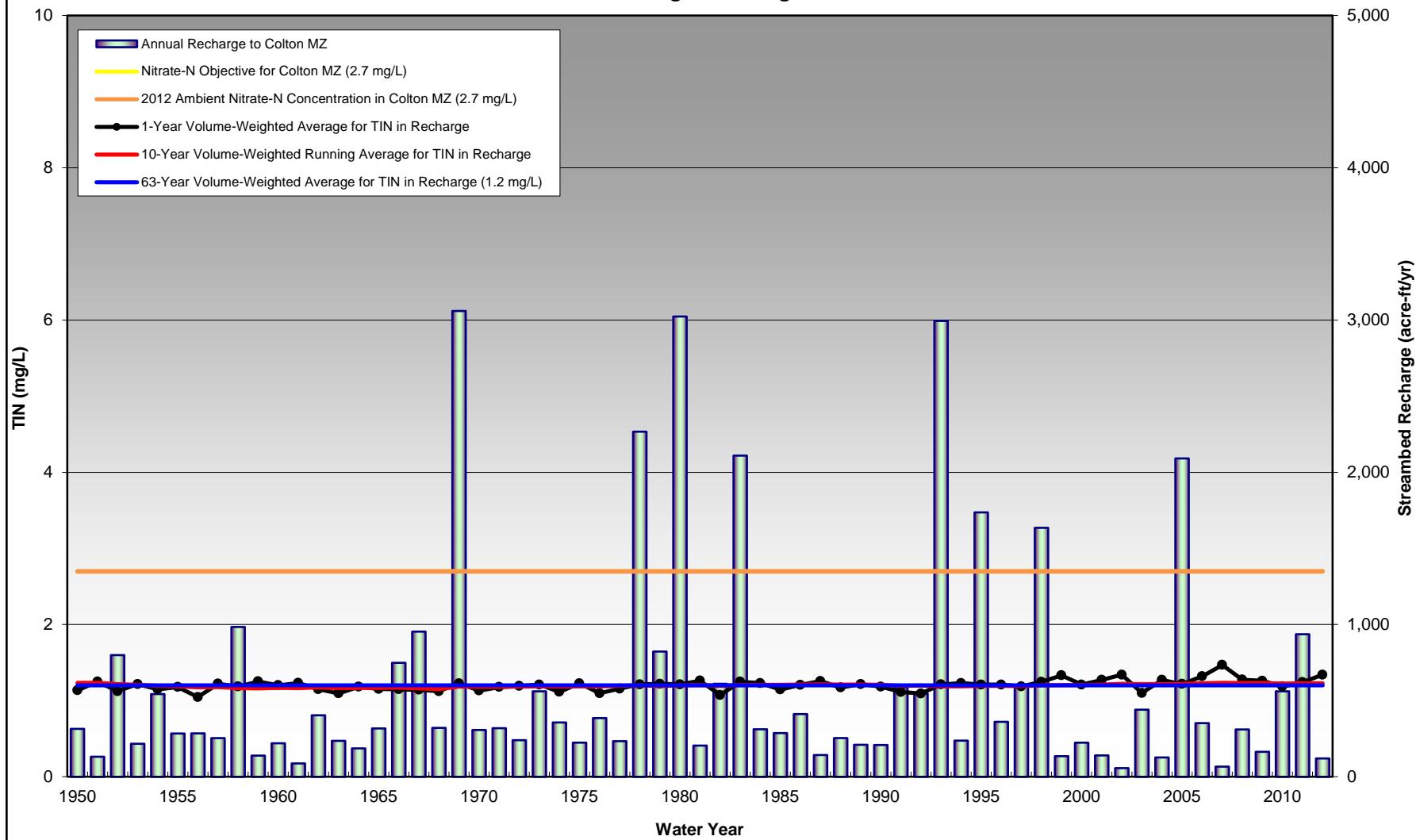


Table 8c-BH
TDS and TIN of Streambed Recharge to the Bunker Hill-B Management Zone
Scenario 8c - High Discharge for 2015

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	225	226	217	1.71	1.68	1.61
1951	253	226	217	1.92	1.68	1.61
1952	199	229	217	1.51	1.71	1.61
1953	228	228	217	1.72	1.71	1.61
1954	207	223	217	1.57	1.67	1.61
1955	223	221	217	1.69	1.66	1.61
1956	243	221	217	1.86	1.66	1.61
1957	225	222	217	1.70	1.67	1.61
1958	195	219	217	1.47	1.65	1.61
1959	243	218	217	1.83	1.65	1.61
1960	223	217	217	1.69	1.65	1.61
1961	272	218	217	2.07	1.65	1.61
1962	212	220	217	1.61	1.67	1.61
1963	238	221	217	1.81	1.67	1.61
1964	238	224	217	1.81	1.70	1.61
1965	221	224	217	1.68	1.70	1.61
1966	210	221	217	1.58	1.67	1.61
1967	207	218	217	1.54	1.65	1.61
1968	223	223	217	1.69	1.69	1.61
1969	196	214	217	1.41	1.60	1.61
1970	227	215	217	1.73	1.60	1.61
1971	230	213	217	1.74	1.59	1.61
1972	251	215	217	1.89	1.61	1.61
1973	205	213	217	1.55	1.59	1.61
1974	224	212	217	1.70	1.58	1.61
1975	226	213	217	1.71	1.59	1.61
1976	221	214	217	1.68	1.59	1.61
1977	227	216	217	1.72	1.61	1.61
1978	192	210	217	1.40	1.56	1.61
1979	200	212	217	1.48	1.59	1.61
1980	197	208	217	1.42	1.54	1.61
1981	231	208	217	1.74	1.54	1.61
1982	203	206	217	1.55	1.53	1.61
1983	195	204	217	1.42	1.51	1.61
1984	232	204	217	1.74	1.51	1.61
1985	225	204	217	1.70	1.51	1.61
1986	214	204	217	1.62	1.51	1.61
1987	246	205	217	1.85	1.51	1.61
1988	222	208	217	1.68	1.54	1.61
1989	231	211	217	1.75	1.56	1.61
1990	246	217	217	1.86	1.62	1.61
1991	214	215	217	1.63	1.61	1.61
1992	205	216	217	1.57	1.62	1.61
1993	194	216	217	1.41	1.62	1.61
1994	231	216	217	1.73	1.62	1.61
1995	203	213	217	1.49	1.59	1.61
1996	238	215	217	1.78	1.60	1.61
1997	215	213	217	1.62	1.59	1.61
1998	202	210	217	1.48	1.56	1.61
1999	258	212	217	1.93	1.57	1.61
2000	238	211	217	1.80	1.57	1.61
2001	246	213	217	1.85	1.58	1.61
2002	314	216	217	2.39	1.60	1.61
2003	219	223	217	1.67	1.66	1.61
2004	259	224	217	1.96	1.67	1.61
2005	199	222	217	1.45	1.65	1.61
2006	235	222	217	1.74	1.65	1.61
2007	297	226	217	2.23	1.68	1.61
2008	236	233	217	1.76	1.74	1.61
2009	242	232	217	1.82	1.73	1.61
2010	220	230	217	1.64	1.72	1.61
2011	214	226	217	1.56	1.68	1.61
2012	260	226	217	1.95	1.67	1.61
Maximum	314	233		2.39	1.74	

Figure 8c-TDS_BH
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 8c - High Discharge for 2015

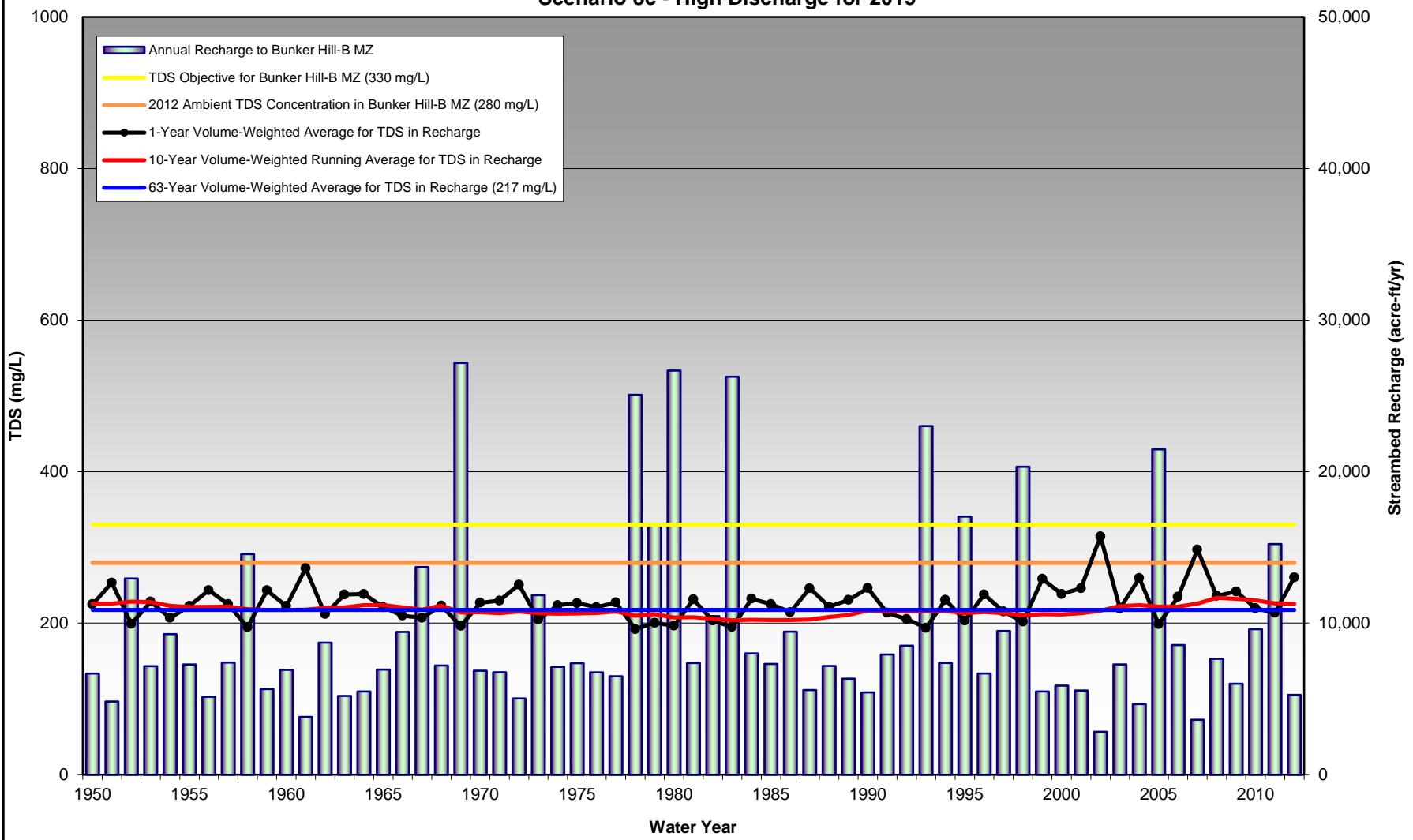


Figure 8c-TIN_BH
**Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
 of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone**
Scenario 8c - High Discharge for 2015

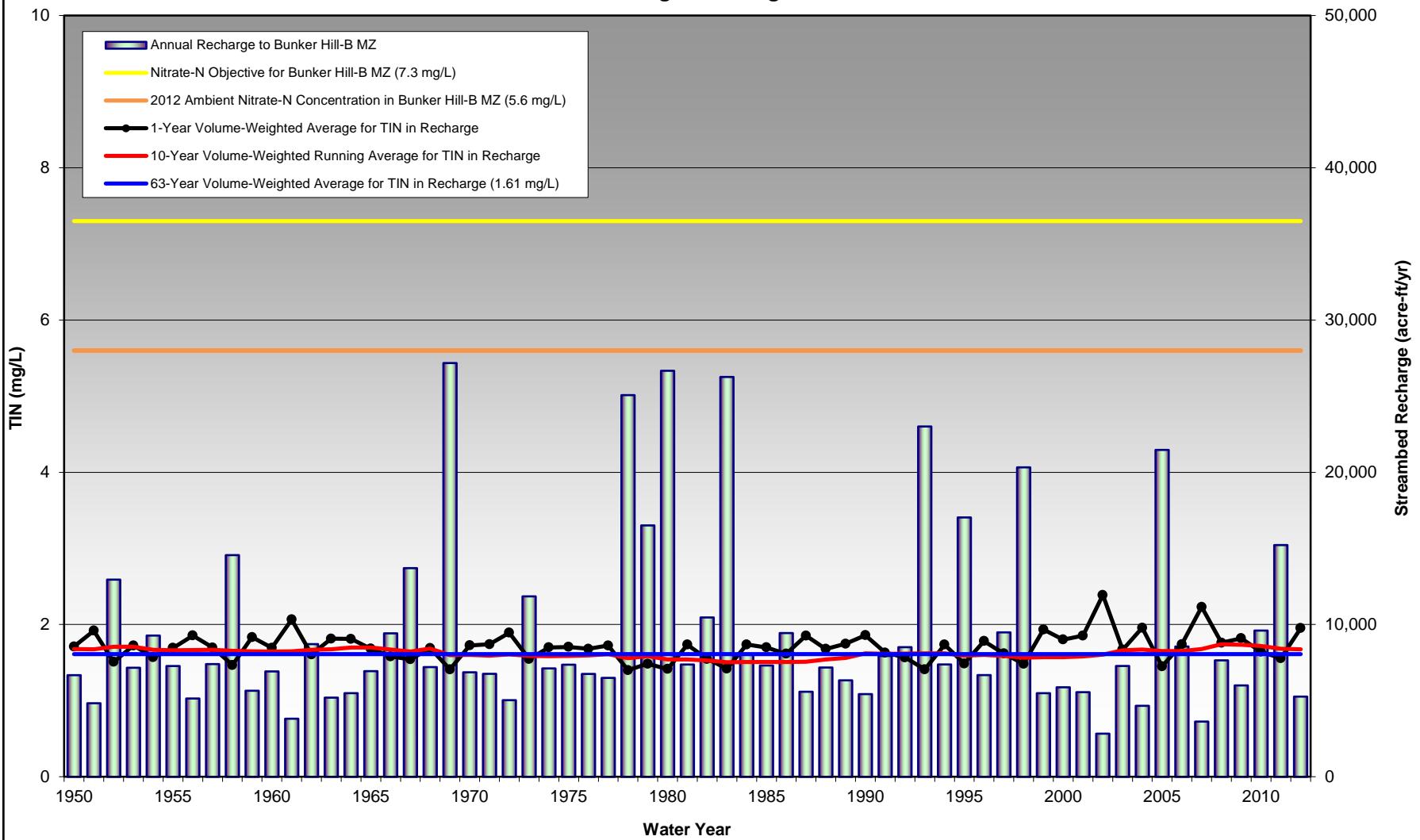


Table 8c-ST
TDS and TIN of Streambed Recharge to the San Timoteo Management Zone
Scenario 8c - High Discharge for 2015

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	388	411	388	3.37	3.58	3.37
1951	447	410	388	3.90	3.57	3.37
1952	338	411	388	2.94	3.58	3.37
1953	407	410	388	3.53	3.57	3.37
1954	363	399	388	3.16	3.47	3.37
1955	402	396	388	3.50	3.45	3.37
1956	421	395	388	3.68	3.44	3.37
1957	406	397	388	3.52	3.45	3.37
1958	322	389	388	2.78	3.38	3.37
1959	429	387	388	3.74	3.37	3.37
1960	403	389	388	3.49	3.38	3.37
1961	453	389	388	3.96	3.38	3.37
1962	373	393	388	3.23	3.42	3.37
1963	425	395	388	3.70	3.43	3.37
1964	419	401	388	3.65	3.49	3.37
1965	393	400	388	3.41	3.48	3.37
1966	360	394	388	3.14	3.42	3.37
1967	348	387	388	3.04	3.37	3.37
1968	399	397	388	3.47	3.46	3.37
1969	302	382	388	2.62	3.32	3.37
1970	418	383	388	3.65	3.33	3.37
1971	420	380	388	3.65	3.31	3.37
1972	429	385	388	3.75	3.36	3.37
1973	351	378	388	3.03	3.29	3.37
1974	397	376	388	3.45	3.27	3.37
1975	397	377	388	3.44	3.28	3.37
1976	381	379	388	3.32	3.30	3.37
1977	407	385	388	3.54	3.35	3.37
1978	281	369	388	2.42	3.20	3.37
1979	339	374	388	2.93	3.25	3.37
1980	304	362	388	2.64	3.14	3.37
1981	423	362	388	3.69	3.14	3.37
1982	366	357	388	3.19	3.10	3.37
1983	302	351	388	2.60	3.04	3.37
1984	420	352	388	3.66	3.06	3.37
1985	405	353	388	3.52	3.06	3.37
1986	399	354	388	3.46	3.07	3.37
1987	444	357	388	3.87	3.10	3.37
1988	406	372	388	3.53	3.23	3.37
1989	430	381	388	3.74	3.31	3.37
1990	438	397	388	3.82	3.45	3.37
1991	376	392	388	3.27	3.41	3.37
1992	371	393	388	3.22	3.42	3.37
1993	351	401	388	3.03	3.49	3.37
1994	419	401	388	3.65	3.49	3.37
1995	337	393	388	2.93	3.42	3.37
1996	428	396	388	3.73	3.44	3.37
1997	374	389	388	3.24	3.38	3.37
1998	335	381	388	2.89	3.31	3.37
1999	464	383	388	4.06	3.33	3.37
2000	425	382	388	3.71	3.32	3.37
2001	428	387	388	3.72	3.36	3.37
2002	472	396	388	4.13	3.44	3.37
2003	387	400	388	3.37	3.48	3.37
2004	450	403	388	3.93	3.51	3.37
2005	332	402	388	2.88	3.50	3.37
2006	426	402	388	3.71	3.49	3.37
2007	483	411	388	4.23	3.58	3.37
2008	425	423	388	3.70	3.69	3.37
2009	433	421	388	3.78	3.67	3.37
2010	390	417	388	3.40	3.63	3.37
2011	378	412	388	3.29	3.59	3.37
2012	458	410	388	4.00	3.58	3.37
Maximum	483	423		4.23	3.69	

San Timoteo Reach 3 defined here is equivalent to San Temoteo Cr reaches 3 and 4 described in 1995 Water Quality Control Plan

Figure 8c-TDS_ST
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 8c - High Discharge for 2015

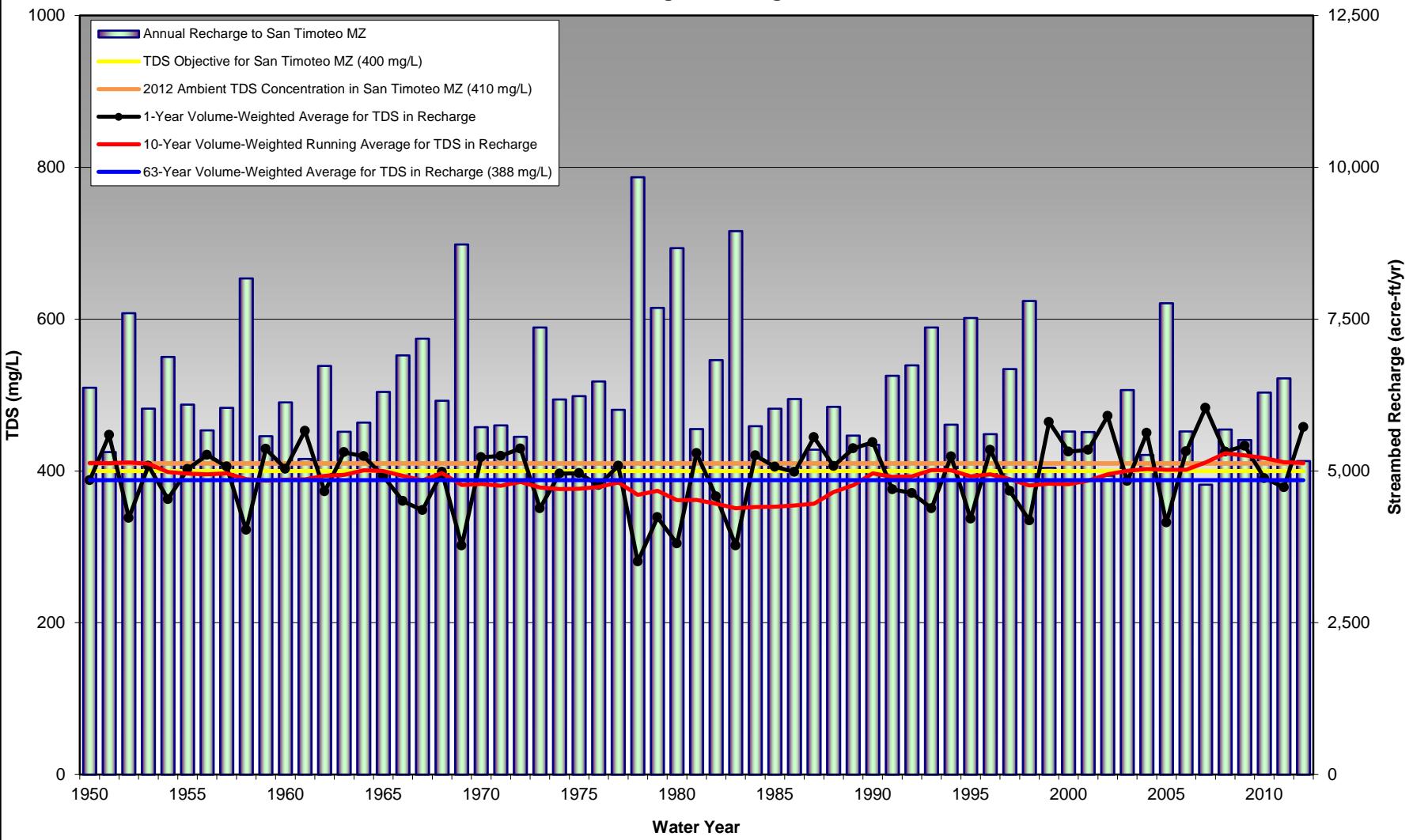


Figure 8c-TIN_ST
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 8c - High Discharge for 2015

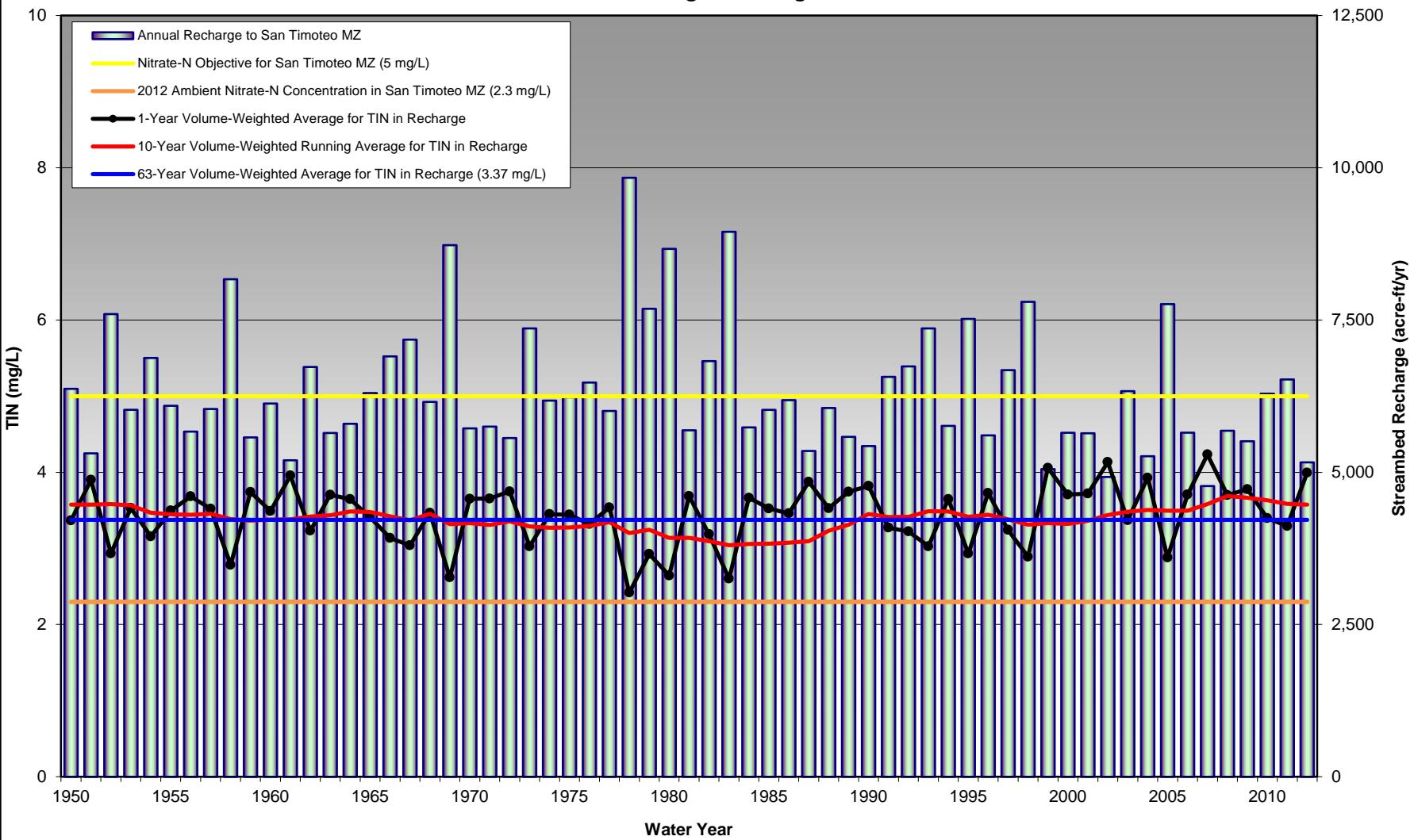


Table 8c-BU
TDS and TIN of Streambed Recharge to the Beaumont Management Zone
Scenario 8c - High Discharge for 2015

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	203	211	188	2.38	2.53	2.19
1951	290	211	188	3.70	2.53	2.19
1952	153	214	188	1.69	2.58	2.19
1953	252	215	188	3.08	2.58	2.19
1954	158	201	188	1.78	2.38	2.19
1955	230	201	188	2.77	2.37	2.19
1956	199	197	188	2.45	2.33	2.19
1957	225	200	188	2.70	2.37	2.19
1958	148	194	188	1.58	2.27	2.19
1959	255	192	188	3.17	2.25	2.19
1960	253	195	188	3.07	2.30	2.19
1961	298	196	188	3.86	2.30	2.19
1962	183	201	188	2.07	2.37	2.19
1963	238	200	188	2.92	2.37	2.19
1964	251	212	188	3.06	2.52	2.19
1965	202	209	188	2.35	2.48	2.19
1966	159	202	188	1.82	2.38	2.19
1967	145	191	188	1.61	2.23	2.19
1968	207	201	188	2.44	2.38	2.19
1969	125	181	188	1.32	2.10	2.19
1970	203	179	188	2.46	2.07	2.19
1971	227	177	188	2.74	2.04	2.19
1972	230	180	188	2.83	2.09	2.19
1973	190	177	188	2.12	2.04	2.19
1974	201	175	188	2.37	2.01	2.19
1975	219	176	188	2.57	2.03	2.19
1976	179	178	188	2.07	2.06	2.19
1977	232	187	188	2.82	2.18	2.19
1978	135	175	188	1.39	2.00	2.19
1979	166	186	188	1.80	2.13	2.19
1980	133	174	188	1.40	1.97	2.19
1981	264	176	188	3.29	1.98	2.19
1982	164	171	188	1.84	1.92	2.19
1983	138	164	188	1.42	1.82	2.19
1984	233	165	188	2.85	1.84	2.19
1985	220	165	188	2.65	1.84	2.19
1986	207	167	188	2.42	1.86	2.19
1987	284	168	188	3.60	1.87	2.19
1988	254	179	188	3.10	2.04	2.19
1989	268	186	188	3.34	2.14	2.19
1990	255	204	188	3.19	2.41	2.19
1991	167	195	188	1.90	2.29	2.19
1992	187	199	188	2.14	2.33	2.19
1993	123	192	188	1.28	2.26	2.19
1994	240	193	188	2.93	2.26	2.19
1995	134	180	188	1.47	2.09	2.19
1996	211	180	188	2.57	2.10	2.19
1997	178	176	188	2.03	2.03	2.19
1998	163	170	188	1.76	1.94	2.19
1999	306	170	188	3.97	1.95	2.19
2000	212	169	188	2.55	1.93	2.19
2001	287	174	188	3.63	2.00	2.19
2002	314	179	188	4.14	2.07	2.19
2003	183	195	188	2.14	2.31	2.19
2004	292	197	188	3.76	2.35	2.19
2005	149	201	188	1.59	2.38	2.19
2006	247	203	188	3.04	2.41	2.19
2007	322	213	188	4.28	2.56	2.19
2008	234	225	188	2.83	2.75	2.19
2009	248	223	188	3.07	2.71	2.19
2010	193	220	188	2.26	2.67	2.19
2011	173	209	188	1.98	2.51	2.19
2012	292	209	188	3.74	2.50	2.19
Maximum	322	225		4.28	2.75	

Figure 8c-TDS_BU
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 8c - High Discharge for 2015

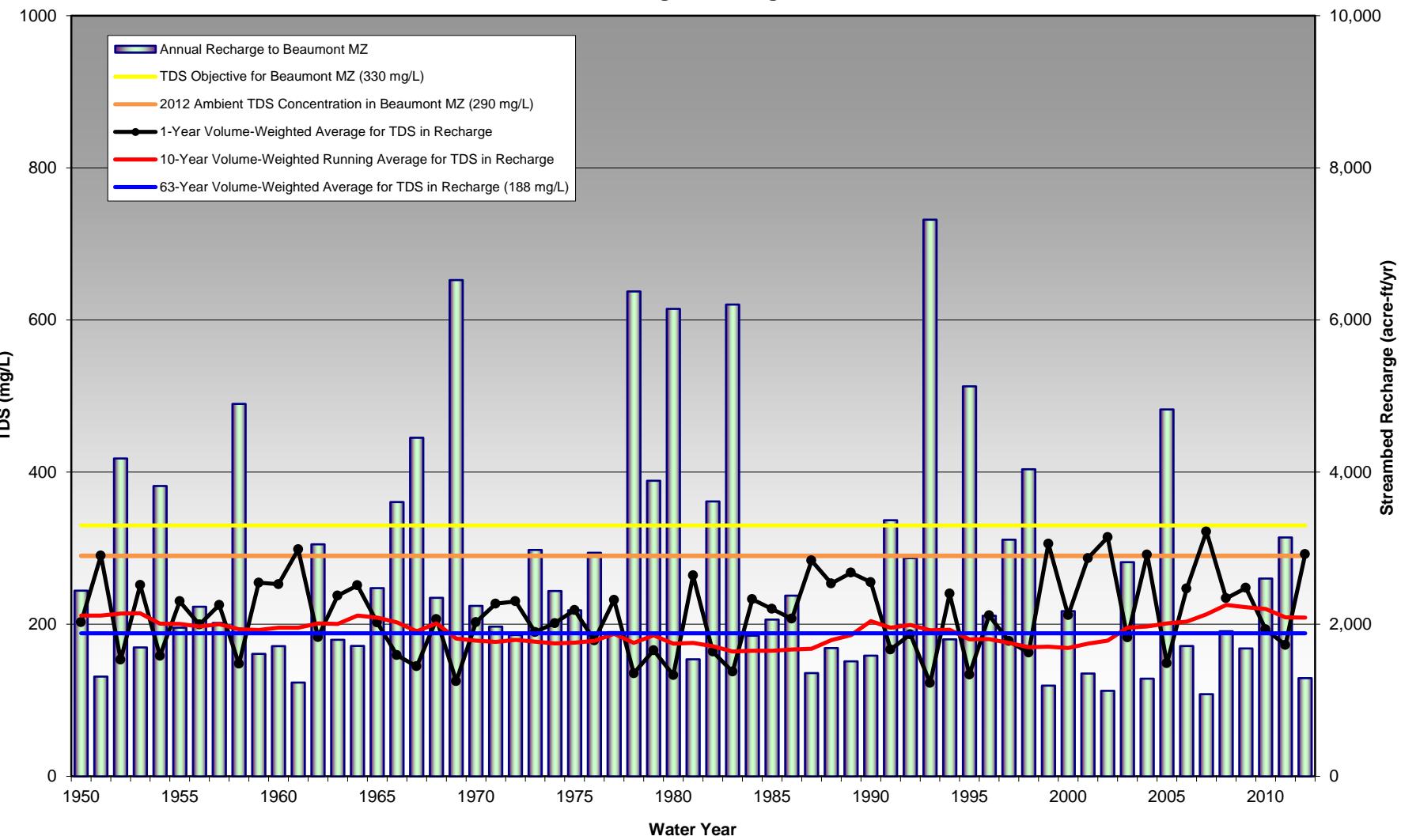


Figure 8c-TIN_BU
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 8c - High Discharge for 2015

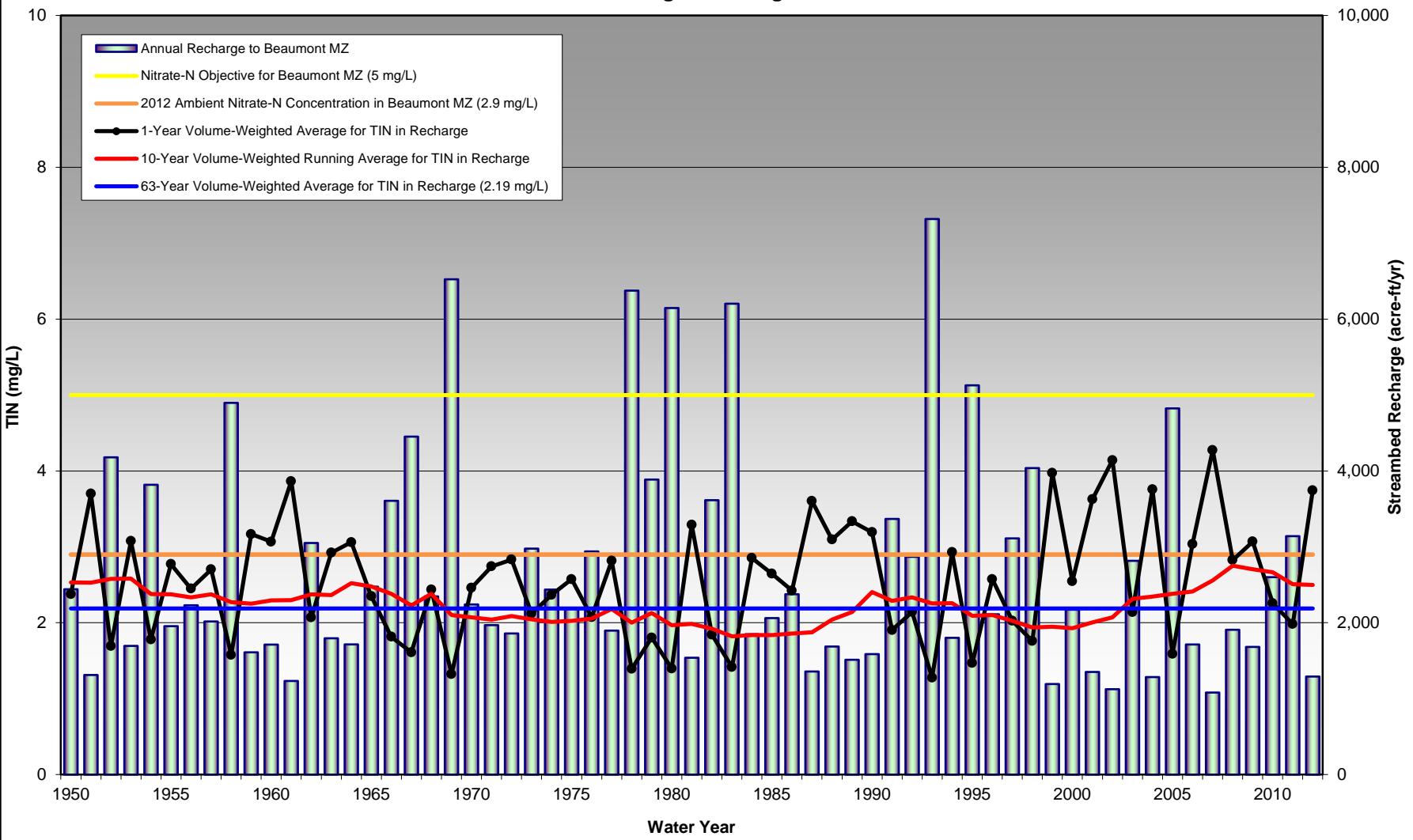


Table 8d-BP
TDS and TIN in Santa Ana River Flow at Below Prado
Scenario 8d - Low Discharge for 2020

Water Year	Volume Weighted Running Average (mg/L)											
	TDS						TIN					
	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only
1950	500	468	430	421	390	737	5.83	5.44	4.98	4.87	4.45	8.08
1951	621	484	437	423	390	737	7.25	5.62	5.07	4.89	4.45	8.08
1952	286	466	401	448	390	737	3.34	5.42	4.66	5.21	4.45	8.08
1953	562	516	458	449	390	737	6.54	6.02	5.35	5.22	4.45	8.08
1954	400	474	426	430	390	736	4.65	5.52	4.97	5.00	4.45	8.07
1955	517	477	428	429	390	735	6.02	5.56	4.99	4.99	4.45	8.05
1956	365	426	394	414	390	737	4.33	4.98	4.60	4.82	4.45	8.08
1957	532	475	459	428	390	737	6.19	5.55	5.36	4.98	4.45	8.08
1958	318	427	404	429	390	683	3.65	4.97	4.70	5.00	4.45	7.48
1959	611	469	431	429	390	737	7.14	5.47	5.02	4.99	4.45	8.08
1960	556	476	436	432	390	737	6.47	5.56	5.08	5.03	4.45	8.08
1961	661	536	485	433	390	702	7.75	6.24	5.63	5.05	4.45	7.70
1962	410	511	460	459	390	737	4.78	5.96	5.34	5.35	4.45	8.08
1963	476	543	522	453	390	736	5.57	6.34	6.10	5.28	4.45	8.07
1964	554	532	514	468	390	737	6.47	6.21	6.00	5.46	4.45	8.08
1965	485	517	500	465	390	715	5.63	6.04	5.84	5.42	4.45	7.84
1966	326	450	431	456	390	737	3.76	5.24	5.01	5.30	4.45	8.08
1967	282	425	387	419	390	710	3.23	4.93	4.48	4.87	4.45	7.77
1968	452	420	384	439	390	737	5.31	4.88	4.45	5.11	4.45	8.08
1969	196	348	288	357	390	696	2.15	4.01	3.29	4.11	4.45	7.59
1970	498	351	289	355	390	735	5.80	4.05	3.29	4.09	4.45	8.06
1971	518	389	304	351	390	733	6.03	4.50	3.47	4.05	4.45	8.03
1972	504	433	331	356	390	689	5.89	5.04	3.80	4.10	4.45	7.54
1973	397	422	327	352	390	737	4.57	4.89	3.73	4.04	4.45	8.08
1974	433	470	463	347	390	737	5.07	5.47	5.38	3.99	4.45	8.08
1975	514	473	465	348	390	737	5.98	5.51	5.41	4.00	4.45	8.08
1976	513	472	465	361	390	737	5.95	5.49	5.40	4.15	4.45	8.08
1977	507	473	465	383	390	291	5.91	5.50	5.41	4.42	4.45	3.16
1978	235	441	374	348	390	737	2.64	5.11	4.32	3.99	4.45	8.08
1979	366	427	364	404	390	737	4.21	4.94	4.18	4.68	4.45	8.08
1980	250	374	307	359	390	730	2.26	4.20	3.28	3.98	4.45	8.00
1981	562	384	309	360	390	737	6.55	4.31	3.30	3.99	4.45	8.08
1982	353	353	298	351	390	734	4.10	3.95	3.19	3.90	4.45	8.05
1983	282	363	313	337	390	386	2.91	4.01	3.29	3.70	4.45	4.17
1984	502	390	323	340	390	732	5.86	4.34	3.39	3.72	4.45	8.03
1985	486	437	389	339	390	737	5.65	5.01	4.38	3.71	4.45	8.08
1986	424	409	375	336	390	735	4.92	4.69	4.23	3.68	4.45	8.06
1987	592	457	405	338	390	737	6.94	5.26	4.57	3.70	4.45	8.08
1988	480	497	489	368	390	735	5.59	5.79	5.70	4.04	4.45	8.06
1989	558	508	499	379	390	737	6.50	5.92	5.80	4.16	4.45	8.08
1990	569	525	513	438	390	737	6.66	6.12	5.98	5.02	4.45	8.08
1991	361	512	490	421	390	736	4.19	5.97	5.71	4.82	4.45	8.07
1992	383	470	449	425	390	737	4.44	5.47	5.22	4.86	4.45	8.08
1993	233	421	341	395	390	736	2.27	4.81	3.75	4.46	4.45	8.07
1994	555	420	341	397	390	737	6.46	4.80	3.75	4.48	4.45	8.08
1995	278	362	308	371	390	737	2.95	4.06	3.33	4.15	4.45	8.08
1996	456	381	316	373	390	737	5.35	4.29	3.42	4.17	4.45	8.08
1997	439	392	321	367	390	737	5.07	4.42	3.47	4.10	4.45	8.08
1998	284	402	357	348	390	703	3.27	4.62	4.05	3.89	4.45	7.70
1999	647	421	361	350	390	737	7.57	4.84	4.11	3.92	4.45	8.08
2000	558	477	425	350	390	737	6.51	5.55	4.94	3.91	4.45	8.08
2001	553	496	438	360	390	737	6.47	5.78	5.09	4.02	4.45	8.08
2002	680	544	467	372	390	737	7.98	6.36	5.45	4.16	4.45	8.08
2003	335	555	510	414	390	737	3.93	6.49	5.97	4.76	4.45	8.08
2004	574	540	501	414	390	737	6.70	6.32	5.86	4.77	4.45	8.08
2005	237	476	378	400	390	737	2.68	5.55	4.38	4.64	4.45	8.08
2006	548	475	377	405	390	737	6.36	5.53	4.37	4.70	4.45	8.08
2007	705	480	378	417	390	737	8.29	5.59	4.39	4.84	4.45	8.08
2008	534	520	412	454	390	737	6.19	6.04	4.76	5.28	4.45	8.08
2009	543	513	409	449	390	737	6.33	5.97	4.73	5.21	4.45	8.08
2010	377	541	513	432	390	737	4.35	6.30	5.97	5.02	4.45	8.08
2011	309	494	441	406	390	698	3.54	5.74	5.11	4.70	4.45	7.63
2012	612	475	435	404	390	736	7.14	5.51	5.03	4.68	4.45	8.07
Maximum	705	555	522	468	390	737	8.29	6.49	6.10	5.46	4.45	8.08

Figure 8d-TDS_Reach 3
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8d - Low Discharge for 2020

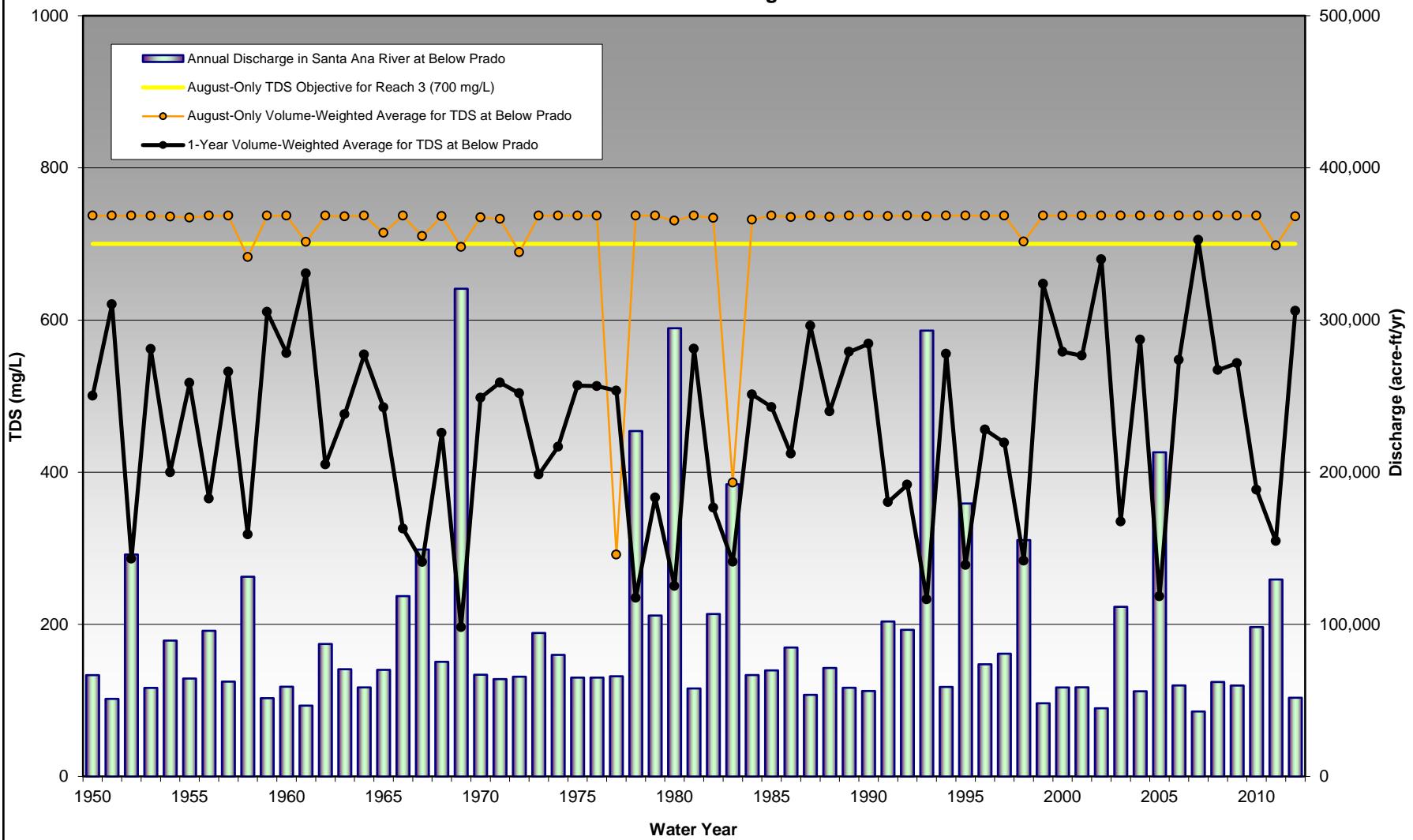


Figure 8d-TIN_BP
Estimated Annual Discharge and Volume-Weighted TIN Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8d - Low Discharge for 2020

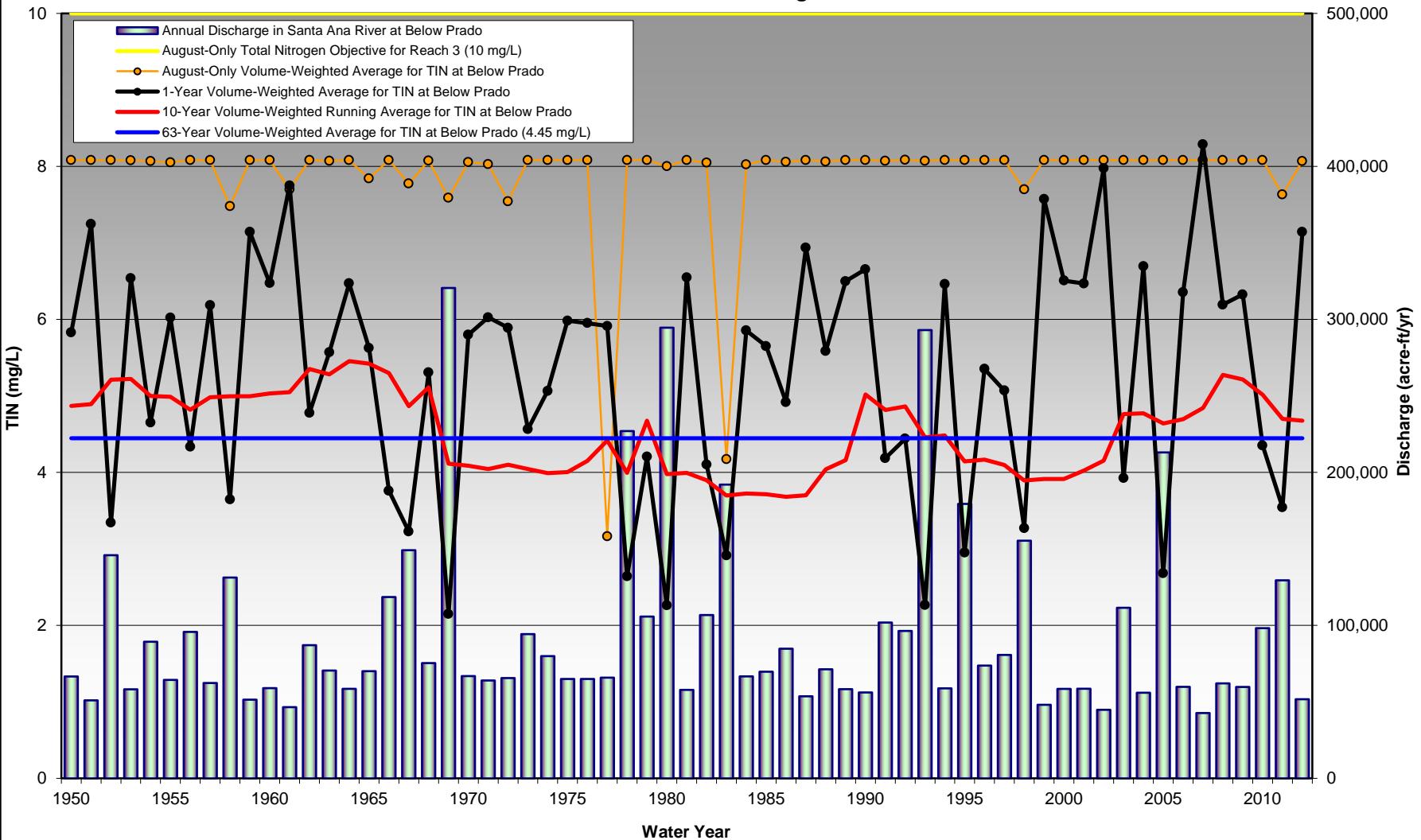


Figure 8d-TDS_Reach 2
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 2 Objective
Scenario 8d - Low Discharge for 2020

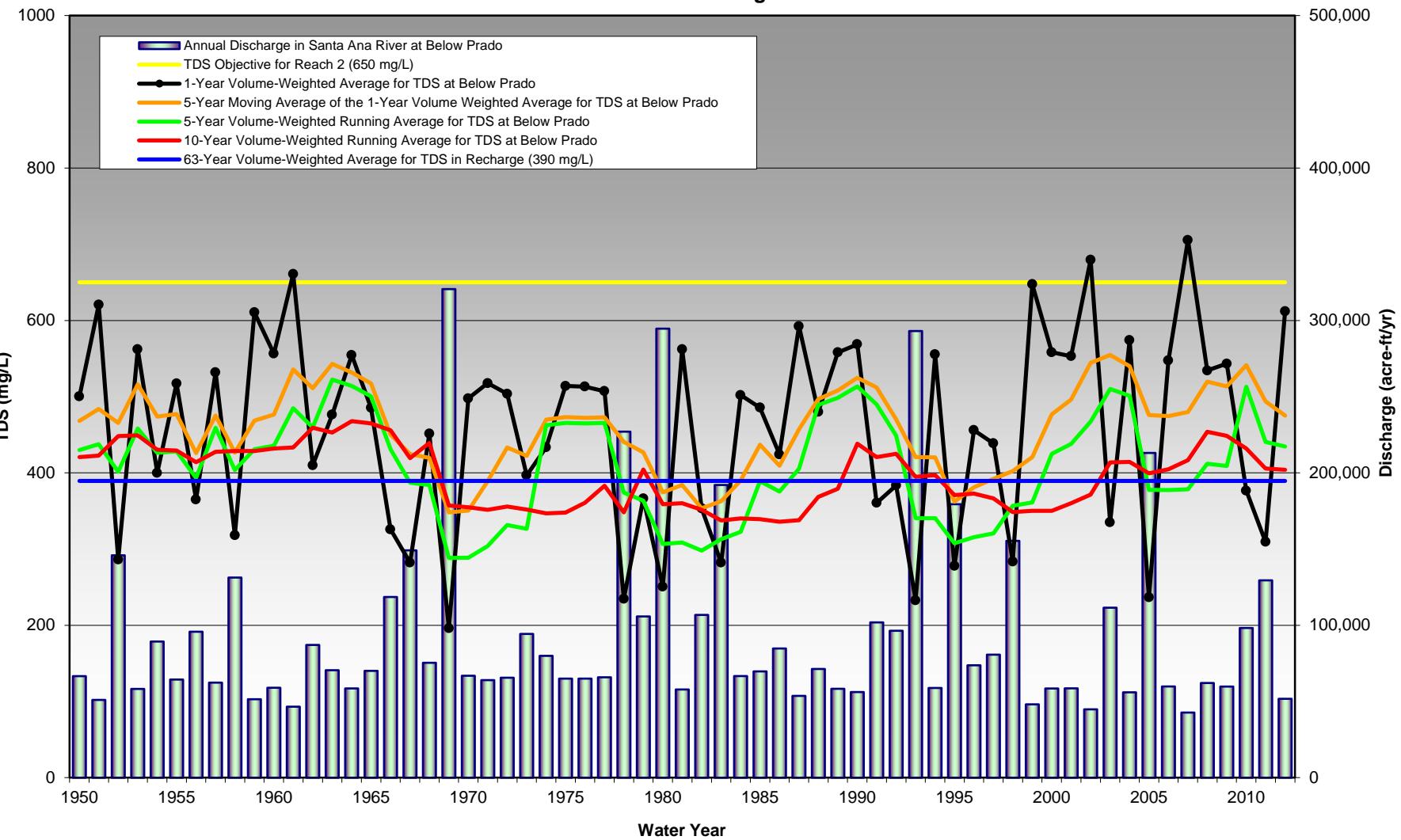


Table 8d-CS
TDS and TIN of Streambed Recharge to the Chino-South Management Zone
Scenario 8d - Low Discharge for 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	629	613	596	4.28	4.16	4.03
1951	650	612	596	4.43	4.19	4.03
1952	539	621	596	3.65	4.14	4.03
1953	638	621	596	4.35	4.15	4.03
1954	597	614	596	4.06	4.14	4.03
1955	628	613	596	4.27	4.15	4.03
1956	615	610	596	4.19	4.15	4.03
1957	635	614	596	4.33	4.16	4.03
1958	544	611	596	3.67	4.13	4.03
1959	658	611	596	4.49	4.15	4.03
1960	646	612	596	4.40	4.17	4.03
1961	664	614	596	4.53	4.17	4.03
1962	603	621	596	4.09	4.23	4.03
1963	624	620	596	4.25	4.22	4.03
1964	645	624	596	4.39	4.25	4.03
1965	624	624	596	4.24	4.25	4.03
1966	571	619	596	3.87	4.21	4.03
1967	544	609	596	3.68	4.14	4.03
1968	624	618	596	4.25	4.20	4.03
1969	419	588	596	2.70	3.98	4.03
1970	634	587	596	4.32	3.97	4.03
1971	633	584	596	4.31	3.95	4.03
1972	638	587	596	4.35	3.97	4.03
1973	597	585	596	4.05	3.96	4.03
1974	614	582	596	4.18	3.94	4.03
1975	635	583	596	4.32	3.94	4.03
1976	625	588	596	4.25	3.98	4.03
1977	640	598	596	4.36	4.05	4.03
1978	461	579	596	3.06	3.91	4.03
1979	575	601	596	3.84	4.07	4.03
1980	430	575	596	2.67	3.86	4.03
1981	648	576	596	4.42	3.87	4.03
1982	573	570	596	3.89	3.83	4.03
1983	481	557	596	3.07	3.72	4.03
1984	628	559	596	4.28	3.73	4.03
1985	626	558	596	4.26	3.72	4.03
1986	612	557	596	4.16	3.71	4.03
1987	653	558	596	4.45	3.72	4.03
1988	630	576	596	4.29	3.85	4.03
1989	645	582	596	4.39	3.90	4.03
1990	642	610	596	4.37	4.13	4.03
1991	593	605	596	4.03	4.09	4.03
1992	591	606	596	4.01	4.10	4.03
1993	430	597	596	2.70	4.03	4.03
1994	637	597	596	4.34	4.03	4.03
1995	513	585	596	3.33	3.93	4.03
1996	632	587	596	4.31	3.94	4.03
1997	605	583	596	4.11	3.92	4.03
1998	517	571	596	3.48	3.83	4.03
1999	657	572	596	4.48	3.84	4.03
2000	648	573	596	4.41	3.84	4.03
2001	644	577	596	4.39	3.88	4.03
2002	667	584	596	4.55	3.92	4.03
2003	586	606	596	3.98	4.10	4.03
2004	656	607	596	4.47	4.11	4.03
2005	479	603	596	3.20	4.09	4.03
2006	639	603	596	4.35	4.10	4.03
2007	672	609	596	4.59	4.14	4.03
2008	638	623	596	4.34	4.24	4.03
2009	645	622	596	4.39	4.23	4.03
2010	591	616	596	4.01	4.19	4.03
2011	574	609	596	3.89	4.14	4.03
2012	657	608	596	4.49	4.13	4.03
Maximum	672	624		4.59	4.25	

Figure 8d-TDS_CS
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 8d - Low Discharge for 2020

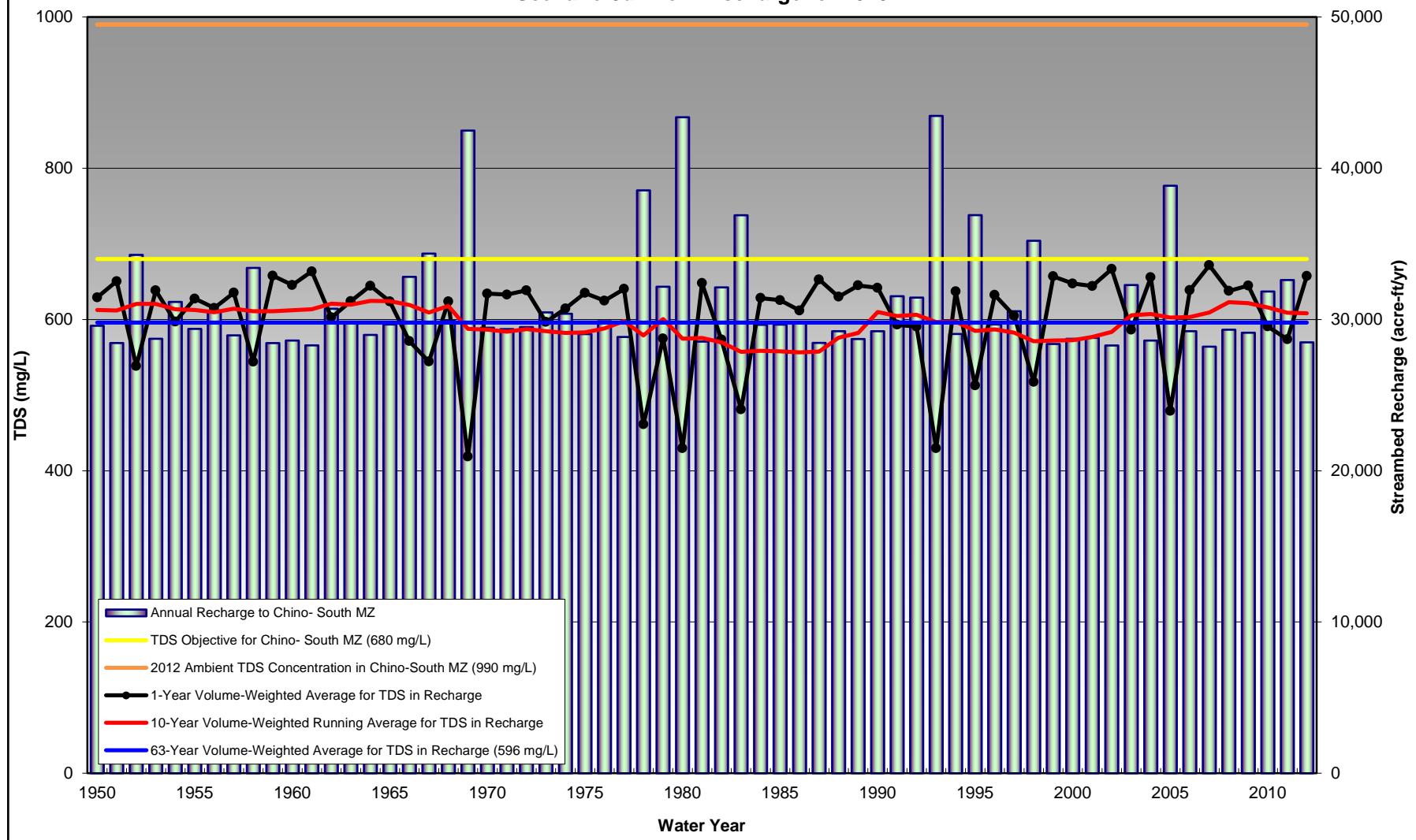


Figure 8d-TIN_CS
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 8d - Low Discharge for 2020

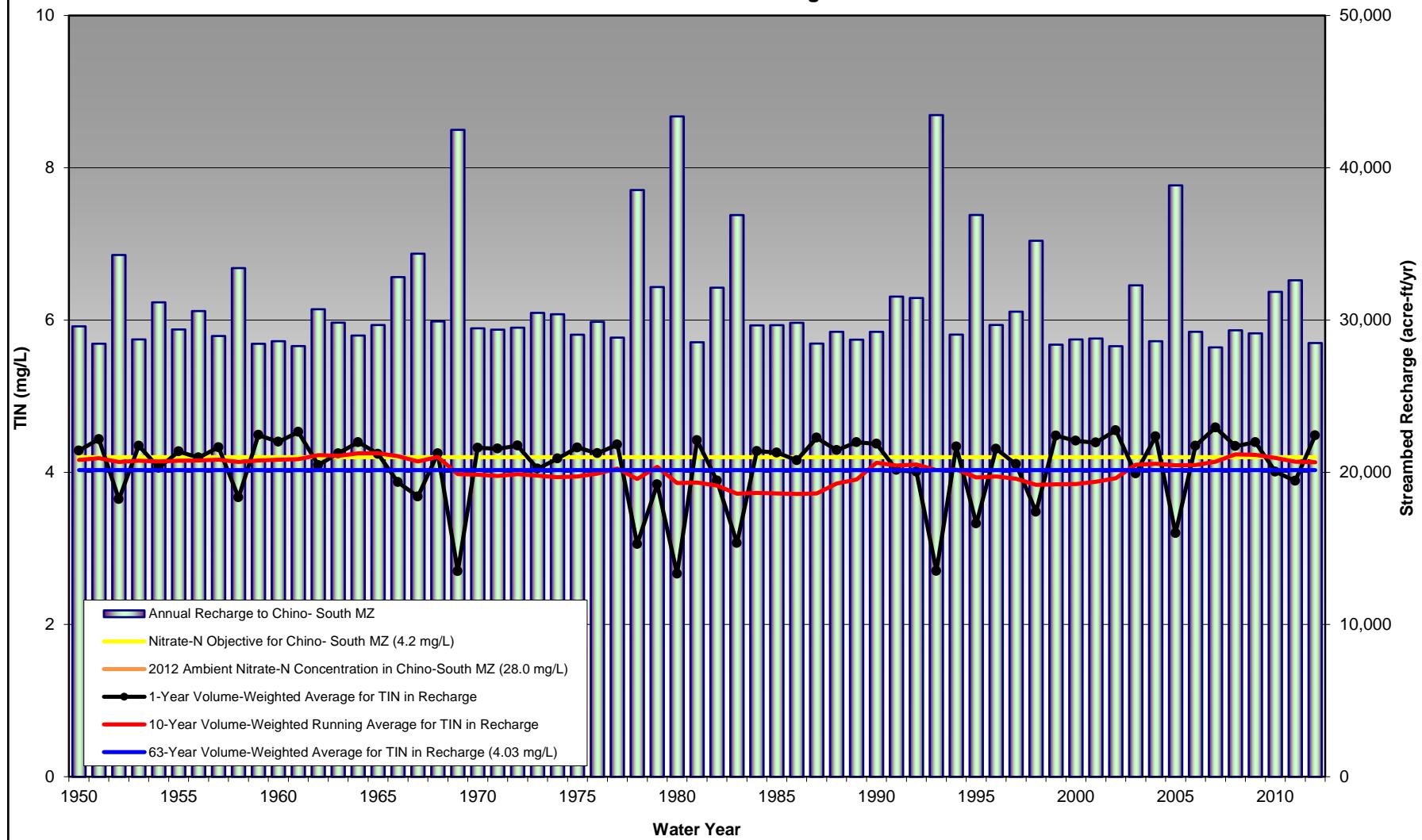


Table 8d-RA
TDS and TIN of Streambed Recharge to the Riverside-A Management Zone
Scenario 8d - Low Discharge for 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	448	436	412	6.08	5.86	5.49
1951	508	436	412	6.99	5.85	5.49
1952	352	450	412	4.64	6.09	5.49
1953	484	451	412	6.62	6.11	5.49
1954	409	440	412	5.48	5.94	5.49
1955	459	439	412	6.25	5.94	5.49
1956	456	437	412	6.25	5.90	5.49
1957	480	444	412	6.55	6.01	5.49
1958	347	436	412	4.45	5.89	5.49
1959	501	435	412	6.90	5.87	5.49
1960	498	439	412	6.84	5.93	5.49
1961	518	439	412	7.17	5.95	5.49
1962	415	449	412	5.57	6.08	5.49
1963	465	447	412	6.35	6.06	5.49
1964	480	455	412	6.57	6.17	5.49
1965	443	453	412	6.00	6.15	5.49
1966	380	444	412	5.02	6.00	5.49
1967	362	430	412	4.76	5.79	5.49
1968	449	444	412	6.10	6.01	5.49
1969	255	404	412	2.90	5.37	5.49
1970	453	402	412	6.16	5.33	5.49
1971	451	397	412	6.11	5.26	5.49
1972	477	402	412	6.53	5.34	5.49
1973	413	398	412	5.51	5.27	5.49
1974	436	395	412	5.90	5.22	5.49
1975	477	397	412	6.51	5.26	5.49
1976	442	403	412	5.98	5.35	5.49
1977	478	414	412	6.54	5.52	5.49
1978	283	391	412	3.37	5.14	5.49
1979	395	418	412	5.23	5.58	5.49
1980	253	384	412	2.83	5.02	5.49
1981	496	387	412	6.81	5.06	5.49
1982	381	379	412	5.07	4.94	5.49
1983	287	364	412	3.47	4.70	5.49
1984	455	365	412	6.18	4.72	5.49
1985	463	365	412	6.31	4.71	5.49
1986	445	365	412	6.00	4.71	5.49
1987	506	366	412	6.97	4.73	5.49
1988	466	387	412	6.35	5.06	5.49
1989	477	393	412	6.51	5.16	5.49
1990	479	431	412	6.55	5.80	5.49
1991	405	423	412	5.42	5.67	5.49
1992	390	424	412	5.17	5.68	5.49
1993	254	410	412	2.88	5.45	5.49
1994	472	412	412	6.43	5.47	5.49
1995	323	396	412	4.05	5.21	5.49
1996	454	396	412	6.16	5.23	5.49
1997	409	390	412	5.44	5.12	5.49
1998	332	377	412	4.20	4.92	5.49
1999	515	379	412	7.11	4.95	5.49
2000	486	380	412	6.65	4.96	5.49
2001	498	386	412	6.84	5.05	5.49
2002	525	395	412	7.27	5.19	5.49
2003	412	427	412	5.54	5.72	5.49
2004	510	430	412	7.04	5.76	5.49
2005	297	423	412	3.60	5.65	5.49
2006	473	424	412	6.42	5.67	5.49
2007	528	434	412	7.31	5.83	5.49
2008	461	452	412	6.25	6.11	5.49
2009	491	450	412	6.74	6.08	5.49
2010	408	443	412	5.43	5.96	5.49
2011	398	433	412	5.26	5.81	5.49
2012	518	433	412	7.16	5.80	5.49
Maximum	528	455		7.31	6.17	

Figure 8d-TDS_RA
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 8d - Low Discharge for 2020

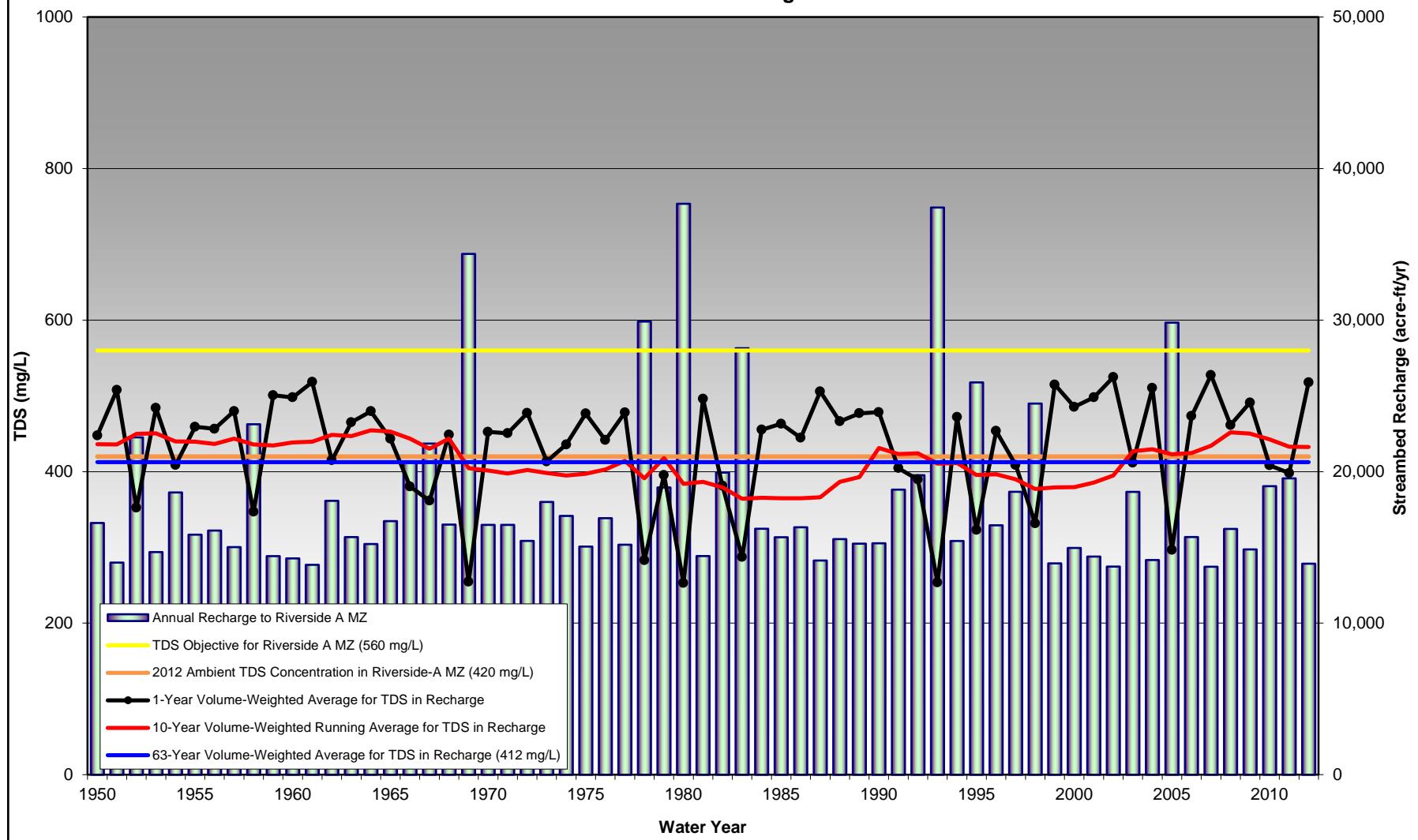


Figure 8d-TIN_RA
**Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
 of the Santa Ana River to the Riverside-A Management Zone**
Scenario 8d - Low Discharge for 2020

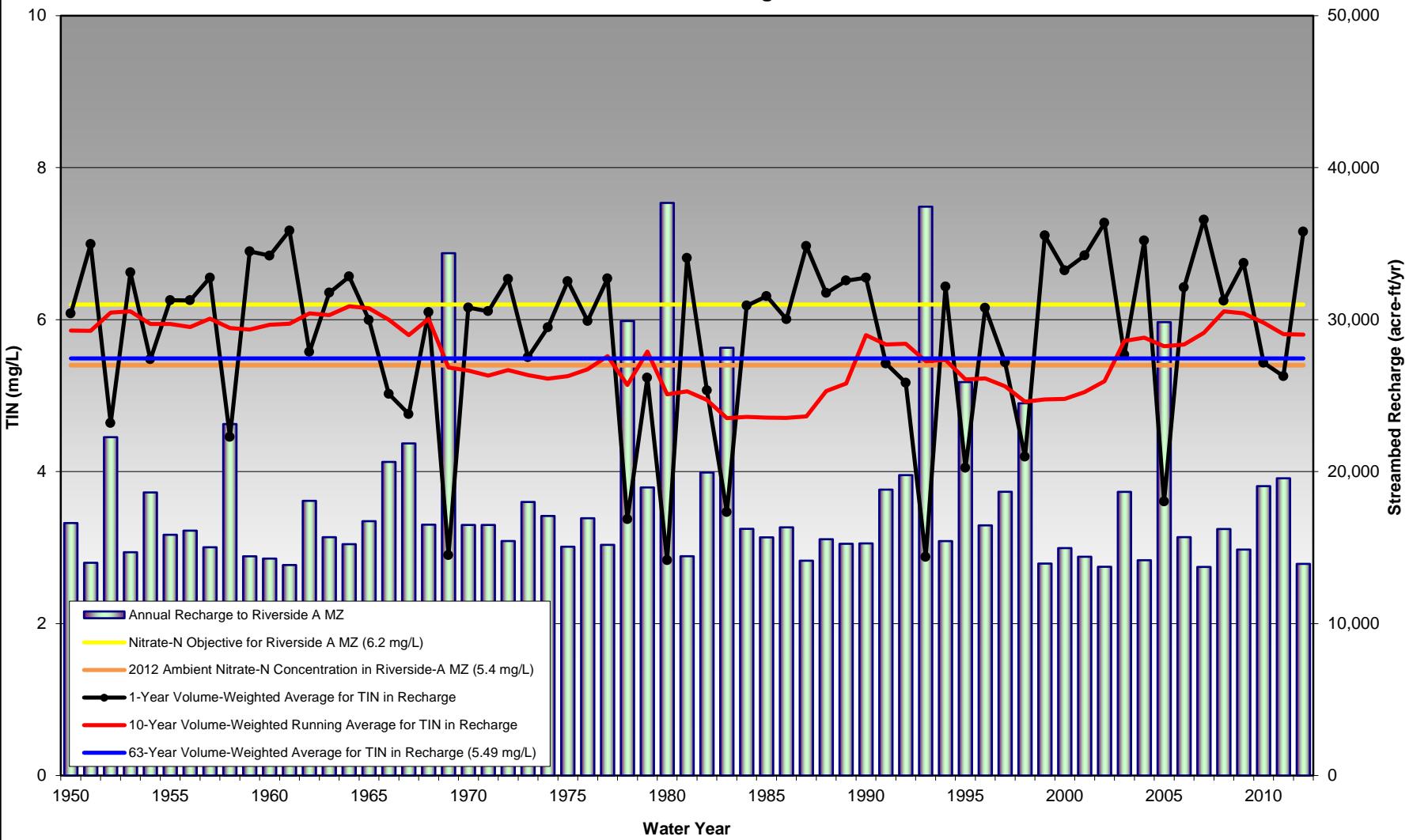


Table 8d-CO
TDS and TIN of Streambed Recharge to the Colton Management Zone
Scenario 8d - Low Discharge for 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	139	159	154	1.12	1.21	1.17
1951	162	159	154	1.22	1.21	1.17
1952	138	155	154	1.11	1.19	1.17
1953	157	153	154	1.20	1.18	1.17
1954	141	151	154	1.12	1.17	1.17
1955	146	149	154	1.16	1.16	1.17
1956	125	146	154	1.03	1.15	1.17
1957	157	146	154	1.20	1.15	1.17
1958	151	146	154	1.17	1.15	1.17
1959	163	145	154	1.23	1.14	1.17
1960	153	146	154	1.18	1.15	1.17
1961	158	146	154	1.21	1.15	1.17
1962	144	148	154	1.14	1.15	1.17
1963	134	146	154	1.08	1.15	1.17
1964	150	147	154	1.16	1.15	1.17
1965	146	147	154	1.14	1.15	1.17
1966	138	147	154	1.10	1.15	1.17
1967	140	145	154	1.10	1.14	1.17
1968	140	143	154	1.11	1.13	1.17
1969	162	151	154	1.19	1.15	1.17
1970	138	150	154	1.11	1.15	1.17
1971	145	150	154	1.16	1.15	1.17
1972	148	150	154	1.16	1.15	1.17
1973	154	151	154	1.19	1.16	1.17
1974	138	150	154	1.10	1.16	1.17
1975	160	151	154	1.21	1.16	1.17
1976	136	151	154	1.08	1.16	1.17
1977	146	153	154	1.13	1.17	1.17
1978	159	155	154	1.19	1.18	1.17
1979	154	152	154	1.18	1.17	1.17
1980	161	156	154	1.19	1.18	1.17
1981	166	157	154	1.24	1.18	1.17
1982	129	155	154	1.06	1.17	1.17
1983	163	157	154	1.22	1.18	1.17
1984	158	157	154	1.21	1.18	1.17
1985	146	157	154	1.13	1.18	1.17
1986	155	158	154	1.19	1.19	1.17
1987	164	158	154	1.23	1.19	1.17
1988	150	157	154	1.15	1.19	1.17
1989	157	158	154	1.20	1.19	1.17
1990	152	155	154	1.17	1.19	1.17
1991	137	153	154	1.10	1.17	1.17
1992	135	153	154	1.08	1.18	1.17
1993	160	154	154	1.19	1.17	1.17
1994	160	154	154	1.21	1.17	1.17
1995	154	154	154	1.17	1.17	1.17
1996	156	154	154	1.19	1.17	1.17
1997	151	154	154	1.17	1.17	1.17
1998	159	155	154	1.22	1.17	1.17
1999	179	155	154	1.32	1.18	1.17
2000	155	155	154	1.19	1.18	1.17
2001	166	157	154	1.24	1.18	1.17
2002	172	158	154	1.27	1.19	1.17
2003	133	155	154	1.09	1.19	1.17
2004	167	155	154	1.25	1.19	1.17
2005	157	156	154	1.19	1.19	1.17
2006	177	157	154	1.31	1.20	1.17
2007	196	158	154	1.40	1.21	1.17
2008	169	159	154	1.26	1.21	1.17
2009	163	159	154	1.23	1.21	1.17
2010	151	158	154	1.17	1.20	1.17
2011	157	157	154	1.19	1.20	1.17
2012	179	158	154	1.32	1.20	1.17
Maximum	196	159		1.40	1.21	

Figure 8d-TDS_CO
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 8d - Low Discharge for 2020

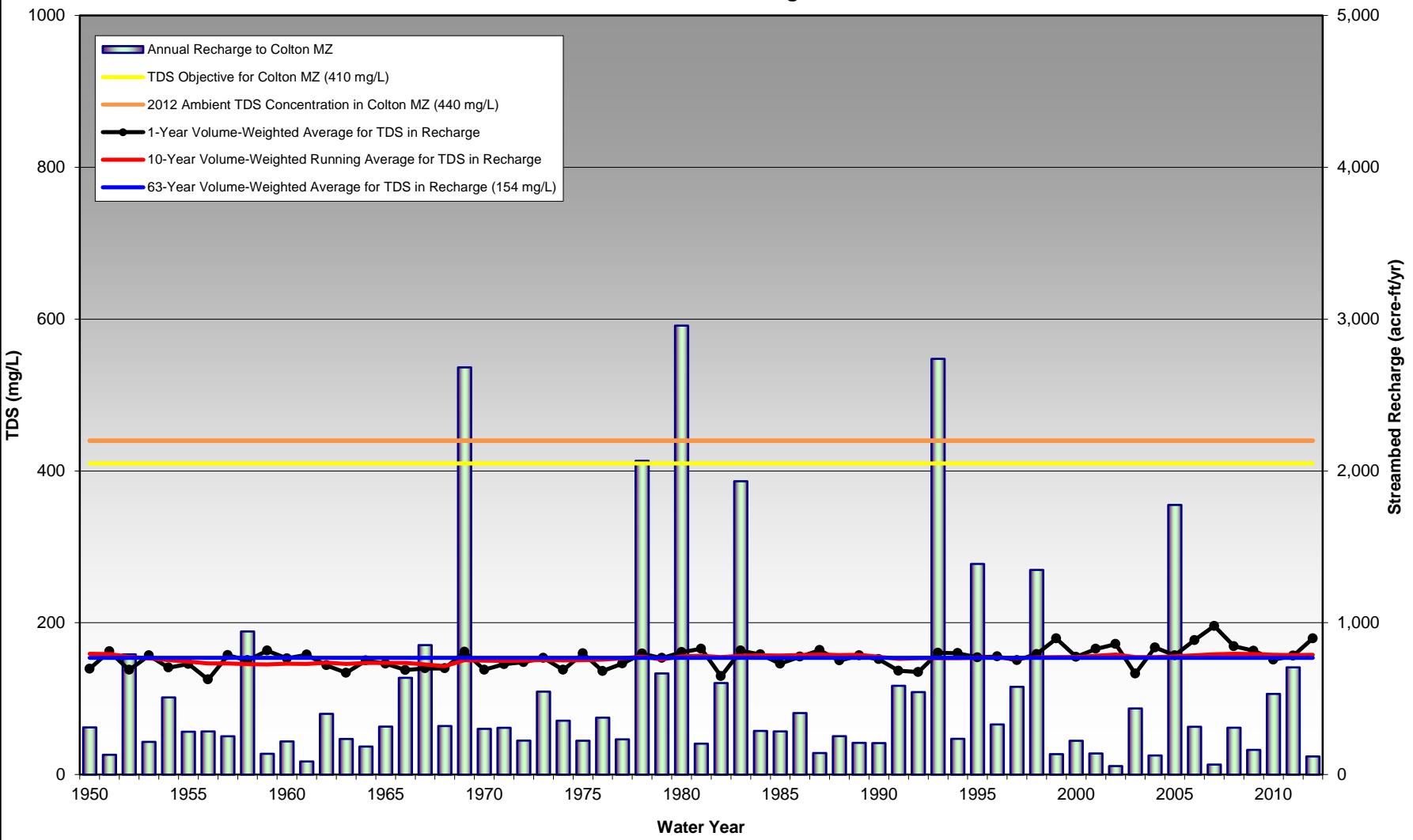


Figure 8d-TIN_CO
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 8d - Low Discharge for 2020

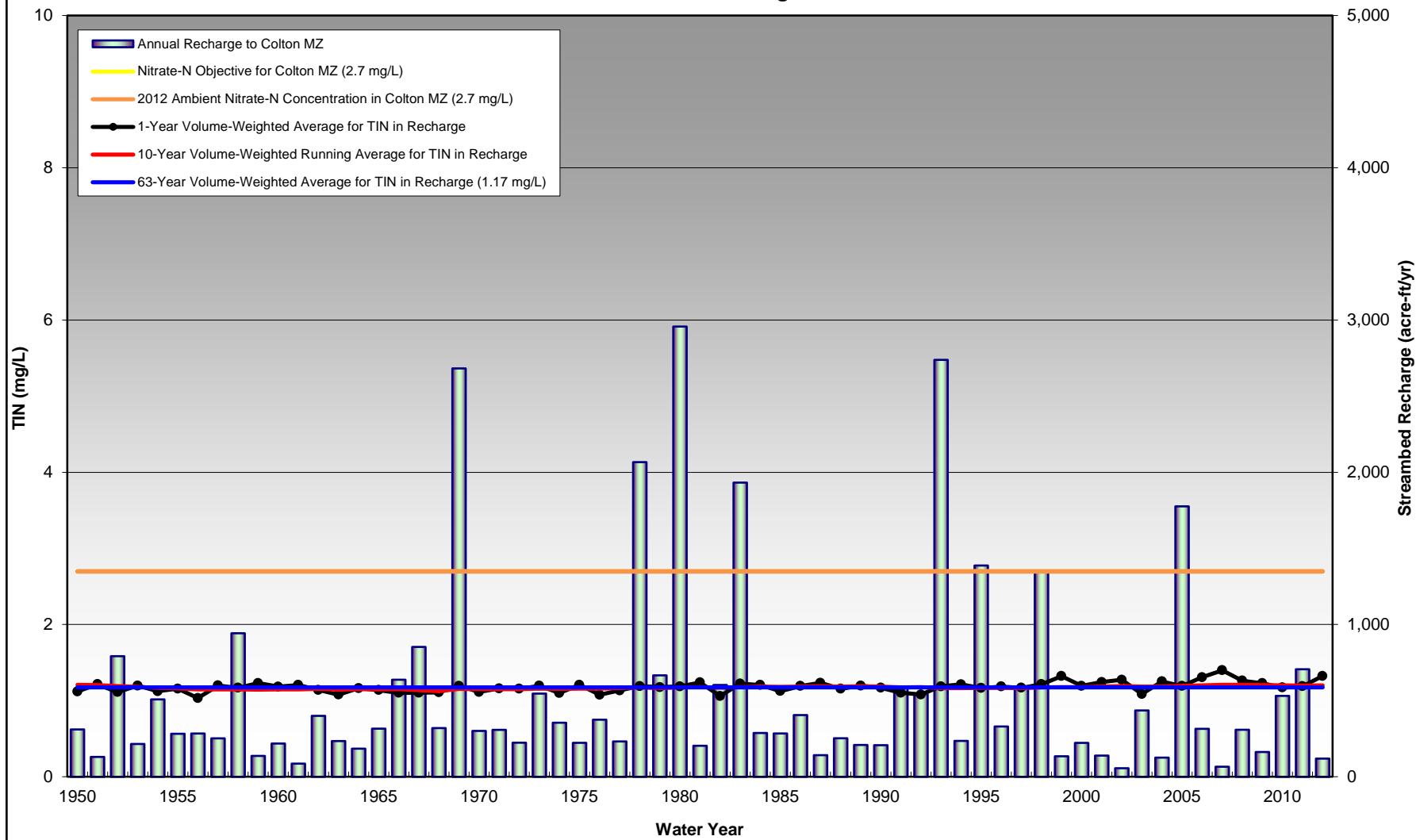


Table 8d-BH
TDS and TIN of Streambed Recharge to the Bunker Hill-B Management Zone
Scenario 8d - Low Discharge for 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	183	196	188	1.39	1.45	1.39
1951	199	196	188	1.49	1.45	1.39
1952	177	195	188	1.34	1.45	1.39
1953	190	194	188	1.42	1.45	1.39
1954	176	190	188	1.33	1.42	1.39
1955	185	189	188	1.40	1.41	1.39
1956	191	188	188	1.45	1.41	1.39
1957	188	188	188	1.41	1.41	1.39
1958	174	184	188	1.31	1.39	1.39
1959	196	183	188	1.46	1.38	1.39
1960	182	183	188	1.38	1.38	1.39
1961	205	183	188	1.53	1.38	1.39
1962	180	184	188	1.35	1.38	1.39
1963	185	183	188	1.40	1.38	1.39
1964	189	184	188	1.42	1.39	1.39
1965	181	184	188	1.37	1.39	1.39
1966	178	183	188	1.35	1.38	1.39
1967	186	183	188	1.39	1.38	1.39
1968	185	185	188	1.39	1.39	1.39
1969	185	184	188	1.34	1.37	1.39
1970	187	185	188	1.42	1.37	1.39
1971	189	185	188	1.43	1.37	1.39
1972	196	186	188	1.47	1.38	1.39
1973	181	185	188	1.36	1.37	1.39
1974	185	185	188	1.40	1.37	1.39
1975	189	185	188	1.41	1.38	1.39
1976	179	186	188	1.36	1.38	1.39
1977	185	186	188	1.39	1.38	1.39
1978	180	184	188	1.31	1.36	1.39
1979	181	183	188	1.35	1.37	1.39
1980	183	183	188	1.32	1.35	1.39
1981	195	183	188	1.45	1.36	1.39
1982	176	182	188	1.34	1.35	1.39
1983	182	182	188	1.33	1.34	1.39
1984	198	183	188	1.47	1.35	1.39
1985	188	183	188	1.41	1.35	1.39
1986	185	183	188	1.39	1.35	1.39
1987	199	184	188	1.48	1.35	1.39
1988	182	185	188	1.37	1.36	1.39
1989	187	185	188	1.41	1.37	1.39
1990	197	187	188	1.48	1.39	1.39
1991	179	185	188	1.36	1.38	1.39
1992	172	185	188	1.31	1.38	1.39
1993	182	185	188	1.32	1.38	1.39
1994	194	185	188	1.45	1.37	1.39
1995	187	185	188	1.37	1.37	1.39
1996	197	186	188	1.47	1.38	1.39
1997	186	185	188	1.39	1.37	1.39
1998	187	186	188	1.39	1.37	1.39
1999	212	187	188	1.57	1.38	1.39
2000	193	187	188	1.45	1.38	1.39
2001	198	188	188	1.48	1.39	1.39
2002	231	190	188	1.73	1.40	1.39
2003	181	192	188	1.37	1.42	1.39
2004	204	192	188	1.52	1.43	1.39
2005	183	191	188	1.35	1.42	1.39
2006	204	192	188	1.50	1.43	1.39
2007	232	194	188	1.72	1.44	1.39
2008	202	197	188	1.49	1.46	1.39
2009	198	196	188	1.47	1.46	1.39
2010	192	196	188	1.43	1.45	1.39
2011	196	195	188	1.44	1.45	1.39
2012	213	196	188	1.57	1.45	1.39
Maximum	232	197		1.73	1.46	

Figure 8d-TDS_BH
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 8d - Low Discharge for 2020

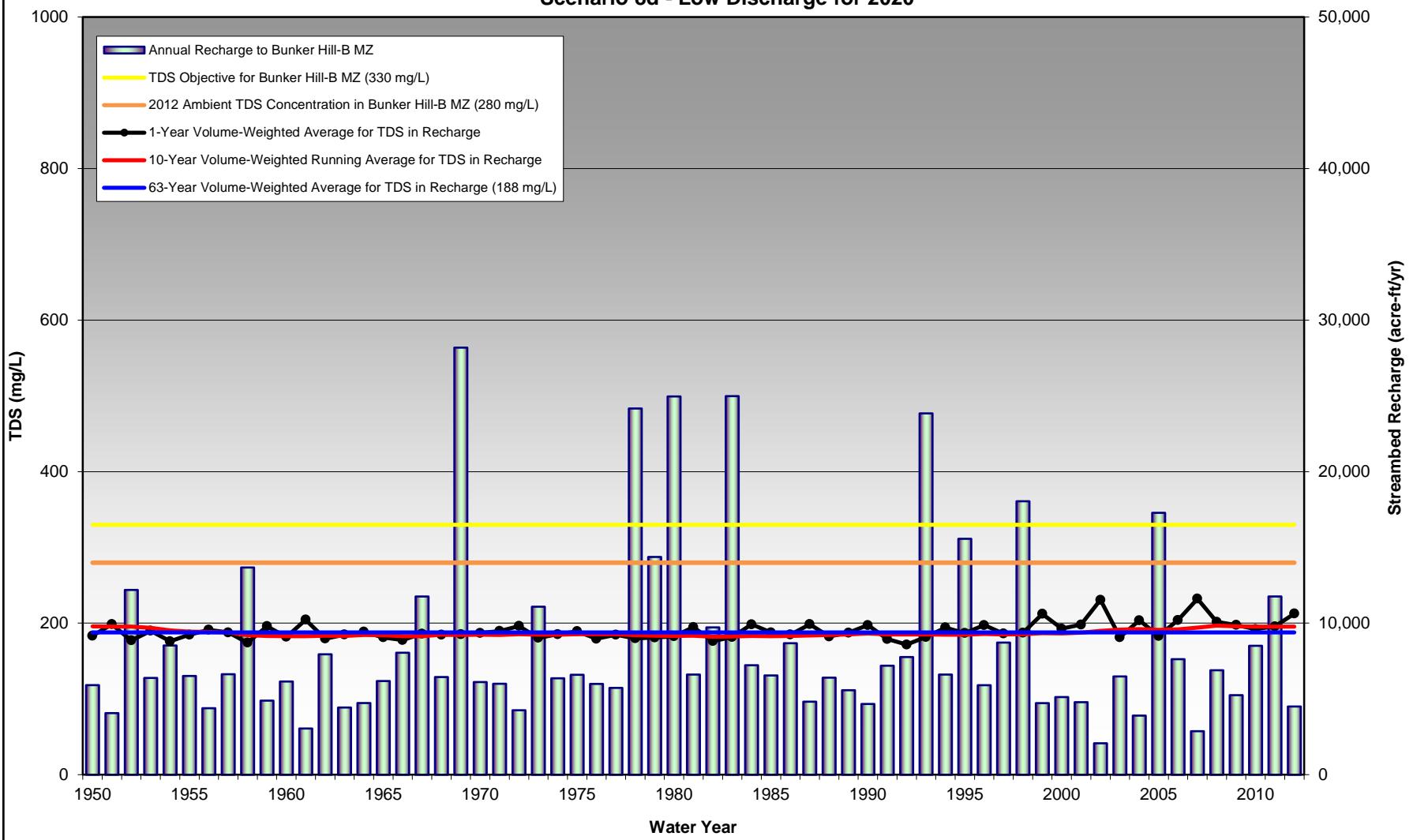


Figure 8d-TIN_BH
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 8d - Low Discharge for 2020

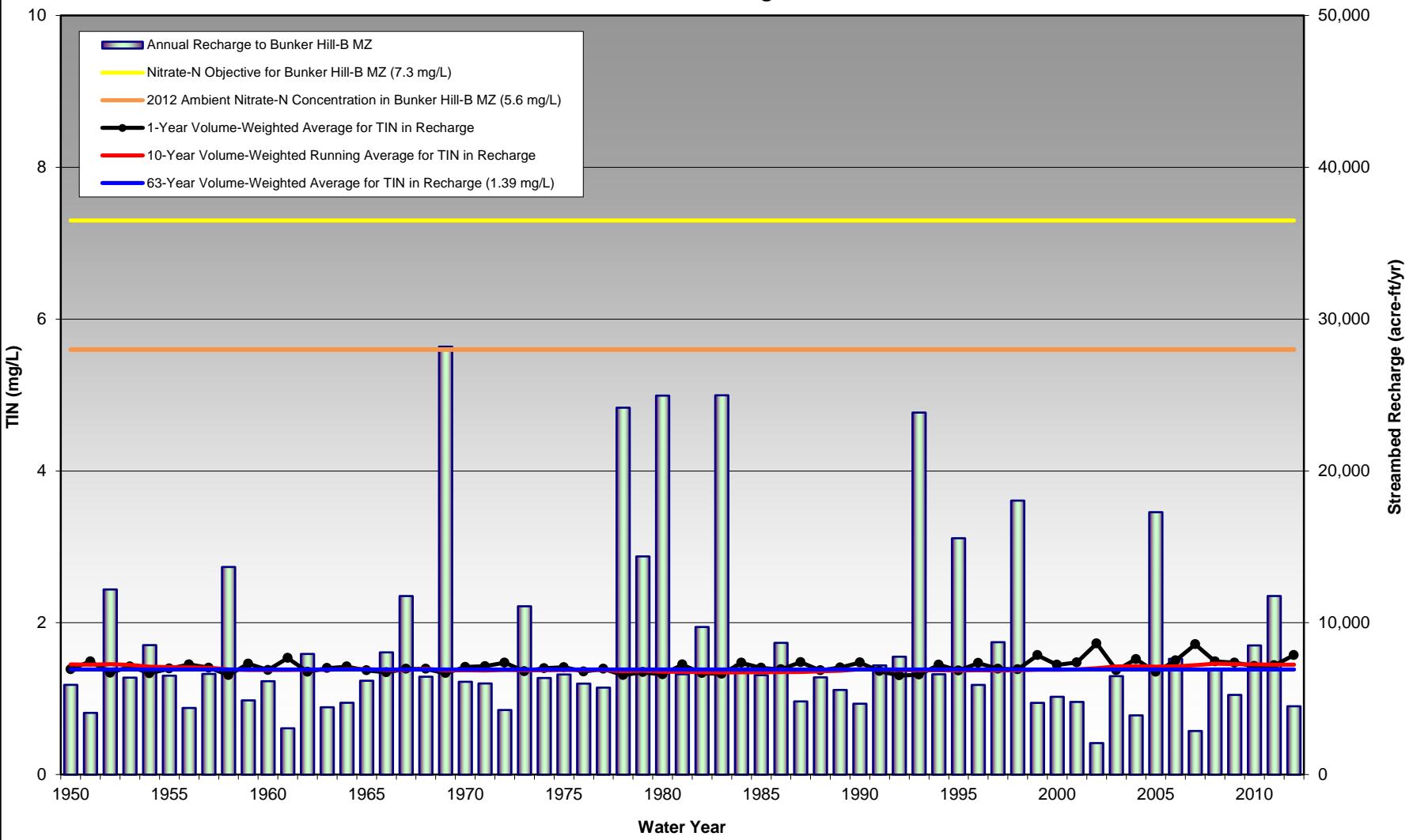


Table 8d-ST
TDS and TIN of Streambed Recharge to the San Timoteo Management Zone
Scenario 8d - Low Discharge for 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	345	371	346	3.10	3.34	3.10
1951	414	370	346	3.75	3.34	3.10
1952	294	372	346	2.62	3.35	3.10
1953	367	370	346	3.29	3.33	3.10
1954	318	357	346	2.86	3.21	3.10
1955	362	355	346	3.25	3.19	3.10
1956	382	354	346	3.47	3.18	3.10
1957	365	355	346	3.28	3.20	3.10
1958	279	347	346	2.47	3.12	3.10
1959	392	345	346	3.54	3.10	3.10
1960	363	346	346	3.24	3.11	3.10
1961	421	347	346	3.82	3.11	3.10
1962	330	352	346	2.95	3.16	3.10
1963	387	353	346	3.50	3.17	3.10
1964	381	360	346	3.43	3.24	3.10
1965	352	359	346	3.15	3.22	3.10
1966	316	352	346	2.84	3.16	3.10
1967	303	345	346	2.73	3.10	3.10
1968	357	356	346	3.21	3.20	3.10
1969	258	338	346	2.30	3.04	3.10
1970	379	340	346	3.43	3.06	3.10
1971	382	337	346	3.44	3.03	3.10
1972	393	343	346	3.55	3.08	3.10
1973	308	335	346	2.73	3.01	3.10
1974	355	333	346	3.19	2.99	3.10
1975	356	333	346	3.19	2.99	3.10
1976	338	336	346	3.04	3.01	3.10
1977	367	342	346	3.30	3.07	3.10
1978	240	325	346	2.12	2.91	3.10
1979	296	331	346	2.62	2.96	3.10
1980	261	318	346	2.33	2.84	3.10
1981	386	318	346	3.48	2.84	3.10
1982	323	313	346	2.89	2.80	3.10
1983	260	307	346	2.29	2.74	3.10
1984	382	308	346	3.45	2.75	3.10
1985	365	309	346	3.28	2.76	3.10
1986	358	310	346	3.20	2.77	3.10
1987	411	313	346	3.71	2.79	3.10
1988	367	329	346	3.29	2.95	3.10
1989	393	338	346	3.55	3.04	3.10
1990	403	356	346	3.64	3.19	3.10
1991	332	350	346	2.99	3.15	3.10
1992	327	351	346	2.93	3.15	3.10
1993	308	360	346	2.73	3.24	3.10
1994	381	360	346	3.43	3.24	3.10
1995	292	351	346	2.62	3.15	3.10
1996	390	354	346	3.53	3.18	3.10
1997	330	347	346	2.96	3.12	3.10
1998	291	338	346	2.58	3.03	3.10
1999	436	340	346	3.96	3.06	3.10
2000	388	340	346	3.50	3.05	3.10
2001	391	345	346	3.52	3.09	3.10
2002	446	354	346	4.06	3.18	3.10
2003	344	359	346	3.10	3.23	3.10
2004	418	362	346	3.78	3.26	3.10
2005	288	361	346	2.57	3.25	3.10
2006	388	361	346	3.50	3.25	3.10
2007	461	372	346	4.20	3.35	3.10
2008	388	385	346	3.49	3.48	3.10
2009	397	382	346	3.59	3.45	3.10
2010	348	378	346	3.13	3.41	3.10
2011	335	372	346	3.01	3.36	3.10
2012	427	371	346	3.87	3.34	3.10
Maximum	461	385		4.20	3.48	

San Timoteo Reach 3 defined here is equivalent to San Temoteo Cr reaches 3 and 4 described in 1995 Water Quality Control Plan

Figure 8d-TDS_ST
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 8d - Low Discharge for 2020

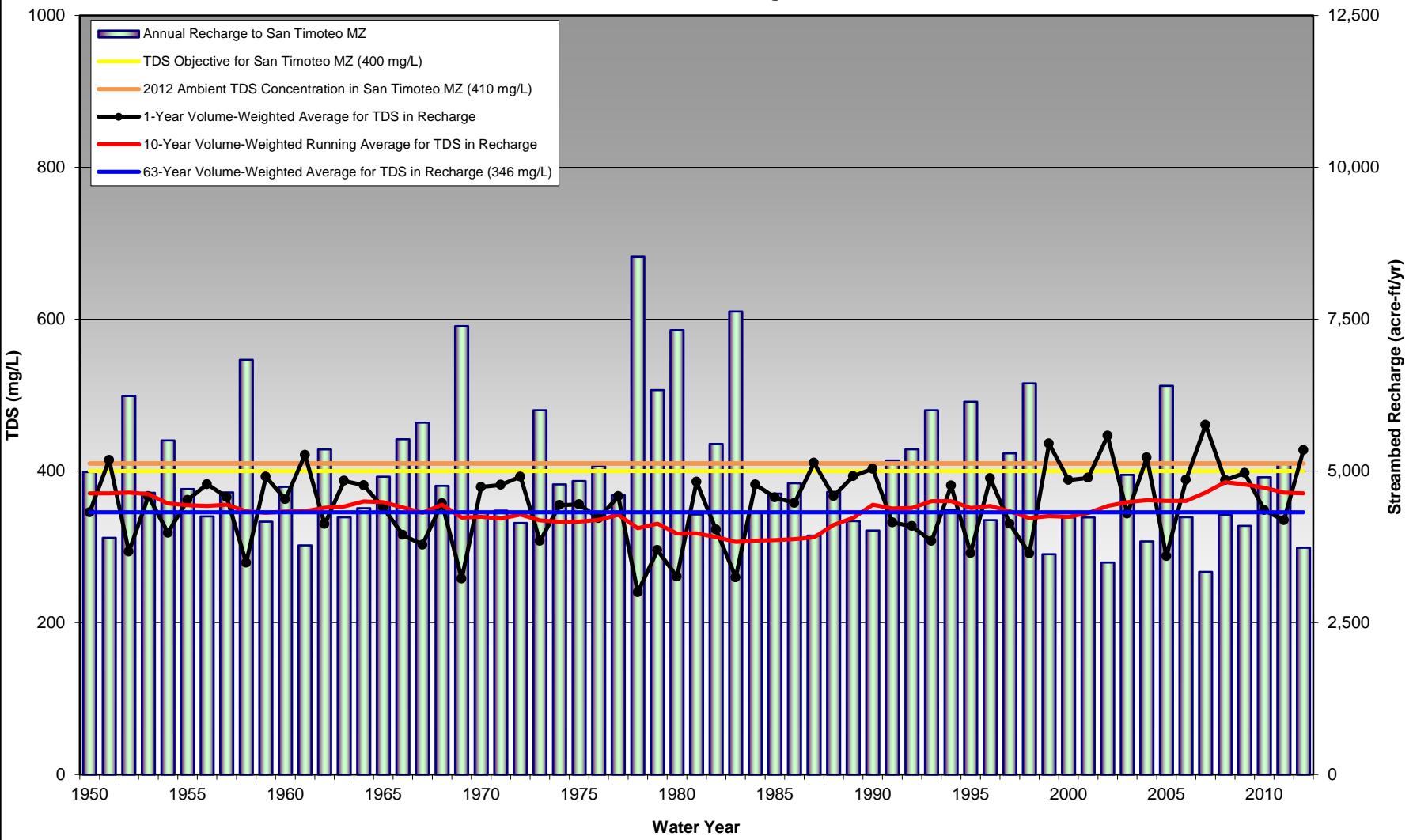


Figure 8d-TIN_ST
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 8d - Low Discharge for 2020

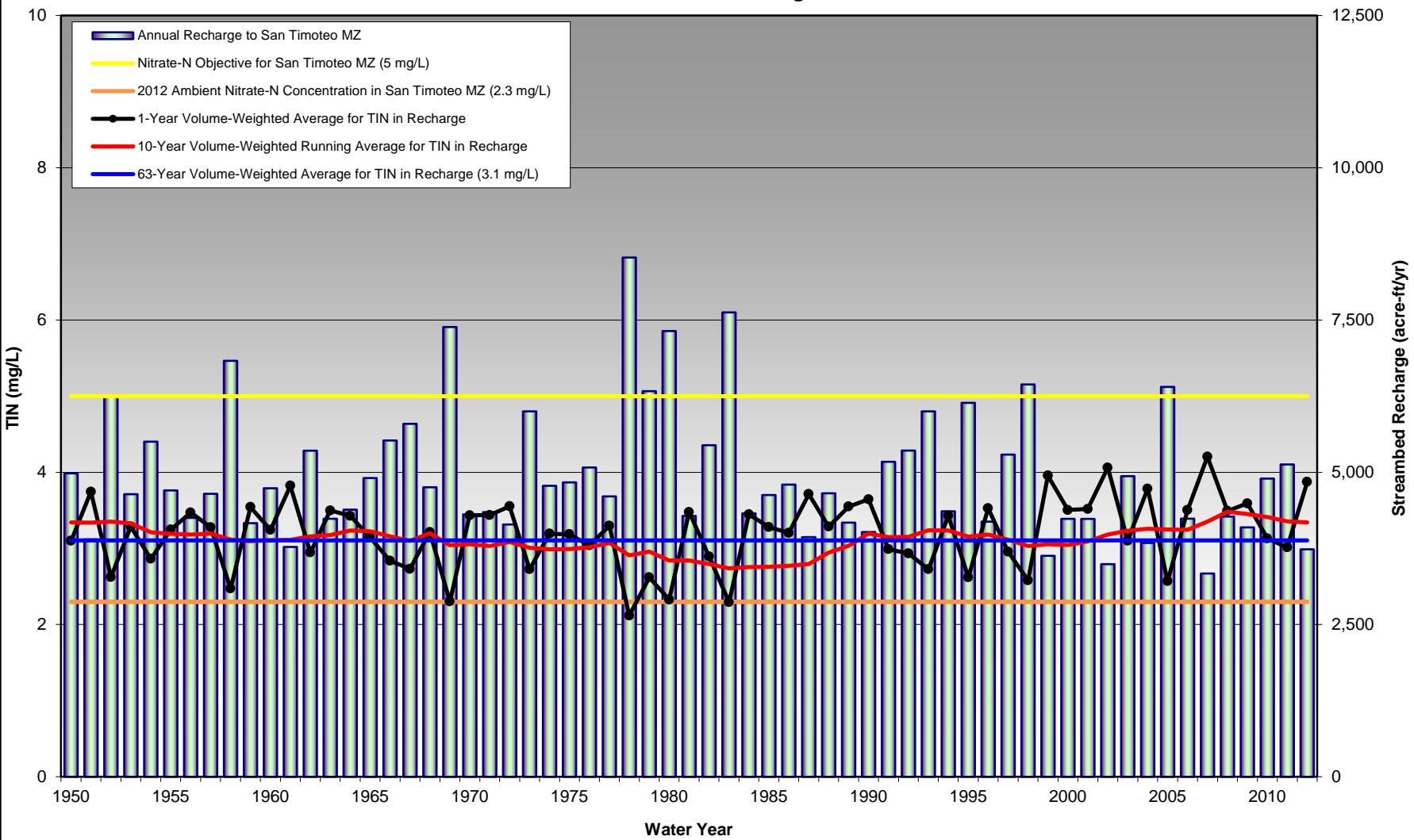


Table 8d-BU
TDS and TIN of Streambed Recharge to the Beaumont Management Zone
Scenario 8d - Low Discharge for 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	192	200	177	2.20	2.34	2.02
1951	283	200	177	3.56	2.34	2.02
1952	145	203	177	1.56	2.39	2.02
1953	242	203	177	2.90	2.39	2.02
1954	150	190	177	1.64	2.20	2.02
1955	219	189	177	2.59	2.19	2.02
1956	187	186	177	2.25	2.15	2.02
1957	214	189	177	2.52	2.19	2.02
1958	141	183	177	1.47	2.09	2.02
1959	244	182	177	2.99	2.08	2.02
1960	243	185	177	2.89	2.12	2.02
1961	292	185	177	3.75	2.12	2.02
1962	173	190	177	1.91	2.19	2.02
1963	226	189	177	2.73	2.19	2.02
1964	241	200	177	2.88	2.34	2.02
1965	192	198	177	2.17	2.30	2.02
1966	150	191	177	1.67	2.20	2.02
1967	136	180	177	1.48	2.06	2.02
1968	196	190	177	2.26	2.20	2.02
1969	119	171	177	1.23	1.93	2.02
1970	191	168	177	2.27	1.91	2.02
1971	216	167	177	2.55	1.88	2.02
1972	218	169	177	2.64	1.92	2.02
1973	181	167	177	1.97	1.88	2.02
1974	190	165	177	2.19	1.85	2.02
1975	208	166	177	2.39	1.86	2.02
1976	168	168	177	1.91	1.89	2.02
1977	221	177	177	2.63	2.01	2.02
1978	130	166	177	1.30	1.84	2.02
1979	158	175	177	1.67	1.96	2.02
1980	127	165	177	1.30	1.81	2.02
1981	254	166	177	3.12	1.83	2.02
1982	155	162	177	1.70	1.77	2.02
1983	132	156	177	1.33	1.68	2.02
1984	221	156	177	2.66	1.70	2.02
1985	209	156	177	2.46	1.70	2.02
1986	196	158	177	2.25	1.71	2.02
1987	276	159	177	3.45	1.73	2.02
1988	244	169	177	2.92	1.88	2.02
1989	259	175	177	3.17	1.98	2.02
1990	245	193	177	3.01	2.22	2.02
1991	157	185	177	1.75	2.11	2.02
1992	177	188	177	1.98	2.16	2.02
1993	117	181	177	1.20	2.08	2.02
1994	229	182	177	2.74	2.08	2.02
1995	126	170	177	1.35	1.93	2.02
1996	199	170	177	2.38	1.93	2.02
1997	168	165	177	1.87	1.86	2.02
1998	155	160	177	1.63	1.78	2.02
1999	301	160	177	3.87	1.79	2.02
2000	200	159	177	2.36	1.77	2.02
2001	280	164	177	3.48	1.84	2.02
2002	311	168	177	4.07	1.91	2.02
2003	172	184	177	1.97	2.13	2.02
2004	285	186	177	3.63	2.16	2.02
2005	141	190	177	1.47	2.20	2.02
2006	236	192	177	2.85	2.23	2.02
2007	320	201	177	4.23	2.37	2.02
2008	223	214	177	2.64	2.56	2.02
2009	237	211	177	2.89	2.51	2.02
2010	182	208	177	2.08	2.47	2.02
2011	163	198	177	1.82	2.32	2.02
2012	285	197	177	3.61	2.31	2.02
Maximum	320	214		4.23	2.56	

Figure 8d-TDS_BU
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 8d - Low Discharge for 2020

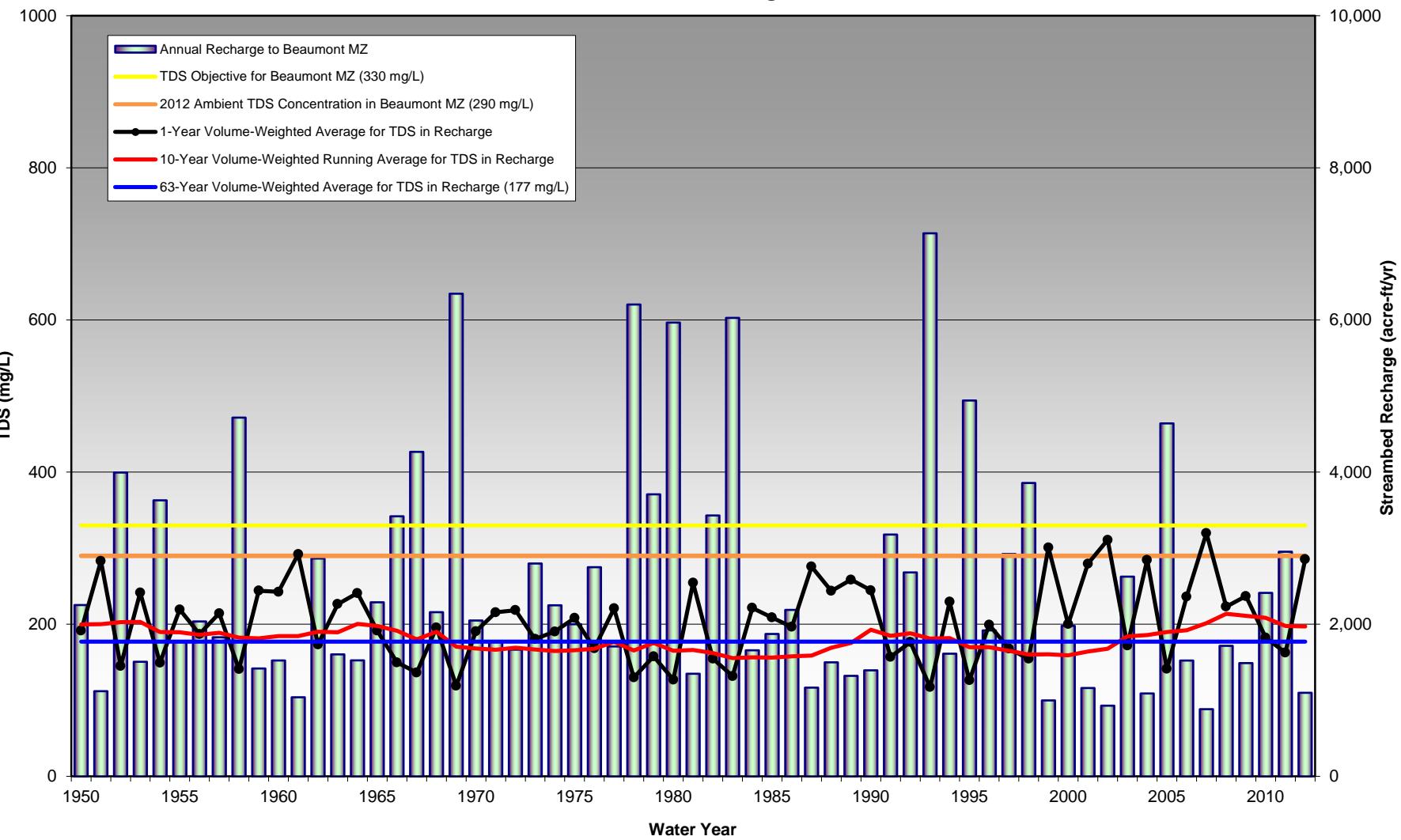


Figure 8d-TIN_BU
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 8d - Low Discharge for 2020

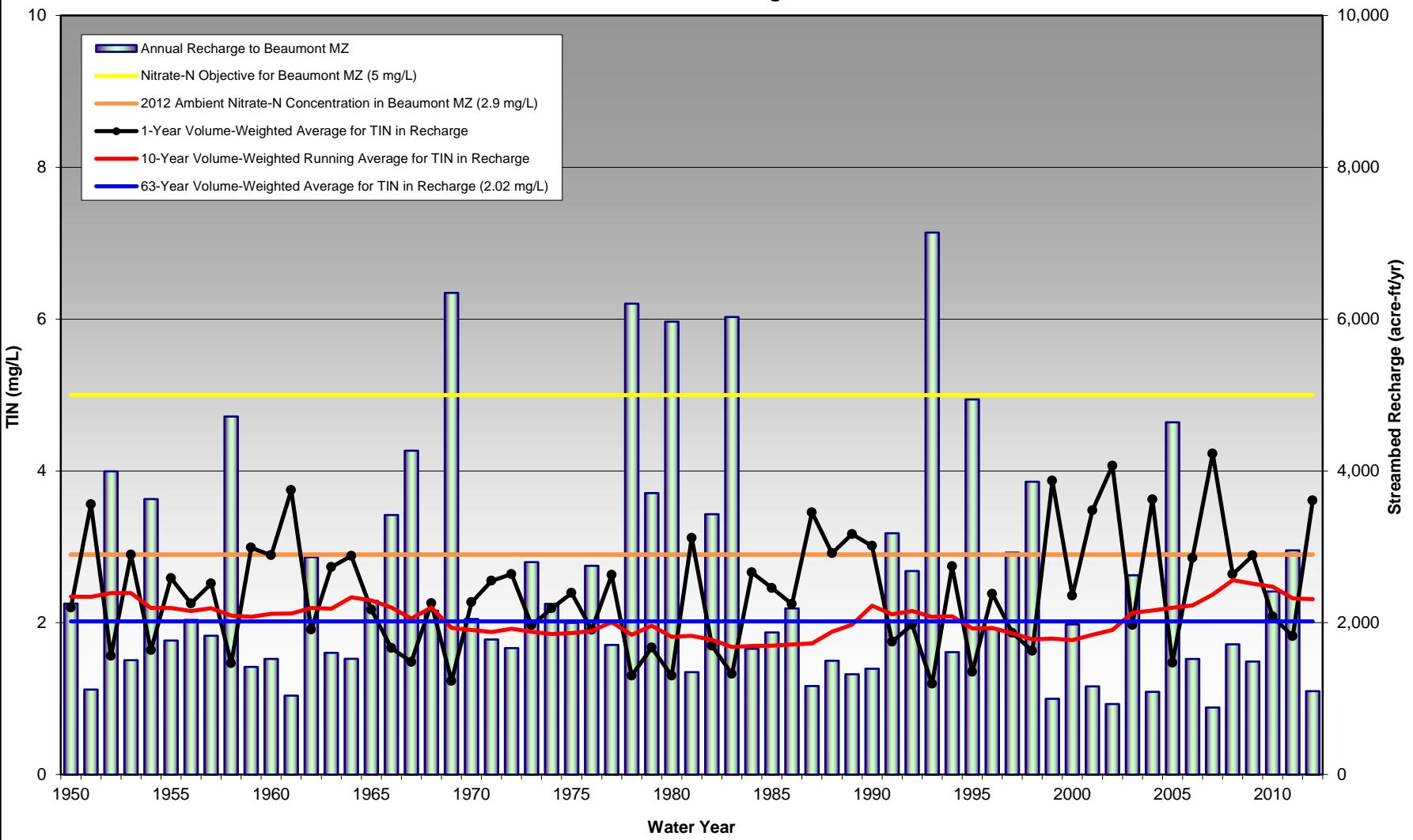


Table 8e-BP
TDS and TIN in Santa Ana River Flow at Below Prado
Scenario 8e - Intermediate Discharge for 2020

Water Year	Volume Weighted Running Average (mg/L)											
	TDS						TIN					
	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only
1950	513	480	450	442	412	698	6.18	5.77	5.39	5.28	4.86	8.07
1951	612	493	457	443	412	698	7.40	5.92	5.48	5.30	4.86	8.07
1952	310	475	423	467	412	698	3.72	5.71	5.08	5.61	4.86	8.07
1953	565	521	476	468	412	698	6.80	6.28	5.73	5.62	4.86	8.07
1954	422	484	447	450	412	697	5.07	5.83	5.37	5.41	4.86	8.06
1955	527	487	449	449	412	696	6.35	5.87	5.40	5.40	4.86	8.05
1956	390	443	416	435	412	698	4.76	5.34	5.02	5.23	4.86	8.07
1957	540	489	477	448	412	698	6.49	5.90	5.75	5.39	4.86	8.07
1958	341	444	426	449	412	660	4.03	5.34	5.11	5.40	4.86	7.63
1959	605	481	451	449	412	698	7.32	5.79	5.43	5.40	4.86	8.07
1960	561	487	455	452	412	698	6.75	5.87	5.48	5.44	4.86	8.07
1961	644	538	499	453	412	674	7.81	6.48	6.00	5.45	4.86	7.79
1962	431	516	477	477	412	698	5.19	6.22	5.73	5.74	4.86	8.07
1963	492	547	532	471	412	697	5.94	6.60	6.42	5.67	4.86	8.06
1964	559	537	525	484	412	698	6.75	6.49	6.33	5.83	4.86	8.07
1965	500	525	513	482	412	682	5.99	6.34	6.19	5.80	4.86	7.89
1966	350	467	451	474	412	698	4.17	5.61	5.42	5.69	4.86	8.07
1967	305	441	410	440	412	679	3.60	5.29	4.90	5.28	4.86	7.85
1968	470	437	407	459	412	697	5.70	5.24	4.87	5.51	4.86	8.07
1969	211	367	312	381	412	670	2.37	4.37	3.66	4.53	4.86	7.71
1970	511	369	312	379	412	696	6.15	4.40	3.67	4.51	4.86	8.05
1971	528	405	327	375	412	695	6.35	4.84	3.86	4.46	4.86	8.03
1972	516	447	355	380	412	665	6.24	5.36	4.20	4.52	4.86	7.68
1973	418	437	350	376	412	698	4.97	5.22	4.13	4.46	4.86	8.07
1974	453	485	480	371	412	698	5.47	5.84	5.77	4.40	4.86	8.07
1975	525	488	482	372	412	698	6.32	5.87	5.79	4.42	4.86	8.07
1976	524	487	482	384	412	698	6.29	5.86	5.78	4.57	4.86	8.07
1977	519	488	482	406	412	322	6.25	5.86	5.79	4.83	4.86	3.65
1978	253	455	397	372	412	698	2.92	5.45	4.73	4.40	4.86	8.07
1979	390	442	387	426	412	698	4.61	5.28	4.59	5.09	4.86	8.07
1980	265	390	328	381	412	693	2.51	4.52	3.65	4.39	4.86	8.01
1981	565	398	330	383	412	698	6.81	4.62	3.67	4.40	4.86	8.07
1982	377	370	319	374	412	696	4.51	4.28	3.55	4.30	4.86	8.05
1983	302	380	334	360	412	417	3.25	4.34	3.66	4.10	4.86	4.73
1984	514	405	344	362	412	694	6.20	4.66	3.77	4.12	4.86	8.03
1985	500	452	411	362	412	698	6.01	5.36	4.80	4.11	4.86	8.07
1986	444	428	398	358	412	696	5.32	5.06	4.64	4.08	4.86	8.05
1987	590	470	426	360	412	698	7.14	5.58	4.98	4.10	4.86	8.07
1988	495	509	503	390	412	697	5.95	6.13	6.06	4.46	4.86	8.06
1989	562	518	511	401	412	698	6.77	6.24	6.15	4.58	4.86	8.07
1990	571	532	524	457	412	698	6.91	6.42	6.32	5.42	4.86	8.07
1991	385	521	504	441	412	697	4.61	6.28	6.07	5.23	4.86	8.07
1992	406	484	467	445	412	698	4.86	5.82	5.62	5.27	4.86	8.07
1993	248	434	364	417	412	697	2.52	5.13	4.16	4.88	4.86	8.07
1994	560	434	364	419	412	698	6.74	5.13	4.16	4.90	4.86	8.07
1995	299	380	330	394	412	698	3.30	4.40	3.71	4.56	4.86	8.07
1996	474	397	338	395	412	698	5.75	4.63	3.80	4.59	4.86	8.07
1997	458	408	343	389	412	698	5.47	4.75	3.86	4.52	4.86	8.07
1998	306	419	380	372	412	675	3.63	4.98	4.47	4.30	4.86	7.79
1999	633	434	384	373	412	698	7.67	5.16	4.52	4.33	4.86	8.07
2000	562	487	445	373	412	698	6.78	5.86	5.35	4.33	4.86	8.07
2001	558	503	457	383	412	698	6.74	6.06	5.49	4.44	4.86	8.07
2002	658	543	484	394	412	698	7.99	6.56	5.82	4.57	4.86	8.07
2003	360	554	522	435	412	698	4.35	6.70	6.31	5.18	4.86	8.07
2004	575	543	514	436	412	698	6.94	6.56	6.21	5.19	4.86	8.07
2005	256	481	401	422	412	698	2.98	5.80	4.80	5.06	4.86	8.07
2006	553	481	401	427	412	698	6.65	5.78	4.79	5.11	4.86	8.07
2007	677	484	402	438	412	698	8.23	5.83	4.81	5.25	4.86	8.07
2008	542	521	433	472	412	698	6.50	6.26	5.18	5.67	4.86	8.07
2009	550	516	431	467	412	698	6.62	6.20	5.14	5.61	4.86	8.07
2010	400	544	524	452	412	698	4.77	6.56	6.30	5.42	4.86	8.07
2011	334	500	460	428	412	671	3.94	6.01	5.51	5.12	4.86	7.74
2012	606	486	454	426	412	697	7.32	5.83	5.44	5.10	4.86	8.06
Maximum	677	554	532	484	412	698	8.23	6.70	6.42	5.83	4.86	8.07

Figure 8e-TDS_Reach 3
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8e - Intermediate Discharge for 2020

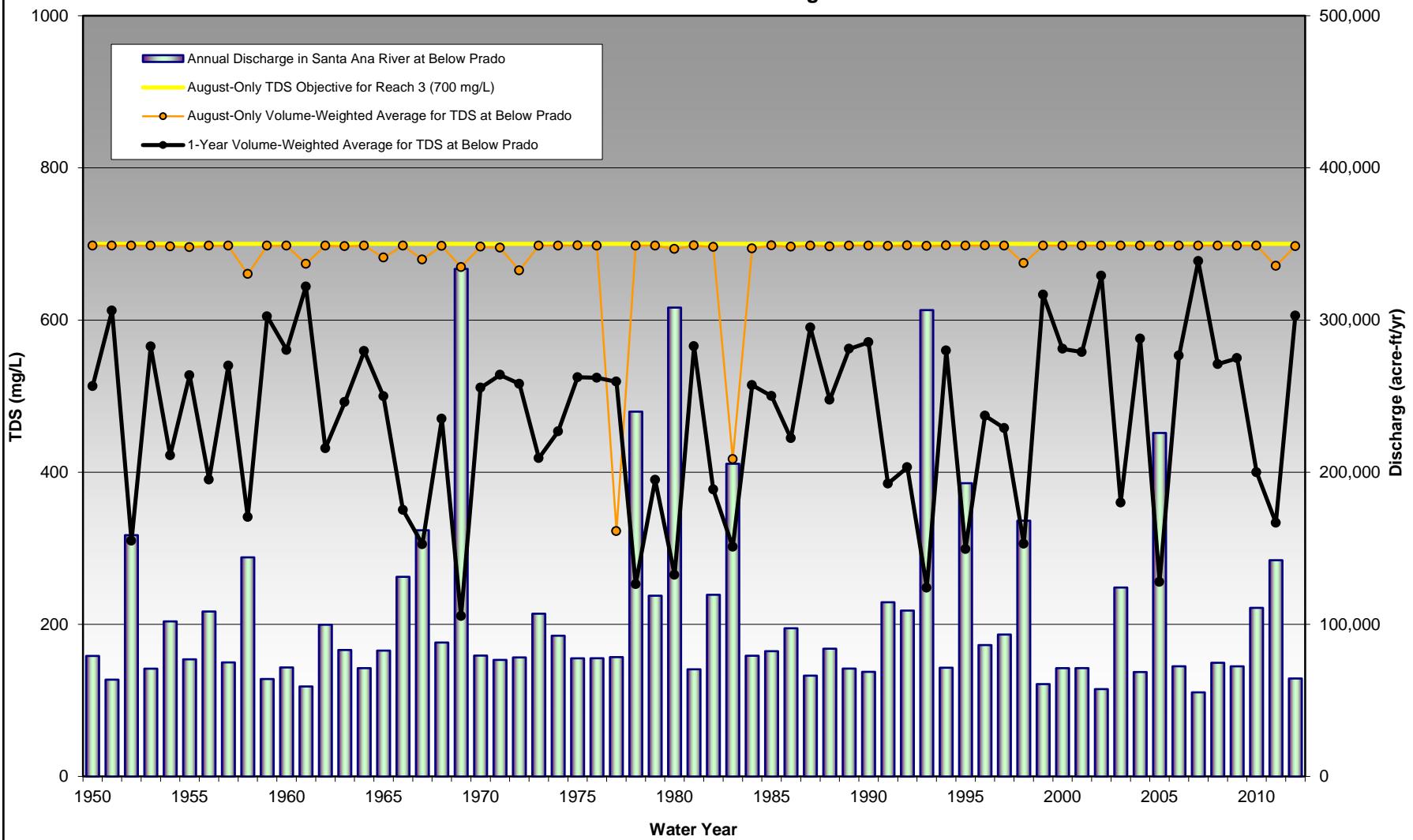


Figure 8e-TIN_BP
Estimated Annual Discharge and Volume-Weighted TIN Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8e - Intermediate Discharge for 2020

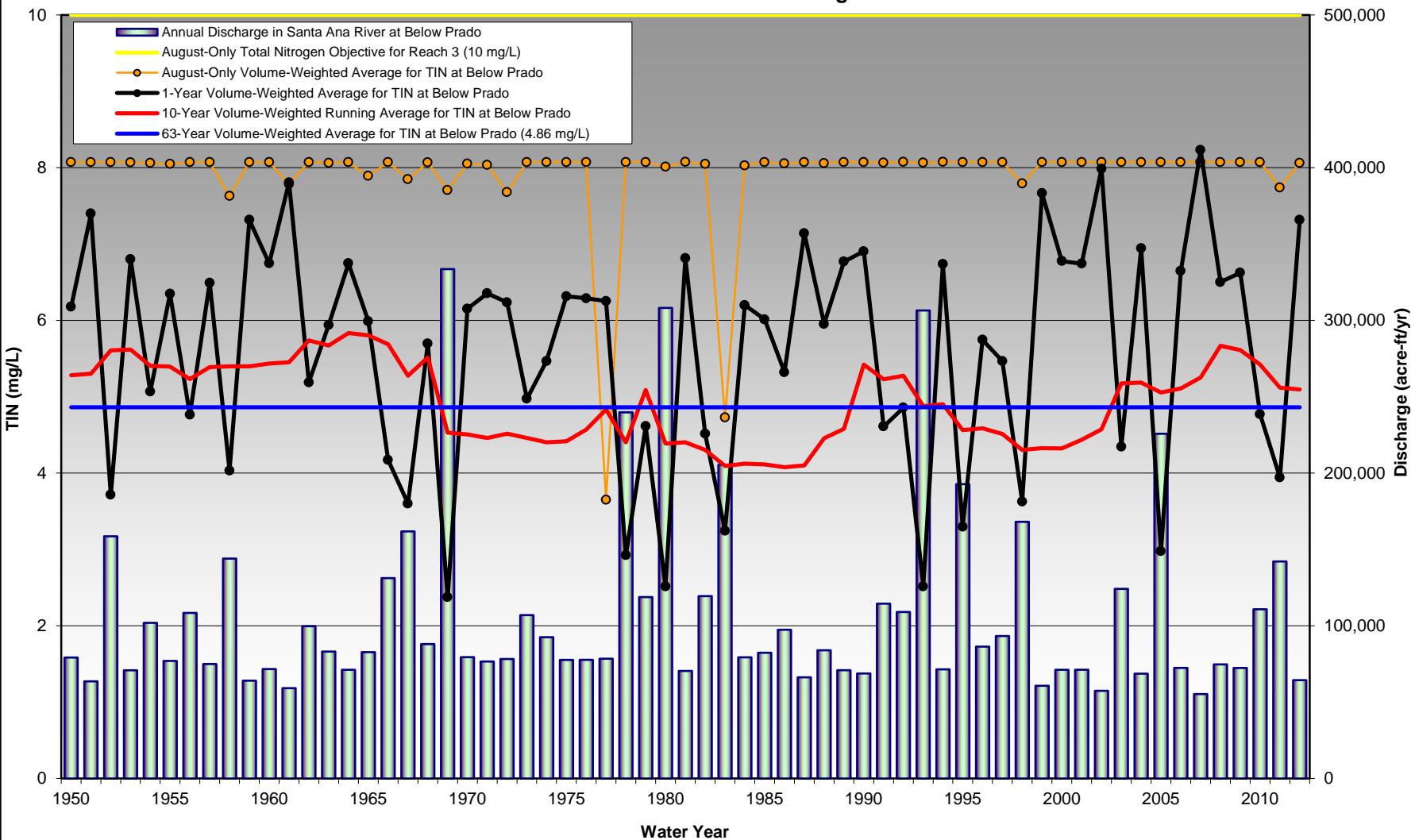


Figure 8e-TDS_Reach 2
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 2 Objective
Scenario 8e - Intermediate Discharge for 2020

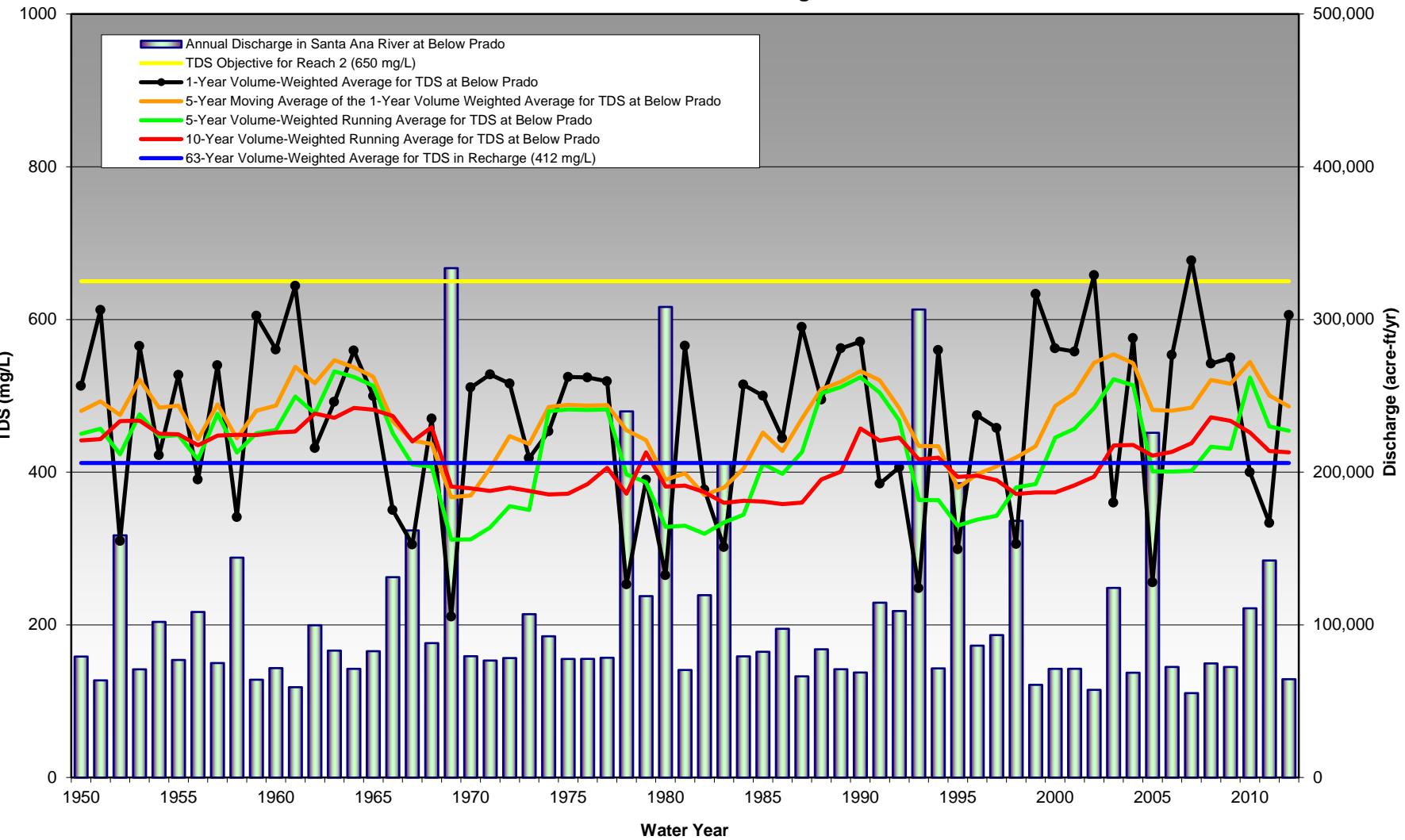


Table 8e-CS
TDS and TIN of Streambed Recharge to the Chino-South Management Zone
Scenario 8e - Intermediate Discharge for 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	623	608	593	4.34	4.22	4.10
1951	643	607	593	4.48	4.25	4.10
1952	540	615	593	3.74	4.20	4.10
1953	632	615	593	4.40	4.21	4.10
1954	593	609	593	4.12	4.21	4.10
1955	622	608	593	4.33	4.21	4.10
1956	610	605	593	4.25	4.22	4.10
1957	629	609	593	4.39	4.23	4.10
1958	545	606	593	3.76	4.20	4.10
1959	649	606	593	4.53	4.22	4.10
1960	638	608	593	4.45	4.23	4.10
1961	654	609	593	4.57	4.24	4.10
1962	599	616	593	4.16	4.29	4.10
1963	619	614	593	4.31	4.28	4.10
1964	637	619	593	4.44	4.31	4.10
1965	618	618	593	4.30	4.31	4.10
1966	570	614	593	3.95	4.27	4.10
1967	545	605	593	3.77	4.20	4.10
1968	618	613	593	4.31	4.26	4.10
1969	428	585	593	2.83	4.05	4.10
1970	627	584	593	4.37	4.05	4.10
1971	627	582	593	4.36	4.03	4.10
1972	631	585	593	4.40	4.05	4.10
1973	594	583	593	4.12	4.03	4.10
1974	609	580	593	4.24	4.01	4.10
1975	629	581	593	4.38	4.02	4.10
1976	619	586	593	4.31	4.06	4.10
1977	633	595	593	4.41	4.12	4.10
1978	469	577	593	3.18	3.99	4.10
1979	573	597	593	3.92	4.14	4.10
1980	435	573	593	2.77	3.94	4.10
1981	640	574	593	4.47	3.95	4.10
1982	572	569	593	3.97	3.91	4.10
1983	485	557	593	3.18	3.81	4.10
1984	622	558	593	4.33	3.82	4.10
1985	620	558	593	4.32	3.81	4.10
1986	607	557	593	4.22	3.80	4.10
1987	645	557	593	4.50	3.81	4.10
1988	624	574	593	4.35	3.93	4.10
1989	637	580	593	4.44	3.98	4.10
1990	634	606	593	4.42	4.19	4.10
1991	589	601	593	4.10	4.16	4.10
1992	587	602	593	4.08	4.17	4.10
1993	435	593	593	2.81	4.10	4.10
1994	630	594	593	4.39	4.10	4.10
1995	514	582	593	3.42	4.01	4.10
1996	626	584	593	4.36	4.02	4.10
1997	601	580	593	4.17	3.99	4.10
1998	521	570	593	3.58	3.92	4.10
1999	649	571	593	4.53	3.92	4.10
2000	640	571	593	4.46	3.92	4.10
2001	637	575	593	4.44	3.95	4.10
2002	656	581	593	4.59	4.00	4.10
2003	583	602	593	4.05	4.17	4.10
2004	647	603	593	4.51	4.18	4.10
2005	484	599	593	3.31	4.16	4.10
2006	632	599	593	4.40	4.16	4.10
2007	661	605	593	4.62	4.20	4.10
2008	631	617	593	4.39	4.29	4.10
2009	637	616	593	4.44	4.29	4.10
2010	587	611	593	4.08	4.25	4.10
2011	572	604	593	3.96	4.20	4.10
2012	648	603	593	4.53	4.19	4.10
Maximum	661	619		4.62	4.31	

Figure 8e-TDS_CS
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 8e - Intermediate Discharge for 2020

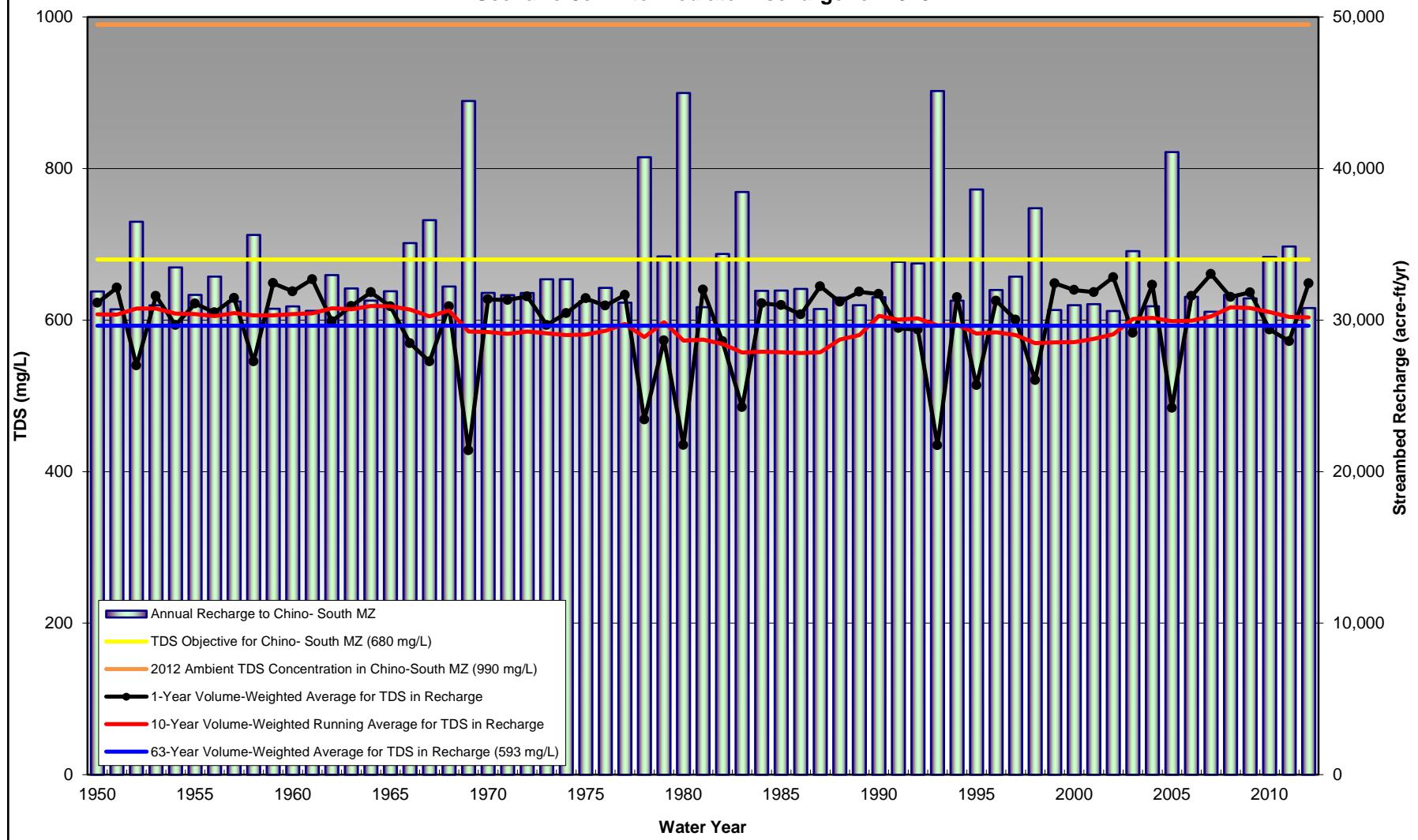


Figure 8e-TIN_CS
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 8e - Intermediate Discharge for 2020

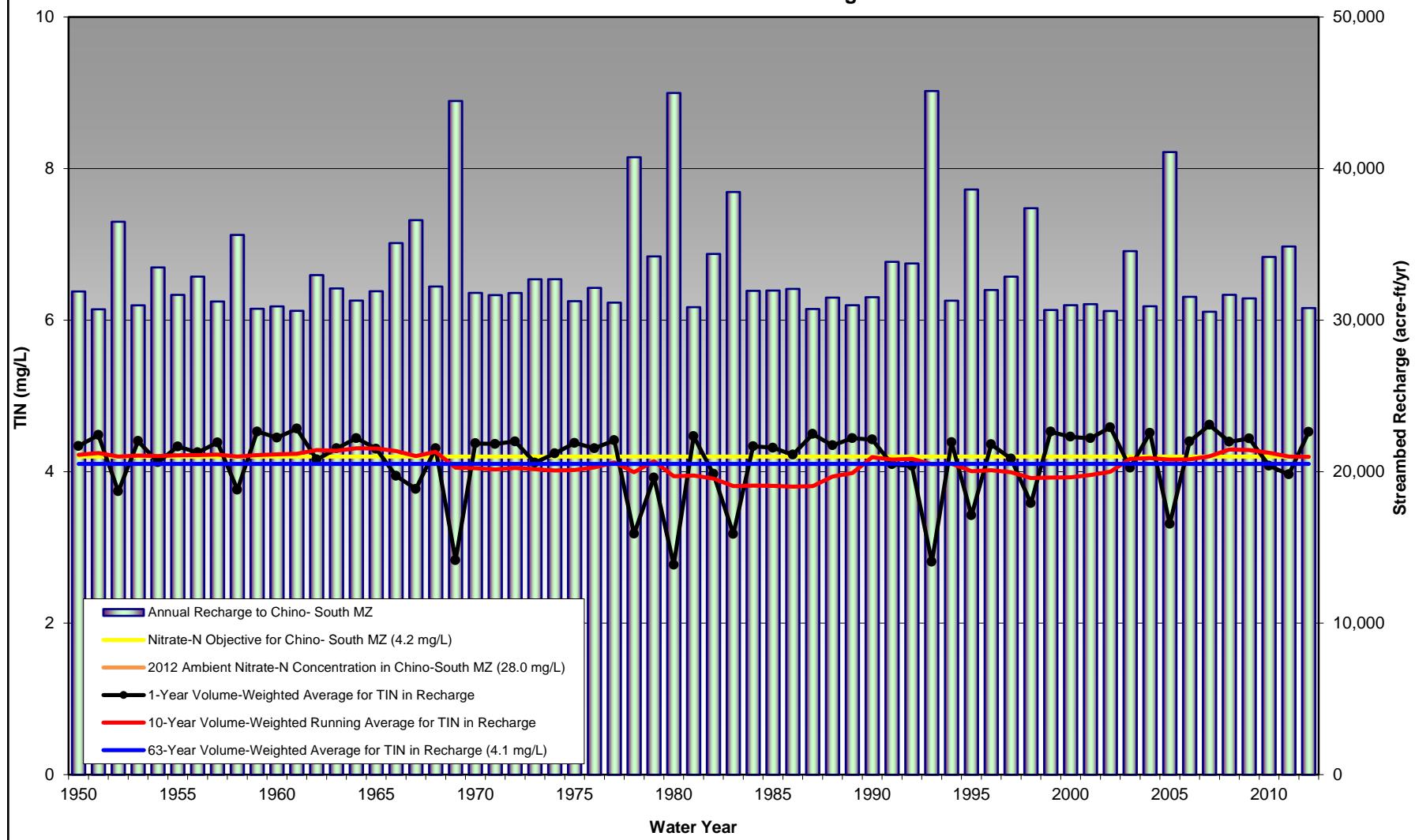


Table 8e-RA
TDS and TIN of Streambed Recharge to the Riverside-A Management Zone
Scenario 8e - Intermediate Discharge for 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	450	439	415	6.10	5.88	5.52
1951	511	439	415	7.02	5.87	5.52
1952	356	452	415	4.67	6.11	5.52
1953	487	453	415	6.64	6.13	5.52
1954	412	442	415	5.50	5.96	5.52
1955	462	442	415	6.28	5.96	5.52
1956	459	439	415	6.27	5.92	5.52
1957	483	447	415	6.57	6.04	5.52
1958	350	439	415	4.49	5.91	5.52
1959	503	438	415	6.90	5.89	5.52
1960	500	442	415	6.85	5.96	5.52
1961	521	442	415	7.18	5.97	5.52
1962	418	451	415	5.60	6.10	5.52
1963	468	450	415	6.37	6.08	5.52
1964	482	457	415	6.58	6.19	5.52
1965	446	456	415	6.01	6.17	5.52
1966	383	446	415	5.05	6.02	5.52
1967	365	433	415	4.79	5.82	5.52
1968	452	446	415	6.12	6.03	5.52
1969	259	408	415	2.96	5.40	5.52
1970	455	405	415	6.17	5.36	5.52
1971	454	401	415	6.13	5.29	5.52
1972	480	405	415	6.55	5.37	5.52
1973	416	401	415	5.53	5.30	5.52
1974	439	398	415	5.92	5.25	5.52
1975	479	400	415	6.52	5.29	5.52
1976	444	406	415	6.00	5.38	5.52
1977	481	417	415	6.56	5.55	5.52
1978	287	394	415	3.42	5.17	5.52
1979	399	421	415	5.27	5.61	5.52
1980	256	387	415	2.88	5.05	5.52
1981	499	390	415	6.82	5.09	5.52
1982	385	382	415	5.10	4.98	5.52
1983	292	368	415	3.53	4.74	5.52
1984	458	369	415	6.20	4.76	5.52
1985	466	368	415	6.33	4.75	5.52
1986	447	368	415	6.02	4.74	5.52
1987	509	369	415	6.98	4.76	5.52
1988	469	390	415	6.37	5.09	5.52
1989	479	396	415	6.53	5.19	5.52
1990	481	434	415	6.57	5.82	5.52
1991	407	426	415	5.44	5.70	5.52
1992	392	427	415	5.19	5.71	5.52
1993	257	413	415	2.92	5.48	5.52
1994	475	415	415	6.46	5.50	5.52
1995	326	399	415	4.08	5.24	5.52
1996	456	399	415	6.17	5.25	5.52
1997	412	393	415	5.46	5.15	5.52
1998	336	380	415	4.24	4.95	5.52
1999	518	382	415	7.12	4.98	5.52
2000	488	383	415	6.66	4.99	5.52
2001	501	389	415	6.86	5.08	5.52
2002	527	398	415	7.28	5.22	5.52
2003	415	430	415	5.56	5.74	5.52
2004	512	432	415	7.04	5.78	5.52
2005	300	426	415	3.65	5.67	5.52
2006	476	427	415	6.44	5.70	5.52
2007	530	437	415	7.32	5.85	5.52
2008	464	455	415	6.26	6.13	5.52
2009	493	453	415	6.75	6.10	5.52
2010	411	445	415	5.46	5.98	5.52
2011	401	436	415	5.28	5.83	5.52
2012	520	435	415	7.17	5.82	5.52
Maximum	530	457		7.32	6.19	

Figure 8e-TDS_RA
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 8e - Intermediate Discharge for 2020

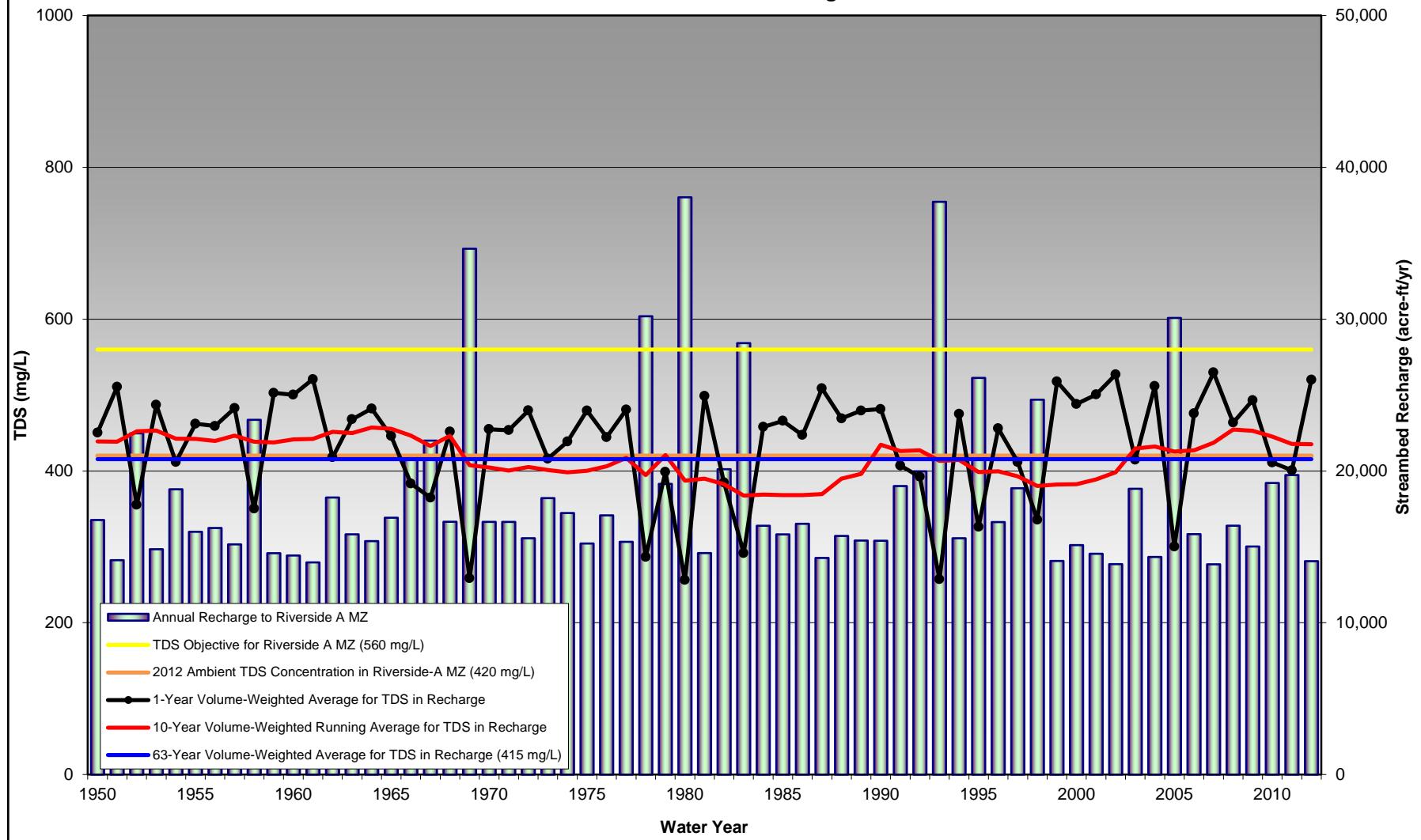


Figure 8e-TIN_RA
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 8e - Intermediate Discharge for 2020

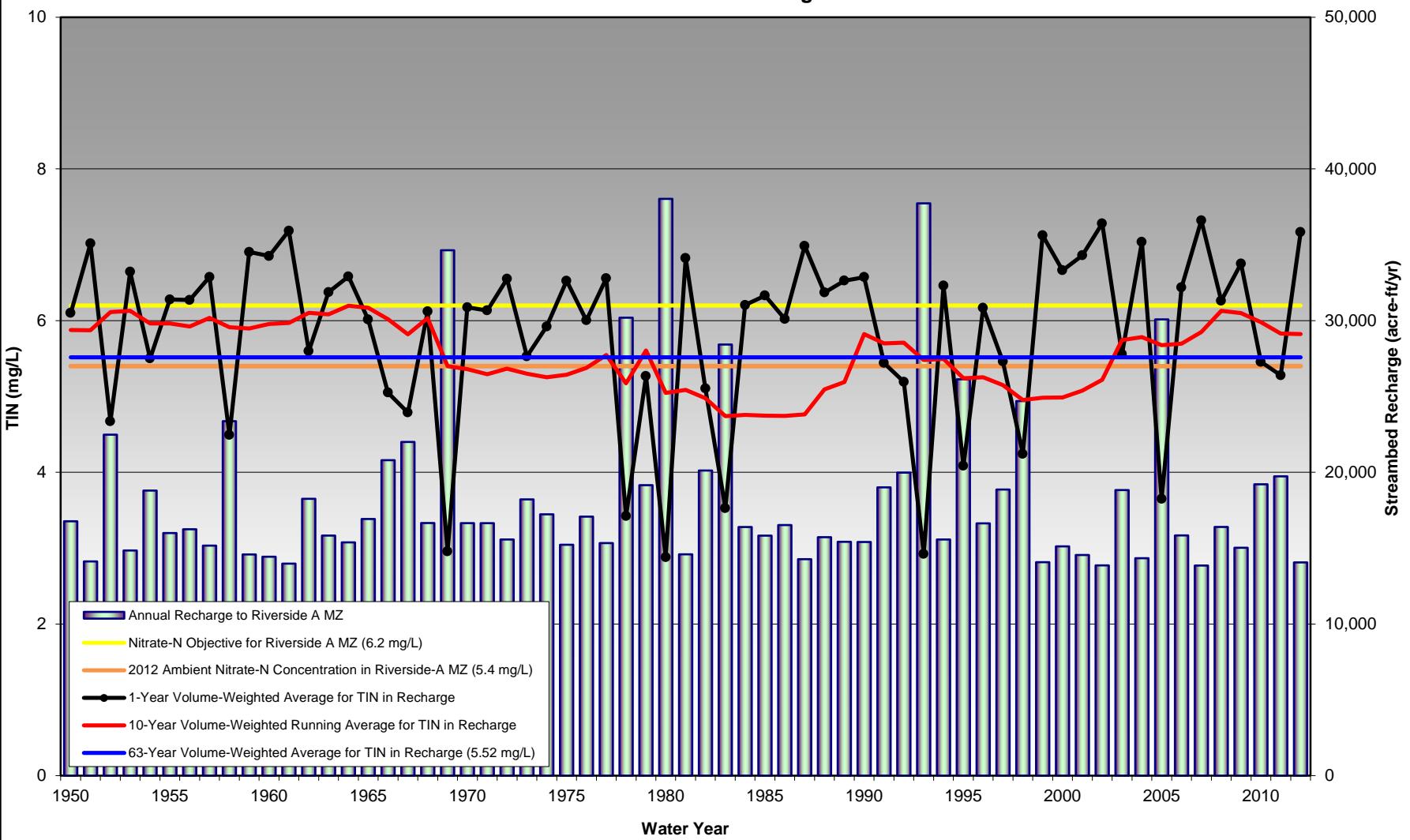


Table 8e-CO
TDS and TIN of Streambed Recharge to the Colton Management Zone
Scenario 8e - Intermediate Discharge for 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	142	160	155	1.14	1.22	1.18
1951	166	160	155	1.25	1.22	1.18
1952	139	157	155	1.12	1.21	1.18
1953	160	155	155	1.22	1.20	1.18
1954	143	152	155	1.14	1.18	1.18
1955	148	151	155	1.18	1.18	1.18
1956	127	148	155	1.05	1.16	1.18
1957	160	148	155	1.22	1.16	1.18
1958	152	148	155	1.18	1.16	1.18
1959	167	147	155	1.25	1.16	1.18
1960	156	148	155	1.21	1.16	1.18
1961	163	148	155	1.23	1.16	1.18
1962	146	150	155	1.15	1.17	1.18
1963	137	148	155	1.10	1.16	1.18
1964	154	149	155	1.18	1.17	1.18
1965	148	149	155	1.16	1.16	1.18
1966	139	149	155	1.11	1.16	1.18
1967	141	147	155	1.11	1.15	1.18
1968	142	145	155	1.12	1.14	1.18
1969	162	152	155	1.20	1.16	1.18
1970	140	152	155	1.13	1.16	1.18
1971	147	151	155	1.18	1.16	1.18
1972	150	151	155	1.17	1.16	1.18
1973	155	152	155	1.21	1.17	1.18
1974	140	152	155	1.12	1.16	1.18
1975	162	152	155	1.23	1.17	1.18
1976	138	153	155	1.09	1.17	1.18
1977	149	154	155	1.16	1.18	1.18
1978	160	156	155	1.20	1.18	1.18
1979	155	153	155	1.19	1.18	1.18
1980	162	157	155	1.19	1.18	1.18
1981	168	158	155	1.26	1.19	1.18
1982	131	156	155	1.07	1.18	1.18
1983	164	158	155	1.23	1.19	1.18
1984	160	158	155	1.22	1.19	1.18
1985	148	158	155	1.15	1.19	1.18
1986	157	159	155	1.21	1.19	1.18
1987	167	159	155	1.26	1.20	1.18
1988	153	159	155	1.18	1.19	1.18
1989	160	159	155	1.22	1.20	1.18
1990	154	157	155	1.18	1.20	1.18
1991	138	154	155	1.12	1.18	1.18
1992	137	155	155	1.09	1.19	1.18
1993	161	155	155	1.19	1.18	1.18
1994	162	155	155	1.23	1.18	1.18
1995	155	155	155	1.17	1.18	1.18
1996	157	155	155	1.19	1.18	1.18
1997	152	155	155	1.18	1.17	1.18
1998	160	156	155	1.22	1.18	1.18
1999	182	156	155	1.34	1.18	1.18
2000	158	156	155	1.21	1.18	1.18
2001	169	158	155	1.27	1.19	1.18
2002	179	159	155	1.33	1.20	1.18
2003	135	156	155	1.10	1.20	1.18
2004	171	156	155	1.28	1.20	1.18
2005	158	157	155	1.20	1.20	1.18
2006	179	158	155	1.32	1.21	1.18
2007	201	160	155	1.48	1.22	1.18
2008	171	161	155	1.28	1.22	1.18
2009	166	160	155	1.26	1.22	1.18
2010	153	159	155	1.18	1.21	1.18
2011	158	159	155	1.20	1.21	1.18
2012	182	159	155	1.35	1.21	1.18
Maximum	201	161		1.48	1.22	

Figure 8e-TDS_CO
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 8e - Intermediate Discharge for 2020

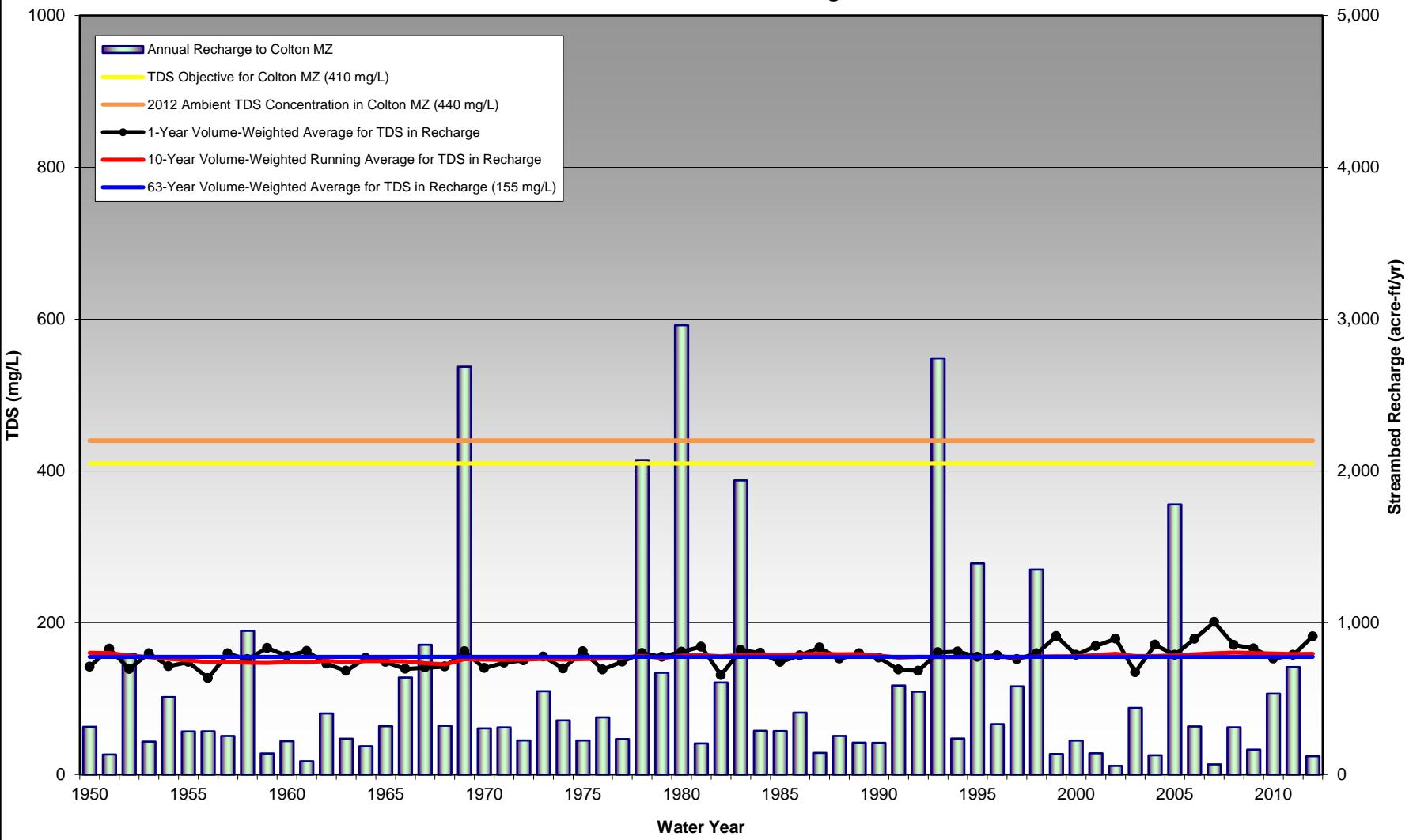


Figure 8e-TIN_CO
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 8e - Intermediate Discharge for 2020

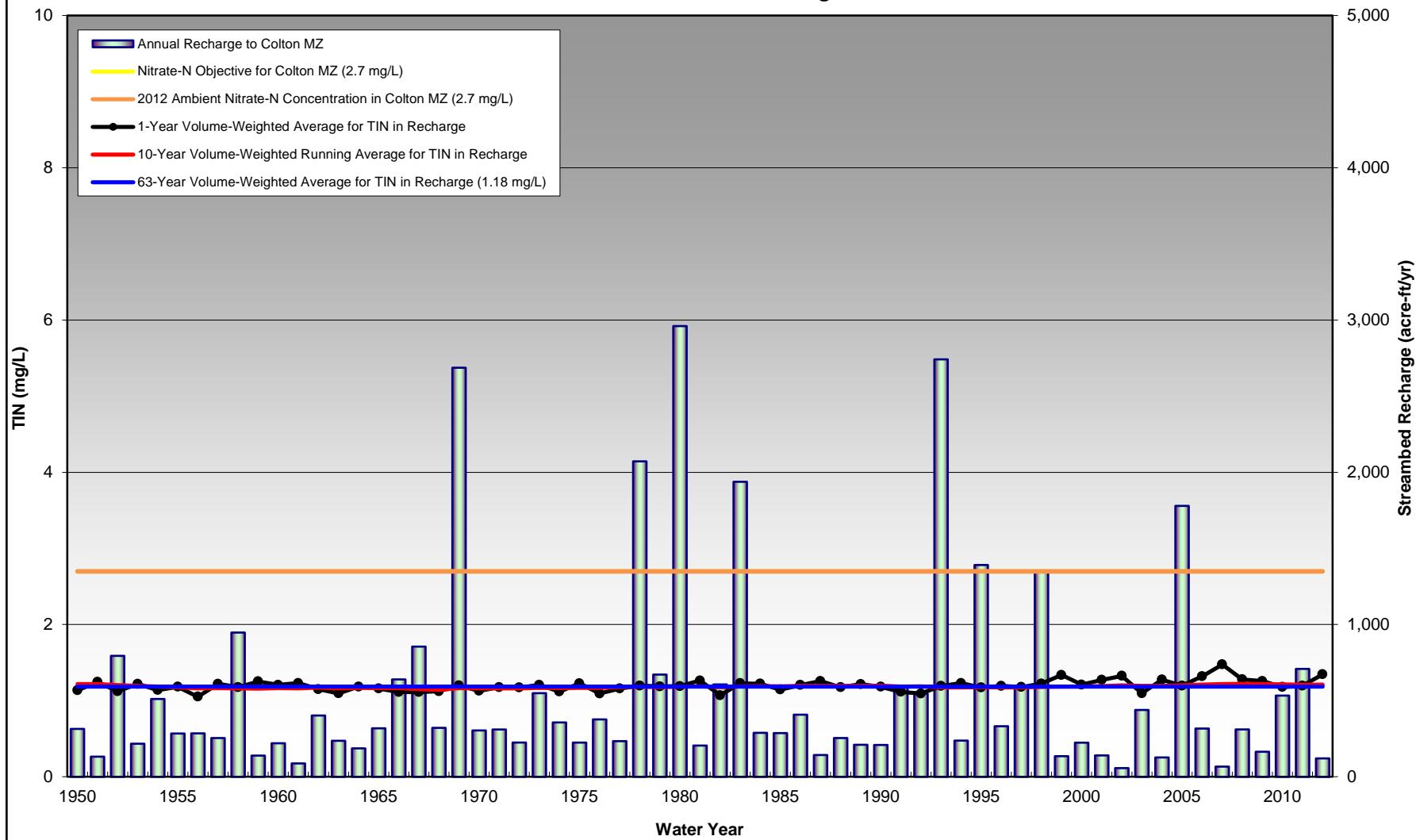


Table 8e-BH
TDS and TIN of Streambed Recharge to the Bunker Hill-B Management Zone
Scenario 8e - Intermediate Discharge for 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	229	231	220	1.74	1.73	1.64
1951	258	231	220	1.96	1.73	1.64
1952	201	233	220	1.53	1.75	1.64
1953	232	233	220	1.75	1.75	1.64
1954	210	227	220	1.59	1.71	1.64
1955	226	226	220	1.72	1.70	1.64
1956	248	226	220	1.89	1.70	1.64
1957	229	226	220	1.73	1.71	1.64
1958	196	222	220	1.48	1.68	1.64
1959	248	221	220	1.87	1.67	1.64
1960	227	221	220	1.72	1.67	1.64
1961	278	221	220	2.11	1.68	1.64
1962	215	224	220	1.63	1.70	1.64
1963	243	224	220	1.85	1.70	1.64
1964	243	228	220	1.85	1.73	1.64
1965	225	228	220	1.71	1.73	1.64
1966	213	224	220	1.62	1.70	1.64
1967	210	222	220	1.58	1.68	1.64
1968	227	227	220	1.72	1.72	1.64
1969	195	216	220	1.41	1.62	1.64
1970	231	217	220	1.76	1.62	1.64
1971	234	215	220	1.77	1.61	1.64
1972	254	218	220	1.93	1.63	1.64
1973	207	215	220	1.57	1.61	1.64
1974	228	214	220	1.73	1.61	1.64
1975	230	215	220	1.73	1.61	1.64
1976	225	216	220	1.71	1.61	1.64
1977	231	217	220	1.76	1.63	1.64
1978	192	211	220	1.41	1.57	1.64
1979	201	214	220	1.51	1.61	1.64
1980	194	209	220	1.41	1.56	1.64
1981	235	209	220	1.76	1.56	1.64
1982	206	207	220	1.57	1.54	1.64
1983	193	204	220	1.42	1.52	1.64
1984	235	205	220	1.76	1.52	1.64
1985	229	205	220	1.73	1.52	1.64
1986	217	205	220	1.64	1.52	1.64
1987	251	205	220	1.89	1.52	1.64
1988	226	209	220	1.71	1.56	1.64
1989	235	212	220	1.78	1.58	1.64
1990	251	219	220	1.90	1.64	1.64
1991	217	218	220	1.66	1.64	1.64
1992	209	218	220	1.59	1.64	1.64
1993	193	219	220	1.41	1.64	1.64
1994	234	218	220	1.76	1.64	1.64
1995	205	215	220	1.51	1.61	1.64
1996	241	217	220	1.81	1.62	1.64
1997	218	215	220	1.64	1.61	1.64
1998	203	212	220	1.51	1.59	1.64
1999	263	214	220	1.97	1.59	1.64
2000	243	213	220	1.84	1.59	1.64
2001	251	215	220	1.89	1.60	1.64
2002	321	219	220	2.44	1.63	1.64
2003	223	226	220	1.70	1.70	1.64
2004	265	228	220	2.00	1.71	1.64
2005	200	226	220	1.48	1.70	1.64
2006	238	226	220	1.77	1.69	1.64
2007	303	230	220	2.28	1.73	1.64
2008	239	239	220	1.79	1.79	1.64
2009	246	238	220	1.85	1.78	1.64
2010	224	235	220	1.68	1.77	1.64
2011	219	232	220	1.62	1.74	1.64
2012	265	231	220	1.99	1.73	1.64
Maximum	321	239		2.44	1.79	

Figure 8e-TDS_BH
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 8e - Intermediate Discharge for 2020

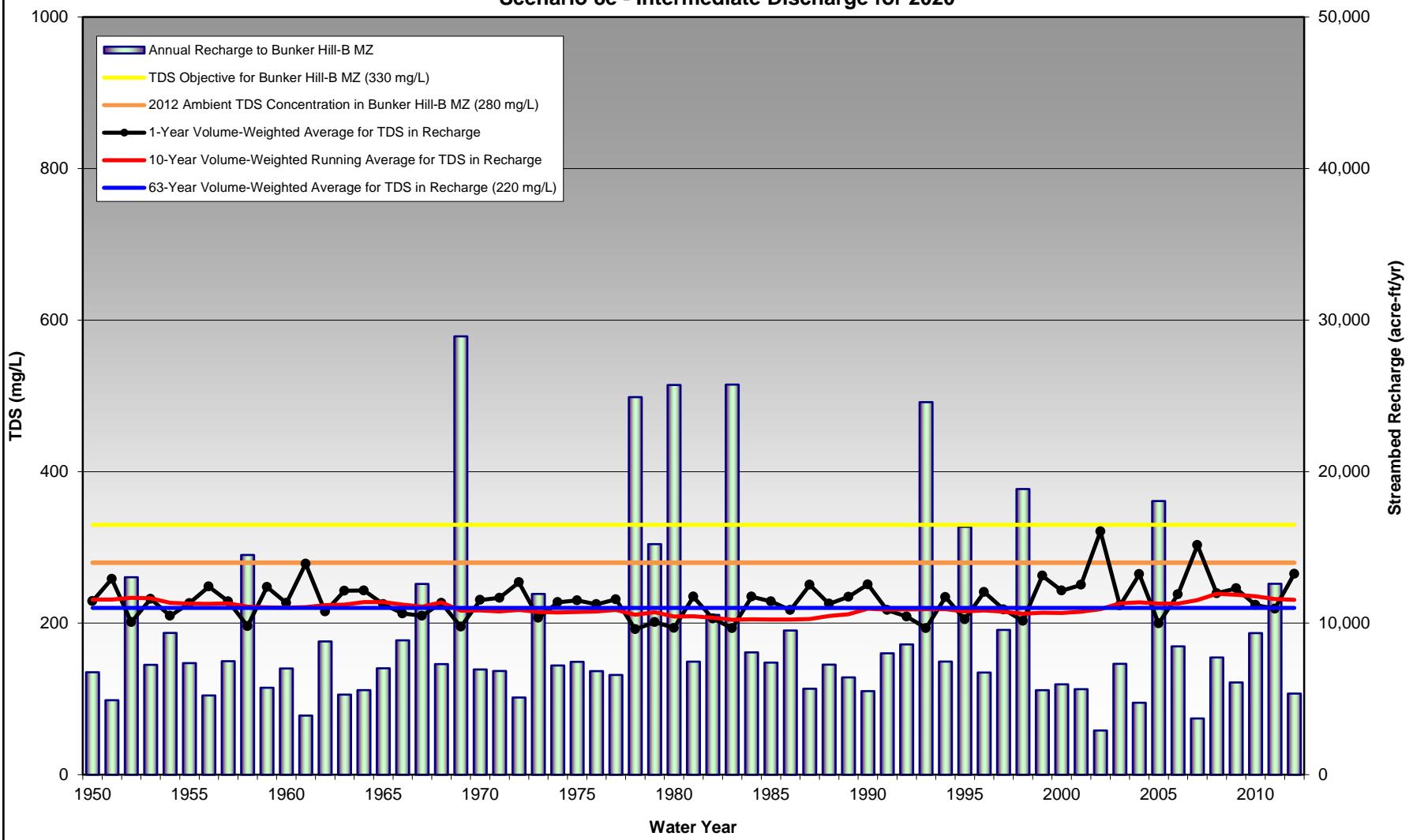


Figure 8e-TIN_BH
**Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone**
Scenario 8e - Intermediate Discharge for 2020

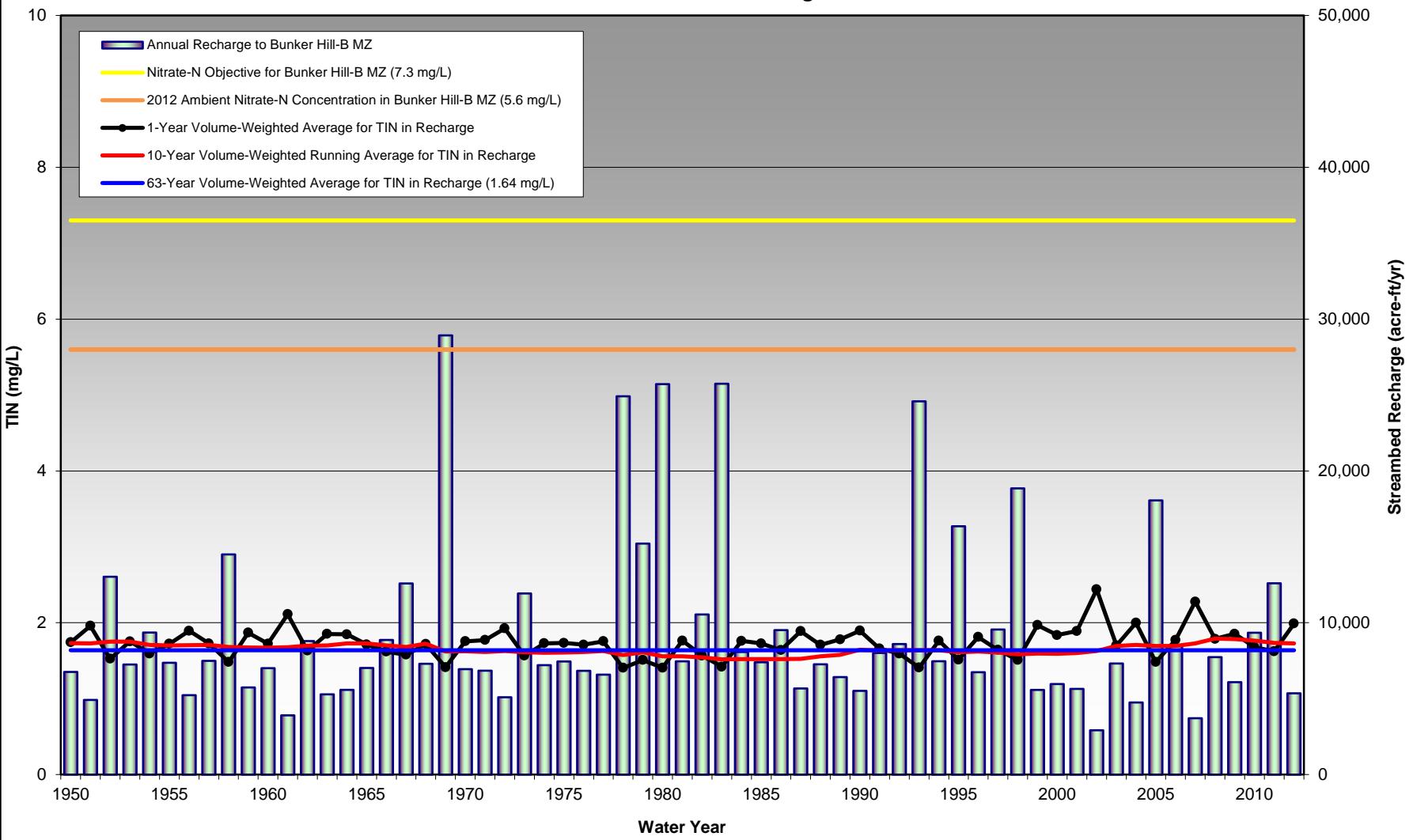


Table 8e-ST
TDS and TIN of Streambed Recharge to the San Timoteo Management Zone
Scenario 8e - Intermediate Discharge for 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	389	411	389	3.41	3.61	3.41
1951	446	411	389	3.92	3.61	3.41
1952	341	411	389	2.98	3.61	3.41
1953	407	410	389	3.56	3.60	3.41
1954	365	399	389	3.20	3.50	3.41
1955	403	397	389	3.53	3.49	3.41
1956	421	396	389	3.71	3.48	3.41
1957	406	398	389	3.56	3.49	3.41
1958	325	390	389	2.83	3.42	3.41
1959	428	388	389	3.77	3.40	3.41
1960	403	390	389	3.53	3.42	3.41
1961	451	390	389	3.97	3.42	3.41
1962	375	394	389	3.27	3.46	3.41
1963	424	396	389	3.73	3.47	3.41
1964	419	401	389	3.68	3.52	3.41
1965	394	400	389	3.45	3.51	3.41
1966	362	394	389	3.18	3.46	3.41
1967	351	388	389	3.08	3.41	3.41
1968	399	398	389	3.50	3.49	3.41
1969	305	383	389	2.67	3.36	3.41
1970	418	384	389	3.68	3.37	3.41
1971	419	382	389	3.68	3.35	3.41
1972	429	387	389	3.77	3.39	3.41
1973	353	380	389	3.07	3.33	3.41
1974	397	378	389	3.49	3.31	3.41
1975	398	378	389	3.48	3.32	3.41
1976	383	380	389	3.36	3.34	3.41
1977	407	386	389	3.57	3.39	3.41
1978	284	370	389	2.47	3.24	3.41
1979	341	375	389	2.97	3.29	3.41
1980	308	364	389	2.69	3.18	3.41
1981	423	364	389	3.71	3.18	3.41
1982	368	359	389	3.23	3.14	3.41
1983	305	353	389	2.65	3.09	3.41
1984	420	355	389	3.69	3.10	3.41
1985	406	355	389	3.56	3.11	3.41
1986	399	357	389	3.49	3.12	3.41
1987	443	359	389	3.89	3.14	3.41
1988	407	374	389	3.56	3.27	3.41
1989	429	382	389	3.77	3.35	3.41
1990	437	398	389	3.84	3.49	3.41
1991	377	393	389	3.31	3.45	3.41
1992	372	394	389	3.26	3.45	3.41
1993	353	402	389	3.07	3.52	3.41
1994	419	402	389	3.68	3.52	3.41
1995	340	394	389	2.98	3.45	3.41
1996	427	396	389	3.75	3.48	3.41
1997	375	390	389	3.28	3.42	3.41
1998	337	382	389	2.94	3.35	3.41
1999	462	385	389	4.07	3.37	3.41
2000	425	384	389	3.74	3.36	3.41
2001	427	388	389	3.75	3.40	3.41
2002	469	396	389	4.14	3.48	3.41
2003	388	401	389	3.41	3.52	3.41
2004	448	403	389	3.95	3.54	3.41
2005	335	402	389	2.93	3.53	3.41
2006	425	402	389	3.73	3.53	3.41
2007	480	411	389	4.24	3.61	3.41
2008	425	423	389	3.73	3.72	3.41
2009	432	420	389	3.80	3.69	3.41
2010	391	417	389	3.43	3.66	3.41
2011	380	412	389	3.33	3.62	3.41
2012	456	411	389	4.01	3.61	3.41
Maximum	480	423		4.24	3.72	

San Timoteo Reach 3 defined here is equivalent to San Temoteo Cr reaches 3 and 4 described in 1995 Water Quality Control Plan

Figure 8e-TDS_ST
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 8e - Intermediate Discharge for 2020

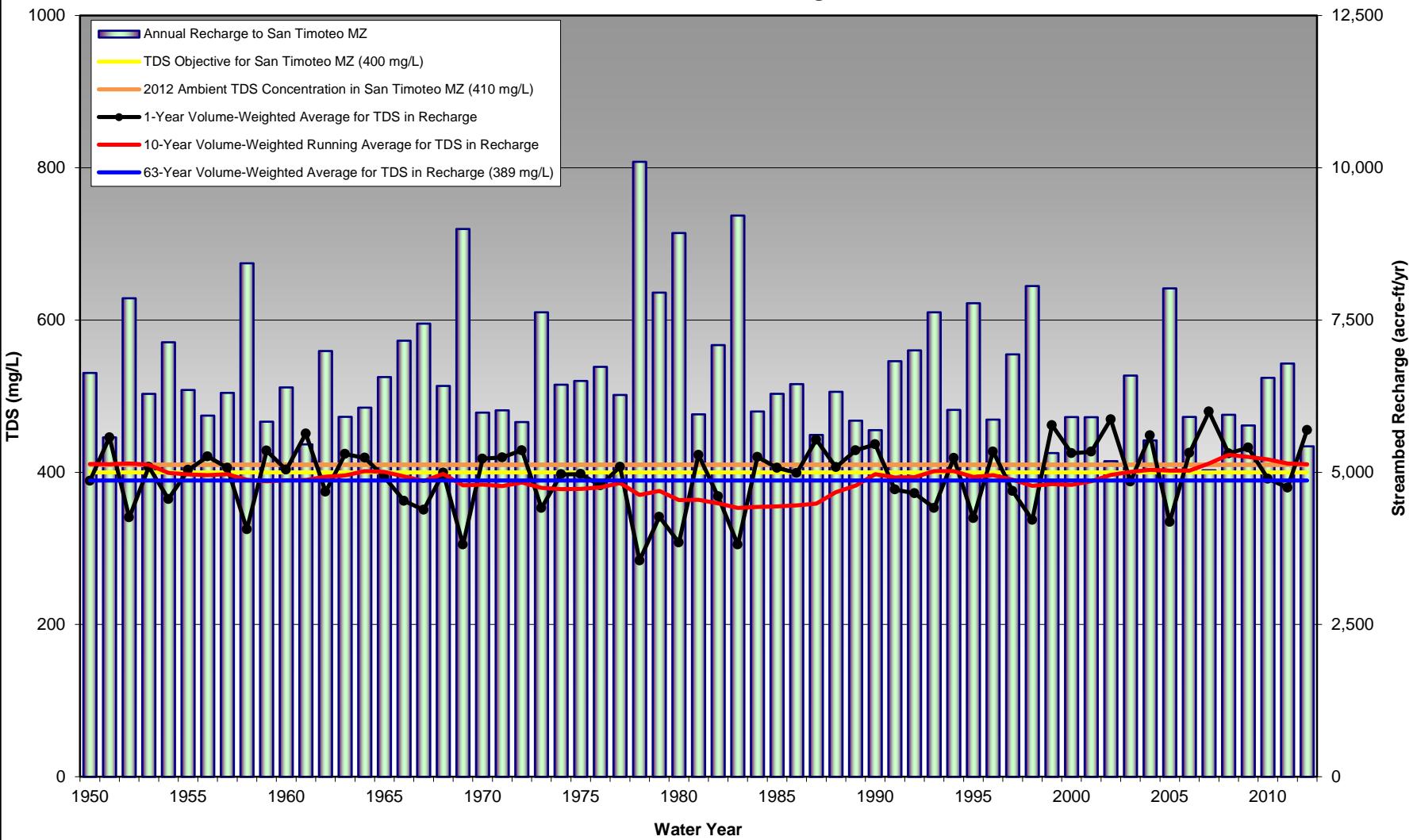


Figure 8e-TIN_ST
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 8e - Intermediate Discharge for 2020

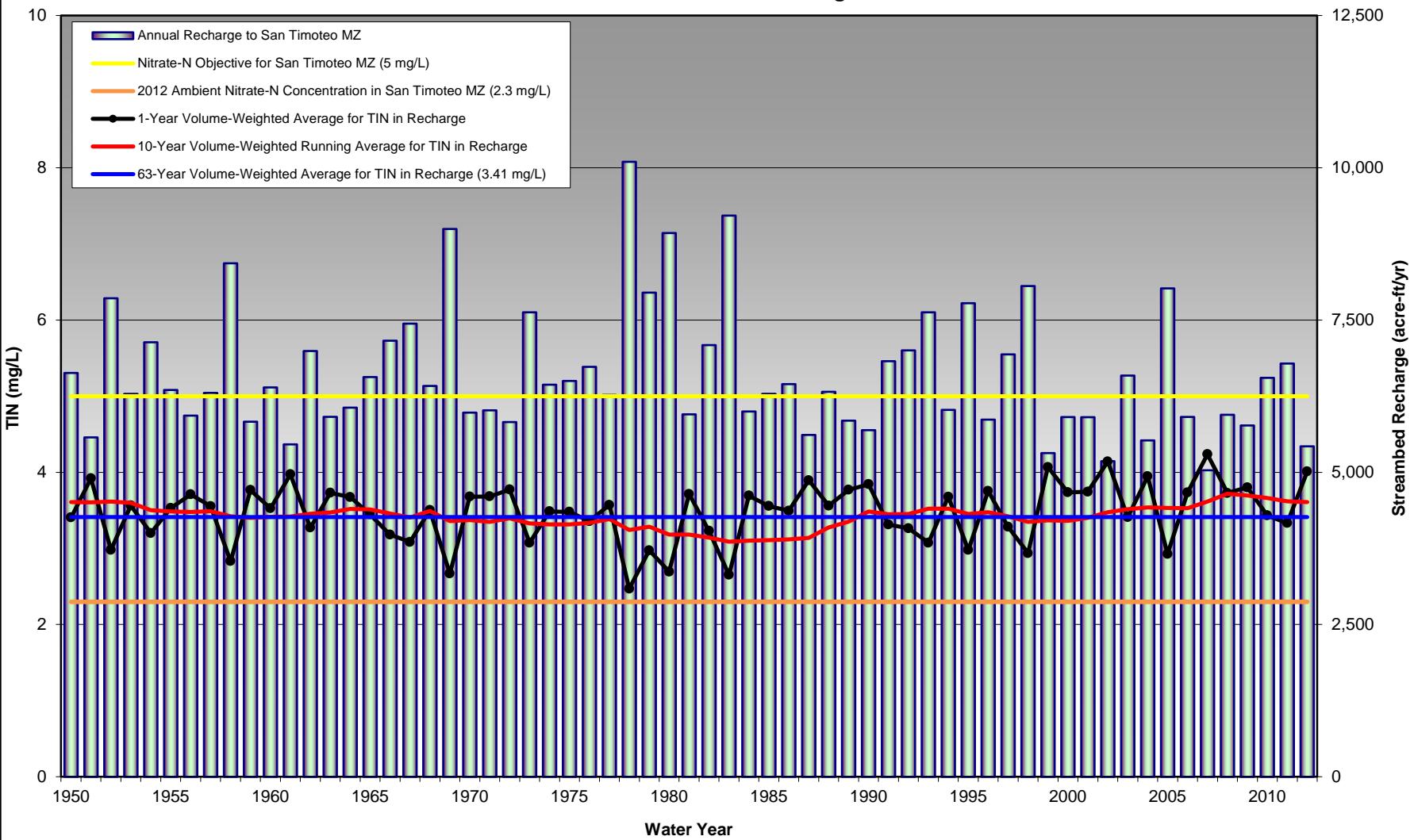


Table 8e-BU
TDS and TIN of Streambed Recharge to the Beaumont Management Zone
Scenario 8e - Intermediate Discharge for 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	229	239	215	2.82	2.98	2.63
1951	304	239	215	3.96	2.97	2.63
1952	177	241	215	2.06	3.02	2.63
1953	273	242	215	3.47	3.03	2.63
1954	183	228	215	2.17	2.82	2.63
1955	255	228	215	3.20	2.82	2.63
1956	229	225	215	2.91	2.78	2.63
1957	251	228	215	3.14	2.82	2.63
1958	169	221	215	1.91	2.71	2.63
1959	277	220	215	3.55	2.69	2.63
1960	274	223	215	3.46	2.74	2.63
1961	310	223	215	4.08	2.74	2.63
1962	209	229	215	2.49	2.82	2.63
1963	263	228	215	3.34	2.81	2.63
1964	273	238	215	3.45	2.96	2.63
1965	229	236	215	2.79	2.92	2.63
1966	185	229	215	2.22	2.83	2.63
1967	168	218	215	1.97	2.67	2.63
1968	233	229	215	2.88	2.83	2.63
1969	143	208	215	1.60	2.53	2.63
1970	232	206	215	2.92	2.50	2.63
1971	253	204	215	3.18	2.47	2.63
1972	256	207	215	3.26	2.52	2.63
1973	214	204	215	2.53	2.47	2.63
1974	228	202	215	2.81	2.44	2.63
1975	244	203	215	3.01	2.45	2.63
1976	206	205	215	2.51	2.48	2.63
1977	257	215	215	3.24	2.62	2.63
1978	152	202	215	1.66	2.42	2.63
1979	189	212	215	2.17	2.56	2.63
1980	151	200	215	1.68	2.38	2.63
1981	284	201	215	3.65	2.39	2.63
1982	189	196	215	2.24	2.32	2.63
1983	155	188	215	1.69	2.21	2.63
1984	258	190	215	3.28	2.23	2.63
1985	247	190	215	3.09	2.23	2.63
1986	234	191	215	2.86	2.25	2.63
1987	299	193	215	3.89	2.27	2.63
1988	275	205	215	3.48	2.46	2.63
1989	287	212	215	3.68	2.58	2.63
1990	277	231	215	3.57	2.85	2.63
1991	193	223	215	2.32	2.73	2.63
1992	213	226	215	2.57	2.78	2.63
1993	139	220	215	1.53	2.70	2.63
1994	264	220	215	3.34	2.70	2.63
1995	156	208	215	1.80	2.53	2.63
1996	240	208	215	3.03	2.54	2.63
1997	204	203	215	2.45	2.45	2.63
1998	185	196	215	2.12	2.35	2.63
1999	315	197	215	4.16	2.37	2.63
2000	239	195	215	2.99	2.34	2.63
2001	301	201	215	3.91	2.43	2.63
2002	320	206	215	4.27	2.51	2.63
2003	210	223	215	2.58	2.76	2.63
2004	305	225	215	4.00	2.80	2.63
2005	170	229	215	1.92	2.83	2.63
2006	270	231	215	3.43	2.86	2.63
2007	325	240	215	4.35	3.00	2.63
2008	259	252	215	3.25	3.19	2.63
2009	271	249	215	3.47	3.14	2.63
2010	221	247	215	2.70	3.10	2.63
2011	200	237	215	2.41	2.96	2.63
2012	305	236	215	4.00	2.95	2.63
Maximum	325	252		4.35	3.19	

Figure 8e-TDS_BU
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 8e - Intermediate Discharge for 2020

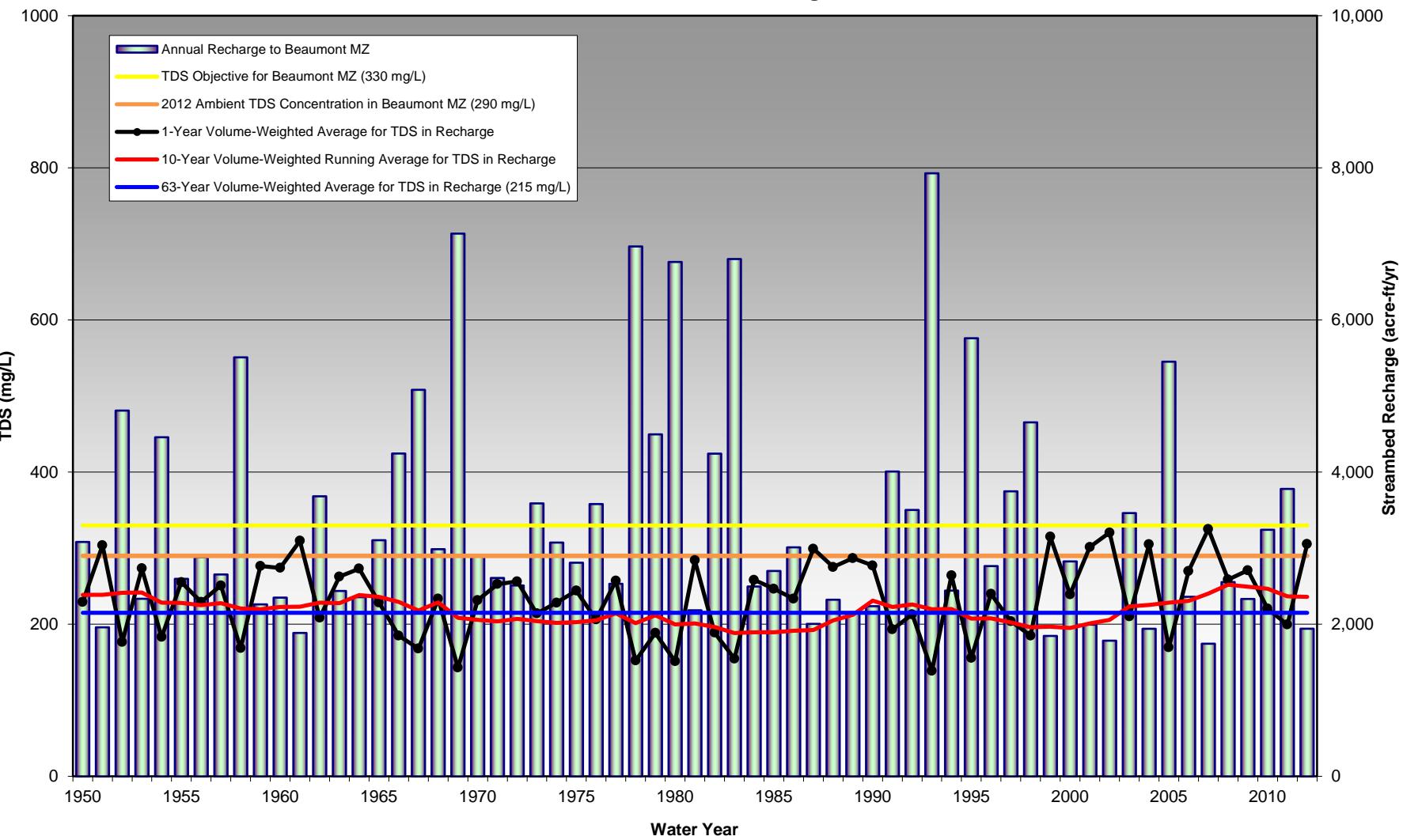


Figure 8e-TIN_BU
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 8e - Intermediate Discharge for 2020

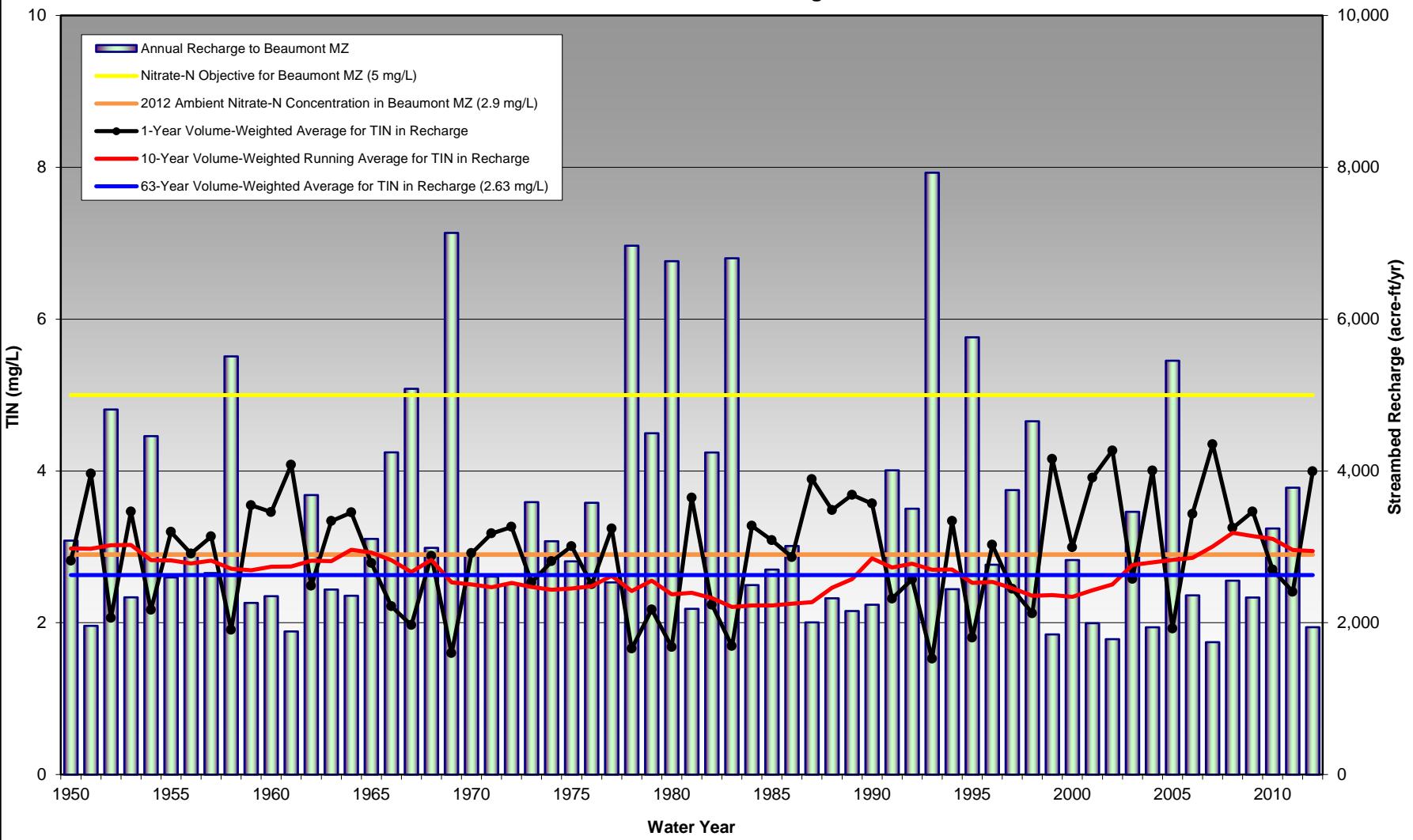


Table 8f-BP
TDS and TIN in Santa Ana River Flow at Below Prado
Scenario 8f - High Discharge for 2020

Water Year	Volume Weighted Running Average (mg/L)											
	TDS						TIN					
	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only
1950	522	490	466	458	431	679	6.48	6.06	5.75	5.65	5.24	8.13
1951	606	501	473	460	431	679	7.54	6.19	5.83	5.67	5.24	8.13
1952	331	483	442	482	431	679	4.08	5.98	5.46	5.96	5.24	8.13
1953	567	525	489	482	431	679	7.03	6.52	6.07	5.97	5.24	8.13
1954	441	493	463	467	431	679	5.44	6.12	5.73	5.77	5.24	8.12
1955	535	496	465	466	431	678	6.63	6.15	5.76	5.76	5.24	8.11
1956	411	457	435	453	431	679	5.15	5.67	5.39	5.60	5.24	8.13
1957	545	500	490	464	431	679	6.76	6.20	6.09	5.75	5.24	8.13
1958	362	459	444	465	431	650	4.40	5.68	5.48	5.76	5.24	7.76
1959	600	491	467	465	431	679	7.48	6.08	5.78	5.76	5.24	8.13
1960	563	496	471	468	431	679	6.99	6.15	5.83	5.79	5.24	8.13
1961	631	540	510	469	431	661	7.89	6.70	6.31	5.81	5.24	7.89
1962	449	521	490	490	431	679	5.56	6.46	6.07	6.08	5.24	8.13
1963	504	549	539	485	431	679	6.27	6.83	6.70	6.02	5.24	8.12
1964	562	542	533	497	431	679	6.99	6.74	6.62	6.17	5.24	8.13
1965	511	531	523	495	431	667	6.31	6.60	6.49	6.14	5.24	7.98
1966	372	480	467	487	431	679	4.56	5.94	5.78	6.03	5.24	8.13
1967	327	455	429	457	431	665	3.96	5.62	5.29	5.64	5.24	7.95
1968	484	451	427	474	431	679	6.04	5.57	5.26	5.87	5.24	8.13
1969	226	384	333	401	431	657	2.61	4.70	4.02	4.92	5.24	7.83
1970	521	386	333	399	431	678	6.46	4.73	4.03	4.89	5.24	8.12
1971	535	419	349	396	431	677	6.64	5.14	4.23	4.85	5.24	8.10
1972	525	458	377	400	431	654	6.53	5.66	4.59	4.90	5.24	7.81
1973	436	449	372	396	431	679	5.34	5.52	4.51	4.84	5.24	8.13
1974	469	497	493	392	431	680	5.82	6.16	6.10	4.79	5.24	8.13
1975	533	500	495	393	431	680	6.60	6.19	6.13	4.80	5.24	8.13
1976	532	499	495	405	431	680	6.58	6.18	6.12	4.95	5.24	8.13
1977	528	500	495	425	431	344	6.55	6.18	6.12	5.21	5.24	4.01
1978	271	466	417	392	431	680	3.22	5.75	5.11	4.79	5.24	8.13
1979	410	455	407	444	431	680	4.99	5.59	4.97	5.46	5.24	8.13
1980	279	404	348	401	431	676	2.77	4.82	4.01	4.77	5.24	8.09
1981	567	411	350	402	431	680	7.04	4.91	4.03	4.79	5.24	8.13
1982	398	385	339	394	431	678	4.90	4.58	3.91	4.68	5.24	8.11
1983	320	395	354	380	431	436	3.57	4.66	4.02	4.47	5.24	5.11
1984	524	418	364	382	431	677	6.50	4.96	4.14	4.50	5.24	8.10
1985	511	464	429	381	431	680	6.33	5.67	5.18	4.49	5.24	8.13
1986	461	443	417	378	431	678	5.68	5.40	5.02	4.45	5.24	8.12
1987	588	481	444	380	431	679	7.33	5.88	5.36	4.48	5.24	8.13
1988	507	518	514	410	431	679	6.27	6.42	6.37	4.84	5.24	8.12
1989	565	526	521	419	431	680	7.01	6.52	6.46	4.96	5.24	8.13
1990	572	538	532	473	431	680	7.13	6.68	6.60	5.78	5.24	8.13
1991	405	527	515	458	431	679	5.00	6.55	6.39	5.60	5.24	8.13
1992	426	495	482	462	431	680	5.24	6.13	5.97	5.64	5.24	8.14
1993	263	446	384	435	431	679	2.77	5.43	4.54	5.26	5.24	8.13
1994	563	446	384	437	431	680	6.98	5.42	4.54	5.28	5.24	8.13
1995	319	395	350	413	431	680	3.64	4.72	4.08	4.95	5.24	8.13
1996	488	412	358	415	431	680	6.09	4.94	4.17	4.97	5.24	8.13
1997	473	421	363	409	431	680	5.82	5.06	4.23	4.90	5.24	8.13
1998	326	434	400	392	431	661	3.98	5.30	4.85	4.69	5.24	7.90
1999	623	446	404	394	431	680	7.77	5.46	4.90	4.71	5.24	8.13
2000	564	495	462	393	431	679	7.01	6.13	5.71	4.71	5.24	8.13
2001	561	510	472	403	431	679	6.98	6.31	5.84	4.82	5.24	8.13
2002	642	543	497	413	431	679	8.03	6.75	6.16	4.96	5.24	8.13
2003	382	554	530	452	431	680	4.73	6.91	6.60	5.55	5.24	8.13
2004	576	545	523	453	431	679	7.16	6.78	6.51	5.56	5.24	8.13
2005	274	487	421	440	431	680	3.28	6.04	5.18	5.43	5.24	8.13
2006	557	486	420	445	431	679	6.90	6.02	5.18	5.48	5.24	8.13
2007	657	489	421	455	431	679	8.23	6.06	5.19	5.62	5.24	8.13
2008	547	522	451	486	431	679	6.77	6.47	5.55	6.01	5.24	8.13
2009	554	518	448	482	431	679	6.88	6.41	5.51	5.96	5.24	8.13
2010	419	547	532	468	431	679	5.15	6.79	6.59	5.78	5.24	8.13
2011	355	507	475	446	431	658	4.32	6.27	5.87	5.49	5.24	7.86
2012	601	495	470	444	431	679	7.48	6.12	5.80	5.47	5.24	8.13
Maximum	657	554	539	497	431	680	8.23	6.91	6.70	6.17	5.24	8.14

Figure 8f-TDS_Reach 3
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8f - High Discharge for 2020

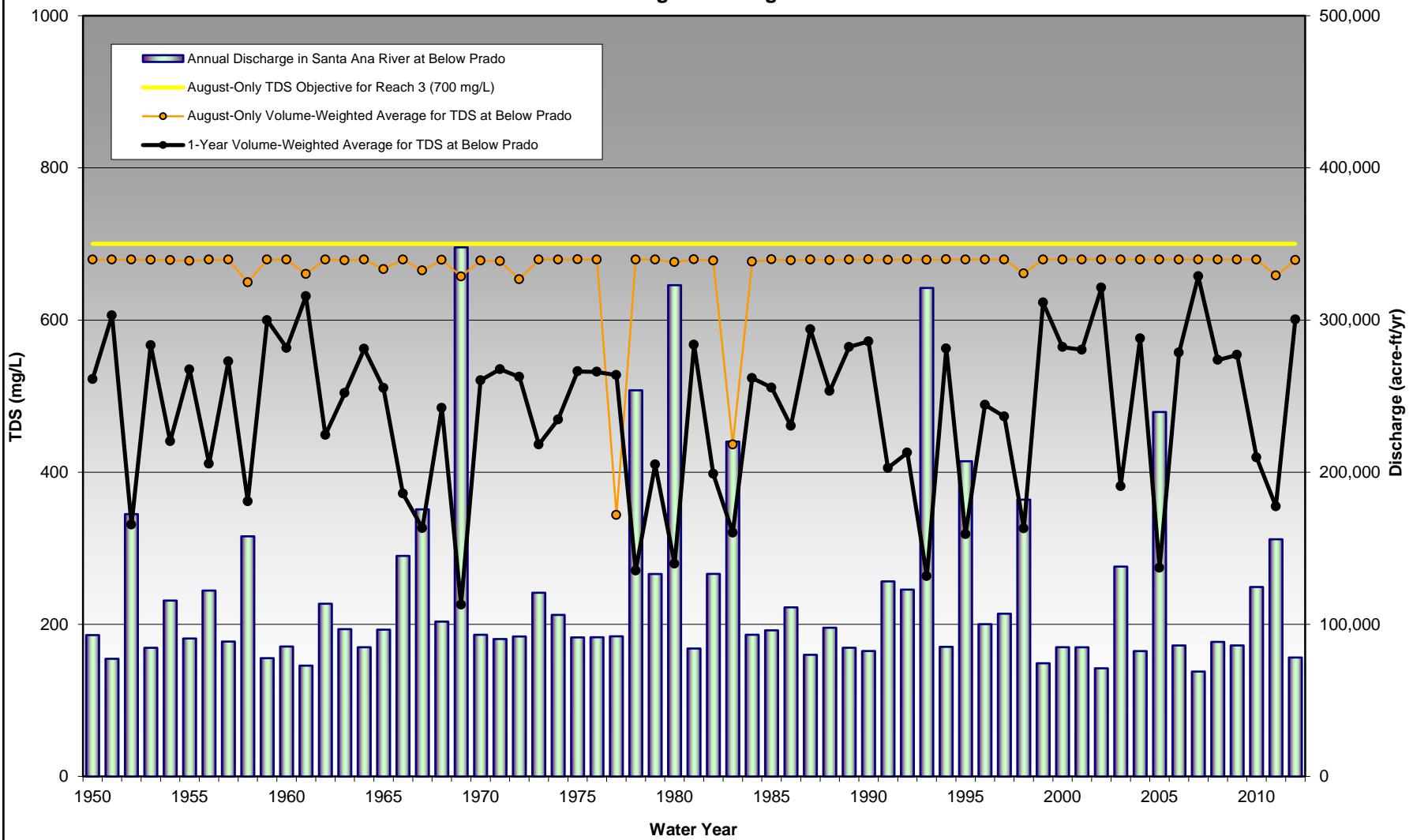


Figure 8f-TIN_BP
Estimated Annual Discharge and Volume-Weighted TIN Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8f - High Discharge for 2020

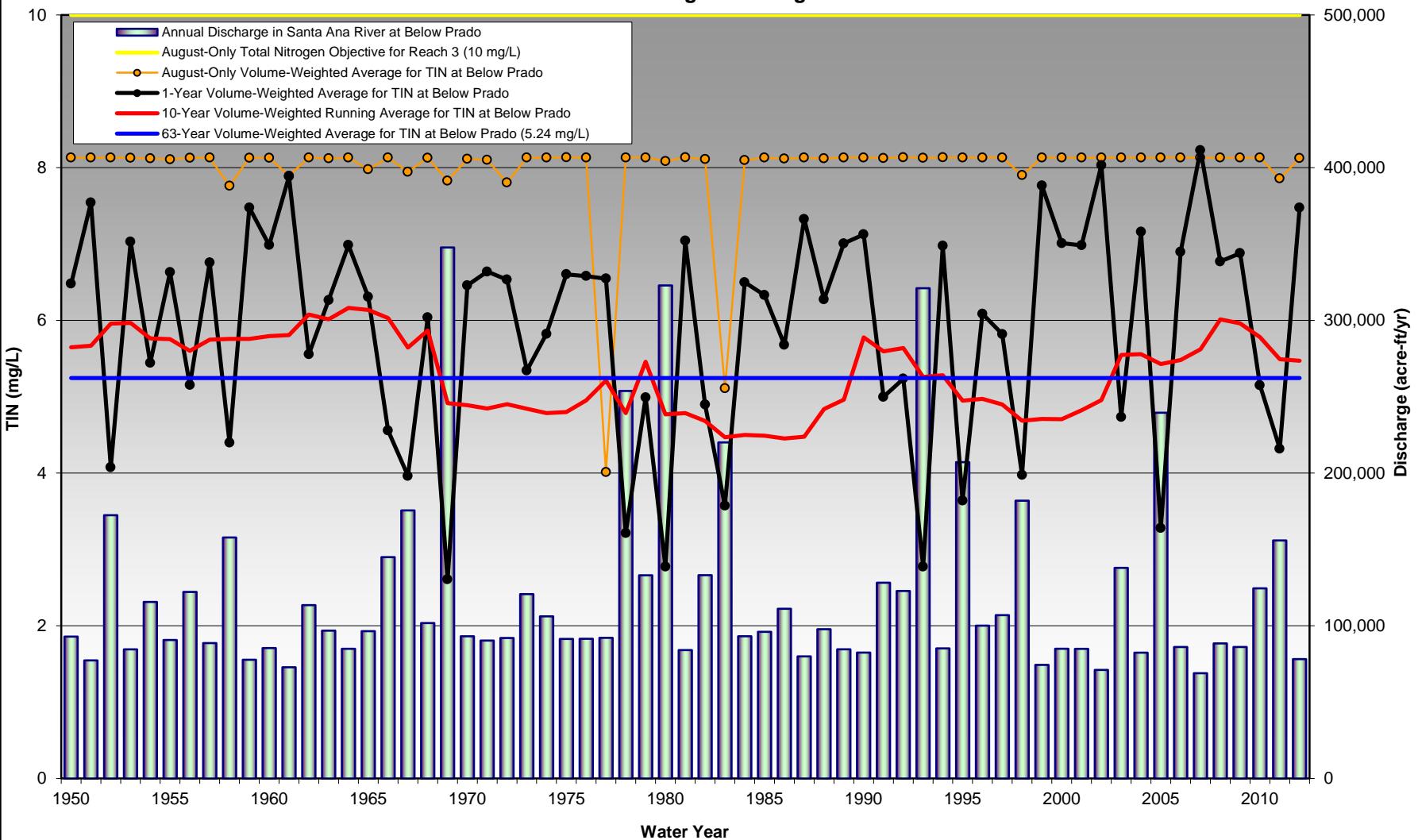


Figure 8f-TDS_Reach 2
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 2 Objective
Scenario 8f - High Discharge for 2020

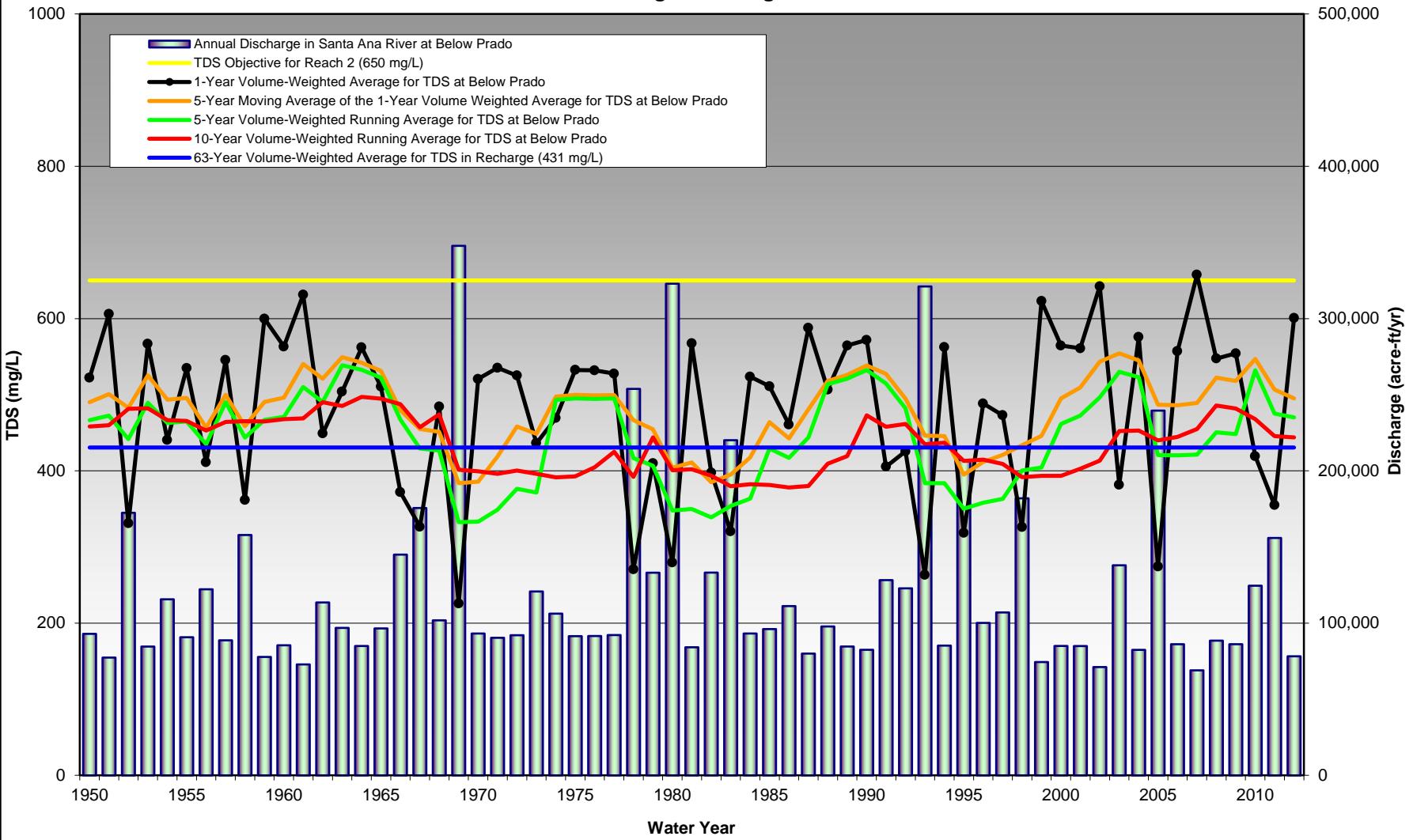


Table 8f-CS
TDS and TIN of Streambed Recharge to the Chino-South Management Zone
Scenario 8f - High Discharge for 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	622	608	594	4.37	4.25	4.14
1951	642	607	594	4.51	4.28	4.14
1952	543	615	594	3.79	4.23	4.14
1953	632	615	594	4.43	4.25	4.14
1954	594	609	594	4.16	4.24	4.14
1955	622	608	594	4.36	4.25	4.14
1956	610	606	594	4.28	4.25	4.14
1957	629	610	594	4.42	4.26	4.14
1958	548	607	594	3.81	4.23	4.14
1959	647	607	594	4.55	4.25	4.14
1960	637	608	594	4.47	4.26	4.14
1961	652	609	594	4.59	4.27	4.14
1962	599	616	594	4.19	4.32	4.14
1963	619	615	594	4.34	4.31	4.14
1964	636	619	594	4.47	4.34	4.14
1965	618	618	594	4.33	4.34	4.14
1966	571	614	594	3.99	4.30	4.14
1967	548	605	594	3.82	4.24	4.14
1968	618	613	594	4.34	4.29	4.14
1969	434	587	594	2.90	4.09	4.14
1970	627	586	594	4.40	4.08	4.14
1971	626	583	594	4.39	4.07	4.14
1972	631	586	594	4.43	4.09	4.14
1973	595	584	594	4.16	4.07	4.14
1974	609	582	594	4.27	4.06	4.14
1975	629	583	594	4.41	4.06	4.14
1976	619	587	594	4.34	4.10	4.14
1977	632	596	594	4.44	4.16	4.14
1978	474	579	594	3.23	4.03	4.14
1979	574	598	594	3.97	4.18	4.14
1980	439	575	594	2.83	3.98	4.14
1981	639	576	594	4.49	3.99	4.14
1982	574	571	594	4.01	3.95	4.14
1983	489	559	594	3.24	3.85	4.14
1984	622	561	594	4.36	3.86	4.14
1985	620	560	594	4.34	3.86	4.14
1986	608	559	594	4.26	3.85	4.14
1987	643	560	594	4.52	3.86	4.14
1988	624	576	594	4.38	3.98	4.14
1989	637	582	594	4.47	4.03	4.14
1990	634	606	594	4.45	4.23	4.14
1991	590	601	594	4.13	4.19	4.14
1992	589	603	594	4.11	4.21	4.14
1993	439	594	594	2.87	4.14	4.14
1994	630	595	594	4.42	4.14	4.14
1995	517	584	594	3.48	4.05	4.14
1996	625	585	594	4.39	4.06	4.14
1997	601	582	594	4.21	4.03	4.14
1998	525	572	594	3.64	3.96	4.14
1999	647	572	594	4.55	3.97	4.14
2000	639	573	594	4.49	3.97	4.14
2001	636	577	594	4.47	4.00	4.14
2002	655	583	594	4.60	4.04	4.14
2003	584	602	594	4.09	4.20	4.14
2004	645	604	594	4.53	4.21	4.14
2005	489	599	594	3.36	4.19	4.14
2006	631	600	594	4.43	4.20	4.14
2007	658	605	594	4.63	4.24	4.14
2008	630	617	594	4.42	4.32	4.14
2009	635	616	594	4.46	4.32	4.14
2010	589	611	594	4.11	4.28	4.14
2011	574	605	594	4.00	4.23	4.14
2012	647	604	594	4.55	4.23	4.14
Maximum	658	619		4.63	4.34	

Figure 8f-TDS_CS
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 8f - High Discharge for 2020

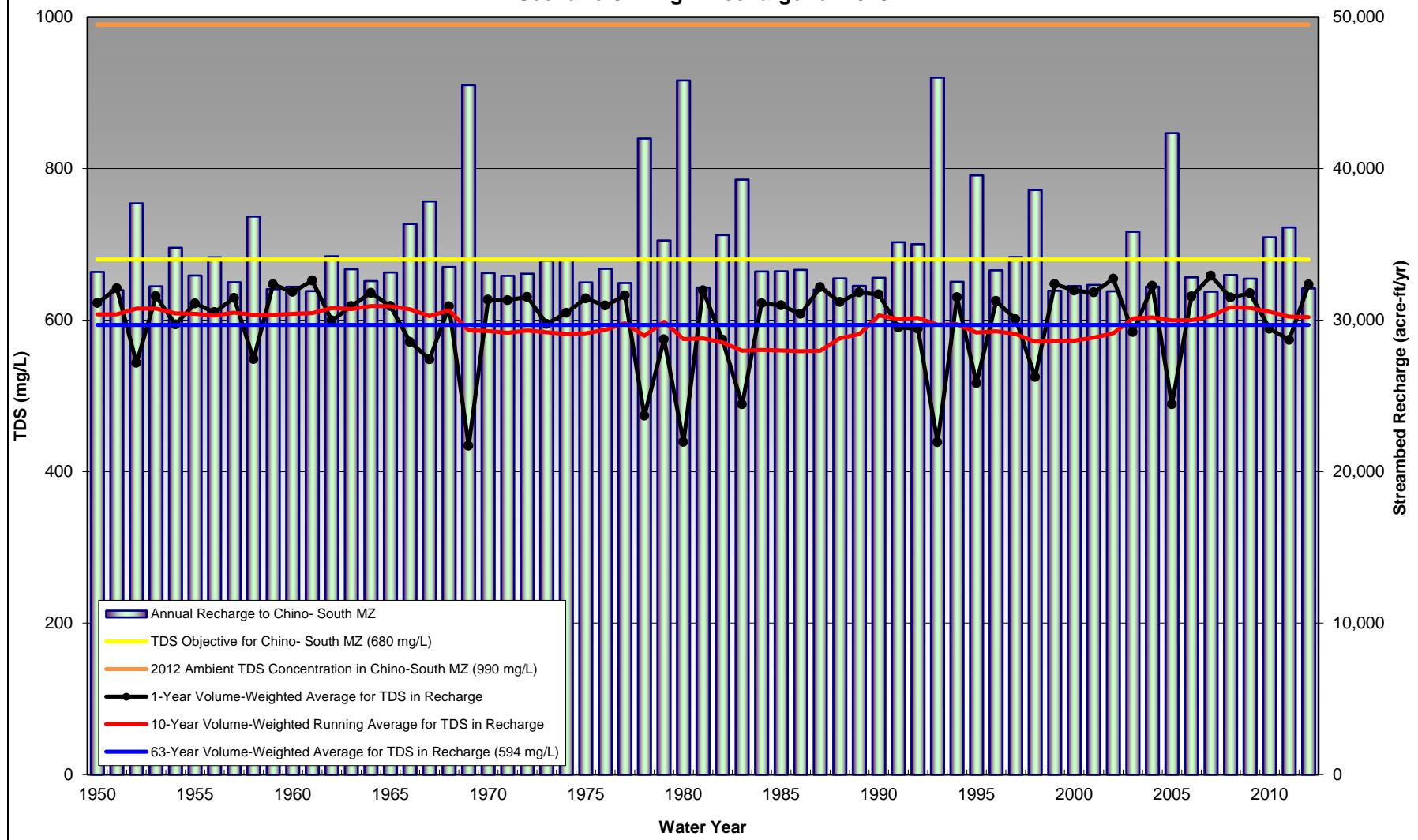


Figure 8f-TIN_CS
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Chino-South Management Zone
Scenario 8f - High Discharge for 2020

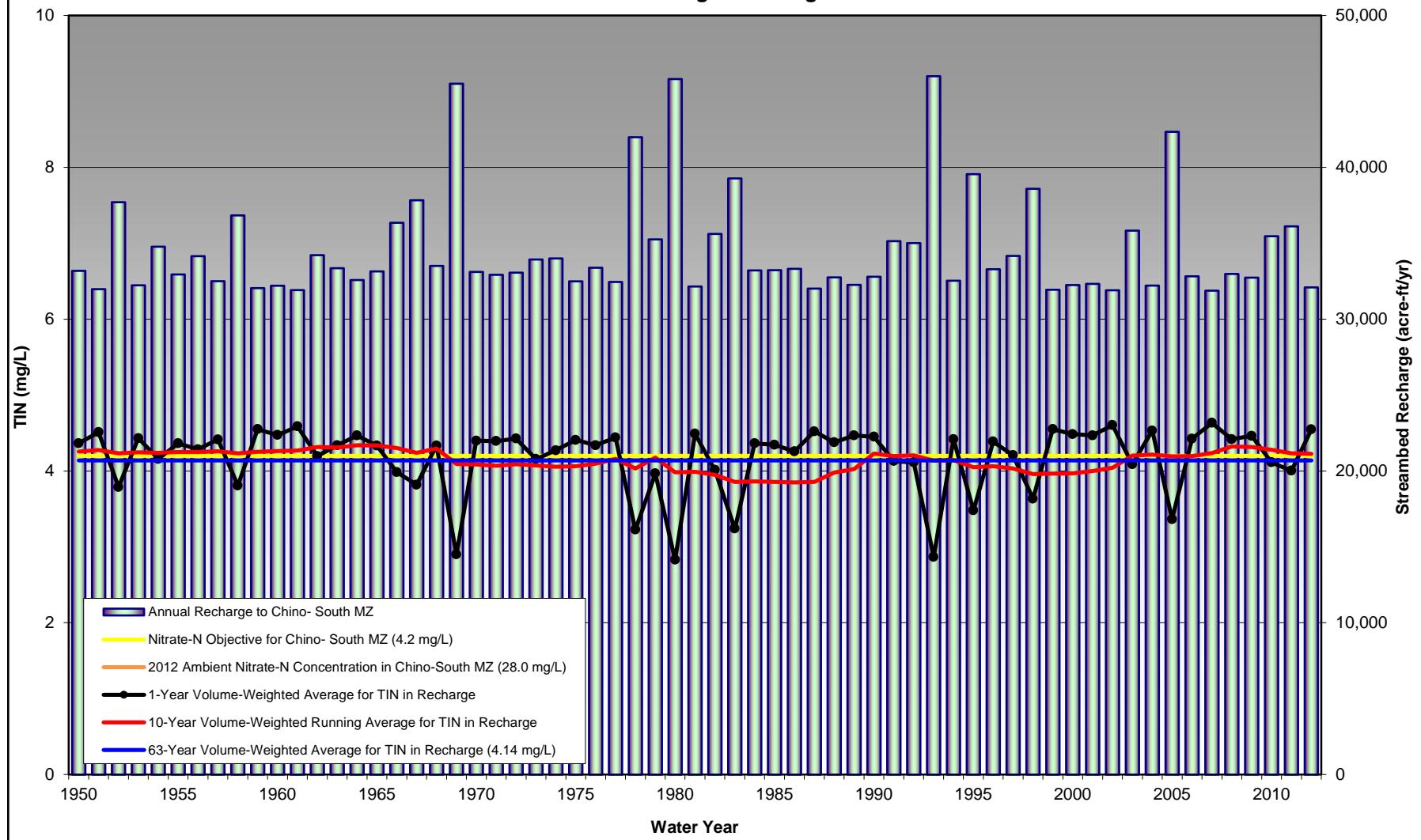


Table 8f-RA
TDS and TIN of Streambed Recharge to the Riverside-A Management Zone
Scenario 8f - High Discharge for 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	451	440	417	6.11	5.88	5.53
1951	512	440	417	7.02	5.88	5.53
1952	357	453	417	4.68	6.12	5.53
1953	488	454	417	6.65	6.14	5.53
1954	413	444	417	5.51	5.97	5.53
1955	463	443	417	6.29	5.97	5.53
1956	460	441	417	6.28	5.93	5.53
1957	484	448	417	6.58	6.04	5.53
1958	351	440	417	4.50	5.92	5.53
1959	504	439	417	6.91	5.90	5.53
1960	501	443	417	6.85	5.96	5.53
1961	522	443	417	7.19	5.98	5.53
1962	419	453	417	5.61	6.11	5.53
1963	469	451	417	6.38	6.09	5.53
1964	483	458	417	6.59	6.20	5.53
1965	447	457	417	6.02	6.18	5.53
1966	384	447	417	5.06	6.03	5.53
1967	366	434	417	4.80	5.83	5.53
1968	453	447	417	6.13	6.04	5.53
1969	260	409	417	2.98	5.41	5.53
1970	456	406	417	6.18	5.37	5.53
1971	455	402	417	6.14	5.30	5.53
1972	481	406	417	6.55	5.38	5.53
1973	417	402	417	5.54	5.31	5.53
1974	440	399	417	5.93	5.26	5.53
1975	480	402	417	6.53	5.30	5.53
1976	446	407	417	6.01	5.39	5.53
1977	482	419	417	6.56	5.56	5.53
1978	288	396	417	3.44	5.18	5.53
1979	400	422	417	5.28	5.62	5.53
1980	258	388	417	2.90	5.06	5.53
1981	500	391	417	6.83	5.10	5.53
1982	386	384	417	5.12	4.99	5.53
1983	294	369	417	3.55	4.75	5.53
1984	459	370	417	6.21	4.77	5.53
1985	467	369	417	6.34	4.76	5.53
1986	448	369	417	6.03	4.76	5.53
1987	510	371	417	6.99	4.78	5.53
1988	470	391	417	6.38	5.11	5.53
1989	480	397	417	6.53	5.20	5.53
1990	483	436	417	6.58	5.83	5.53
1991	408	427	417	5.45	5.71	5.53
1992	393	428	417	5.20	5.72	5.53
1993	259	414	417	2.94	5.49	5.53
1994	476	416	417	6.47	5.51	5.53
1995	328	400	417	4.10	5.25	5.53
1996	457	401	417	6.17	5.27	5.53
1997	413	394	417	5.47	5.16	5.53
1998	337	382	417	4.26	4.96	5.53
1999	519	383	417	7.13	4.99	5.53
2000	489	384	417	6.67	5.00	5.53
2001	502	390	417	6.87	5.09	5.53
2002	528	399	417	7.28	5.23	5.53
2003	416	431	417	5.57	5.75	5.53
2004	512	433	417	7.03	5.79	5.53
2005	302	427	417	3.67	5.68	5.53
2006	477	428	417	6.44	5.71	5.53
2007	530	438	417	7.32	5.86	5.53
2008	465	456	417	6.27	6.14	5.53
2009	494	454	417	6.75	6.11	5.53
2010	412	446	417	5.47	5.99	5.53
2011	402	437	417	5.29	5.84	5.53
2012	521	436	417	7.17	5.83	5.53
Maximum	530	458		7.32	6.20	

Figure 8f-TDS_RA
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 8f - High Discharge for 2020

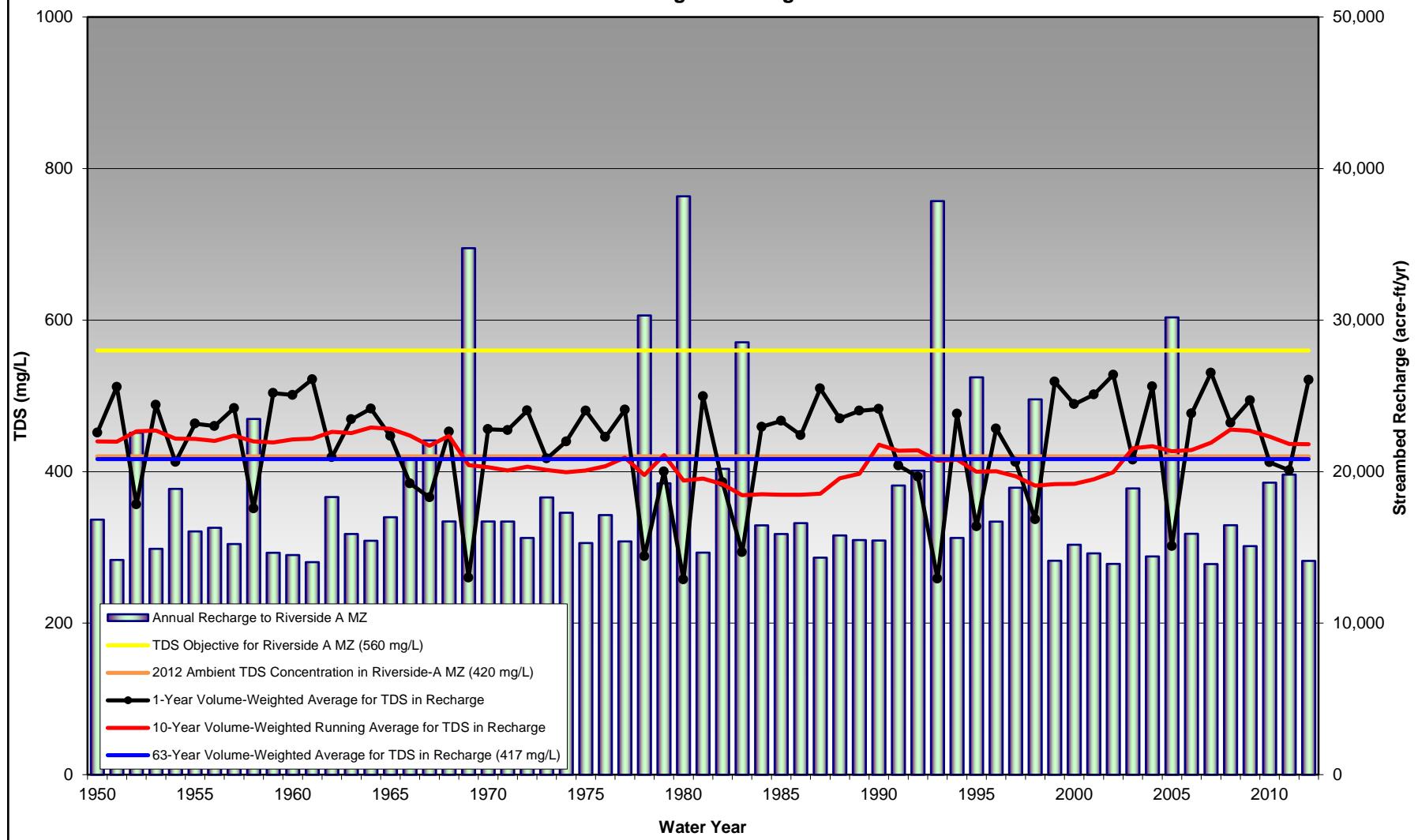


Figure 8f-TIN_RA
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Riverside-A Management Zone
Scenario 8f - High Discharge for 2020

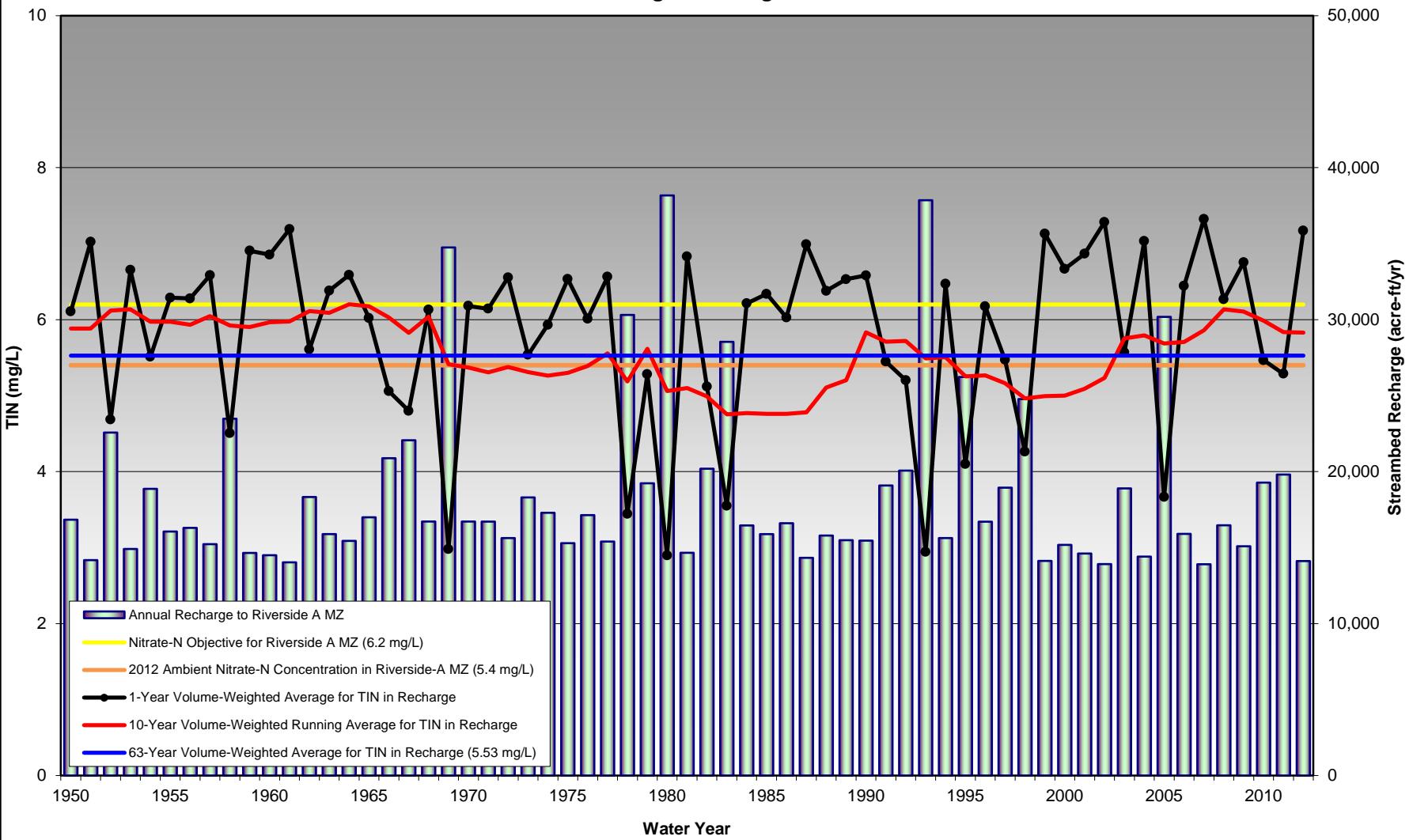


Table 8f-CO
TDS and TIN of Streambed Recharge to the Colton Management Zone
Scenario 8f - High Discharge for 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	143	161	155	1.14	1.22	1.19
1951	167	161	155	1.25	1.22	1.19
1952	139	157	155	1.13	1.21	1.19
1953	160	155	155	1.23	1.20	1.19
1954	143	153	155	1.14	1.19	1.19
1955	149	151	155	1.18	1.18	1.19
1956	128	149	155	1.06	1.17	1.19
1957	160	149	155	1.23	1.17	1.19
1958	152	148	155	1.18	1.17	1.19
1959	168	148	155	1.28	1.16	1.19
1960	157	149	155	1.22	1.17	1.19
1961	164	148	155	1.24	1.17	1.19
1962	147	150	155	1.16	1.18	1.19
1963	137	149	155	1.10	1.17	1.19
1964	155	150	155	1.19	1.17	1.19
1965	149	150	155	1.16	1.17	1.19
1966	139	150	155	1.12	1.17	1.19
1967	141	147	155	1.11	1.16	1.19
1968	143	146	155	1.13	1.15	1.19
1969	162	153	155	1.20	1.17	1.19
1970	141	152	155	1.14	1.16	1.19
1971	148	152	155	1.18	1.16	1.19
1972	151	152	155	1.18	1.16	1.19
1973	156	153	155	1.21	1.17	1.19
1974	140	152	155	1.12	1.17	1.19
1975	163	153	155	1.24	1.17	1.19
1976	139	153	155	1.10	1.17	1.19
1977	150	155	155	1.17	1.18	1.19
1978	160	157	155	1.20	1.19	1.19
1979	156	154	155	1.19	1.18	1.19
1980	162	157	155	1.19	1.19	1.19
1981	169	158	155	1.26	1.19	1.19
1982	131	156	155	1.07	1.18	1.19
1983	164	158	155	1.23	1.19	1.19
1984	161	159	155	1.23	1.19	1.19
1985	149	158	155	1.15	1.19	1.19
1986	158	159	155	1.21	1.20	1.19
1987	168	159	155	1.26	1.20	1.19
1988	153	159	155	1.18	1.20	1.19
1989	160	159	155	1.22	1.20	1.19
1990	155	157	155	1.20	1.20	1.19
1991	139	155	155	1.12	1.19	1.19
1992	137	155	155	1.10	1.19	1.19
1993	161	155	155	1.19	1.18	1.19
1994	163	155	155	1.24	1.18	1.19
1995	155	155	155	1.17	1.18	1.19
1996	158	155	155	1.19	1.18	1.19
1997	153	155	155	1.18	1.18	1.19
1998	160	156	155	1.22	1.18	1.19
1999	183	156	155	1.35	1.19	1.19
2000	159	156	155	1.22	1.19	1.19
2001	171	158	155	1.27	1.19	1.19
2002	181	160	155	1.35	1.20	1.19
2003	135	157	155	1.10	1.20	1.19
2004	172	157	155	1.29	1.20	1.19
2005	158	157	155	1.20	1.21	1.19
2006	179	159	155	1.32	1.21	1.19
2007	202	160	155	1.47	1.22	1.19
2008	171	161	155	1.28	1.23	1.19
2009	167	161	155	1.26	1.22	1.19
2010	153	160	155	1.18	1.22	1.19
2011	158	159	155	1.20	1.21	1.19
2012	184	160	155	1.35	1.21	1.19
Maximum	202	161		1.47	1.23	

Figure 8f-TDS_CO
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 8f - High Discharge for 2020

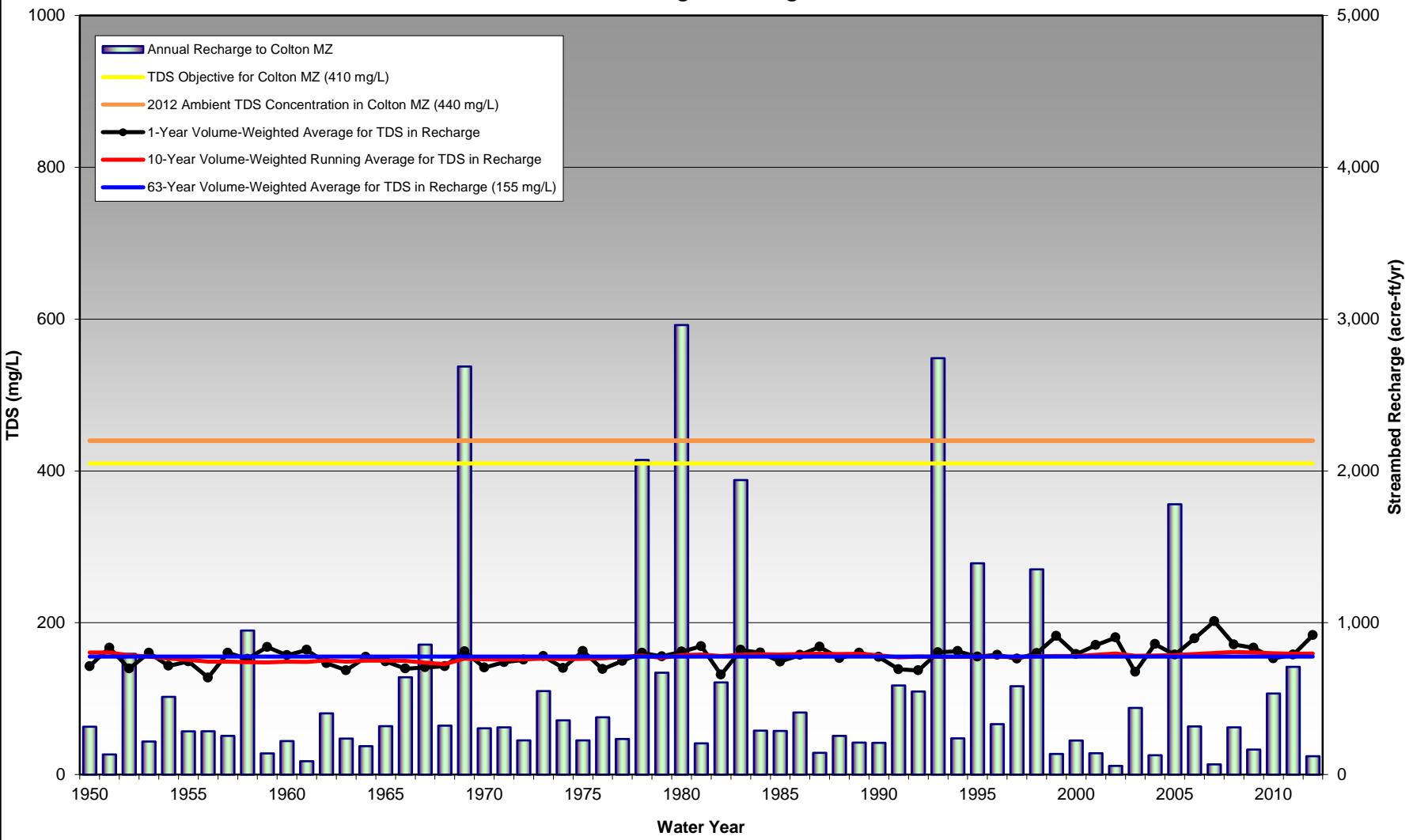


Figure 8f-TIN_CO
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River to the Colton Management Zone
Scenario 8f - High Discharge for 2020

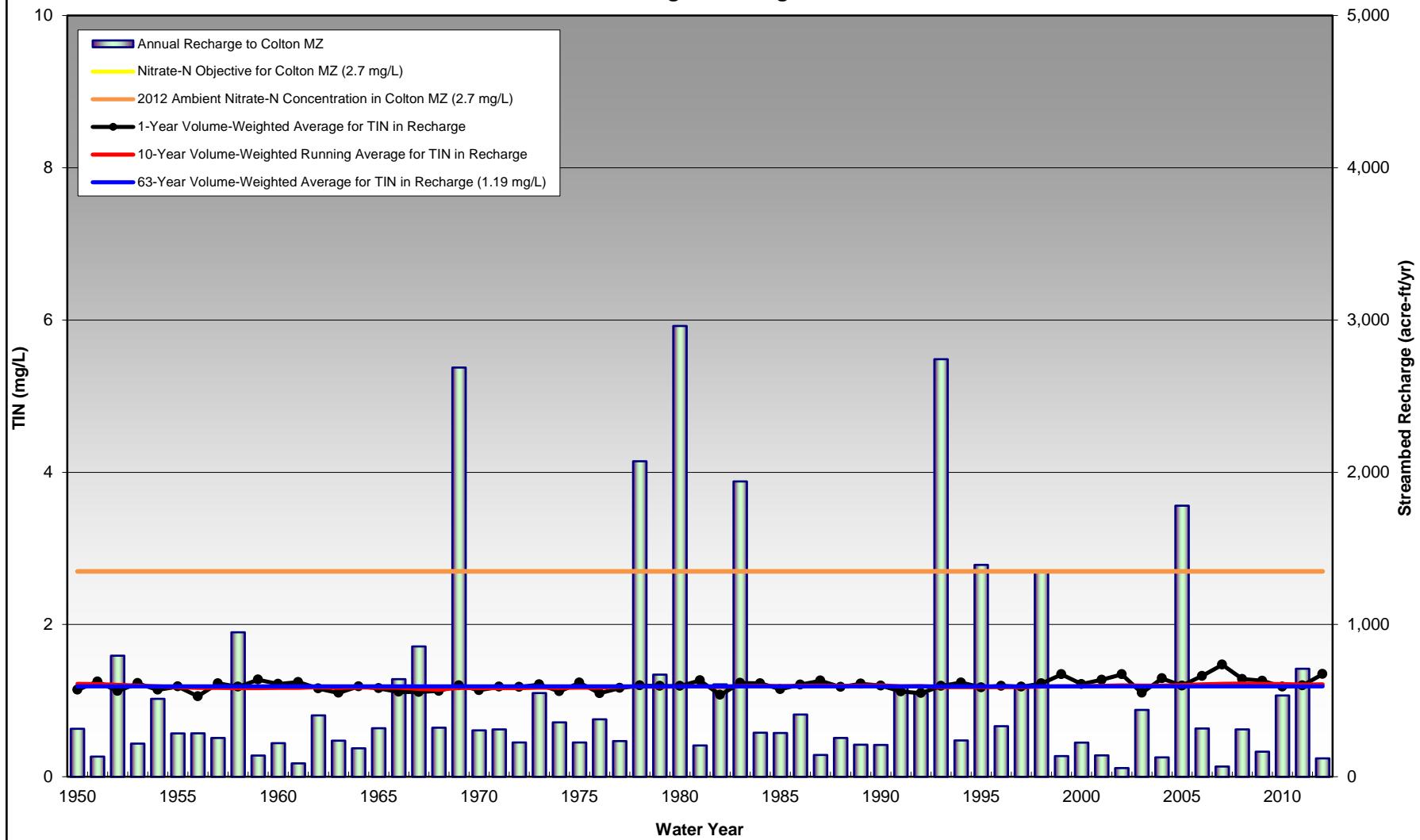


Table 8f-BH
TDS and TIN of Streambed Recharge to the Bunker Hill-B Management Zone
Scenario 8f - High Discharge for 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	242	242	229	1.84	1.81	1.71
1951	274	241	229	2.08	1.81	1.71
1952	208	244	229	1.58	1.84	1.71
1953	244	244	229	1.85	1.84	1.71
1954	219	237	229	1.67	1.79	1.71
1955	238	236	229	1.81	1.79	1.71
1956	263	236	229	2.01	1.79	1.71
1957	240	237	229	1.82	1.79	1.71
1958	203	233	229	1.53	1.77	1.71
1959	262	232	229	1.98	1.76	1.71
1960	239	231	229	1.82	1.76	1.71
1961	296	232	229	2.25	1.76	1.71
1962	225	235	229	1.71	1.79	1.71
1963	258	236	229	1.97	1.79	1.71
1964	258	240	229	1.96	1.82	1.71
1965	237	240	229	1.81	1.82	1.71
1966	223	236	229	1.70	1.79	1.71
1967	217	233	229	1.64	1.77	1.71
1968	239	239	229	1.81	1.82	1.71
1969	198	226	229	1.44	1.70	1.71
1970	243	226	229	1.85	1.70	1.71
1971	246	225	229	1.87	1.69	1.71
1972	269	227	229	2.05	1.70	1.71
1973	215	224	229	1.63	1.68	1.71
1974	239	223	229	1.82	1.67	1.71
1975	242	223	229	1.83	1.68	1.71
1976	238	224	229	1.81	1.68	1.71
1977	244	227	229	1.86	1.70	1.71
1978	196	219	229	1.44	1.64	1.71
1979	208	224	229	1.56	1.68	1.71
1980	197	217	229	1.44	1.62	1.71
1981	246	217	229	1.85	1.62	1.71
1982	215	214	229	1.64	1.60	1.71
1983	197	211	229	1.45	1.57	1.71
1984	246	212	229	1.84	1.57	1.71
1985	241	212	229	1.82	1.57	1.71
1986	227	211	229	1.71	1.57	1.71
1987	265	212	229	2.00	1.58	1.71
1988	238	217	229	1.80	1.62	1.71
1989	248	220	229	1.88	1.64	1.71
1990	265	229	229	2.01	1.72	1.71
1991	228	227	229	1.74	1.71	1.71
1992	219	228	229	1.68	1.72	1.71
1993	197	228	229	1.44	1.72	1.71
1994	246	228	229	1.85	1.72	1.71
1995	210	224	229	1.56	1.68	1.71
1996	253	226	229	1.91	1.70	1.71
1997	227	224	229	1.72	1.68	1.71
1998	208	221	229	1.55	1.65	1.71
1999	276	222	229	2.08	1.66	1.71
2000	257	221	229	1.95	1.66	1.71
2001	265	223	229	2.00	1.67	1.71
2002	341	227	229	2.60	1.69	1.71
2003	235	236	229	1.79	1.77	1.71
2004	280	238	229	2.12	1.79	1.71
2005	205	236	229	1.52	1.78	1.71
2006	248	236	229	1.85	1.77	1.71
2007	320	241	229	2.41	1.81	1.71
2008	250	251	229	1.87	1.89	1.71
2009	259	249	229	1.96	1.88	1.71
2010	233	247	229	1.75	1.86	1.71
2011	226	242	229	1.68	1.82	1.71
2012	279	241	229	2.10	1.81	1.71
Maximum	341	251		2.60	1.89	

Figure 8f-TDS_BH
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 8f - High Discharge for 2020

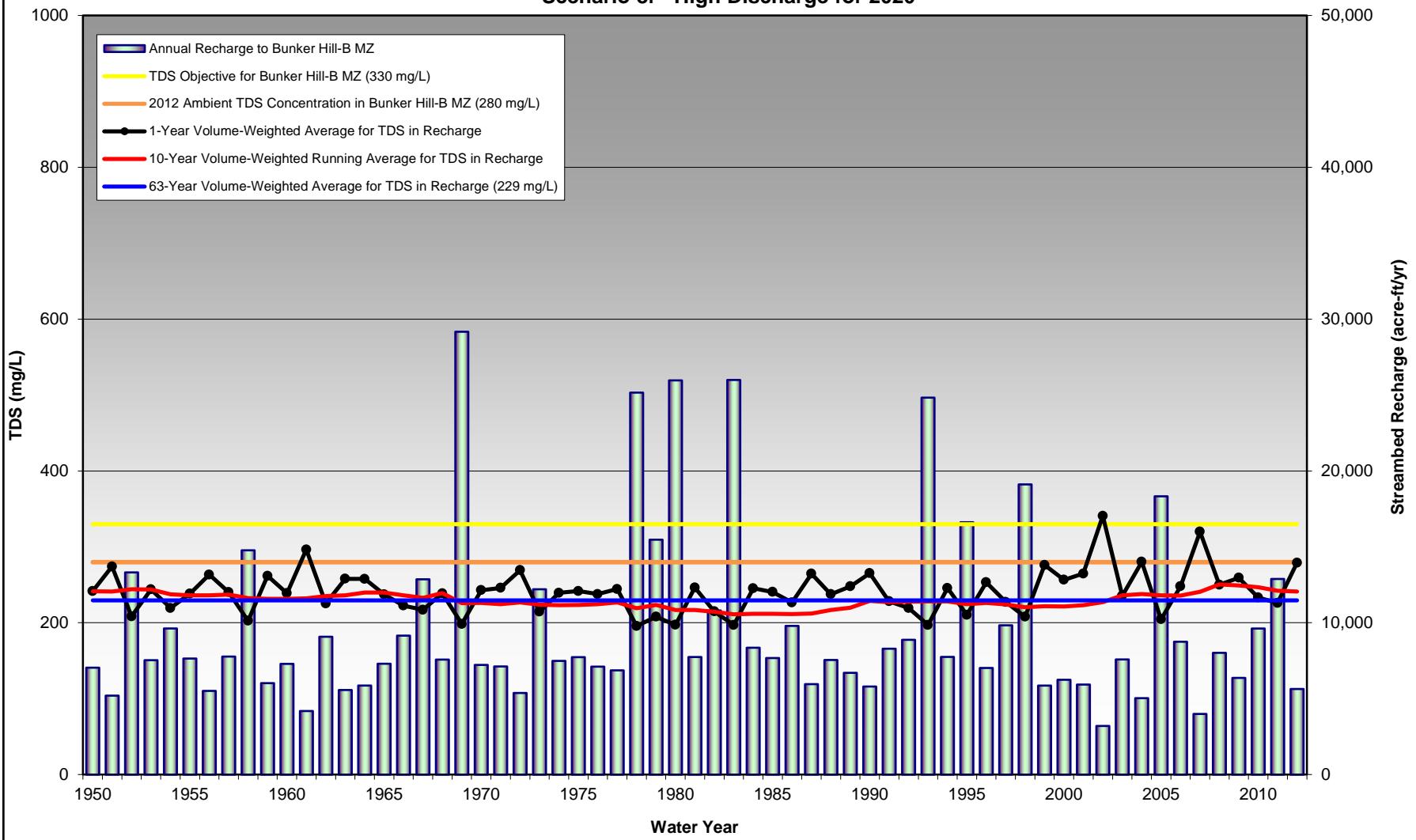


Figure 8f-TIN_BH
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the Santa Ana River and San Timoteo Creek to the Bunker Hill-B Management Zone
Scenario 8f - High Discharge for 2020

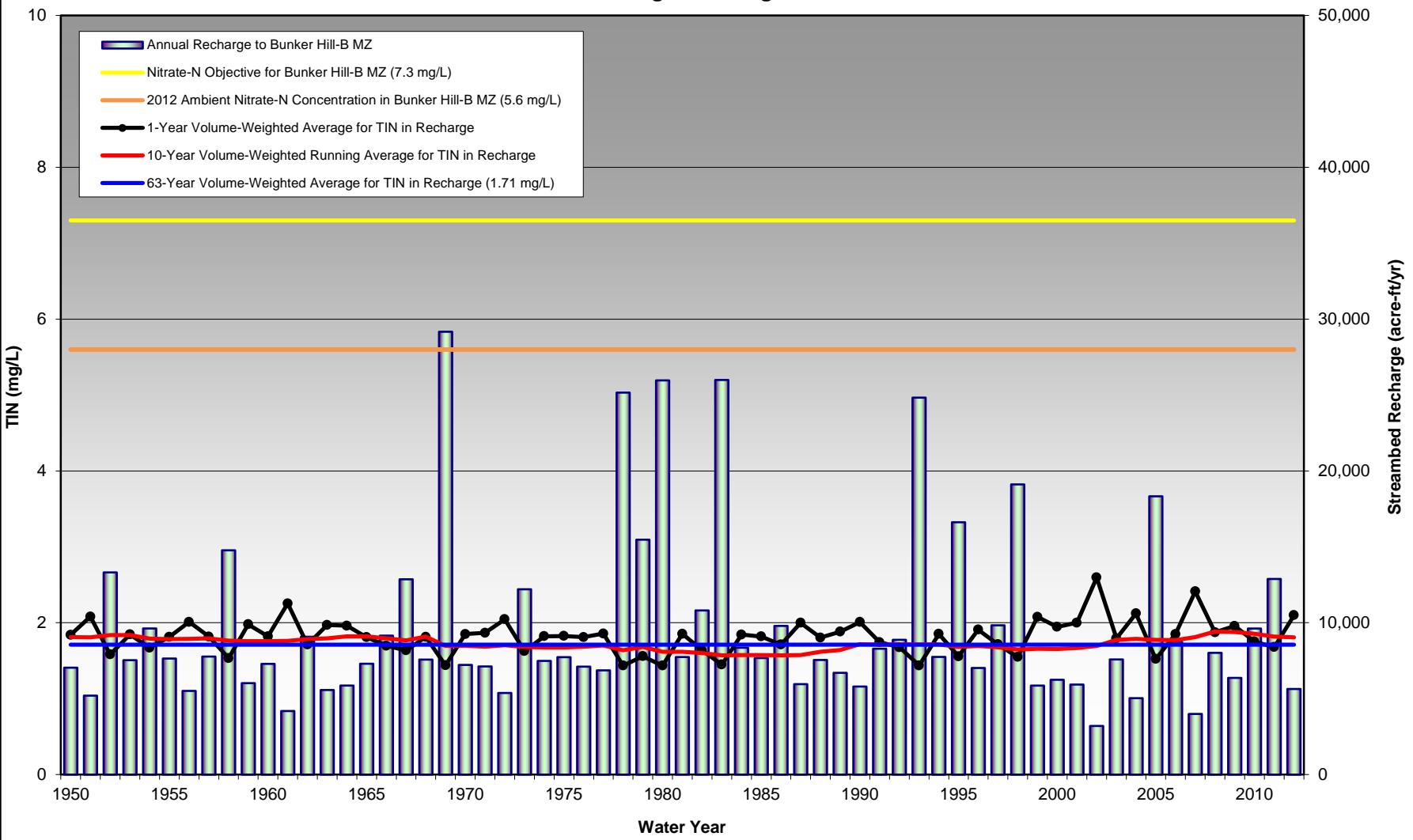


Table 8f-ST
TDS and TIN of Streambed Recharge to the San Timoteo Management Zone
Scenario 8f - High Discharge for 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	395	417	396	3.46	3.65	3.46
1951	450	416	396	3.95	3.65	3.46
1952	349	417	396	3.05	3.66	3.46
1953	413	416	396	3.61	3.64	3.46
1954	372	405	396	3.26	3.55	3.46
1955	409	404	396	3.58	3.53	3.46
1956	426	403	396	3.75	3.53	3.46
1957	412	404	396	3.60	3.54	3.46
1958	333	397	396	2.90	3.47	3.46
1959	433	395	396	3.80	3.46	3.46
1960	409	396	396	3.57	3.47	3.46
1961	455	397	396	4.00	3.47	3.46
1962	382	401	396	3.33	3.51	3.46
1963	429	402	396	3.77	3.52	3.46
1964	424	408	396	3.72	3.57	3.46
1965	400	407	396	3.50	3.56	3.46
1966	370	401	396	3.24	3.51	3.46
1967	358	395	396	3.15	3.46	3.46
1968	405	404	396	3.55	3.54	3.46
1969	313	390	396	2.74	3.41	3.46
1970	423	391	396	3.72	3.42	3.46
1971	425	389	396	3.72	3.40	3.46
1972	434	393	396	3.81	3.45	3.46
1973	361	387	396	3.14	3.39	3.46
1974	404	385	396	3.54	3.37	3.46
1975	404	385	396	3.53	3.37	3.46
1976	390	387	396	3.41	3.39	3.46
1977	413	393	396	3.62	3.44	3.46
1978	292	377	396	2.54	3.30	3.46
1979	349	382	396	3.04	3.34	3.46
1980	316	371	396	2.76	3.24	3.46
1981	428	371	396	3.75	3.24	3.46
1982	376	367	396	3.29	3.20	3.46
1983	313	361	396	2.72	3.15	3.46
1984	426	362	396	3.73	3.16	3.46
1985	412	363	396	3.60	3.17	3.46
1986	405	364	396	3.54	3.18	3.46
1987	447	366	396	3.92	3.20	3.46
1988	413	381	396	3.61	3.33	3.46
1989	434	389	396	3.81	3.41	3.46
1990	441	404	396	3.87	3.54	3.46
1991	384	400	396	3.37	3.50	3.46
1992	380	400	396	3.32	3.50	3.46
1993	361	408	396	3.14	3.57	3.46
1994	424	408	396	3.72	3.57	3.46
1995	348	400	396	3.05	3.50	3.46
1996	432	403	396	3.79	3.53	3.46
1997	382	397	396	3.34	3.47	3.46
1998	345	389	396	3.00	3.40	3.46
1999	465	391	396	4.09	3.42	3.46
2000	430	390	396	3.77	3.42	3.46
2001	432	395	396	3.78	3.45	3.46
2002	472	403	396	4.16	3.53	3.46
2003	395	407	396	3.46	3.57	3.46
2004	452	409	396	3.97	3.59	3.46
2005	343	408	396	2.99	3.58	3.46
2006	430	408	396	3.77	3.58	3.46
2007	481	417	396	4.24	3.66	3.46
2008	430	428	396	3.77	3.76	3.46
2009	437	426	396	3.84	3.73	3.46
2010	398	422	396	3.48	3.70	3.46
2011	387	417	396	3.39	3.66	3.46
2012	459	416	396	4.03	3.65	3.46
Maximum	481	428		4.24	3.76	

San Timoteo Reach 3 defined here is equivalent to San Temoteo Cr reaches 3 and 4 described in 1995 Water Quality Control Plan

Figure 8f-TDS_ST
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 8f - High Discharge for 2020

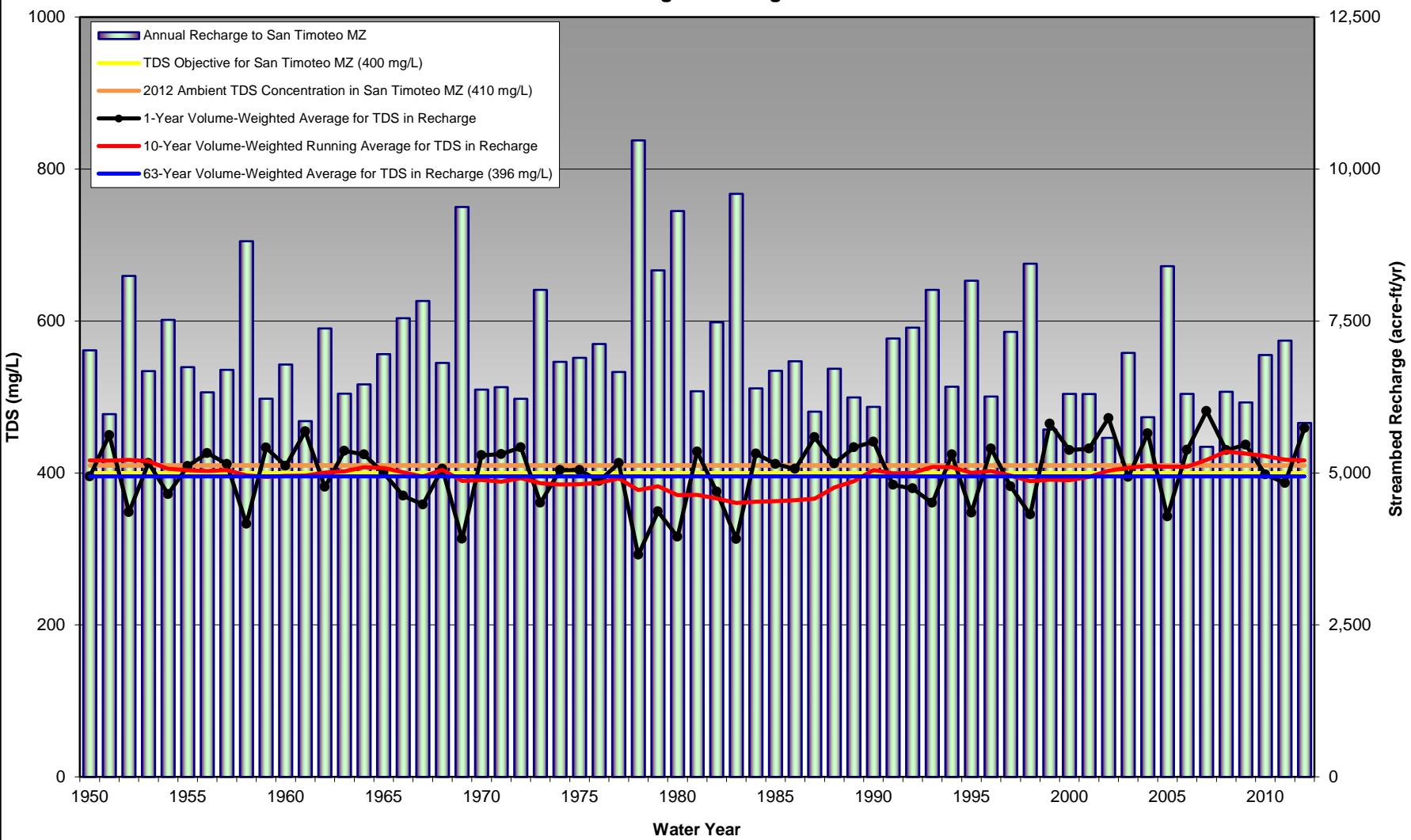


Figure 8f-TIN_ST
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the San Timoteo Management Zone
Scenario 8f - High Discharge for 2020

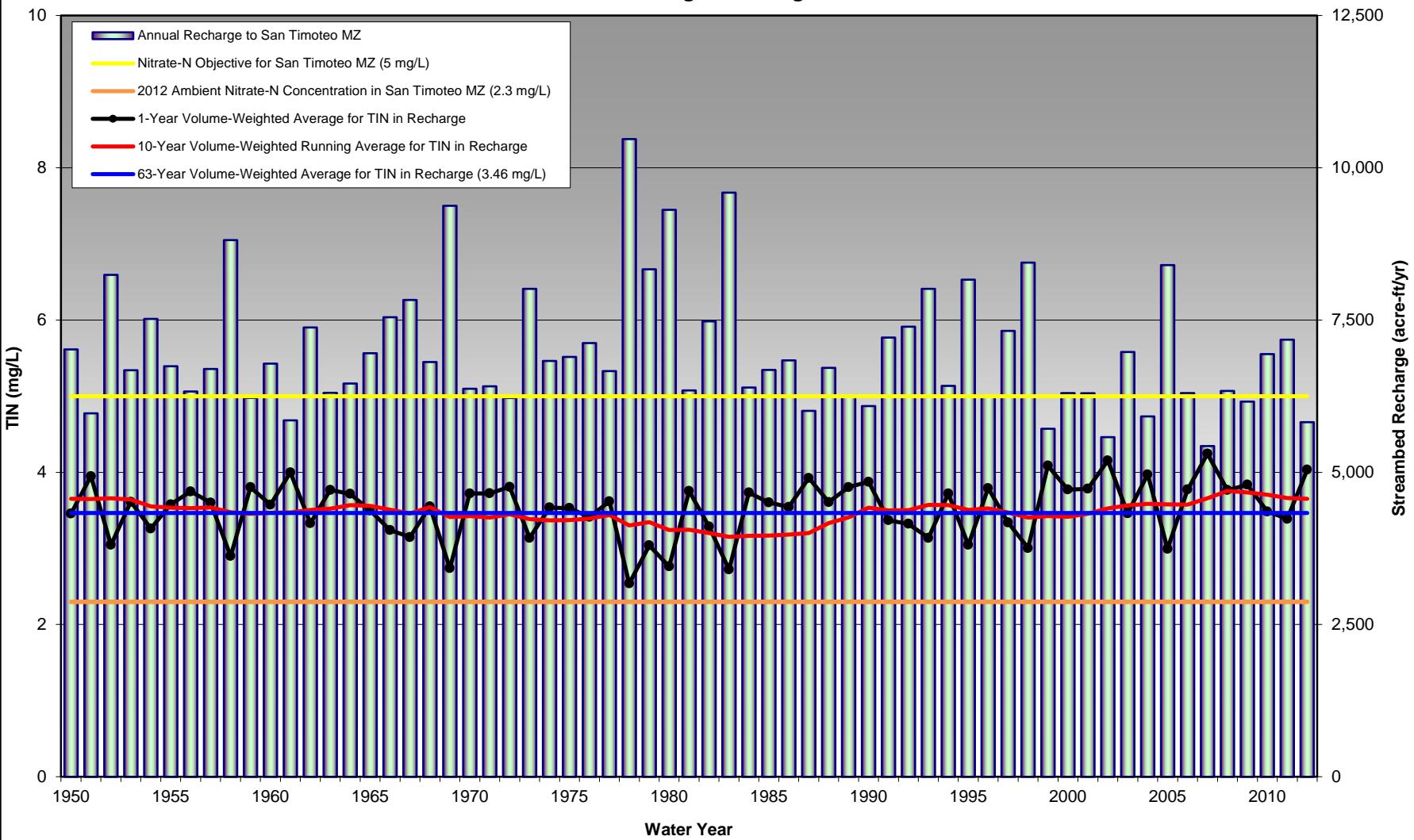


Table 8f-BU
TDS and TIN of Streambed Recharge to the Beaumont Management Zone
Scenario 8f - High Discharge for 2020

Water Year	Volume-Weighted Running Average (mg/L)					
	TDS			TIN		
	1 Year	10 Year	63 Year	1 Year	10 Year	63 Year
1950	236	245	222	2.92	3.08	2.73
1951	306	245	222	4.01	3.07	2.73
1952	183	247	222	2.16	3.12	2.73
1953	278	248	222	3.55	3.12	2.73
1954	190	235	222	2.27	2.93	2.73
1955	261	234	222	3.29	2.92	2.73
1956	236	231	222	3.01	2.88	2.73
1957	257	234	222	3.23	2.92	2.73
1958	174	227	222	1.99	2.81	2.73
1959	281	226	222	3.62	2.80	2.73
1960	279	229	222	3.54	2.84	2.73
1961	312	229	222	4.12	2.84	2.73
1962	215	235	222	2.59	2.92	2.73
1963	268	234	222	3.43	2.91	2.73
1964	278	244	222	3.53	3.06	2.73
1965	235	242	222	2.89	3.02	2.73
1966	192	236	222	2.32	2.93	2.73
1967	174	225	222	2.06	2.77	2.73
1968	240	235	222	2.98	2.93	2.73
1969	148	215	222	1.67	2.64	2.73
1970	238	212	222	3.02	2.61	2.73
1971	258	210	222	3.27	2.57	2.73
1972	262	214	222	3.35	2.63	2.73
1973	220	211	222	2.63	2.57	2.73
1974	235	208	222	2.91	2.54	2.73
1975	250	209	222	3.11	2.55	2.73
1976	213	212	222	2.61	2.59	2.73
1977	262	221	222	3.33	2.72	2.73
1978	157	208	222	1.73	2.52	2.73
1979	194	218	222	2.27	2.66	2.73
1980	156	206	222	1.76	2.48	2.73
1981	288	207	222	3.72	2.50	2.73
1982	195	202	222	2.34	2.42	2.73
1983	160	194	222	1.77	2.30	2.73
1984	264	196	222	3.37	2.32	2.73
1985	252	196	222	3.18	2.33	2.73
1986	240	197	222	2.96	2.35	2.73
1987	302	199	222	3.95	2.37	2.73
1988	280	212	222	3.56	2.56	2.73
1989	291	219	222	3.75	2.68	2.73
1990	282	237	222	3.65	2.95	2.73
1991	200	229	222	2.42	2.83	2.73
1992	219	232	222	2.67	2.88	2.73
1993	143	226	222	1.60	2.80	2.73
1994	269	227	222	3.43	2.81	2.73
1995	161	214	222	1.89	2.63	2.73
1996	246	214	222	3.13	2.64	2.73
1997	210	209	222	2.55	2.56	2.73
1998	191	203	222	2.22	2.46	2.73
1999	317	203	222	4.19	2.47	2.73
2000	245	202	222	3.09	2.44	2.73
2001	304	208	222	3.96	2.53	2.73
2002	321	212	222	4.29	2.61	2.73
2003	217	230	222	2.68	2.87	2.73
2004	307	232	222	4.05	2.90	2.73
2005	175	235	222	2.01	2.93	2.73
2006	275	237	222	3.52	2.96	2.73
2007	326	246	222	4.37	3.10	2.73
2008	264	258	222	3.34	3.28	2.73
2009	276	255	222	3.55	3.24	2.73
2010	227	253	222	2.80	3.20	2.73
2011	206	243	222	2.51	3.06	2.73
2012	308	242	222	4.04	3.05	2.73
Maximum	326	258		4.37	3.28	

Figure 8f-TDS_BU
Estimated Annual Streambed Recharge and Volume-Weighted TDS Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 8f - High Discharge for 2020

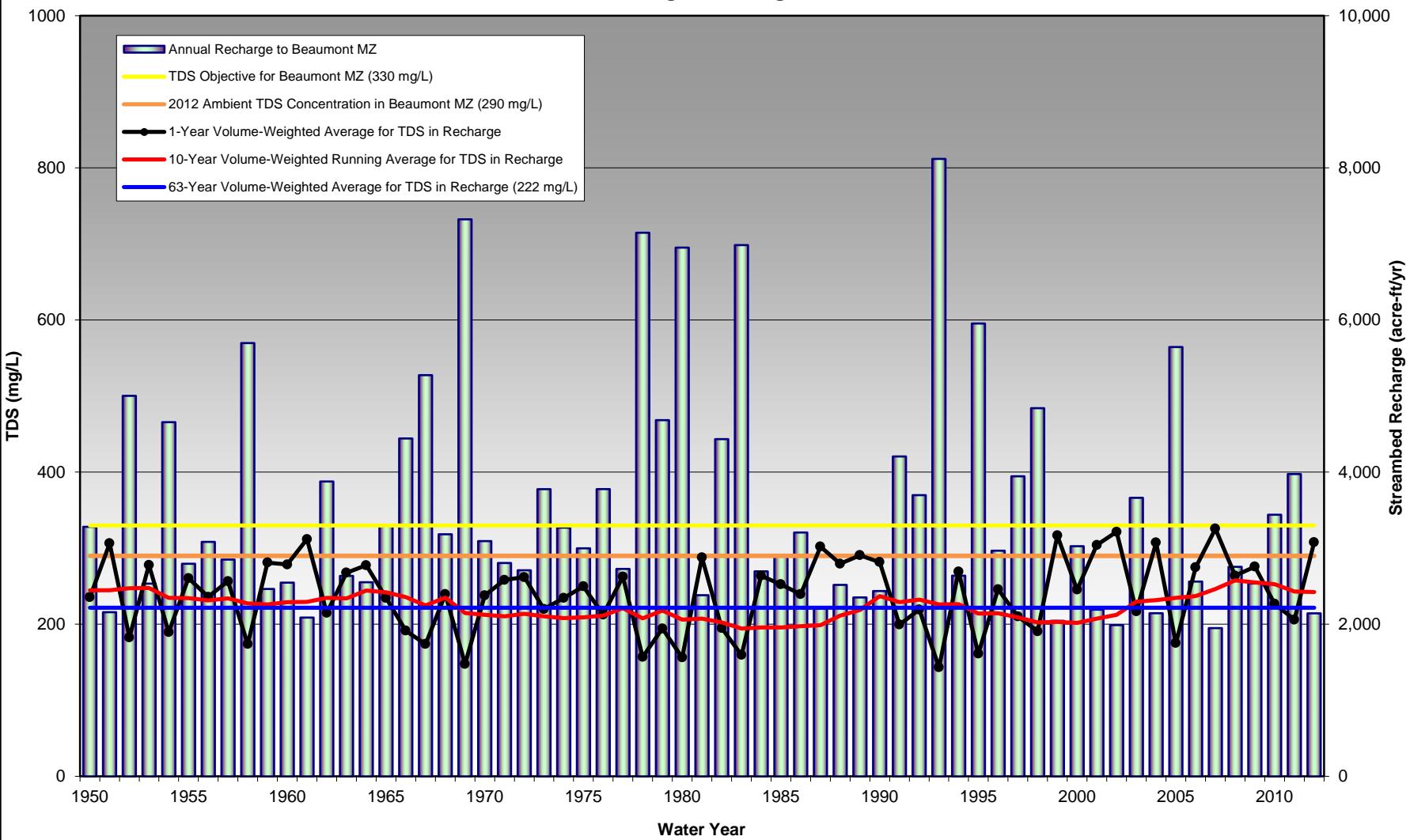


Figure 8f-TIN_BU
Estimated Annual Streambed Recharge and Volume-Weighted TIN Concentration
of the San Timoteo Creek to the Beaumont Management Zone
Scenario 8f - High Discharge for 2020

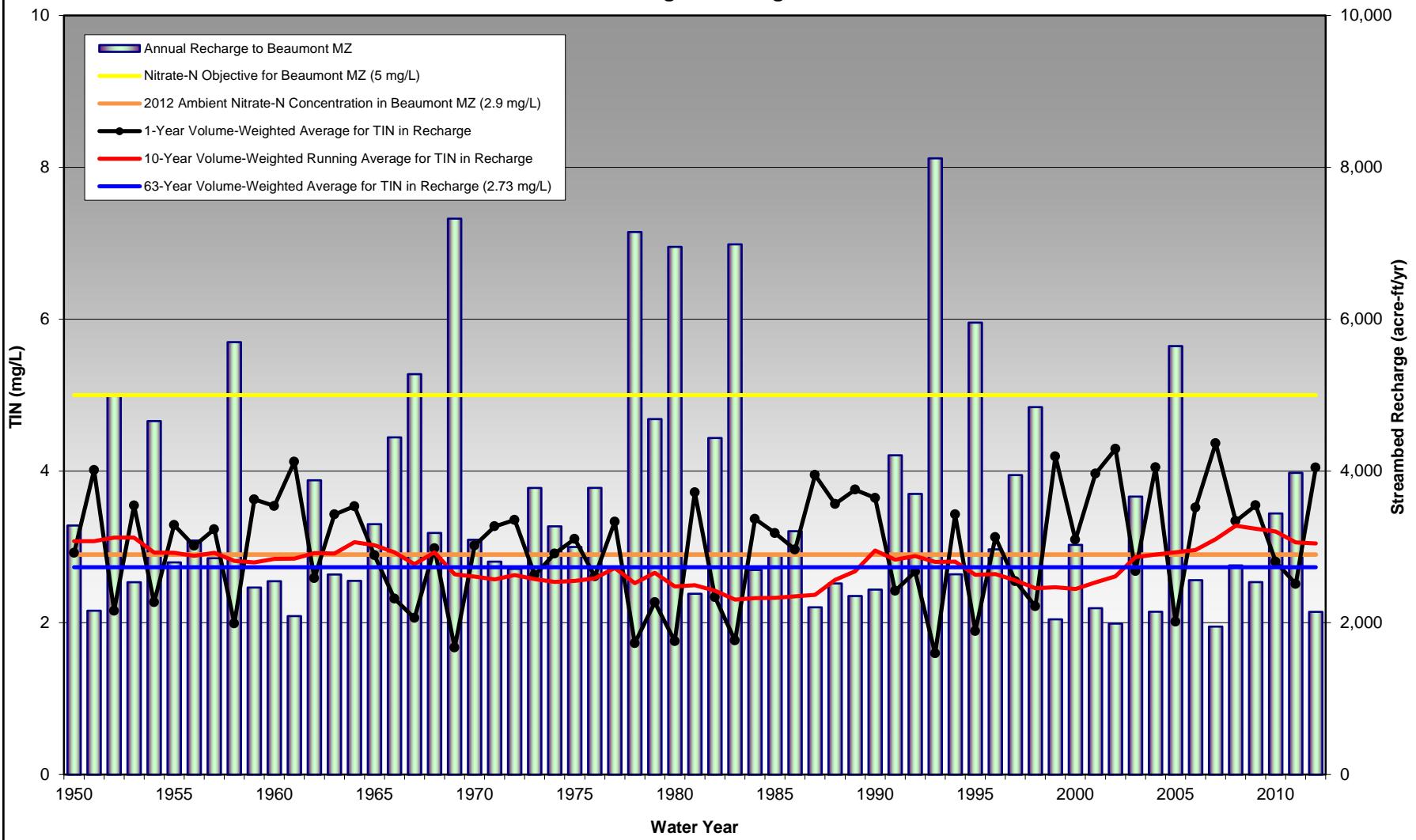


Table 8a'-BP
TDS and TIN in Santa Ana River Flow at Below Prado
Scenario 8a' - Low Discharge for 2015, High EMWD Discharge

Water Year	Volume Weighted Running Average (mg/L)											
	TDS						TIN					
	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only
1950	507	482	448	438	407	716	6.01	5.69	5.28	5.15	4.72	8.08
1951	617	494	453	440	407	716	7.33	5.84	5.34	5.17	4.72	8.08
1952	312	476	418	464	407	716	3.69	5.63	4.94	5.49	4.72	8.08
1953	564	522	470	465	407	716	6.68	6.19	5.57	5.50	4.72	8.08
1954	425	485	442	449	407	715	5.02	5.74	5.24	5.30	4.72	8.07
1955	523	488	444	446	407	714	6.19	5.78	5.26	5.27	4.72	8.06
1956	378	440	411	430	407	716	4.55	5.22	4.88	5.09	4.72	8.08
1957	536	485	471	442	407	716	6.34	5.76	5.59	5.23	4.72	8.08
1958	343	441	420	443	407	672	3.99	5.22	4.97	5.24	4.72	7.57
1959	608	477	444	443	407	716	7.23	5.66	5.25	5.24	4.72	8.08
1960	559	485	448	446	407	716	6.62	5.75	5.30	5.28	4.72	8.08
1961	652	540	494	447	407	688	7.78	6.39	5.83	5.30	4.72	7.76
1962	435	519	473	472	407	716	5.15	6.15	5.59	5.59	4.72	8.08
1963	496	550	531	467	407	715	5.90	6.54	6.31	5.54	4.72	8.08
1964	557	540	524	480	407	716	6.61	6.41	6.22	5.69	4.72	8.08
1965	493	527	512	477	407	697	5.81	6.25	6.07	5.66	4.72	7.88
1966	351	466	448	469	407	716	4.11	5.52	5.30	5.55	4.72	8.08
1967	306	441	406	436	407	694	3.56	5.20	4.78	5.14	4.72	7.82
1968	461	434	401	454	407	715	5.50	5.12	4.72	5.37	4.72	8.08
1969	214	365	307	375	407	682	2.35	4.27	3.54	4.38	4.72	7.67
1970	504	367	308	373	407	714	5.97	4.30	3.54	4.35	4.72	8.06
1971	522	402	320	369	407	712	6.18	4.71	3.69	4.31	4.72	8.04
1972	508	442	345	372	407	677	6.04	5.21	3.99	4.34	4.72	7.63
1973	421	434	343	368	407	716	4.92	5.09	3.96	4.29	4.72	8.08
1974	444	480	473	363	407	716	5.27	5.68	5.60	4.23	4.72	8.08
1975	529	485	478	366	407	716	6.27	5.74	5.66	4.27	4.72	8.09
1976	527	486	480	378	407	716	6.23	5.75	5.67	4.42	4.72	8.08
1977	524	489	483	400	407	308	6.22	5.78	5.71	4.68	4.72	3.42
1978	254	456	396	367	407	716	2.89	5.37	4.64	4.27	4.72	8.08
1979	393	446	389	423	407	716	4.53	5.23	4.52	4.96	4.72	8.08
1980	268	393	331	379	407	710	2.52	4.47	3.61	4.29	4.72	8.02
1981	564	401	330	381	407	716	6.69	4.57	3.60	4.30	4.72	8.09
1982	379	372	319	374	407	713	4.47	4.22	3.49	4.22	4.72	8.06
1983	304	382	334	359	407	404	3.20	4.28	3.59	4.01	4.72	4.48
1984	507	404	341	362	407	712	6.01	4.58	3.67	4.04	4.72	8.04
1985	493	449	405	360	407	716	5.84	5.24	4.64	4.01	4.72	8.09
1986	448	426	394	357	407	714	5.28	4.96	4.52	3.98	4.72	8.06
1987	591	469	421	357	407	716	7.04	5.47	4.82	3.99	4.72	8.08
1988	499	508	501	388	407	714	5.91	6.02	5.93	4.34	4.72	8.07
1989	560	518	510	397	407	716	6.64	6.14	6.03	4.45	4.72	8.08
1990	570	534	523	453	407	716	6.78	6.33	6.20	5.27	4.72	8.08
1991	388	522	502	437	407	715	4.58	6.19	5.95	5.09	4.72	8.08
1992	410	485	467	442	407	716	4.82	5.75	5.52	5.14	4.72	8.09
1993	250	436	360	412	407	715	2.48	5.06	4.03	4.73	4.72	8.08
1994	565	436	362	415	407	716	6.69	5.07	4.06	4.78	4.72	8.09
1995	301	383	331	391	407	716	3.23	4.36	3.65	4.44	4.72	8.09
1996	463	398	336	391	407	716	5.52	4.55	3.70	4.45	4.72	8.08
1997	447	405	338	385	407	716	5.24	4.63	3.72	4.38	4.72	8.08
1998	306	416	375	367	407	688	3.55	4.85	4.31	4.16	4.72	7.76
1999	640	431	376	369	407	716	7.62	5.03	4.32	4.18	4.72	8.08
2000	561	483	435	369	407	716	6.65	5.72	5.13	4.18	4.72	8.08
2001	563	503	450	378	407	716	6.70	5.95	5.31	4.29	4.72	8.08
2002	668	548	478	388	407	716	7.98	6.50	5.65	4.40	4.72	8.08
2003	363	559	521	429	407	716	4.32	6.65	6.19	5.01	4.72	8.08
2004	575	546	512	428	407	716	6.82	6.49	6.09	5.00	4.72	8.08
2005	258	485	398	415	407	716	2.96	5.76	4.69	4.89	4.72	8.08
2006	548	482	395	420	407	716	6.47	5.71	4.64	4.95	4.72	8.08
2007	691	487	396	432	407	716	8.26	5.76	4.66	5.09	4.72	8.08
2008	548	524	428	468	407	716	6.47	6.19	5.02	5.53	4.72	8.08
2009	555	520	428	464	407	716	6.58	6.14	5.02	5.49	4.72	8.08
2010	403	549	525	450	407	716	4.73	6.50	6.21	5.31	4.72	8.08
2011	336	506	461	425	407	684	3.91	5.99	5.43	5.01	4.72	7.70
2012	609	490	455	423	407	715	7.23	5.78	5.36	4.98	4.72	8.07
Maximum	691	559	531	480	407	716	8.26	6.65	6.31	5.69	4.72	8.09

Figure 8a'-TDS_Reach 3
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8a' - Low Discharge for 2015, High EMWD Discharge

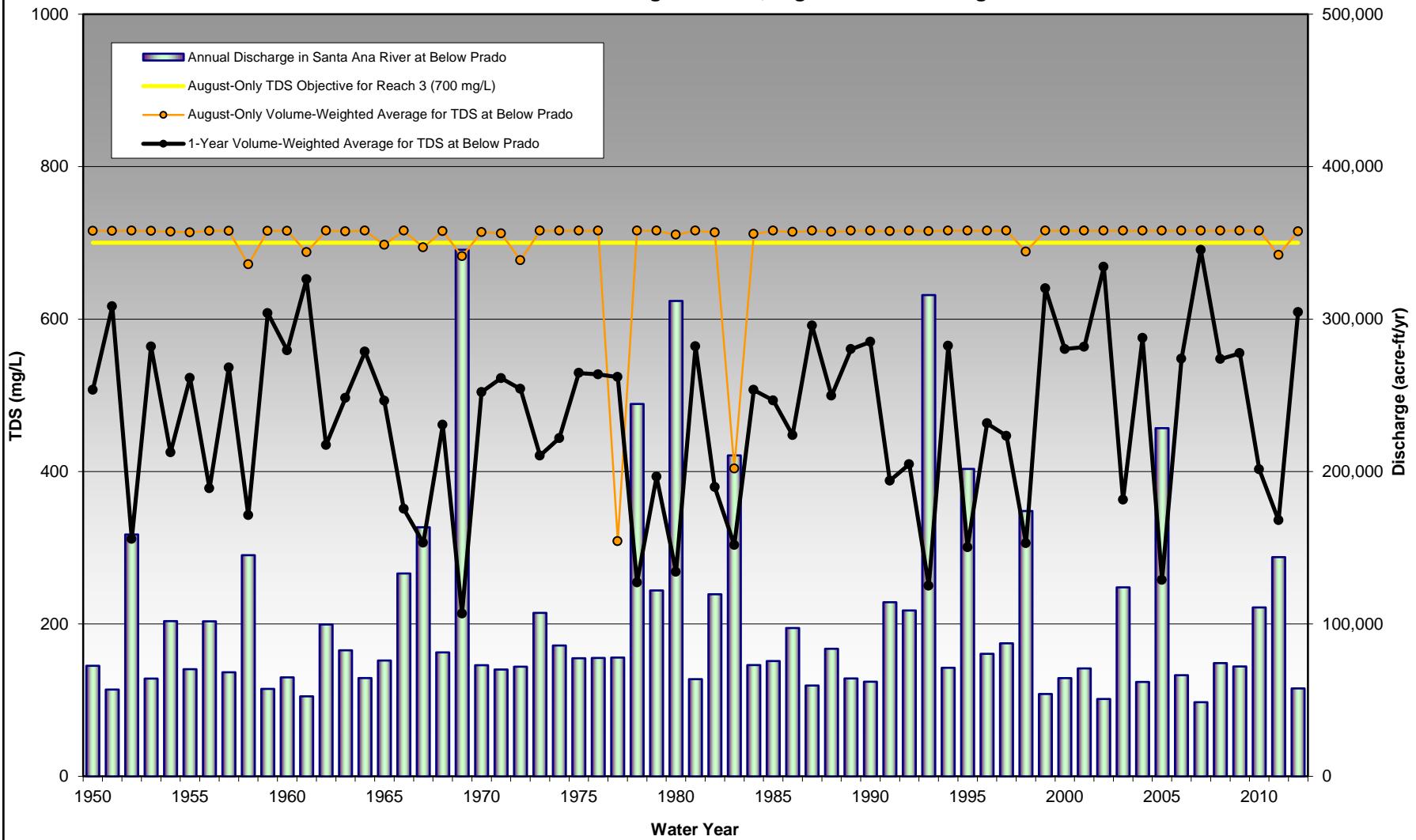


Figure 8a'-TIN_BP
Estimated Annual Discharge and Volume-Weighted TIN Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8a' - Low Discharge for 2015, High EMWD Discharge

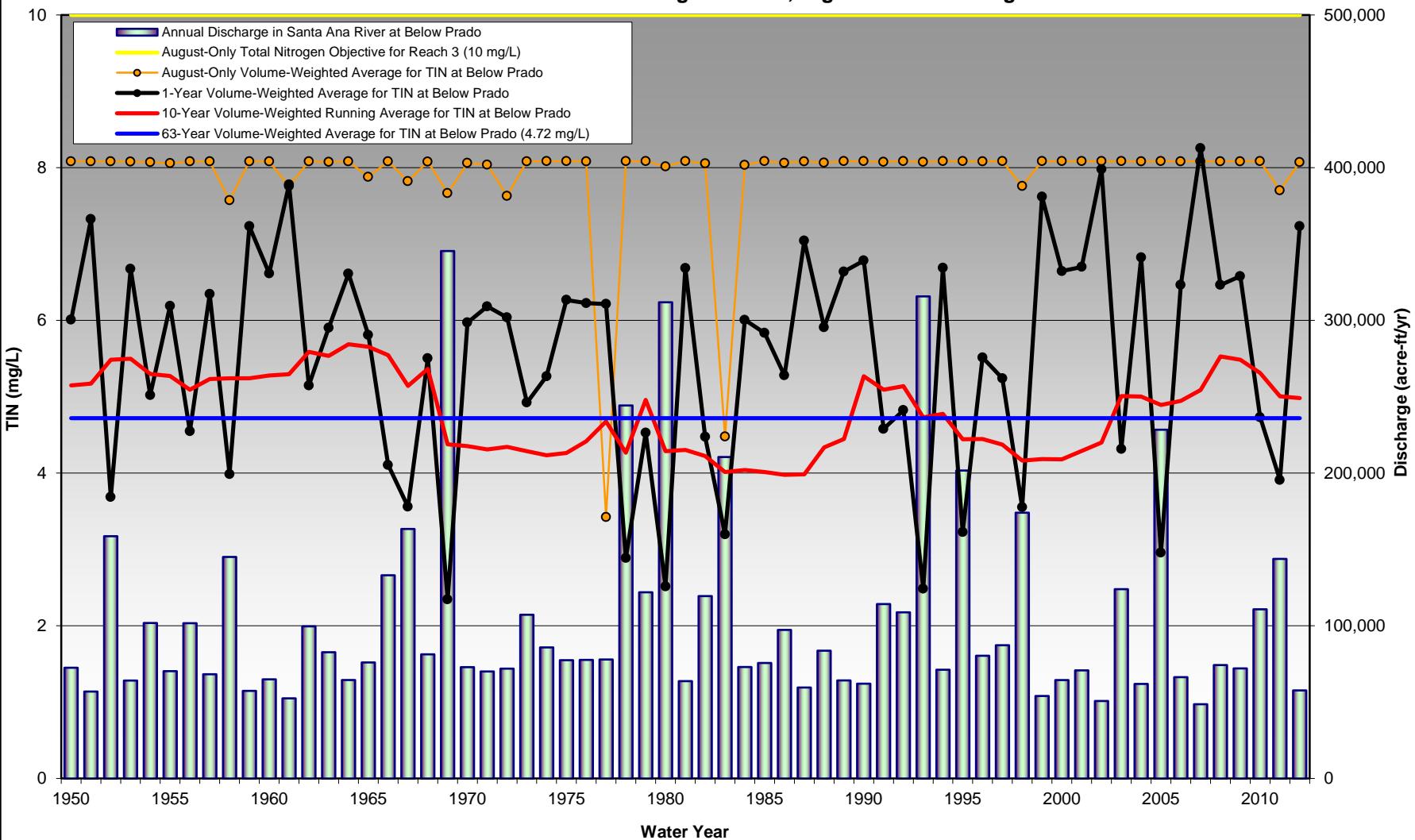


Figure 8a'-TDS_Reach 2
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 2 Objective
Scenario 8a' - Low Discharge for 2015, High EMWD Discharge

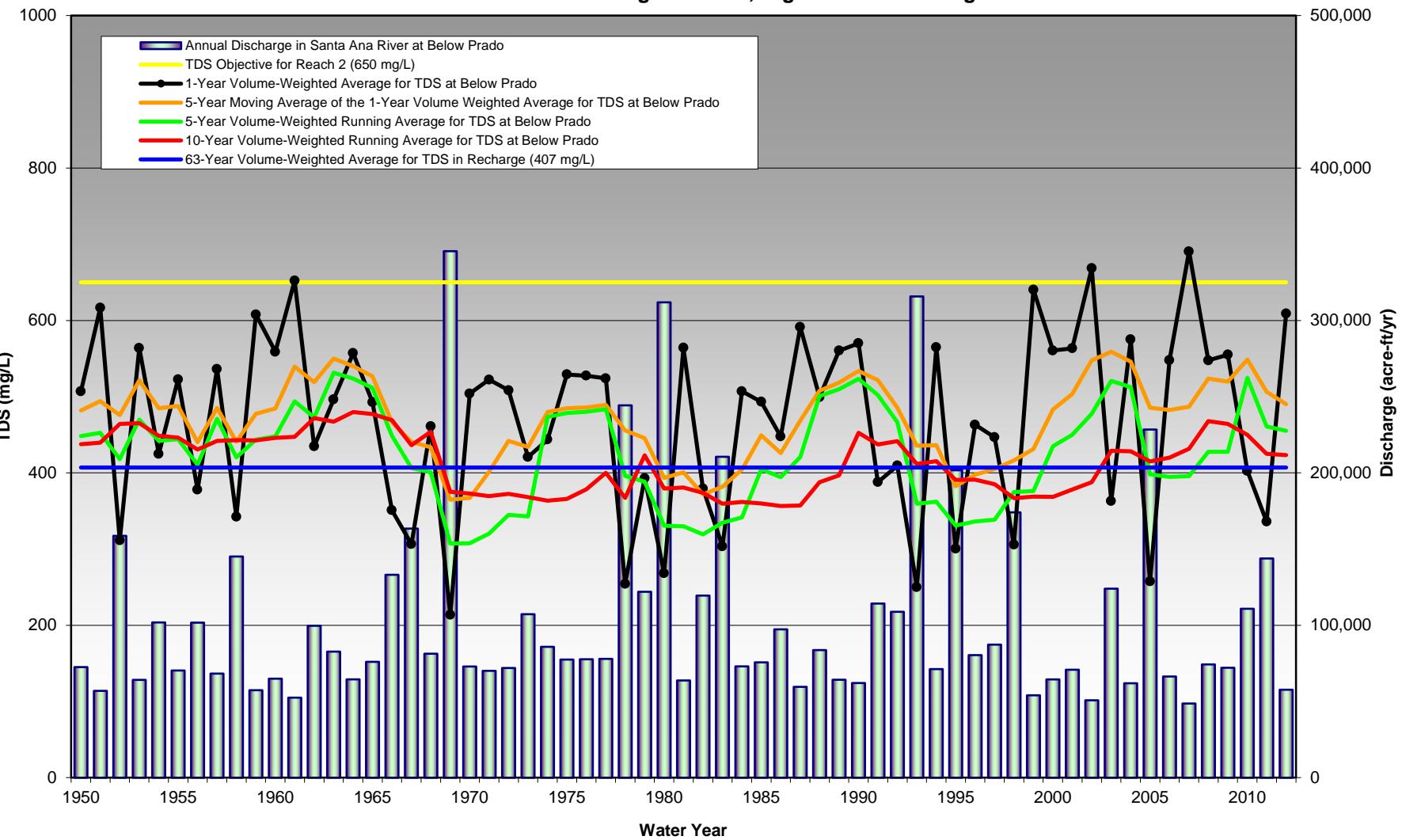


Table 8b'-BP
TDS and TIN in Santa Ana River Flow at Below Prado
Scenario 8b' - Intermediate Discharge for 2015, High EMWD Discharge

Water Year	Volume Weighted Running Average (mg/L)											
	TDS						TIN					
	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only
1950	510	485	453	443	413	702	6.10	5.77	5.38	5.25	4.83	8.06
1951	614	496	458	445	413	702	7.36	5.91	5.44	5.28	4.83	8.06
1952	318	478	424	469	413	702	3.78	5.70	5.04	5.58	4.83	8.06
1953	564	523	474	470	413	702	6.74	6.25	5.67	5.60	4.83	8.06
1954	430	487	447	454	413	701	5.12	5.82	5.34	5.40	4.83	8.05
1955	525	490	449	451	413	700	6.27	5.85	5.36	5.37	4.83	8.04
1956	385	445	417	436	413	702	4.67	5.32	4.99	5.20	4.83	8.06
1957	538	489	475	447	413	702	6.42	5.84	5.69	5.34	4.83	8.06
1958	348	445	426	448	413	663	4.08	5.31	5.08	5.35	4.83	7.60
1959	606	481	449	448	413	702	7.27	5.74	5.36	5.35	4.83	8.06
1960	560	487	453	451	413	702	6.68	5.83	5.41	5.38	4.83	8.06
1961	647	540	498	453	413	677	7.78	6.45	5.93	5.40	4.83	7.77
1962	440	520	477	476	413	702	5.25	6.21	5.69	5.69	4.83	8.06
1963	500	551	534	472	413	701	5.99	6.59	6.39	5.63	4.83	8.05
1964	558	541	527	484	413	702	6.68	6.48	6.30	5.78	4.83	8.06
1965	497	528	515	482	413	686	5.91	6.32	6.15	5.75	4.83	7.87
1966	357	470	454	474	413	702	4.21	5.61	5.40	5.64	4.83	8.06
1967	312	445	412	442	413	683	3.66	5.29	4.89	5.25	4.83	7.83
1968	466	438	407	459	413	702	5.61	5.21	4.83	5.47	4.83	8.06
1969	217	370	313	381	413	673	2.40	4.36	3.64	4.49	4.83	7.68
1970	508	372	314	379	413	701	6.07	4.39	3.64	4.46	4.83	8.04
1971	525	406	327	376	413	699	6.27	4.80	3.80	4.42	4.83	8.02
1972	512	446	351	379	413	668	6.13	5.29	4.10	4.45	4.83	7.65
1973	426	438	349	374	413	702	5.02	5.18	4.06	4.40	4.83	8.06
1974	449	484	478	370	413	702	5.38	5.77	5.70	4.34	4.83	8.06
1975	531	489	483	372	413	702	6.34	5.83	5.75	4.37	4.83	8.06
1976	530	490	484	385	413	702	6.30	5.83	5.77	4.52	4.83	8.06
1977	526	493	487	406	413	318	6.29	5.87	5.80	4.79	4.83	3.58
1978	259	459	402	373	413	702	2.96	5.45	4.74	4.37	4.83	8.06
1979	398	449	394	428	413	702	4.63	5.30	4.62	5.06	4.83	8.06
1980	272	397	336	385	413	697	2.58	4.55	3.70	4.39	4.83	8.00
1981	565	404	335	387	413	702	6.75	4.64	3.70	4.41	4.83	8.06
1982	385	376	325	379	413	700	4.58	4.30	3.58	4.32	4.83	8.04
1983	308	386	340	365	413	413	3.28	4.36	3.68	4.11	4.83	4.65
1984	510	408	347	368	413	698	6.10	4.66	3.77	4.14	4.83	8.02
1985	497	453	410	365	413	702	5.93	5.33	4.74	4.12	4.83	8.06
1986	453	431	400	362	413	701	5.37	5.05	4.62	4.08	4.83	8.04
1987	591	472	426	363	413	702	7.09	5.55	4.92	4.09	4.83	8.06
1988	503	511	504	393	413	701	5.99	6.10	6.02	4.44	4.83	8.05
1989	561	521	513	402	413	702	6.71	6.22	6.12	4.55	4.83	8.06
1990	570	536	526	457	413	702	6.85	6.40	6.28	5.37	4.83	8.06
1991	394	524	506	443	413	702	4.68	6.26	6.04	5.20	4.83	8.06
1992	415	489	471	447	413	702	4.93	5.83	5.62	5.24	4.83	8.06
1993	254	439	366	417	413	702	2.55	5.14	4.13	4.84	4.83	8.05
1994	565	440	368	421	413	702	6.75	5.15	4.16	4.88	4.83	8.06
1995	306	387	336	397	413	702	3.31	4.44	3.74	4.55	4.83	8.06
1996	468	402	342	397	413	702	5.62	4.63	3.80	4.55	4.83	8.06
1997	452	409	344	391	413	702	5.35	4.71	3.82	4.48	4.83	8.06
1998	311	421	381	373	413	678	3.64	4.93	4.41	4.27	4.83	7.77
1999	636	435	382	375	413	702	7.63	5.11	4.43	4.29	4.83	8.06
2000	561	486	440	375	413	702	6.71	5.79	5.23	4.29	4.83	8.06
2001	564	505	455	384	413	702	6.76	6.02	5.41	4.40	4.83	8.06
2002	662	547	482	394	413	702	7.97	6.54	5.74	4.51	4.83	8.06
2003	369	559	523	434	413	702	4.42	6.70	6.28	5.11	4.83	8.06
2004	575	546	516	434	413	702	6.88	6.55	6.18	5.11	4.83	8.06
2005	263	487	404	421	413	702	3.04	5.81	4.80	5.00	4.83	8.06
2006	550	484	401	426	413	702	6.54	5.77	4.75	5.05	4.83	8.06
2007	683	488	402	437	413	702	8.23	5.82	4.77	5.20	4.83	8.06
2008	549	524	433	472	413	702	6.53	6.24	5.13	5.63	4.83	8.06
2009	556	520	433	469	413	702	6.64	6.20	5.13	5.58	4.83	8.06
2010	408	549	527	455	413	702	4.83	6.56	6.29	5.41	4.83	8.06
2011	342	508	466	431	413	674	4.01	6.05	5.53	5.11	4.83	7.72
2012	607	493	460	429	413	701	7.27	5.86	5.46	5.09	4.83	8.05
Maximum	683	559	534	484	413	702	8.23	6.70	6.39	5.78	4.83	8.06

Figure 8b'-TDS_Reach 3
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8b' - Intermediate Discharge for 2015, High EMWD Discharge

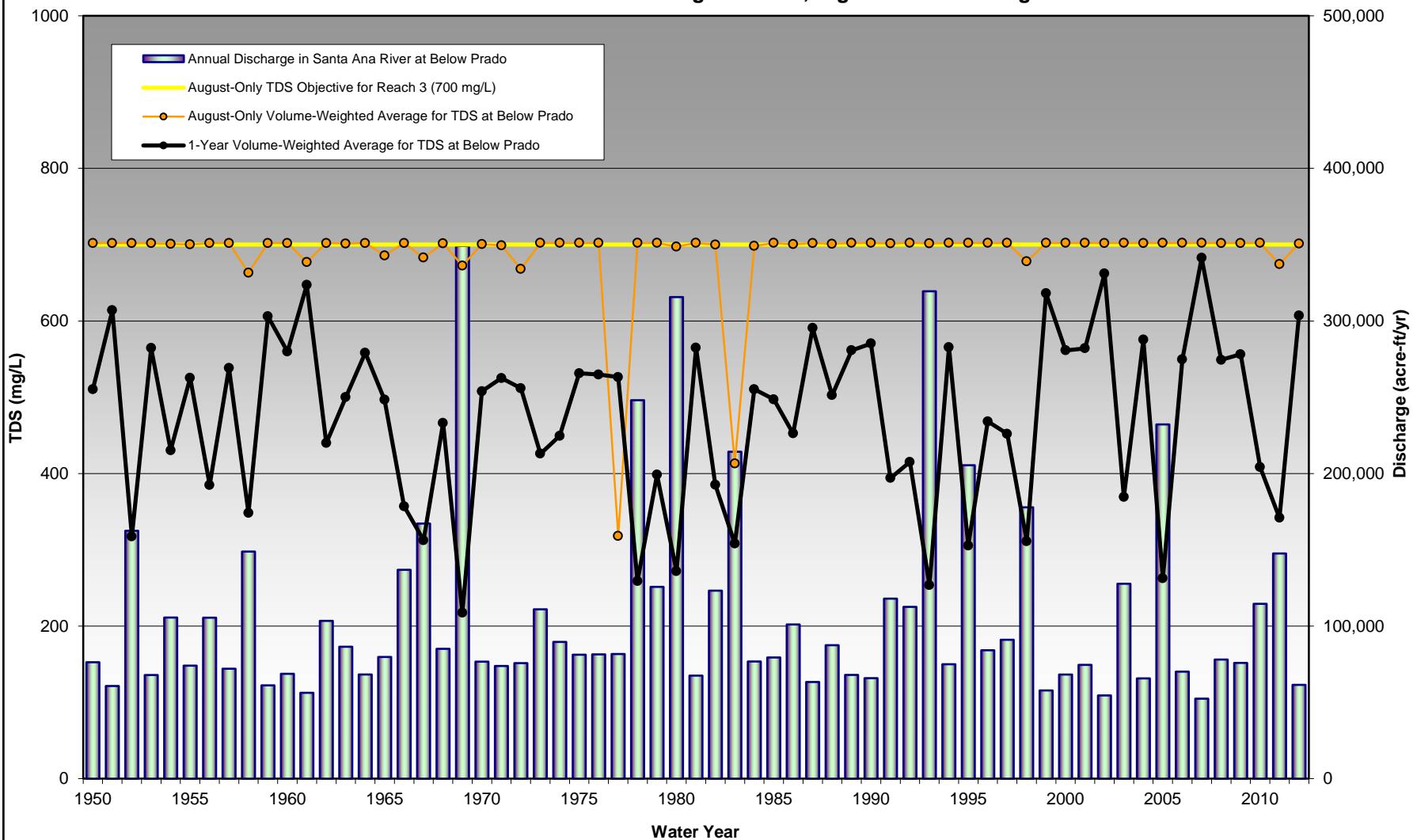


Figure 8b'-TIN_BP
Estimated Annual Discharge and Volume-Weighted TIN Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8b' - Intermediate Discharge for 2015, High EMWD Discharge

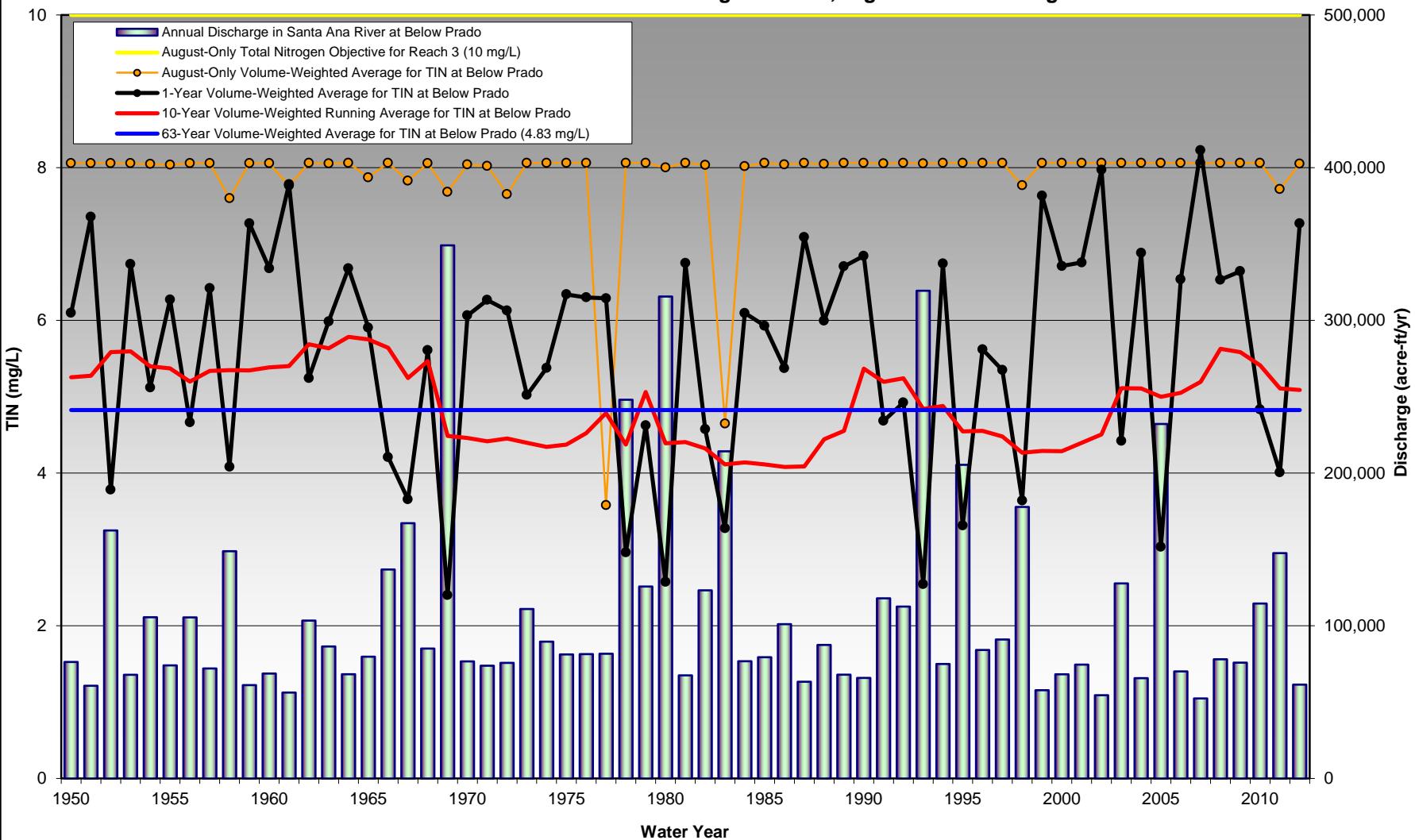


Figure 8b'-TDS_Reach 2
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 2 Objective
Scenario 8b' - Intermediate Discharge for 2015, High EMWD Discharge

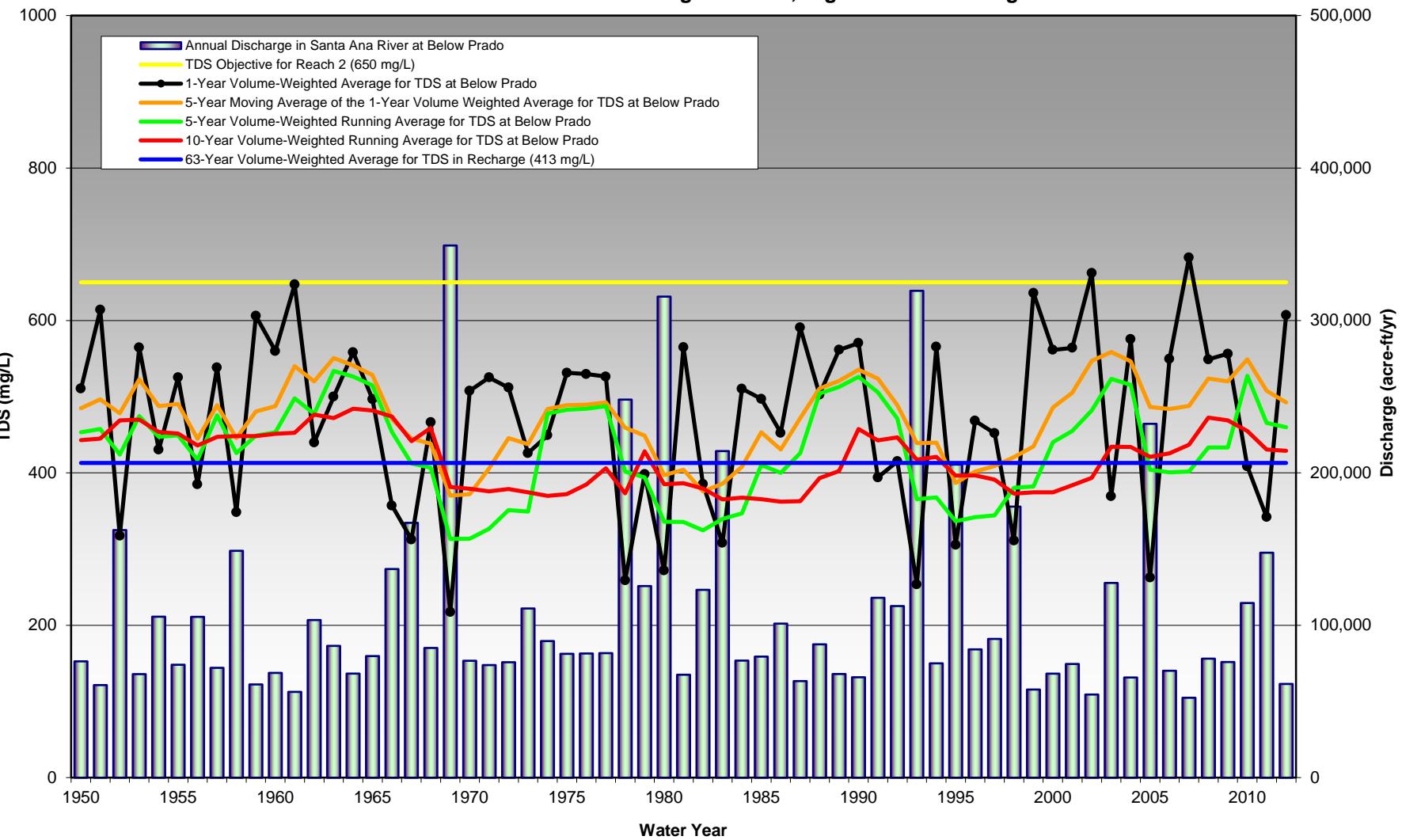


Table 8c'-BP
TDS and TIN in Santa Ana River Flow at Below Prado
Scenario 8c' - High Discharge for 2015, High EMWD Discharge

Water Year	Volume Weighted Running Average (mg/L)											
	TDS						TIN					
	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only
1950	517	493	467	457	428	686	6.35	6.03	5.70	5.57	5.15	8.08
1951	607	502	470	458	428	686	7.47	6.15	5.74	5.59	5.15	8.08
1952	336	484	439	481	428	686	4.10	5.93	5.36	5.88	5.15	8.08
1953	565	525	485	482	428	686	6.93	6.45	5.96	5.90	5.15	8.08
1954	446	494	461	467	428	685	5.46	6.06	5.65	5.71	5.15	8.07
1955	530	497	463	465	428	684	6.51	6.09	5.67	5.68	5.15	8.06
1956	402	456	432	450	428	686	4.99	5.60	5.31	5.51	5.15	8.08
1957	542	497	486	461	428	686	6.64	6.11	5.98	5.64	5.15	8.08
1958	366	457	441	461	428	653	4.41	5.60	5.39	5.65	5.15	7.68
1959	600	488	462	461	428	686	7.40	5.99	5.66	5.65	5.15	8.08
1960	561	494	466	464	428	686	6.88	6.06	5.71	5.69	5.15	8.08
1961	634	540	506	465	428	665	7.84	6.63	6.20	5.70	5.15	7.82
1962	455	523	488	487	428	686	5.57	6.42	5.98	5.98	5.15	8.08
1963	510	552	539	483	428	685	6.28	6.79	6.63	5.93	5.15	8.07
1964	559	544	532	494	428	686	6.88	6.69	6.55	6.07	5.15	8.08
1965	505	533	522	492	428	672	6.17	6.55	6.41	6.04	5.15	7.91
1966	376	481	467	485	428	686	4.55	5.89	5.71	5.94	5.15	8.08
1967	331	456	428	455	428	670	3.98	5.57	5.22	5.56	5.15	7.88
1968	477	450	423	472	428	686	5.89	5.49	5.15	5.77	5.15	8.08
1969	230	384	331	398	428	661	2.60	4.64	3.94	4.81	5.15	7.75
1970	515	386	331	396	428	685	6.32	4.67	3.95	4.79	5.15	8.06
1971	530	417	344	393	428	684	6.51	5.06	4.11	4.75	5.15	8.05
1972	518	454	368	396	428	657	6.38	5.54	4.42	4.78	5.15	7.72
1973	441	447	366	391	428	686	5.35	5.43	4.38	4.72	5.15	8.08
1974	462	493	488	387	428	686	5.67	6.05	5.98	4.67	5.15	8.08
1975	538	498	493	389	428	686	6.60	6.10	6.04	4.70	5.15	8.08
1976	536	499	495	401	428	686	6.57	6.12	6.06	4.85	5.15	8.08
1977	534	502	498	422	428	331	6.56	6.15	6.10	5.11	5.15	3.81
1978	274	469	418	390	428	686	3.21	5.72	5.07	4.70	5.15	8.08
1979	415	459	411	443	428	686	4.96	5.58	4.96	5.38	5.15	8.08
1980	284	409	353	401	428	682	2.80	4.82	4.02	4.72	5.15	8.03
1981	565	414	352	403	428	686	6.94	4.89	4.00	4.74	5.15	8.08
1982	403	388	341	396	428	684	4.92	4.57	3.88	4.66	5.15	8.06
1983	324	398	356	382	428	425	3.56	4.64	3.99	4.44	5.15	4.90
1984	517	419	363	384	428	683	6.35	4.91	4.08	4.47	5.15	8.04
1985	505	463	426	382	428	686	6.20	5.59	5.07	4.44	5.15	8.08
1986	466	443	416	379	428	685	5.69	5.34	4.95	4.40	5.15	8.06
1987	587	480	440	379	428	686	7.24	5.81	5.24	4.41	5.15	8.08
1988	512	518	513	409	428	685	6.28	6.35	6.29	4.77	5.15	8.07
1989	562	527	520	418	428	686	6.90	6.46	6.38	4.88	5.15	8.08
1990	570	539	532	470	428	686	7.03	6.63	6.53	5.68	5.15	8.08
1991	412	529	514	456	428	686	5.03	6.50	6.31	5.51	5.15	8.07
1992	432	497	483	460	428	686	5.26	6.10	5.92	5.56	5.15	8.08
1993	266	448	382	432	428	686	2.76	5.40	4.46	5.16	5.15	8.07
1994	568	449	385	436	428	686	6.97	5.41	4.50	5.21	5.15	8.08
1995	322	400	354	413	428	686	3.60	4.72	4.06	4.88	5.15	8.08
1996	479	413	359	413	428	686	5.91	4.90	4.12	4.88	5.15	8.08
1997	464	420	361	407	428	686	5.64	4.98	4.13	4.81	5.15	8.08
1998	329	432	397	389	428	666	3.94	5.21	4.74	4.59	5.15	7.83
1999	625	444	398	391	428	686	7.71	5.36	4.75	4.62	5.15	8.08
2000	562	492	454	391	428	686	6.91	6.02	5.54	4.61	5.15	8.08
2001	566	509	468	400	428	686	6.98	6.24	5.71	4.72	5.15	8.08
2002	646	546	492	409	428	686	8.00	6.71	6.03	4.83	5.15	8.08
2003	388	557	530	449	428	686	4.76	6.87	6.53	5.43	5.15	8.08
2004	574	547	523	448	428	686	7.06	6.74	6.44	5.42	5.15	8.08
2005	279	491	420	436	428	686	3.30	6.02	5.13	5.32	5.15	8.08
2006	552	488	417	440	428	686	6.75	5.98	5.08	5.37	5.15	8.08
2007	663	491	418	451	428	686	8.21	6.02	5.09	5.51	5.15	8.08
2008	553	524	447	484	428	686	6.78	6.42	5.45	5.92	5.15	8.08
2009	560	521	448	481	428	686	6.88	6.38	5.45	5.89	5.15	8.08
2010	425	550	533	468	428	686	5.17	6.76	6.54	5.72	5.15	8.08
2011	360	512	478	445	428	662	4.34	6.28	5.84	5.43	5.15	7.78
2012	601	500	473	444	428	685	7.40	6.11	5.77	5.41	5.15	8.07
Maximum	663	557	539	494	428	686	8.21	6.87	6.63	6.07	5.15	8.08

Figure 8c'-TDS_Reach 3
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8c' - High Discharge for 2015, High EMWD Discharge

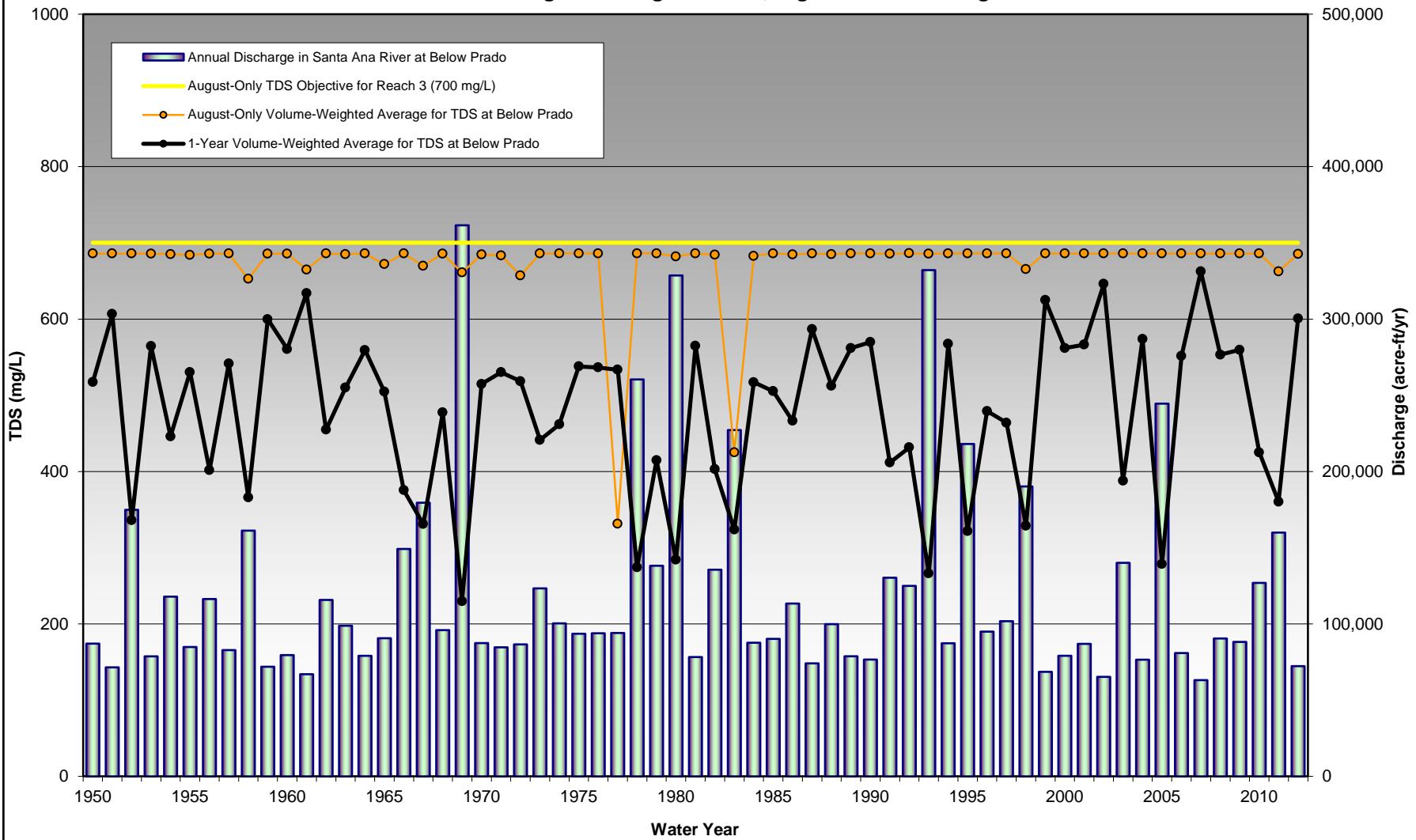


Figure 8c'-TIN_BP
Estimated Annual Discharge and Volume-Weighted TIN Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8c' - High Discharge for 2015, High EMWD Discharge

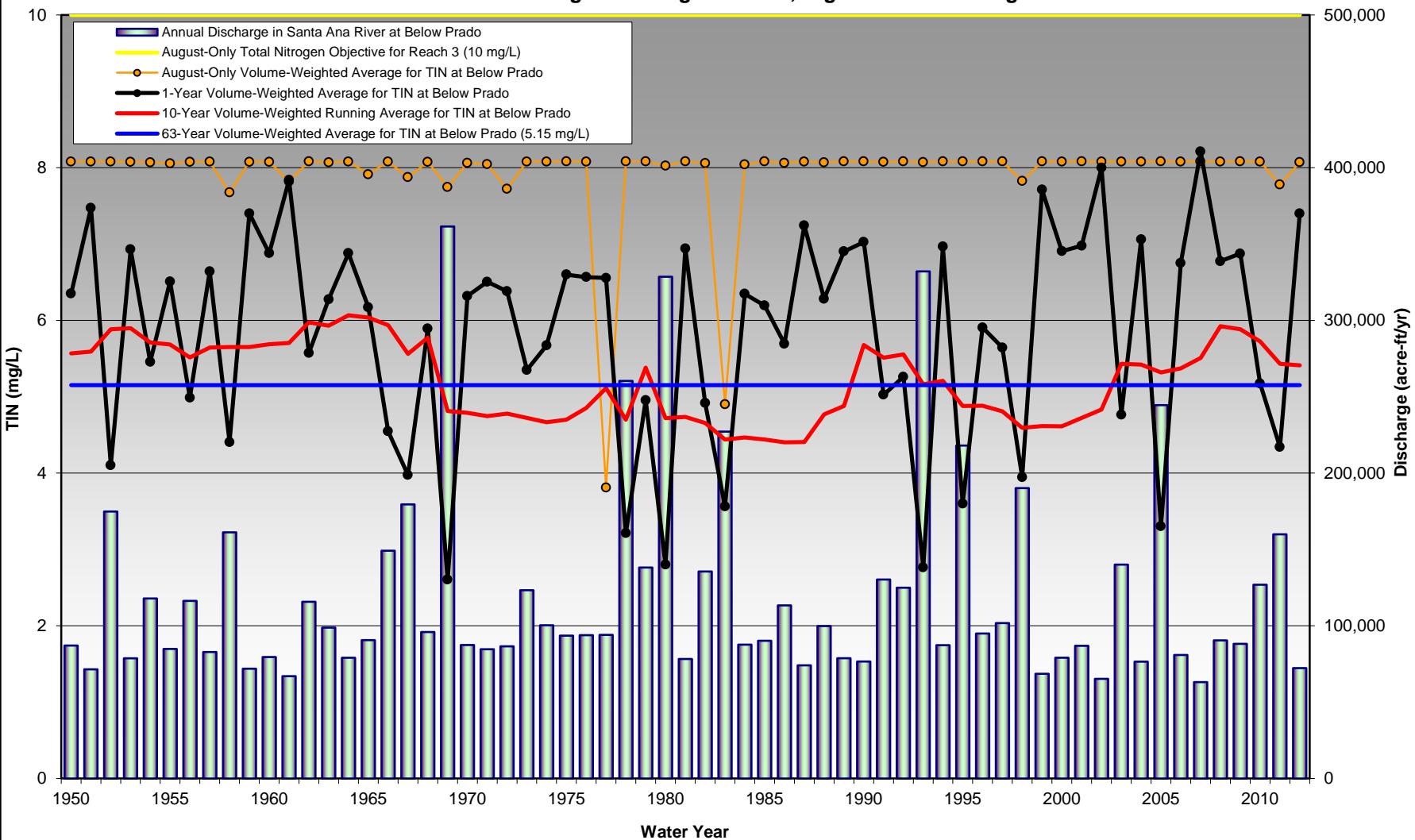


Figure 8c'-TDS_Reach 2
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 2 Objective
Scenario 8c' - High Discharge for 2015, High EMWD Discharge

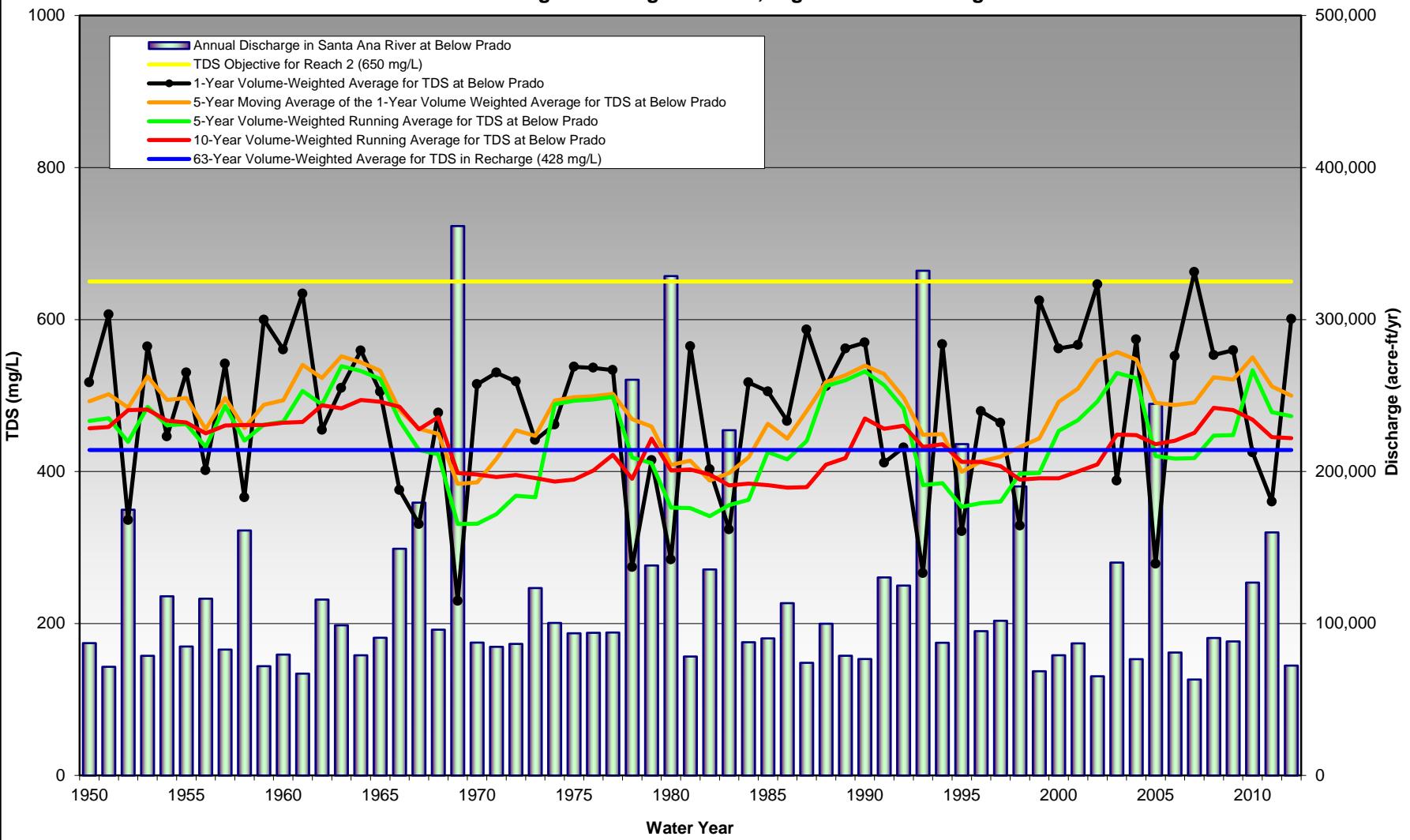


Table 8d'-BP
TDS and TIN in Santa Ana River Flow at Below Prado
Scenario 8d' - Low Discharge for 2020, High EMWD Discharge

Water Year	Volume Weighted Running Average (mg/L)											
	TDS						TIN					
	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only
1950	500	477	440	429	398	737	5.83	5.54	5.10	4.97	4.55	8.08
1951	621	490	444	431	398	737	7.25	5.70	5.15	4.99	4.55	8.08
1952	301	472	408	456	398	737	3.52	5.50	4.75	5.31	4.55	8.08
1953	562	519	461	457	398	737	6.54	6.06	5.38	5.32	4.55	8.08
1954	416	480	433	440	398	736	4.85	5.60	5.05	5.12	4.55	8.07
1955	517	483	435	437	398	735	6.02	5.64	5.07	5.09	4.55	8.05
1956	365	432	400	421	398	737	4.33	5.05	4.68	4.90	4.55	8.08
1957	532	478	462	432	398	737	6.19	5.59	5.40	5.04	4.55	8.08
1958	334	433	411	434	398	683	3.84	5.05	4.78	5.06	4.55	7.48
1959	611	472	434	433	398	737	7.14	5.50	5.06	5.05	4.55	8.08
1960	556	480	439	437	398	737	6.47	5.60	5.12	5.09	4.55	8.08
1961	661	539	488	438	398	702	7.75	6.28	5.67	5.11	4.55	7.70
1962	426	517	465	464	398	737	4.97	6.03	5.42	5.41	4.55	8.08
1963	490	549	527	459	398	736	5.74	6.41	6.16	5.36	4.55	8.07
1964	554	537	519	472	398	737	6.47	6.28	6.06	5.51	4.55	8.08
1965	485	523	505	469	398	715	5.63	6.11	5.90	5.48	4.55	7.84
1966	342	459	440	462	398	737	3.96	5.35	5.13	5.37	4.55	8.08
1967	297	434	397	427	398	710	3.41	5.04	4.61	4.97	4.55	7.77
1968	452	426	391	446	398	737	5.31	4.95	4.54	5.19	4.55	8.08
1969	207	356	298	366	398	696	2.26	4.11	3.40	4.21	4.55	7.59
1970	498	359	298	364	398	735	5.80	4.15	3.40	4.19	4.55	8.06
1971	518	394	311	360	398	733	6.03	4.56	3.55	4.15	4.55	8.03
1972	504	436	335	363	398	689	5.89	5.06	3.84	4.18	4.55	7.54
1973	412	428	334	359	398	737	4.76	4.95	3.81	4.13	4.55	8.08
1974	433	473	466	354	398	737	5.07	5.51	5.42	4.07	4.55	8.08
1975	525	478	471	357	398	737	6.12	5.57	5.49	4.10	4.55	8.08
1976	524	480	473	369	398	737	6.10	5.59	5.51	4.25	4.55	8.08
1977	519	483	477	392	398	291	6.07	5.62	5.55	4.52	4.55	3.16
1978	247	450	387	358	398	737	2.79	5.23	4.47	4.11	4.55	8.08
1979	385	440	380	415	398	737	4.38	5.09	4.37	4.79	4.55	8.08
1980	262	388	322	371	398	730	2.41	4.35	3.47	4.12	4.55	8.00
1981	562	395	322	372	398	737	6.55	4.44	3.45	4.14	4.55	8.08
1982	369	365	311	365	398	734	4.30	4.09	3.34	4.06	4.55	8.05
1983	297	375	326	351	398	386	3.09	4.15	3.44	3.86	4.55	4.17
1984	502	399	333	353	398	732	5.86	4.44	3.51	3.88	4.55	8.03
1985	486	443	396	351	398	737	5.65	5.09	4.47	3.86	4.55	8.08
1986	439	419	386	348	398	735	5.10	4.80	4.35	3.82	4.55	8.06
1987	592	463	413	348	398	737	6.94	5.33	4.65	3.83	4.55	8.08
1988	493	502	494	379	398	735	5.75	5.86	5.76	4.17	4.55	8.06
1989	558	514	504	388	398	737	6.50	5.99	5.87	4.27	4.55	8.08
1990	569	530	518	445	398	737	6.66	6.19	6.04	5.10	4.55	8.08
1991	377	518	495	429	398	736	4.39	6.05	5.78	4.92	4.55	8.07
1992	400	479	458	433	398	737	4.64	5.59	5.34	4.96	4.55	8.08
1993	245	430	351	403	398	736	2.41	4.92	3.88	4.56	4.55	8.07
1994	563	431	354	407	398	737	6.57	4.93	3.91	4.61	4.55	8.08
1995	295	376	324	383	398	737	3.13	4.23	3.52	4.29	4.55	8.08
1996	456	392	329	383	398	737	5.35	4.42	3.58	4.29	4.55	8.08
1997	439	400	331	377	398	737	5.07	4.51	3.59	4.22	4.55	8.08
1998	298	410	368	359	398	703	3.45	4.71	4.18	4.02	4.55	7.70
1999	647	427	369	361	398	737	7.57	4.91	4.19	4.04	4.55	8.08
2000	558	480	428	361	398	737	6.51	5.59	4.98	4.04	4.55	8.08
2001	562	501	444	371	398	737	6.58	5.84	5.17	4.15	4.55	8.08
2002	680	549	473	381	398	737	7.98	6.42	5.52	4.26	4.55	8.08
2003	352	560	515	422	398	737	4.13	6.55	6.03	4.86	4.55	8.08
2004	574	545	506	421	398	737	6.70	6.38	5.93	4.85	4.55	8.08
2005	249	483	388	406	398	737	2.83	5.64	4.51	4.72	4.55	8.08
2006	548	480	384	411	398	737	6.36	5.60	4.46	4.78	4.55	8.08
2007	705	486	385	423	398	737	8.29	5.66	4.47	4.92	4.55	8.08
2008	544	524	419	460	398	737	6.33	6.10	4.84	5.35	4.55	8.08
2009	553	520	419	456	398	737	6.45	6.05	4.85	5.31	4.55	8.08
2010	393	549	520	441	398	737	4.55	6.40	6.06	5.13	4.55	8.08
2011	325	504	453	416	398	698	3.74	5.87	5.26	4.82	4.55	7.63
2012	612	485	447	414	398	736	7.14	5.64	5.19	4.80	4.55	8.07
Maximum	705	560	527	472	398	737	8.29	6.55	6.16	5.51	4.55	8.08

Figure 8d'-TDS_Reach 3
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8d' - Low Discharge for 2020, High EMWD Discharge

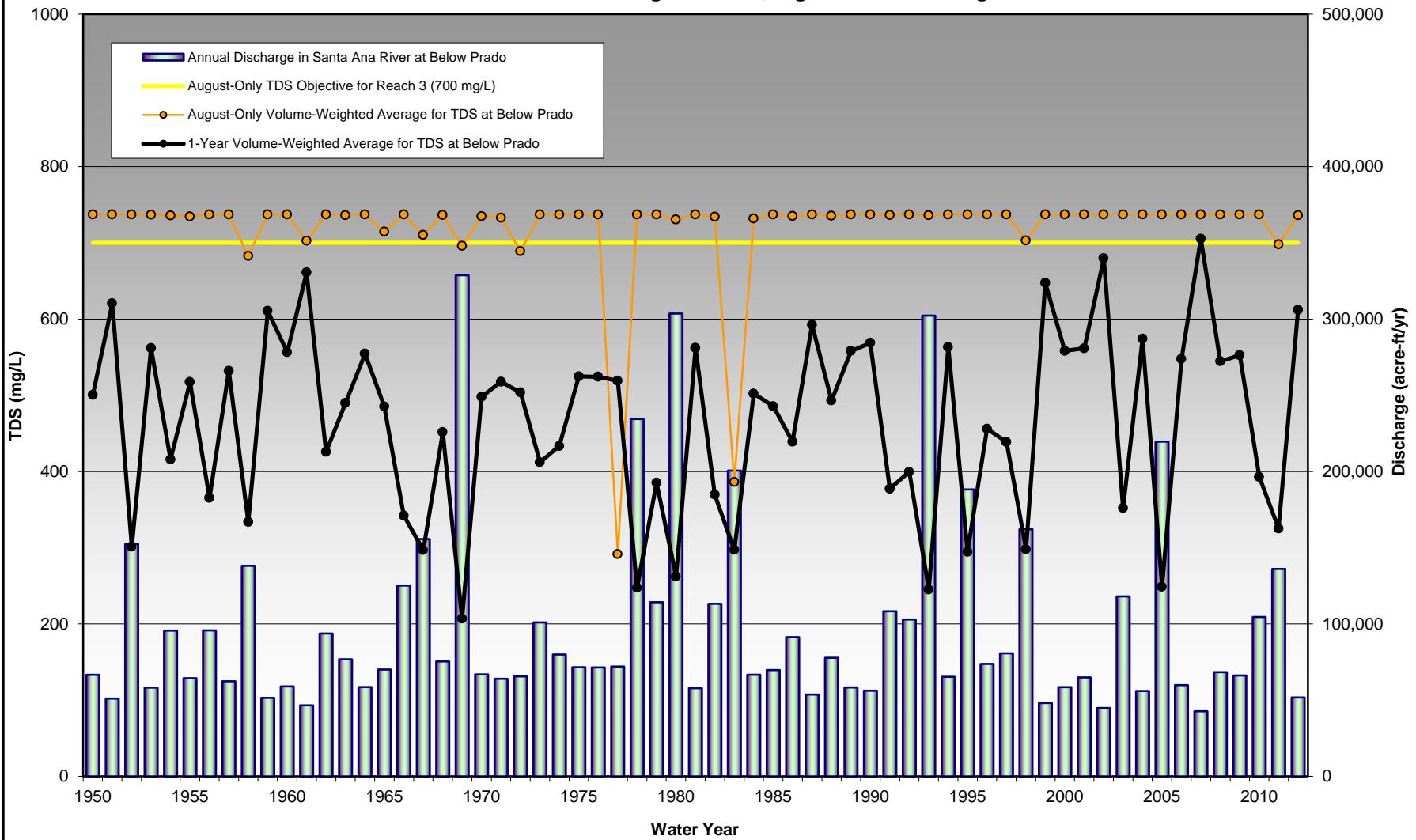


Figure 8d'-TIN_BP
Estimated Annual Discharge and Volume-Weighted TIN Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8d' - Low Discharge for 2020, High EMWD Discharge

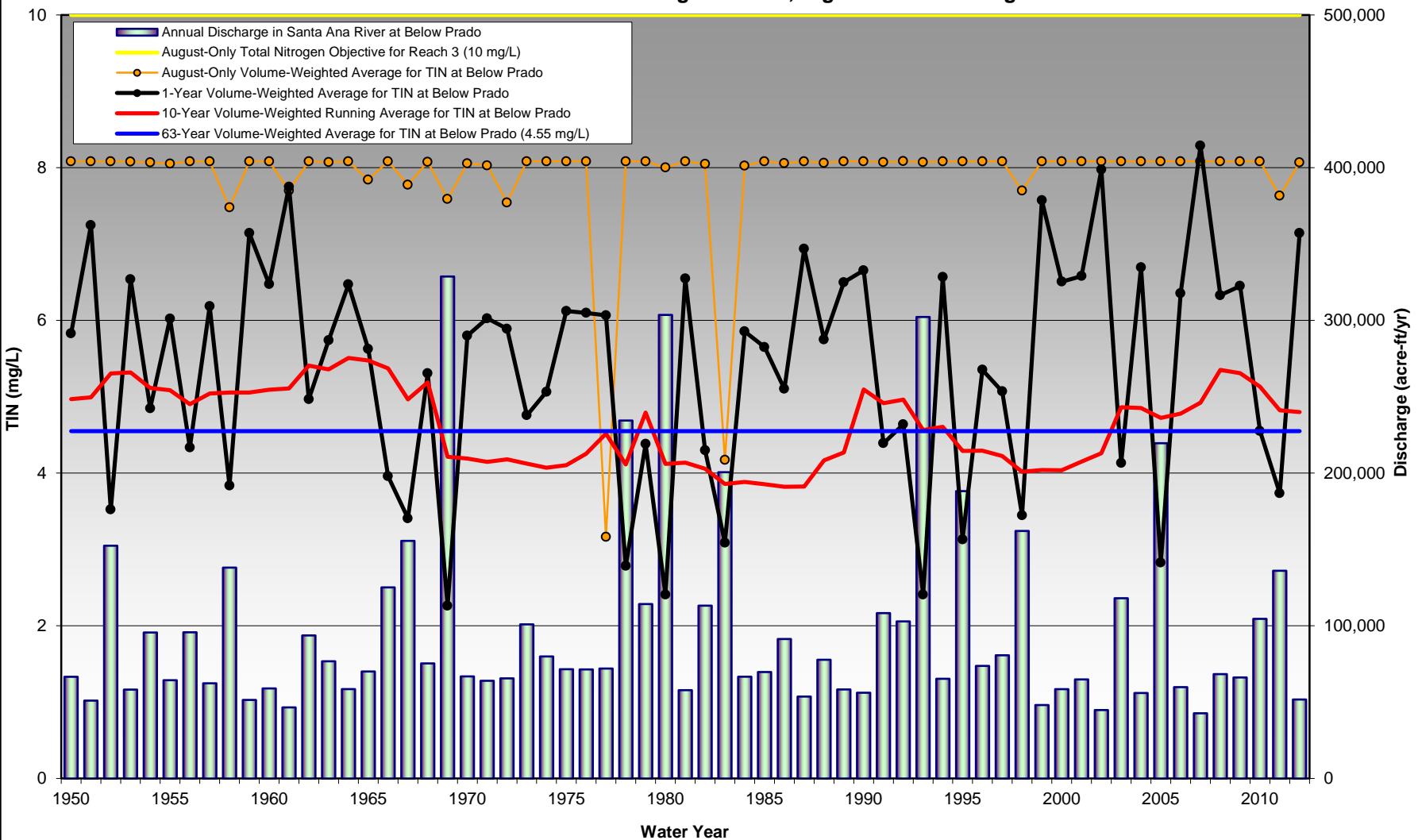


Figure 8d'-TDS_Reach 2
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 2 Objective
Scenario 8d' - Low Discharge for 2020, High EMWD Discharge

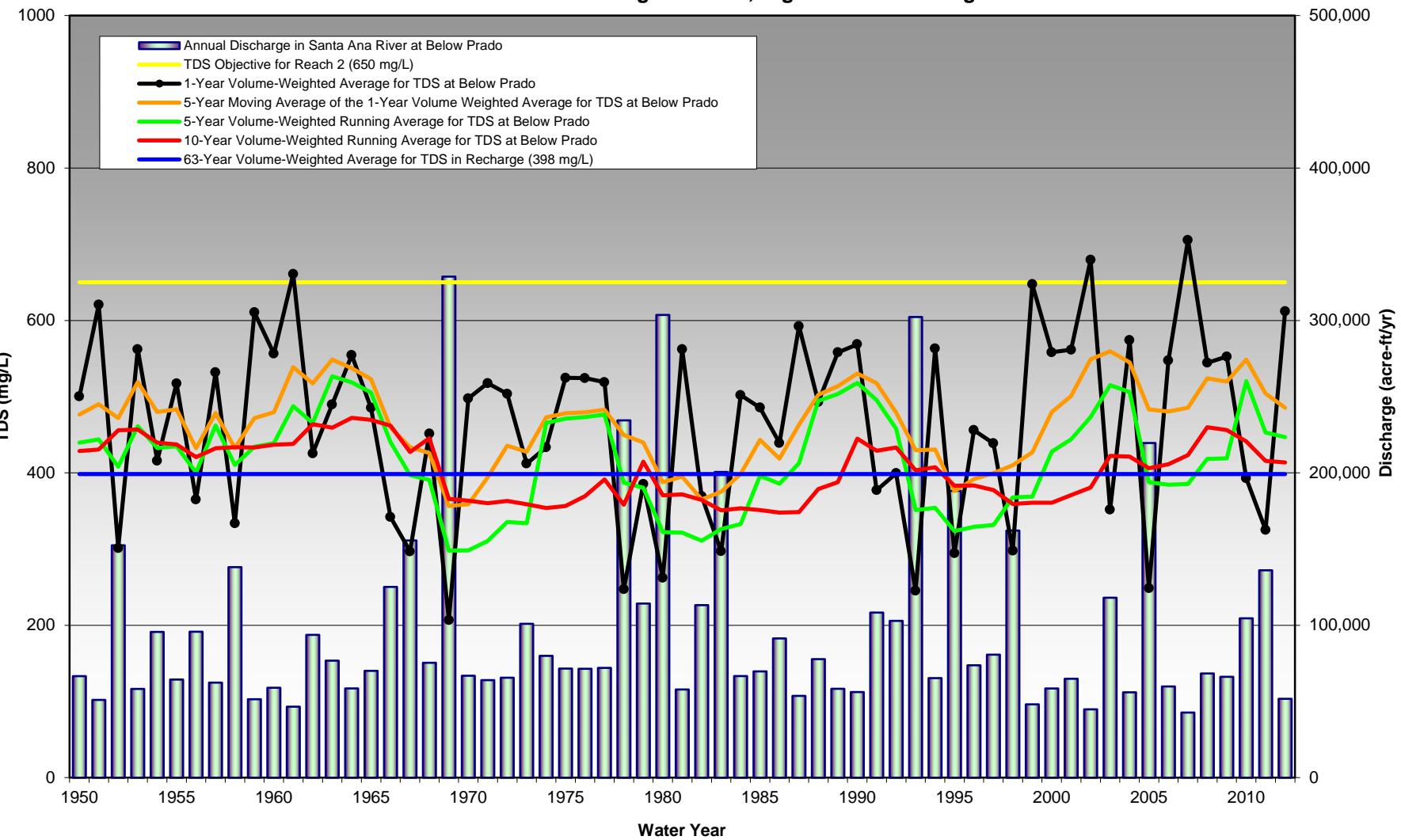


Table 8e'-BP
TDS and TIN in Santa Ana River Flow at Below Prado
Scenario 8e' - Intermediate Discharge for 2020, High EMWD Discharge

Water Year	Volume Weighted Running Average (mg/L)											
	TDS						TIN					
	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only
1950	513	488	459	449	420	698	6.18	5.87	5.51	5.38	4.97	8.07
1951	612	499	463	451	420	698	7.40	6.00	5.55	5.40	4.97	8.07
1952	325	481	430	474	420	698	3.90	5.79	5.16	5.70	4.97	8.07
1953	565	524	479	475	420	698	6.80	6.32	5.77	5.71	4.97	8.07
1954	438	491	453	459	420	697	5.26	5.91	5.45	5.52	4.97	8.06
1955	527	493	455	457	420	696	6.35	5.94	5.47	5.49	4.97	8.05
1956	390	449	423	442	420	698	4.76	5.42	5.10	5.31	4.97	8.07
1957	540	492	480	453	420	698	6.49	5.93	5.79	5.45	4.97	8.07
1958	356	450	432	453	420	660	4.22	5.42	5.19	5.46	4.97	7.63
1959	605	484	454	453	420	698	7.32	5.83	5.46	5.46	4.97	8.07
1960	561	490	458	456	420	698	6.75	5.91	5.51	5.49	4.97	8.07
1961	644	541	502	458	420	674	7.81	6.52	6.03	5.51	4.97	7.79
1962	446	522	482	481	420	698	5.37	6.29	5.80	5.79	4.97	8.07
1963	505	552	536	477	420	697	6.10	6.67	6.48	5.74	4.97	8.06
1964	559	543	529	488	420	698	6.75	6.56	6.39	5.89	4.97	8.07
1965	500	531	518	486	420	682	5.99	6.40	6.25	5.86	4.97	7.89
1966	366	475	460	479	420	698	4.37	5.72	5.53	5.76	4.97	8.07
1967	320	450	420	448	420	679	3.79	5.40	5.03	5.37	4.97	7.85
1968	470	443	414	465	420	697	5.70	5.32	4.96	5.59	4.97	8.07
1969	222	376	321	389	420	670	2.50	4.47	3.78	4.63	4.97	7.71
1970	511	378	322	387	420	696	6.15	4.50	3.78	4.61	4.97	8.05
1971	528	410	334	384	420	695	6.35	4.90	3.93	4.56	4.97	8.03
1972	516	449	359	387	420	665	6.24	5.39	4.24	4.60	4.97	7.68
1973	433	442	357	382	420	698	5.16	5.28	4.21	4.54	4.97	8.07
1974	453	488	483	378	420	698	5.47	5.87	5.80	4.48	4.97	8.07
1975	535	493	488	380	420	698	6.45	5.93	5.86	4.52	4.97	8.07
1976	535	494	490	393	420	698	6.43	5.95	5.89	4.67	4.97	8.07
1977	530	497	493	414	420	322	6.40	5.98	5.92	4.93	4.97	3.65
1978	266	464	410	382	420	698	3.08	5.56	4.89	4.52	4.97	8.07
1979	407	455	403	436	420	698	4.78	5.43	4.78	5.20	4.97	8.07
1980	277	403	343	393	420	693	2.66	4.67	3.84	4.53	4.97	8.01
1981	565	409	343	394	420	698	6.81	4.75	3.82	4.54	4.97	8.07
1982	393	382	332	387	420	696	4.71	4.41	3.70	4.46	4.97	8.05
1983	316	392	347	373	420	417	3.42	4.48	3.81	4.25	4.97	4.73
1984	514	413	354	375	420	694	6.20	4.76	3.89	4.28	4.97	8.03
1985	500	458	418	373	420	698	6.01	5.43	4.88	4.25	4.97	8.07
1986	459	436	408	370	420	696	5.50	5.17	4.76	4.21	4.97	8.05
1987	590	476	433	370	420	698	7.14	5.65	5.06	4.22	4.97	8.07
1988	507	514	508	400	420	697	6.11	6.19	6.12	4.58	4.97	8.06
1989	562	524	516	409	420	698	6.77	6.31	6.21	4.68	4.97	8.07
1990	571	538	529	463	420	698	6.91	6.49	6.37	5.49	4.97	8.07
1991	401	526	509	449	420	697	4.81	6.35	6.14	5.32	4.97	8.07
1992	422	493	476	453	420	698	5.05	5.93	5.73	5.37	4.97	8.07
1993	260	443	374	425	420	697	2.66	5.24	4.28	4.98	4.97	8.07
1994	568	444	376	428	420	698	6.84	5.25	4.32	5.02	4.97	8.07
1995	315	393	346	405	420	698	3.47	4.57	3.90	4.70	4.97	8.07
1996	474	408	351	405	420	698	5.75	4.75	3.96	4.71	4.97	8.07
1997	458	415	353	400	420	698	5.47	4.84	3.98	4.64	4.97	8.07
1998	320	427	390	382	420	675	3.81	5.07	4.58	4.43	4.97	7.79
1999	633	440	392	384	420	698	7.67	5.23	4.60	4.45	4.97	8.07
2000	562	490	448	383	420	698	6.78	5.89	5.38	4.45	4.97	8.07
2001	566	508	463	393	420	698	6.85	6.11	5.56	4.56	4.97	8.07
2002	658	548	489	403	420	698	7.99	6.62	5.89	4.67	4.97	8.07
2003	377	559	526	443	420	698	4.55	6.77	6.37	5.27	4.97	8.07
2004	575	548	519	442	420	698	6.94	6.62	6.27	5.26	4.97	8.07
2005	268	489	411	428	420	698	3.14	5.89	4.92	5.14	4.97	8.07
2006	553	486	407	433	420	698	6.65	5.85	4.88	5.19	4.97	8.07
2007	677	490	408	444	420	698	8.23	5.90	4.89	5.33	4.97	8.07
2008	552	525	440	478	420	698	6.63	6.32	5.26	5.74	4.97	8.07
2009	559	522	440	474	420	698	6.74	6.28	5.26	5.70	4.97	8.07
2010	416	551	531	461	420	698	4.97	6.64	6.39	5.54	4.97	8.07
2011	349	511	472	437	420	671	4.14	6.14	5.66	5.24	4.97	7.74
2012	606	496	466	435	420	697	7.32	5.96	5.59	5.22	4.97	8.06
Maximum	677	559	536	488	420	698	8.23	6.77	6.48	5.89	4.97	8.07

Figure 8e'-TDS_Reach 3
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8e' - Intermediate Discharge for 2020, High EMWD Discharge

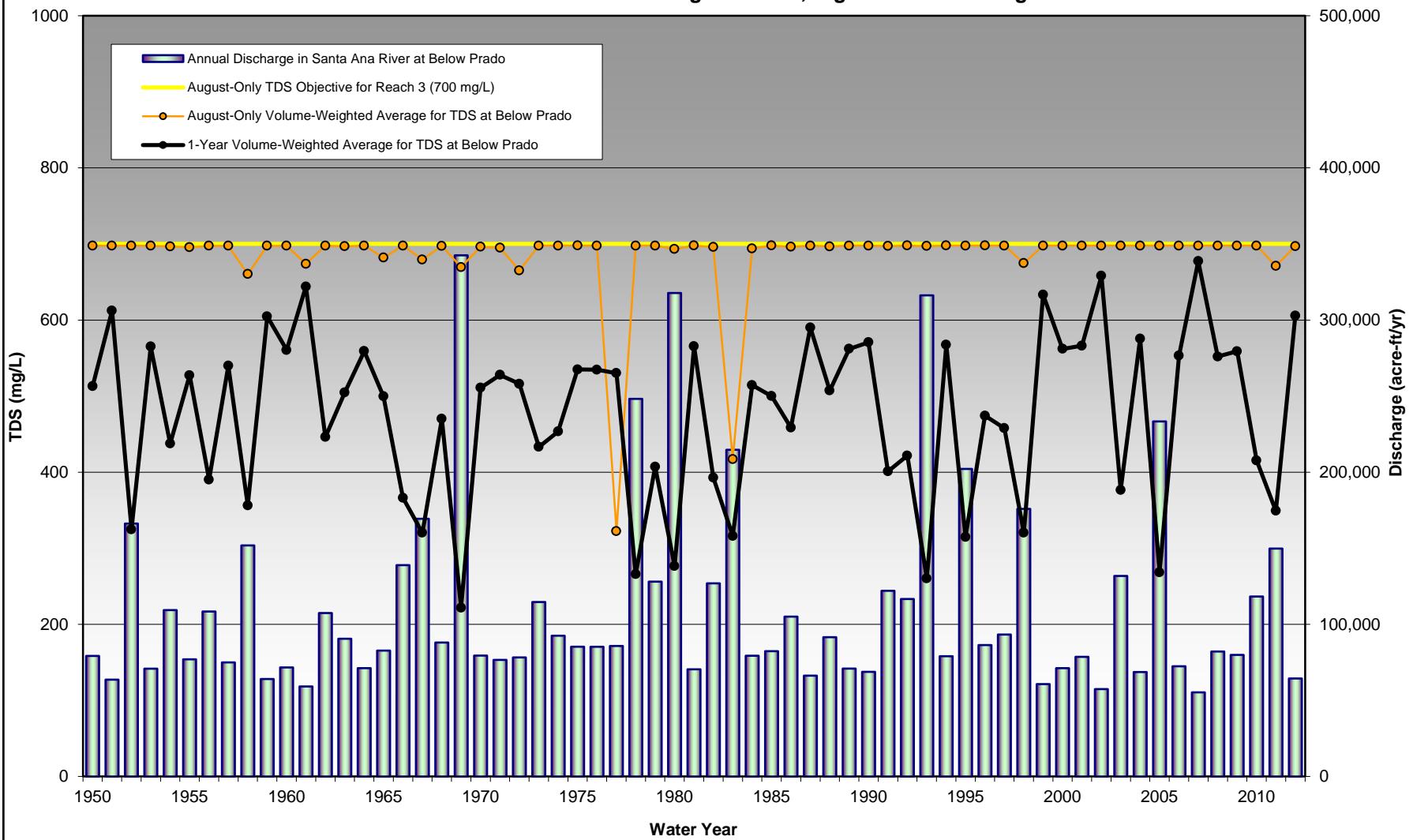


Figure 8e'-TIN_BP
Estimated Annual Discharge and Volume-Weighted TIN Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8e' - Intermediate Discharge for 2020, High EMWD Discharge

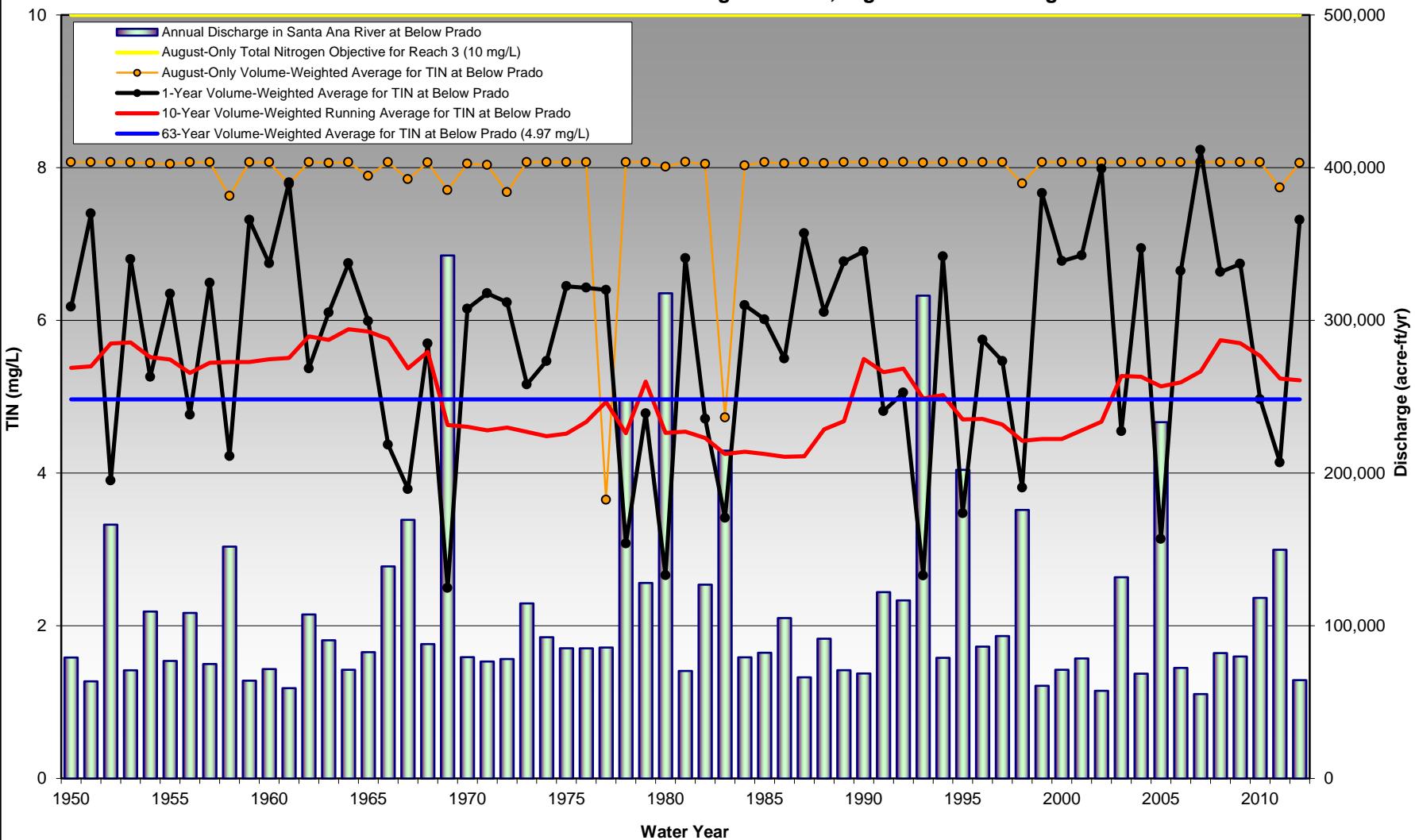


Figure 8e'-TDS_Reach 2
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 2 Objective
Scenario 8e' - Intermediate Discharge for 2020, High EMWD Discharge

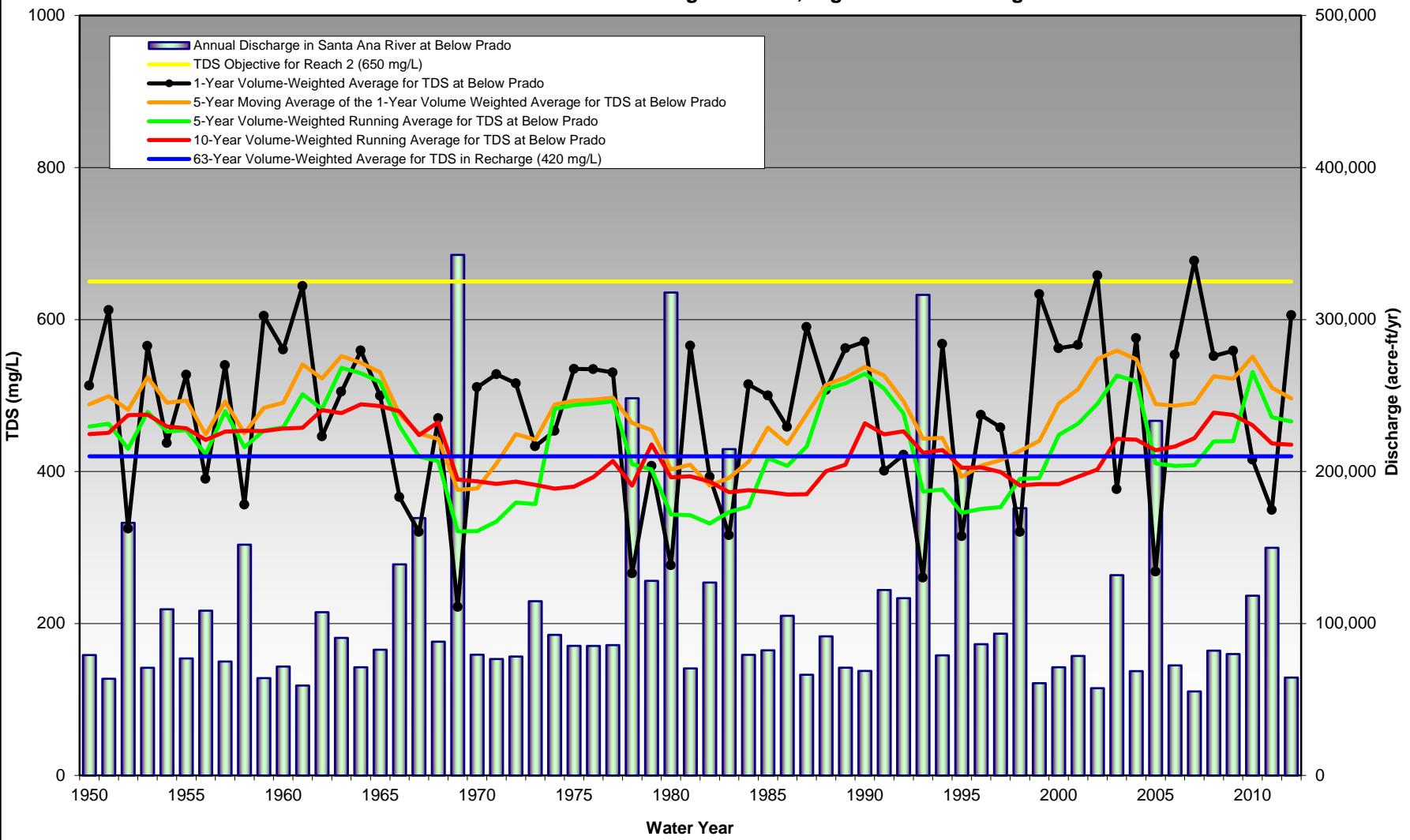


Table 8f-BP
TDS and TIN in Santa Ana River Flow at Below Prado
Scenario 8f - High Discharge for 2020, High EMWD Discharge

Water Year	Volume Weighted Running Average (mg/L)											
	TDS						TIN					
	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only	1 Year	5 Year Moving Average of the 1 year volume weighted average	5 Year	10 Year	63 Year	August Only
1950	522	498	475	466	438	679	6.48	6.16	5.86	5.74	5.34	8.13
1951	606	507	478	467	438	679	7.54	6.27	5.90	5.76	5.34	8.13
1952	346	489	448	488	438	679	4.27	6.06	5.53	6.04	5.34	8.13
1953	567	528	492	489	438	679	7.03	6.56	6.10	6.05	5.34	8.13
1954	455	499	469	475	438	679	5.63	6.19	5.81	5.87	5.34	8.12
1955	535	502	471	473	438	678	6.63	6.22	5.83	5.84	5.34	8.11
1956	411	463	441	459	438	679	5.15	5.74	5.47	5.68	5.34	8.13
1957	545	503	493	469	438	679	6.76	6.24	6.12	5.80	5.34	8.13
1958	377	465	450	469	438	650	4.59	5.75	5.56	5.81	5.34	7.76
1959	600	494	470	469	438	679	7.48	6.12	5.82	5.81	5.34	8.13
1960	563	499	474	472	438	679	6.99	6.19	5.87	5.85	5.34	8.13
1961	631	543	513	473	438	661	7.89	6.74	6.34	5.86	5.34	7.89
1962	463	527	495	494	438	679	5.73	6.53	6.13	6.13	5.34	8.13
1963	516	555	543	491	438	679	6.41	6.90	6.75	6.08	5.34	8.12
1964	562	547	537	501	438	679	6.99	6.80	6.67	6.21	5.34	8.13
1965	511	537	527	499	438	667	6.31	6.67	6.54	6.18	5.34	7.98
1966	387	488	475	493	438	679	4.75	6.04	5.88	6.10	5.34	8.13
1967	342	464	438	464	438	665	4.15	5.72	5.40	5.73	5.34	7.95
1968	484	457	433	480	438	679	6.04	5.65	5.33	5.94	5.34	8.13
1969	237	392	342	409	438	657	2.74	4.80	4.14	5.01	5.34	7.83
1970	521	394	343	407	438	678	6.46	4.83	4.15	4.99	5.34	8.12
1971	535	424	355	404	438	677	6.64	5.21	4.31	4.94	5.34	8.10
1972	525	461	380	407	438	654	6.53	5.68	4.62	4.98	5.34	7.81
1973	451	454	378	403	438	679	5.52	5.58	4.59	4.92	5.34	8.13
1974	469	500	496	398	438	680	5.82	6.20	6.14	4.86	5.34	8.13
1975	542	505	500	401	438	680	6.73	6.25	6.19	4.90	5.34	8.13
1976	542	506	502	413	438	680	6.71	6.26	6.21	5.05	5.34	8.13
1977	538	509	505	433	438	344	6.68	6.29	6.25	5.31	5.34	4.01
1978	284	475	429	402	438	680	3.37	5.86	5.26	4.90	5.34	8.13
1979	426	467	422	453	438	680	5.15	5.73	5.15	5.56	5.34	8.13
1980	291	416	363	412	438	676	2.92	4.97	4.19	4.90	5.34	8.09
1981	567	421	362	413	438	680	7.04	5.03	4.18	4.92	5.34	8.13
1982	413	396	351	406	438	678	5.09	4.71	4.05	4.84	5.34	8.11
1983	334	406	366	392	438	436	3.74	4.79	4.17	4.62	5.34	5.11
1984	524	426	373	395	438	677	6.50	5.06	4.25	4.65	5.34	8.10
1985	511	470	436	392	438	680	6.33	5.74	5.25	4.62	5.34	8.13
1986	474	451	426	389	438	678	5.85	5.50	5.13	4.58	5.34	8.12
1987	588	486	450	390	438	679	7.33	5.95	5.43	4.59	5.34	8.13
1988	518	523	519	419	438	679	6.42	6.49	6.43	4.95	5.34	8.12
1989	565	531	526	427	438	680	7.01	6.59	6.51	5.06	5.34	8.13
1990	572	543	537	478	438	680	7.13	6.75	6.66	5.85	5.34	8.13
1991	421	533	520	465	438	679	5.19	6.62	6.45	5.68	5.34	8.13
1992	440	503	490	469	438	680	5.42	6.23	6.07	5.73	5.34	8.14
1993	275	455	393	442	438	679	2.91	5.53	4.66	5.35	5.34	8.13
1994	570	456	396	446	438	680	7.07	5.55	4.69	5.39	5.34	8.13
1995	334	408	365	424	438	680	3.81	4.88	4.26	5.08	5.34	8.13
1996	488	422	371	424	438	680	6.09	5.06	4.32	5.09	5.34	8.13
1997	473	428	373	418	438	680	5.82	5.14	4.34	5.01	5.34	8.13
1998	341	441	410	401	438	661	4.16	5.39	4.96	4.80	5.34	7.90
1999	623	452	411	403	438	680	7.77	5.53	4.98	4.83	5.34	8.13
2000	564	498	465	403	438	679	7.01	6.17	5.74	4.82	5.34	8.13
2001	569	514	478	412	438	679	7.09	6.37	5.91	4.94	5.34	8.13
2002	642	548	502	421	438	679	8.03	6.81	6.22	5.05	5.34	8.13
2003	398	559	534	460	438	680	4.93	6.97	6.65	5.63	5.34	8.13
2004	576	550	528	459	438	679	7.16	6.84	6.57	5.63	5.34	8.13
2005	287	494	430	446	438	680	3.45	6.13	5.30	5.51	5.34	8.13
2006	557	492	427	451	438	679	6.90	6.09	5.25	5.56	5.34	8.13
2007	657	495	428	461	438	679	8.23	6.13	5.27	5.69	5.34	8.13
2008	557	527	457	491	438	679	6.89	6.53	5.62	6.08	5.34	8.13
2009	563	524	457	489	438	679	6.99	6.49	5.63	6.05	5.34	8.13
2010	434	554	539	476	438	679	5.34	6.87	6.67	5.89	5.34	8.13
2011	370	516	486	455	438	658	4.51	6.39	6.00	5.61	5.34	7.86
2012	601	505	481	453	438	679	7.48	6.24	5.94	5.58	5.34	8.13
Maximum	657	559	543	501	438	680	8.23	6.97	6.75	6.21	5.34	8.14

Figure 8f-TDS_Reach 3
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8f' - High Discharge for 2020, High EMWD Discharge

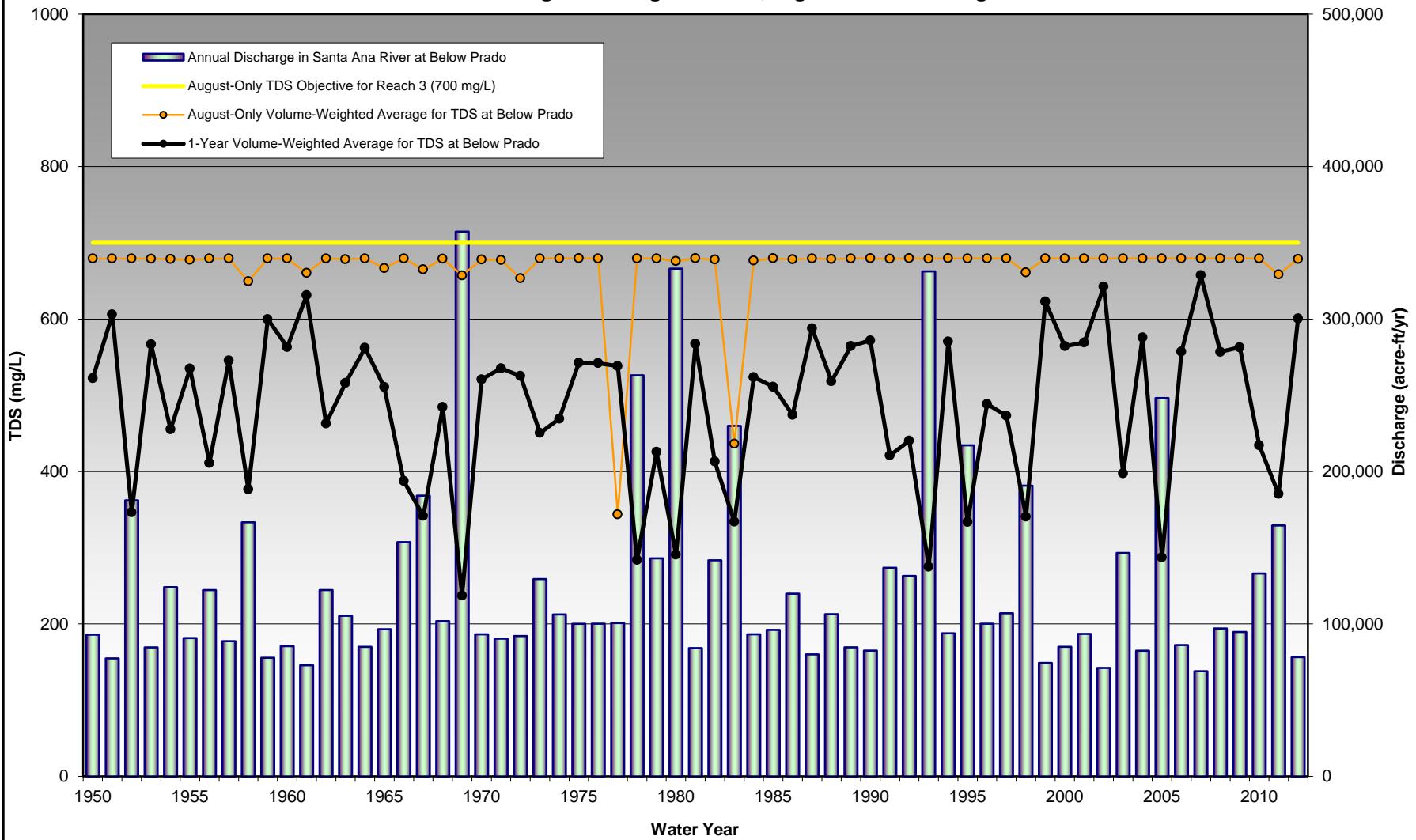


Figure 8f-TIN_BP
Estimated Annual Discharge and Volume-Weighted TIN Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 3 Objective
Scenario 8f - High Discharge for 2020, High EMWD Discharge

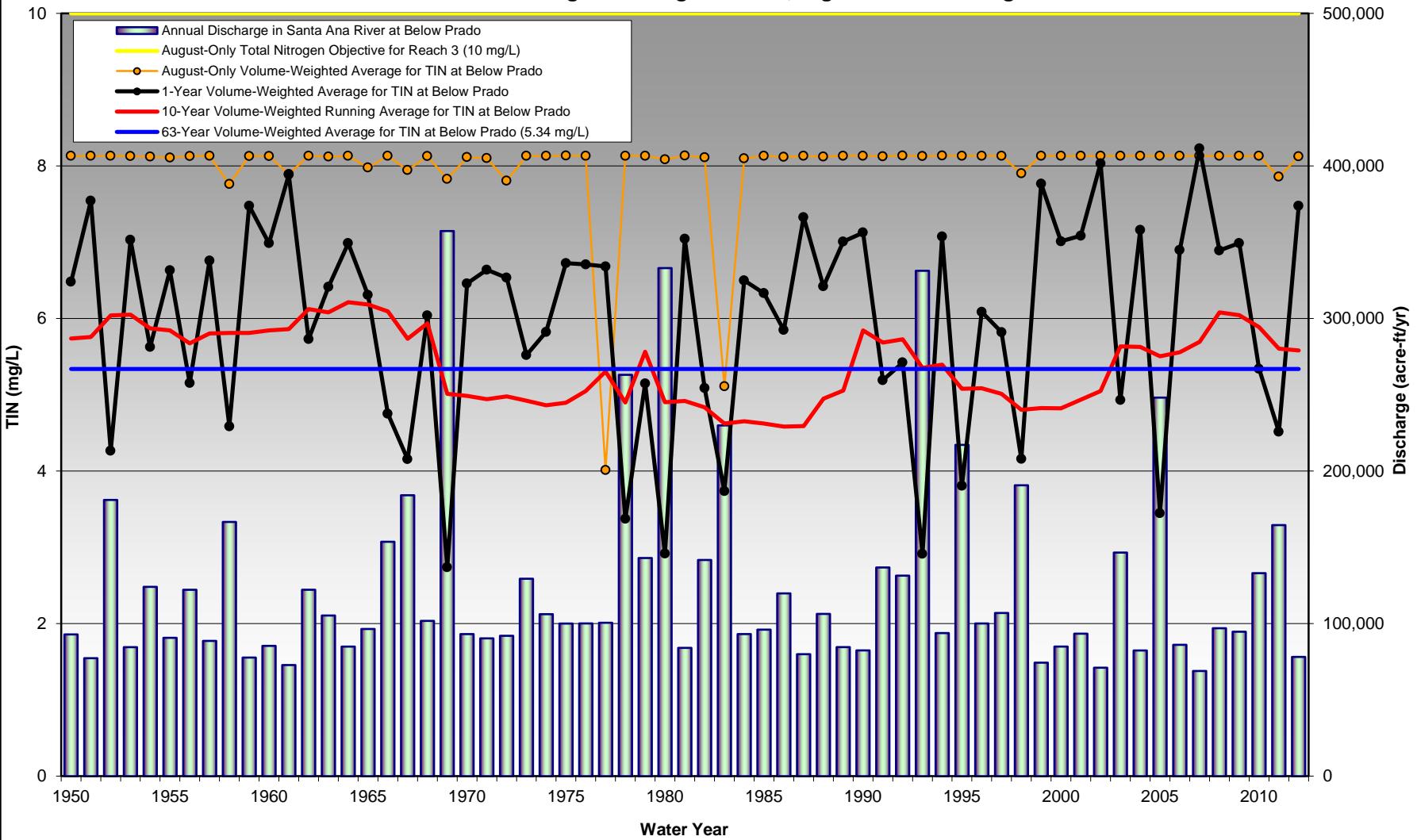


Figure 8f-TDS_Reach 2
Estimated Annual Discharge and Volume-Weighted TDS Concentration
in Santa Ana River Flow at Below Prado Compared to the Reach 2 Objective
Scenario 8f' - High Discharge for 2020, High EMWD Discharge

