5.6.6 UAA Analysis: Cucamonga Creek, Reach 1

In part, the following discussion summarizes and references data and information contained in the "Use Attainability Analysis Technical Report for Cucamonga Creek" CDM, August 2010 (CC Technical Report). Maps, tables, and photographs from the technical report are reproduced here directly or adapted and referenced appropriately. In addition, the text adds observations, photographs, and analysis by Regional Board staff.

5.6.6.1 Waterbody Description/Location

The Cucamonga Creek Watershed is approximately 92 mi^2 in size. The watershed includes portions of the cities of Chino, Ontario, Rancho Cucamonga, and Upland and sections of unincorporated Riverside and San Bernardino Counties (Figure V-CC-1).

The Basin Plan identifies two reaches of Cucamonga Creek (Basin Plan, Chapter 3, Table 3-1). Lower Deer Creek, West Cucamonga Channel, Upper Deer Canyon Wash, and Demens Creek are the main tributaries to Cucamonga Creek within Reach 1. There are numerous local storm drain outfalls discharging runoff into the channel and its tributaries. Both the REC1 and REC2 uses are designated in the Basin Plan for Reach 1.

This UAA addresses Reach 1 of Cucamonga Creek. Neither Reach 2 of the Creek nor tributaries to the Creek are addressed in this UAA.

5.6.6.2 Reach Identification

The downstream boundary of Reach 1 is defined in the Basin Plan as the confluence with Mill Creek[1] (essentially at Hellman Avenue), while the upstream boundary is marked by the Cucamonga Canyon Dam, a small dam at the downstream end of a debris basin, located near 23rd Street in the City of Upland (Figures CC-2, and CC-3).

The analyses reported in the CC Technical Report focused on the lower part (~the lower quarter) of Reach 1, from Hellman Avenue upstream to approximately 750 feet downstream of the confluence of Lower Deer Creek. (The CC Technical Report refers to this segment as "Reach 1"; see Figure CC-2.) However, a more inclusive approach is recommended in this staff report. The channel morphology (see next section) of the remainder of Reach 1, as defined in the Basin Plan, and other characteristics (e.g., land use) are the same as or at least highly comparable to those identified in the CDM Technical Reports for other waters for which UAA analyses were conducted by the Task Force (see, for example, the Greenville-Banning Channel UAA discussion). Given these circumstances, Board staff proposes to extend the UAA analysis and recommendations to include Reach 1 of Cucamonga Creek in its entirety. This approach is documented in the discussion that follows.

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[1] Mill Creek is identified in the Basin Plan as beginning at the downstream end of Cucamonga Creek, where the concrete trapezoidal channel transitions to a trapezoidal rip rap channel, just downstream of Hellman Avenue, located in unincorporated Riverside County. See Figure CC-4. The area downstream of Hellman Avenue is in the Prado Basin Management Zone.

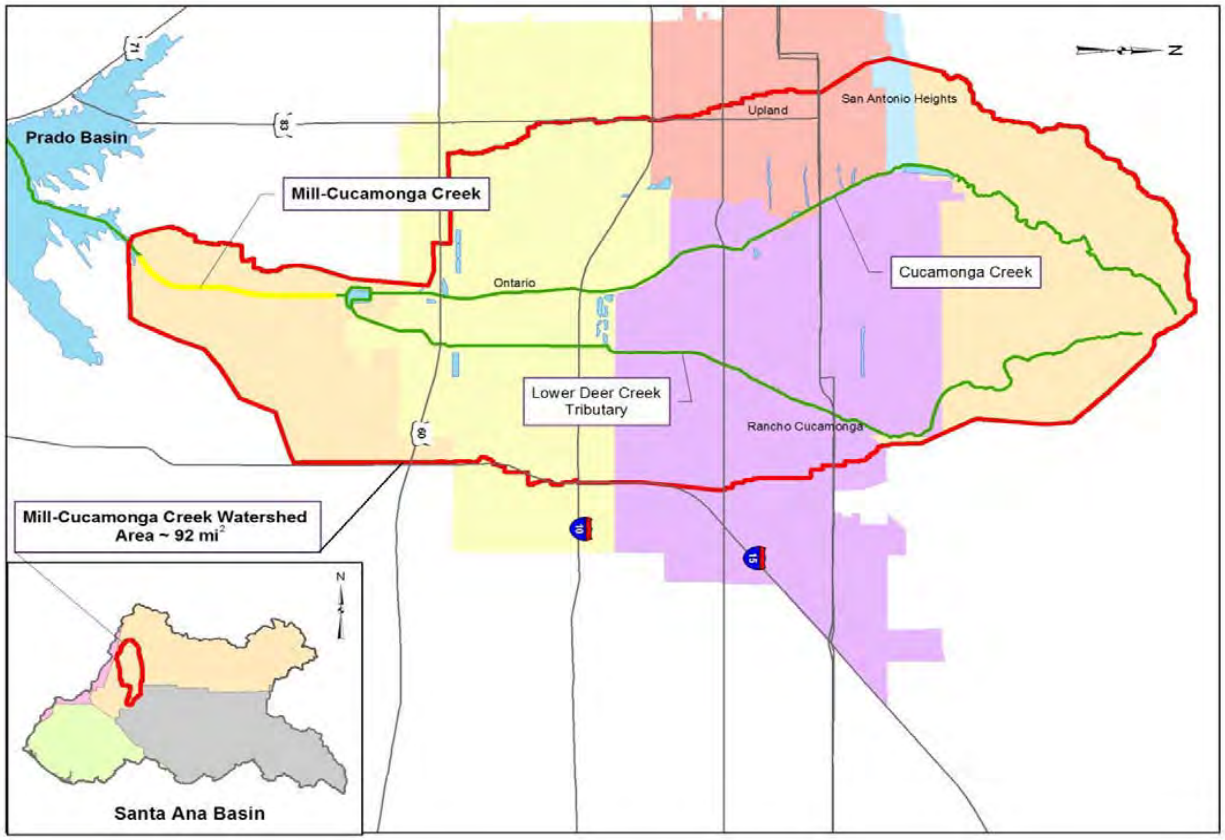


Figure CC-1, Map of Cucamonga Creek Watershed

(Source: Use Attainability Analysis Technical Report for Cucamonga Creek, CDM, August 2010, Figure 2-1)

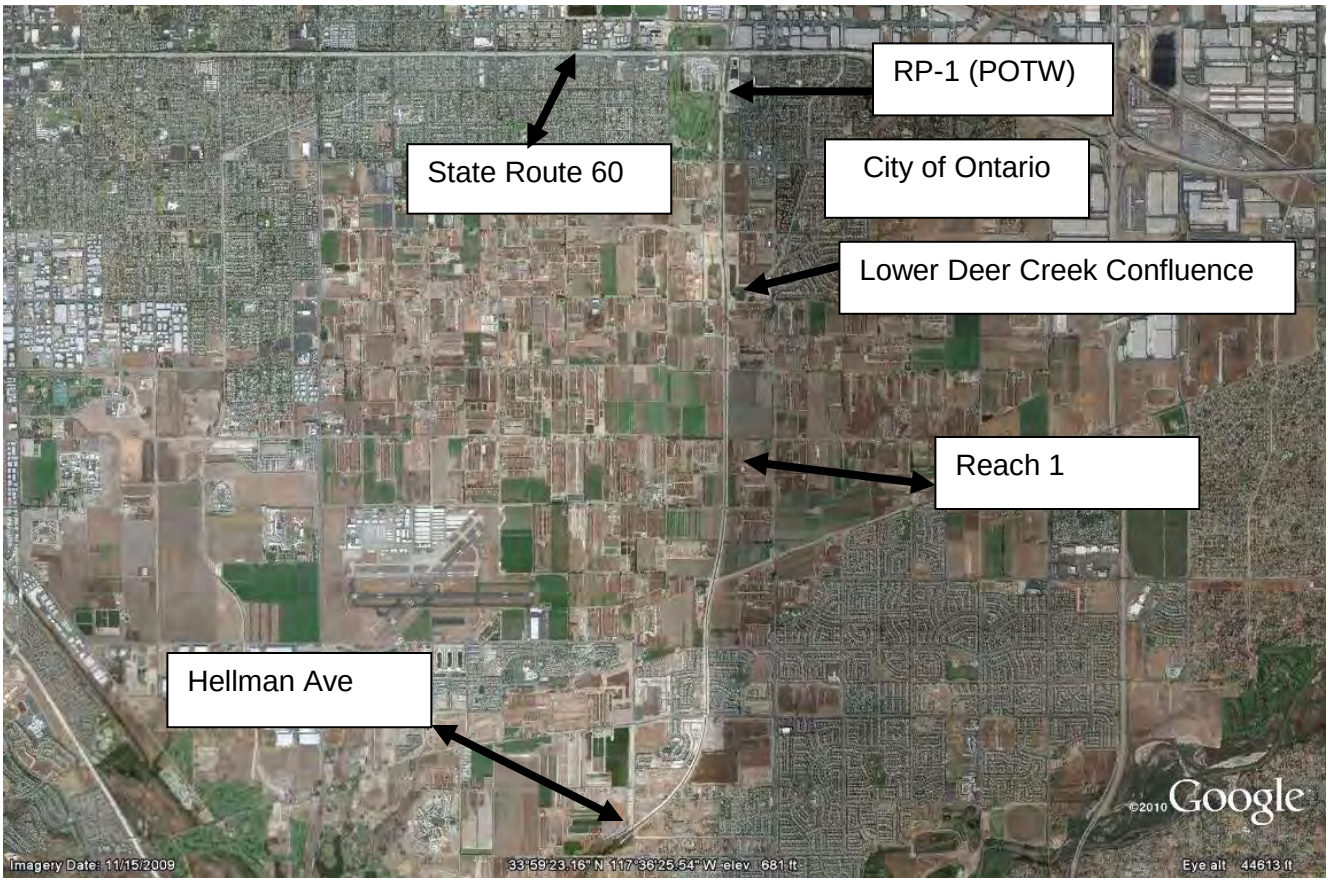


Figure CC-2. **Portion of Reach 1 of Cucamonga Creek: Hellman Avenue to the Ontario International Airport, which is just over a mile north of the State Route 60 Freeway.**

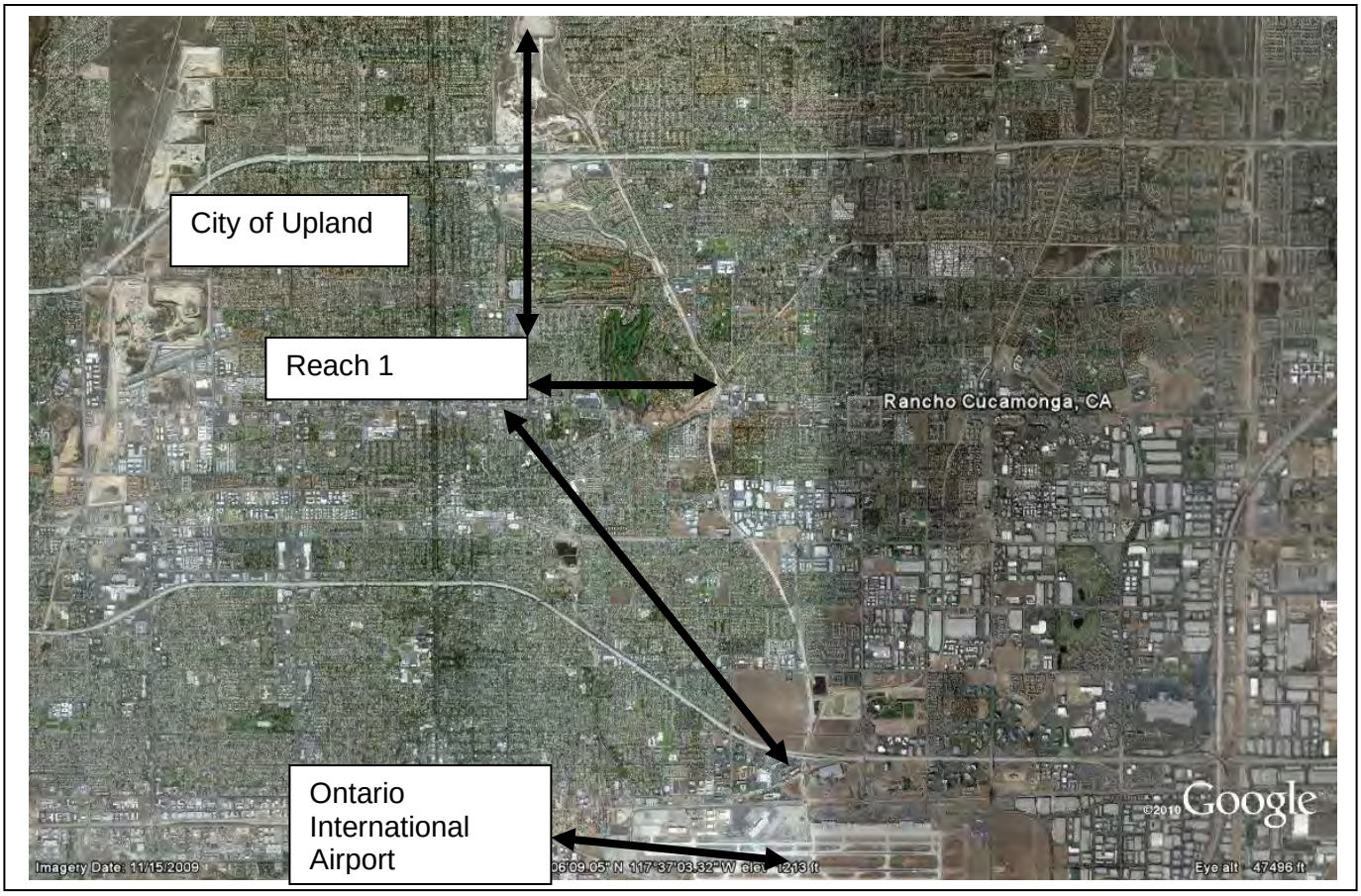


Figure CC-3. Portion of Cucamonga Creek Reach 1: runs in an underground culvert through the Ontario International Airport upstream to the Cucamonga Canyon Dam near 23rd St. in the City of Upland.

Figure CC-4. Mill Creek at Hellman Avenue in the Prado Basin Management Zone, looking downstream. Cucamonga Creek becomes known as Mill Creek at this point**.** (Source: Use Attainability Analysis Technical Report for Cucamonga Creek, CDM, August 2010, Figure 2-6.)

5.6.6.3 Reach 1 Description

Reach 1 is fully concrete lined, however the downstream segment (identified in the CC Technical Report as “Reach 1”) has trapezoidal side slopes, while the segment upstream is vertical walled. From Hellman Avenue upstream to approximately 750 feet downstream of the confluence with Lower Deer Creek Channel, the channel sides are trapezoidal, with a slope of 2:1.The bottom width is 70 to 78 feet, with a low flow channel. This segment is approximately 4 miles in length (see Figure CC-5). The CC Technical Report includes additional photographs of this portion of the channel (CC Technical Report, Figures 2-8, 2-9).

The vertical walled segment extends from 750 feet downstream of the confluence of Lower Deer Creek to near 23rd Street in Upland, terminating at the Cucamonga Canyon Dam. The channel in this area is essentially an open concrete box with a low flow channel in some sections. The walls are approximately 12-15 feet in height and the channel bottom width ranges from approximately 80 feet in the downstream segment to approximately 25 feet in the most

upstream segment. Where the channel runs under Ontario International Airport, it is enclosed in a box culvert for about a 1/3 of a mile. This segment of Reach 1 is approximately 11 miles long. (See Figures CC-6 and CC-7.)

The channel characteristics of Reach 1 are summarized in Table CC-1.

Figure CC-5. Looking upstream at Reach 1 at Hellman Avenue. This trapezoidal walled section of Cucamonga Creek stretches from this point approximately 4 miles upstream where the channel transitions to the vertical walled section. (Source: Use Attainability Analysis Technical Report for Cucamonga Creek, CDM, August 2010, Figure 2-7.)

Figure CC-6. **Vertical wall section of Cucamonga Creek, Reach 1, looking upstream.** Treated effluent is contained by a berm to the right side of channel while dry weather runoff from the surrounding areas flows in the middle of the channel. Regional Board staff photograph, May 2011.

Figure CC-7. **The most upstream section of Cucamonga Creek, Reach 1, looking upstream at Cucamonga Canyon Dam**. Regional Board staff photograph, May 2011.

Table CC-1 Sidewall and Bottom Construction of Cucamonga Creek	
Segment	**Description**
Cucamonga Creek at Hellman Avenue upstream to approximately 750 ft. downstream of confluence with Lower Deer Creek Channel	Trapezoidal, fully concrete-lined; side slope (2:1); bottom width of 70 to 78 ft. with low flow channel
Approximately 750 ft. downstream of Deer Creek Channel confluence to 23Rd Street Upland (at Cucamonga Canyon Dam).	Vertical walls (approximately 12-15 ft. in height), fully concrete-lined; bottom width of 70 to 78 ft. with low flow channel in some sections.

5.6.6.4 Flow Conditions and Water Levels

As with the other waters in the Santa Ana Region for which UAA results are being considered, dry weather flow is the predominant flow condition in Cucamonga Creek. Precipitation-derived runoff typically occurs for only relatively short episodic periods during and shortly after rainfall events in the watershed. As is typical of this area, rainfall events almost always occur in the wet season (mid-October through Mid-April).

The dry weather flows in Reach 1 are a combination of nuisance flows from the urban and agricultural land uses tributary to the Creek and treated effluent discharged to Reach 1 by the Inland Empire Utilities Agency (IEUA) from two Publicly Owned Treatment Works (POTWs) (Regional Plants (RP) 1 and 4). Studies conducted by the San Bernardino County Stormwater Program in response to bacterial indicator TMDL requirements found that nuisance flows during dry weather in 2007 and 2008 contributed about three to four cubic feet per second (cfs) of flow in the channel (draft "Comprehensive Bacteria Reduction Plan" (CBRP), San Bernardino County Stormwater Program, December 31, 2010). Effluent from IEUA's RP 1 and RP4 is commingled at RP1 and ~ 4 cfs (~ 2.8 MGD) are discharged on average to Cucamonga Creek just downstream of State Route 60. (Effluent discharges to the Creek vary depending, in part, on demand for recycled water in IEUA's service area.) A USGS flow gauge at Merrill Avenue, which is located downstream of the Lower Deer Creek Channel and measures flows in Cucamonga Creek from 95% of the entire drainage area of Reach 1, measured an average of 36 cfs of dry weather flow during 2007 and 2008 (CBPR, page 3-16, County of San Bernardino Dec 2010).

Depending on the magnitude of nuisance flows and effluent discharges, dry weather flows in the channel may extend across its width (see Figure CC-8) or be limited to part of the width of the channel. Regional Board staff noted on February 10, 2011, during a period of dry weather, that flows covered about ¾ of the channel bottom with a depth of five inches in the center of the channel (see Figure CC-9). Stream flow during this observation was calculated to be approximately 5 cfs. Stream flows that occupy only the central low flow channel have also been observed by Regional Board staff. In addition, the most upstream sections have been observed to be dry (see Figure CC-7).

Figure CC-8. **Cucamonga Creek Channel bottom covered with treated effluent at Hellman Avenue looking upstream.** (Source: Use Attainability Analysis Cucamonga Creek, CDM**,** August 2010, Figure 3-2)

Figure CC-9. Cucamonga Creek at Hellman Avenue looking upstream during dry weather. Regional Board staff photograph February 2011**.**

Section 4.2 of the CC Technical Report describes CDM's analyses of flow and water level conditions in the channel. The depth of flow in the channel has been measured directly. CDM used a rating curve to convert continuous depth records to flow rates. Hydrologic data used in the analysis were developed from the depth of flow in the channel recorded at 30-minute intervals at a gage located at Merrill Avenue, which is located downstream of the confluence with Lower Deer Creek. The channel in this area is concrete trapezoidal.

Figure CC-10 presents a hydrograph of mean daily flow data from 1968 to 2009. The continuous time series of measured depth and estimated flow was analyzed to assess the frequency of different conditions in the channel. Cumulative frequency curves of flow rate and depth from 1988 to 2008 are shown in Figures CC-11 and 12. The frequency distributions show that more than 90 percent of the time, flow rates and depths are characteristic of dry weather flow conditions. Flow depths during 1988 to 2008 were less than 2 feet approximately 98 percent of the time and less than 1.5 feet about 93 percent of the time (Figure CC- 12).

Hydrographs were used to show the typical response of the creek during rain events of varying depths (¼", 1/2", ¾", 1", 2" and 3"). The analyses showed that flows in Cucamonga Creek typically return to base flow conditions shortly after storm events. Analysis of the six storm events of varying depths showed that near-dry-weather baseflow channel velocities and associated depths returned in as soon as 8 hours following a storm event (ranging from 8 to 30 hours in most cases).

Wet weather flows can be quite large and destructive in Cucamonga Creek. Section 2.2.1 of the CC Technical Report discusses the flooding that has occurred in the channel over the last hundred years. Historical flood accounts indicate that Cucamonga Creek has changed its course, causing significant damage to commercial, residential and agricultural areas, as well as to transportation (road and railroads) and utility facilities. The largest flood on record occurred in March of 1938. During that flood, the estimated peak discharge for Cucamonga creek was 10,300 cfs.

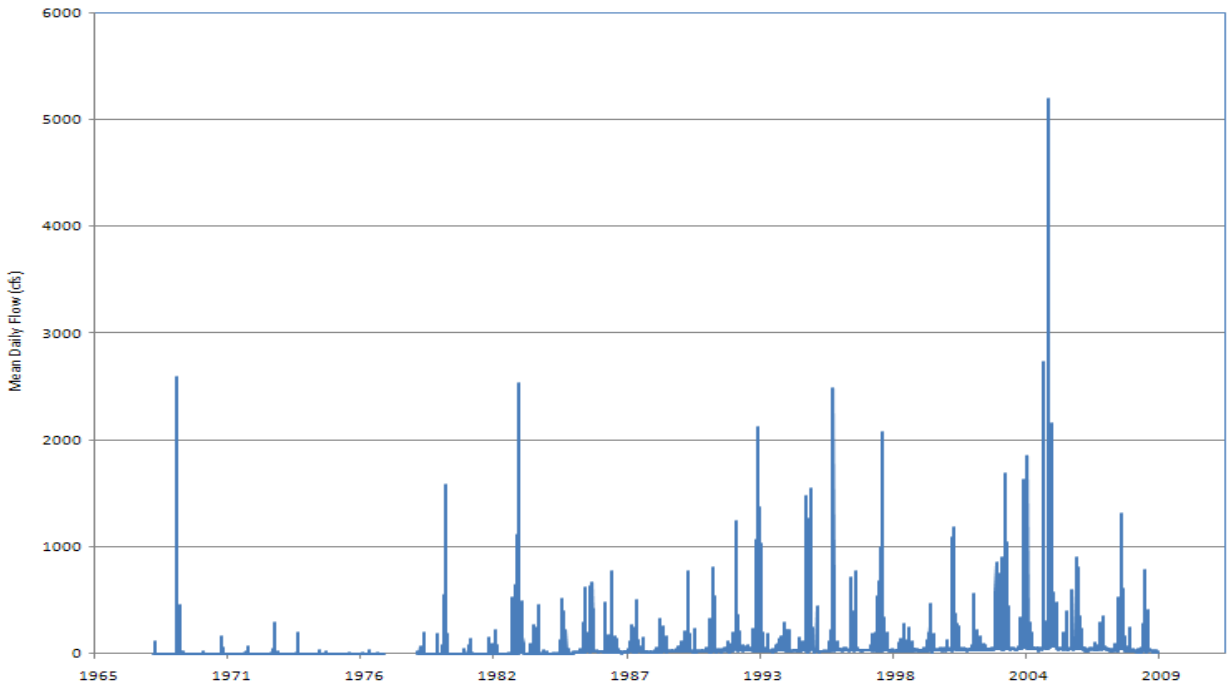
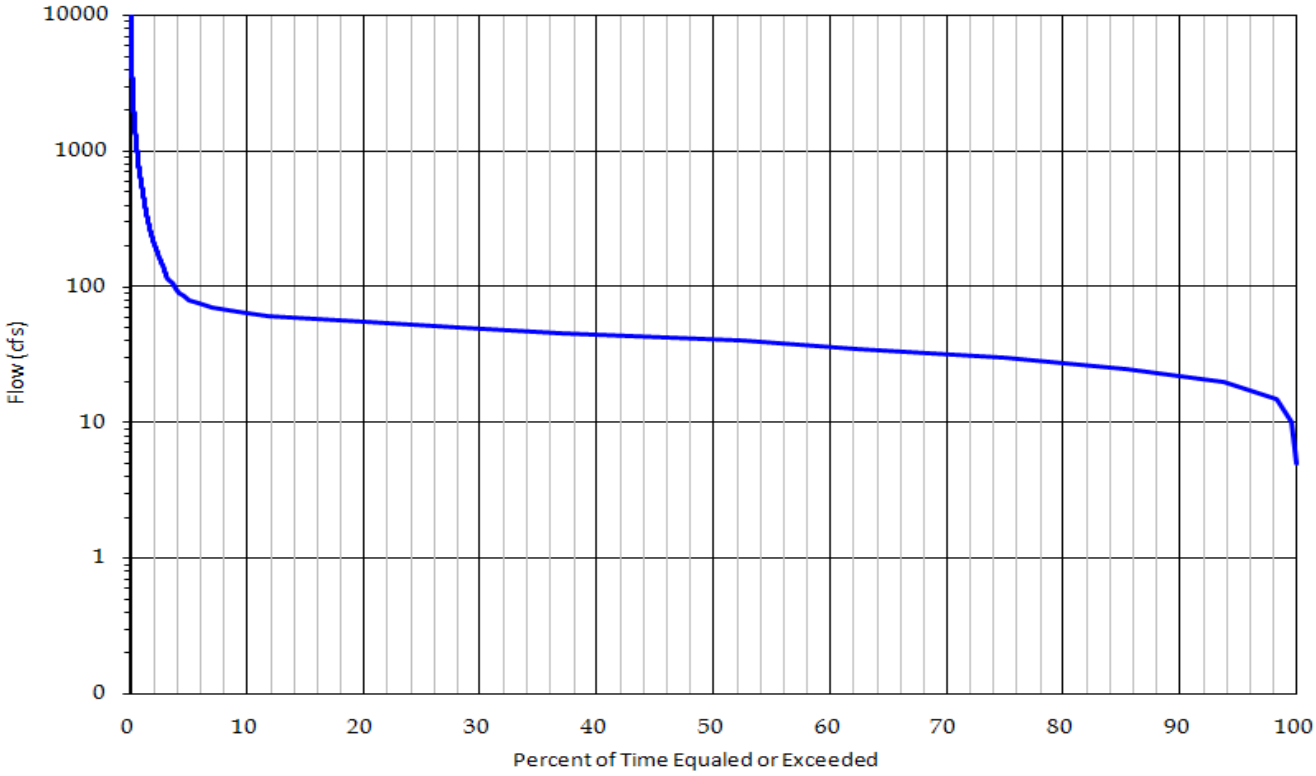


Figure CC-10, Mean Daily Flow in Cucamonga Creek (1968-2009) (Source: Use Attainability Analysis Technical Report Cucamonga Creek, CDM, August 2010, Figure 4-2)

Figure CC-11, Channel Flow Duration Curve for the Cucamonga Channel (1988-2008) (Source: Use Attainability Analysis Technical Report Cucamonga Creek, CDM, August 2010, Figure 4-3)



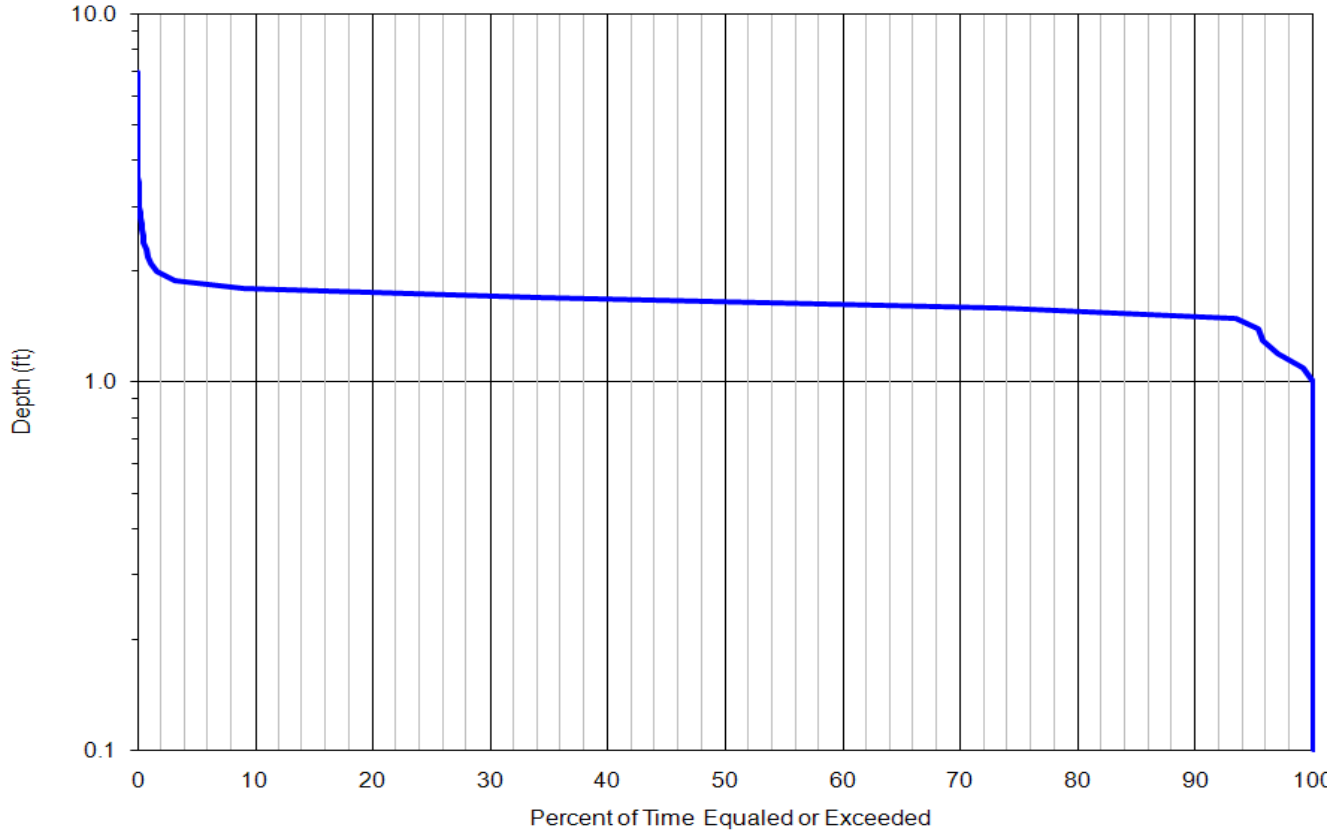


Figure CC-12. **Channel Depth Curve for the Cucamonga Creek (1988-2008).** (Source: Use Attainability Analysis Cucamonga Creek, CDM August 2010, Figure 4-4)

5.6.6.5 Access and Safety

The Riverside County Flood Control and Water Conservation District and the San Bernardino County Flood Control District, which own and manage the channel in Reach 1, prohibit public access into the channel. As a result, the entire length of Reach 1 is fenced with locked gates and posted to keep individuals out of the channel (see Figure CC-13). There are few maintenance entry points that might be used by the public for unauthorized access to the channel along Reach 1. Access is also limited by the vertical walls of the channel that occur in most of Reach 1.

Entry into the channel when it is carrying, high, wet- weather flows would be extremely dangerous, even deadly. Wet weather flows can fill the channel bottom from wall to wall. The City of Ontario Fire Department has installed a couple of swift water rescue systems (cables that stretch across the channel) in the vertical walled section of the channel that lies within the City of Ontario. It is obviously risky and dangerous for individuals to enter the channel during any time of the year by climbing over fences or gates walking/scaling down the vertical or even trapezoidal channel walls.

Figure CC-13. A section of Cucamonga Creek, Reach 1, near Baseline Street in the City of Rancho Cucamonga showing locked gate, fencing, and no trespassing/warning sign. This is an example of how the entire length of Reach 1 is fenced with locked gates and posted to keep individuals out of the channel. Photograph by Regional Board staff, May 2011**.**

5.6.6.6 Adjacent Land Use

The Reach 1 watershed is composed of agricultural, residential and mixed urban and industrial land uses. The drainage area in lower part of the Reach, particularly adjacent to the trapezoidal wall section, is still largely in agricultural use. Further upstream, in the Cities of Ontario, Rancho Cucamonga, and Upland, the land uses in the drainage area are predominantly urban and include a mix of residential, commercial, transportation, industrial and public service uses. The entire drainage area has been rapidly transitioning to urbanization in the last several years. Land use adjacent to and in the vicinity of Reach 1 is shown in Figure CC-14.

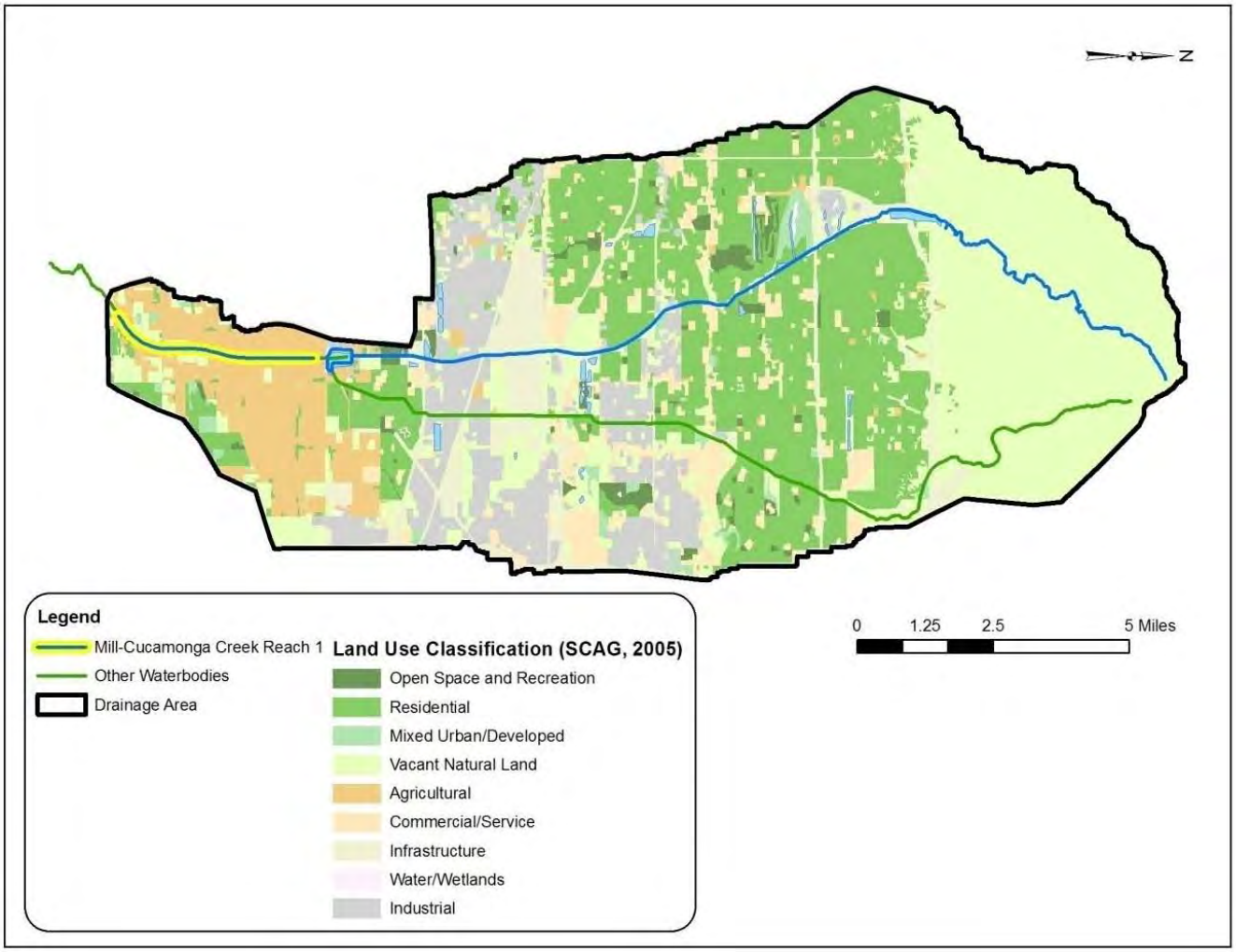


Figure CC-14. Land Use with the Cucamonga Creek Drainage Area (Source: Use Attainability Analysis Technical Report for Cucamonga Creek, CDM, August 2010, Figure 2-4)

5.6.6.7 Water Quality Conditions

Regional Board staff performed bacteria quality monitoring approximately weekly at Mill Creek at Chino Corona Road (about 0.3 mile downstream of the lower terminus of Reach 1)) and at Cucamonga Creek at Merrill Avenue, from 2002 to 2004. [Note again that Cucamonga Creek is referred to as Mill Creek beginning where the concrete trapezoidal channel transitions to a trapezoidal rip rap channel downstream of Hellman Avenue (See Figure CC-4). San Bernardino County Flood Control District (SBCFCD) performed bacteria quality monitoring approximately monthly at Cucamonga Creek at Hellman Avenue, from 2001 to 2009. SBCFCD also conducted bacteria quality monitoring approximately weekly at Mill Creek at Chino Corona Road from 2007-2009. Figure V-CC-15 shows the sampling locations. The data from the monitoring described above are summarized in Appendix 1 of this report and Table 3-3 of the CC Technical Report.

The data were combined for analysis and presentation within the CC Technical Report (Section 3.1.2). For fecal coliform, when 5 or more samples were collected in a 30 day period (calendar month, not rolling 30 day periods), a geometric mean (geomean) was calculated and compared to the existing REC1 fecal coliform objective (200 organisms/100mL based on five or more samples/30day period). When insufficient data were available to calculate geomeans, the fecal coliform data were compared generally to that part of the existing REC1 fecal coliform objective that specifies that no more than 10% of the samples exceed 400 organisms/100mL for any 30-day period. Similarly, geomeans were calculated for *E. coli* provided that five or more samples/30 day period had been collected. The *E. coli* geomeans were compared to the recommended *E. coli* geomean objective (126/100mL).

The analyses show that the existing REC1 fecal coliform objectives and the proposed REC1 *E. coli* objective are not consistently attained. Of nine geomeans calculated for fecal coliform, six exceed the geomean objective of 200/100mL. More than half of the samples exceeded 400/100mL. Similarly, for *E. coli,* of nine geomeans calculated, five exceeded the proposed geomean objective of 126/100mL. See Figure CC-16 and CC-17.

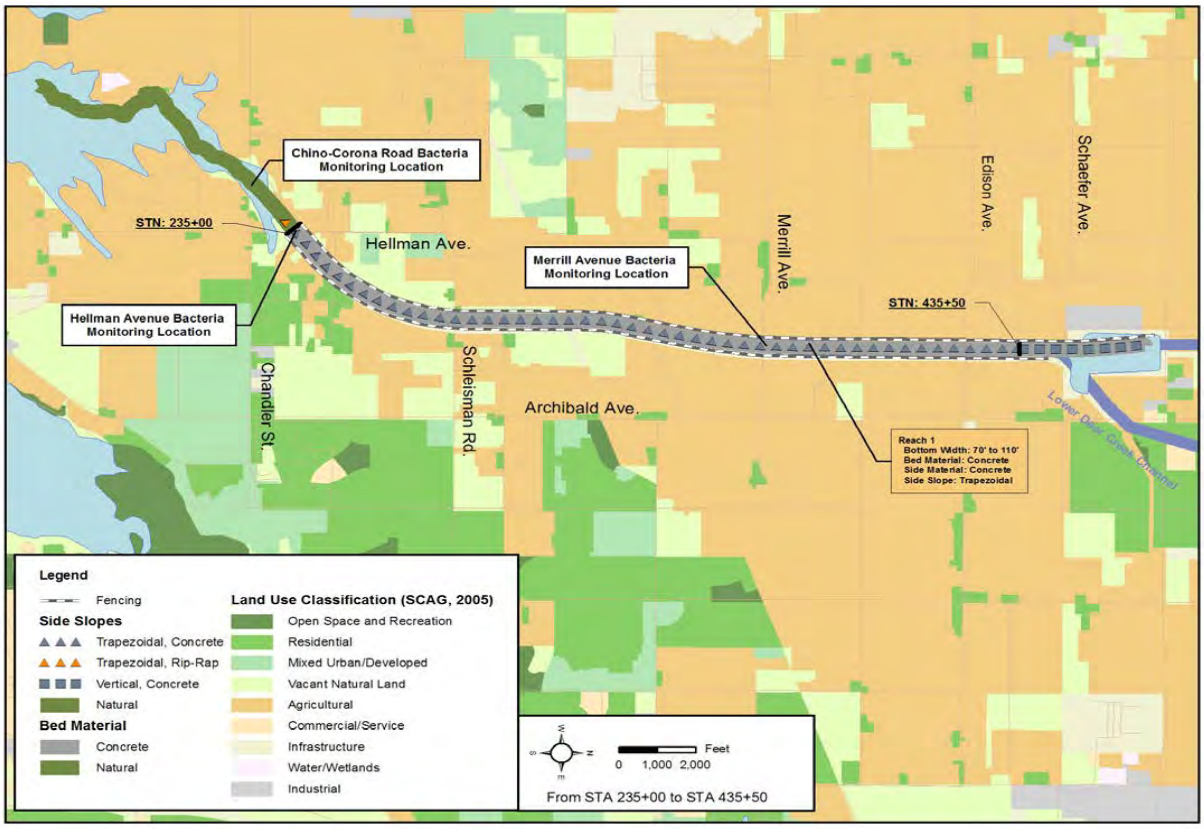


Figure CC-15. Mill Creek at Chino Corona Road and Cucamonga Creek at Hellman Avenue and Merrill Avenue Bacteria Monitoring Sampling Locations**.** (Source: Use Attainability Analysis Technical Report for Cucamonga Creek, CDM, August 2010, Figure 3-16)

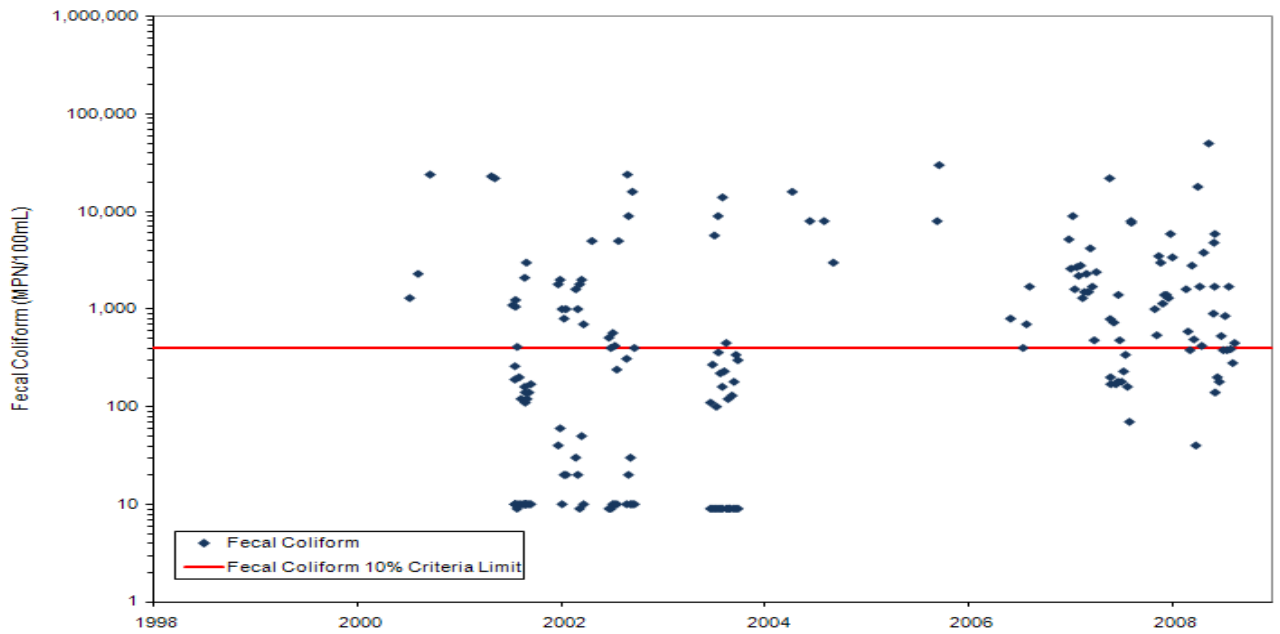


Figure CC-16. **Time Series of Fecal Coliform Concentrations in Mill Cucamonga Creek from 2001 through 2009 (**Source: Use Attainability Analysis Technical Report for Cucamonga Creek, CDM, August 2010, Figure 3-17)

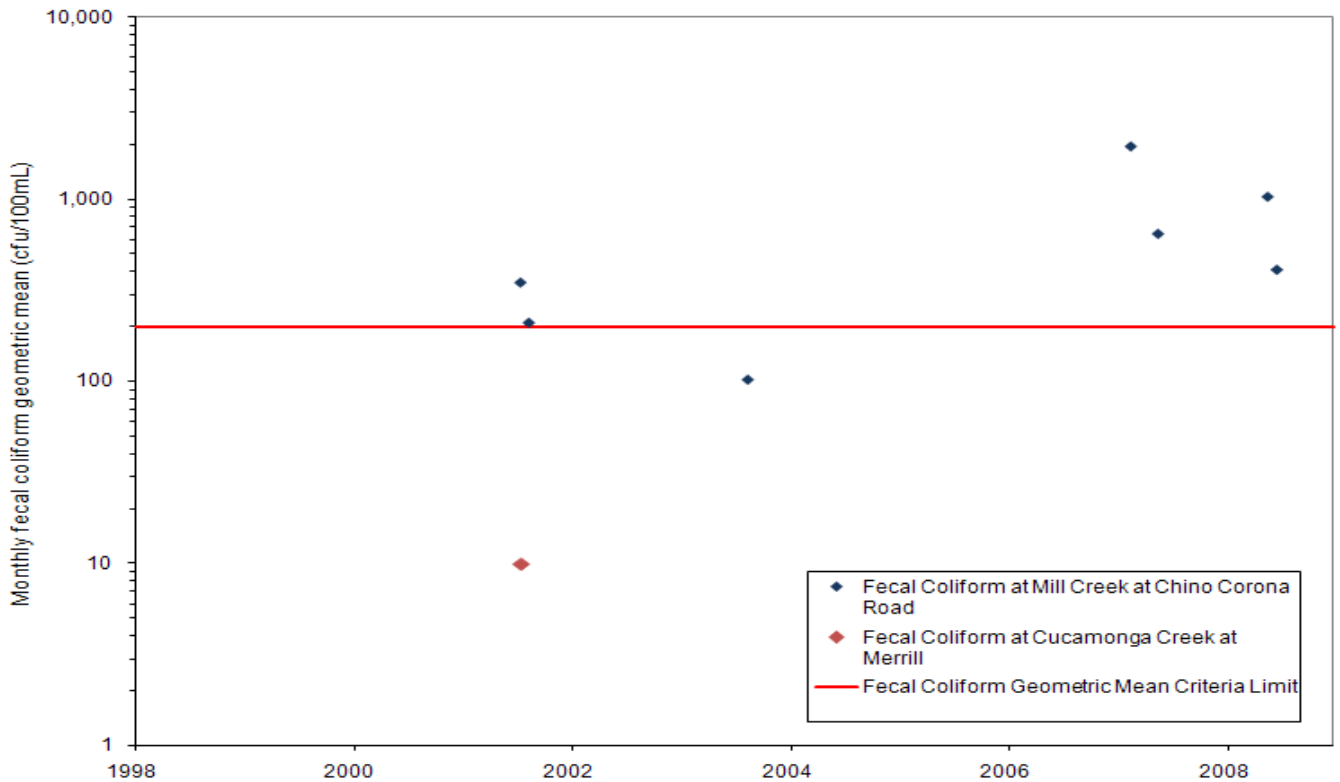


Figure CC-17. **Monthly Geometric Mean Fecal Coliform Concentrations in Mill Cucamonga Creek from 2001 through 2009.** (Source: Use Attainability Analysis Technical Report for Cucamonga Creek, CDM, August 2010, Figure 3-18).

5.6.6.7.1 Expected Water Quality Improvement[2]

This section describes programs developed by the San Bernardino and Riverside County stormwater programs to address bacteria indicator inputs resulting from urban runoff. As described above, the drainage area tributary to Reach 1 is rapidly urbanizing. The Stormwater Programs were formed to meet the requirements of the Municipal Separate Storm Sewer System (MS4) Permit issued to each county. The Counties have developed and implemented a wide range of Best Management Practices (BMPs) focused on source control of pathogens and other pollutants. BMP implementation in the Cucamonga Creek watershed is guided largely by the Middle Santa Ana River Watershed Bacteria Indicator TMDLs and MS4 Permit requirements relevant to those TMDLs.

The Regional Board adopted Bacteria Indicator Total Maximum Daily Loads (TMDLs) for Reach 3 of the Santa Ana River and its major tributaries, including Cucamonga Creek, in 2005. USEPA approved the TMDLs in 2007. To support TMDL implementation, the Middle Santa Ana River (MSAR) Task Force (stakeholders representing urban stormwater dischargers, agricultural operators and the Regional Board) was established. The TMDLs required urban stormwater dischargers in the MSAR watershed to (1) implement a watershed-wide compliance monitoring program; and (2) develop an Urban Source Evaluation Plan (USEP) for the purpose of identifying specific activities, operations, and processes in urban areas that contribute bacteria to MSAR waterbodies.

In 2006, the Santa Ana Watershed Project Authority, in cooperation with the SBCFCD, Riverside County Flood and Water Conservation District (RCFWCD), and Orange County Water District (OCWD)[3] submitted a successful Proposition 40 grant proposal to the State Board to support the implementation of then-anticipated TMDL requirements. The resulting grant project, MSAR Pathogen TMDL-BMP Implementation (Grant Project), was developed in part to initiate watershed-wide compliance monitoring and characterize urban bacteria sources within the watershed.

Implementation of the Grant Project has resulted in:

- The establishment of a watershed-wide compliance monitoring program;
- A Regional Board - approved USEP to guide activities that focus on (1) bacterial indicator source evaluation studies; and (2) evaluation of opportunities for implementation of BMPs dedicated to bacterial load reductions.

The Grant Project final report contained a BMP control strategy and is serving as a foundation for Comprehensive Bacteria Reduction Plans (CBRPs), which are required by the MS4 Permits.

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[2] Much of the information for this section was derived from the draft Comprehensive Bacteria Reduction Plans (CBRP) submitted by the Counties of Riverside and San Bernardino in December 2010 in response to requirements of the Middle Santa Ana River Watershed Bacterial Indicator TMDLs and permit requirements implementing those TMDLs.

[3] Orange County Water District recharges a significant volume of the flows in the Santa Ana River in the Orange County Groundwater Management Zone, downstream of the Middle Santa Ana River. The District thus has a significant interest in the quality of the flows in the River.

The CBRPs are intended to address bacteria reduction in the Middle Santa Ana River Watershed, including Reach 1 of Cucamonga Creek. Final Draft CBRPs were submitted in late December 2010 by Riverside and San Bernardino Counties to Regional Board staff for review. The CBRP is a long term plan designed to achieve compliance with dry weather condition (April 1- October 31) wasteload allocations for bacterial indicators established by the MSAR Bacterial Indicator TMDLs. The MS4 permits require compliance with the final water quality based effluent limitations (WQBELs) implementing the TMDLs no later than December 31, 2015. The final WQBELs may be the development and implementation of a CBRP that will achieve compliance with the urban wasteload allocations during dry weather. Alternatively, if the measures identified in the CBRP are not completed in a timely manner, then the urban wasteload allocations for dry weather conditions become the final WQBELs.

While implementation of the CBRP is expected to achieve the numeric wasteload allocations, it is also recognized that CBRP implementation will likely be an iterative and adaptive process, given inherent uncertainties regarding the efficacy of bacteria indicator control BMPs. Further, the CBRPs must be tailored to assure compliance with applicable water quality standards for Cucamonga Creek (and other waters). The intent of this UAA analysis is to document the basis for changes to recreational standards that, if approved, would likely affect the type and location of requisite BMPs and, in turn, the strategies identified in the CBRP.

5.6.6.8 Recreation Use Surveys

This section provides information on current, historical, and probable future recreational activity in Reach 1 of Cucamonga Creek.

5.6.6.8.1 Evidence of Actual Recreational Use

Recreational use surveys were performed by CDM at three locations on Reach 1 of Cucamonga Creek. Two sites were surveyed from July 2005 through November 2006. The third site was surveyed from October 2007 through October 2008. The three sites surveyed are:

- Cucamonga Creek facing upstream at Hellman Avenue near Prado Basin (2005-2006)
- Cucamonga Creek facing downstream at Hellman Avenue (2005-2006)
- Cucamonga Creek at RP1 facing upstream (2007-2008)

It should be noted that the reach of Cucamonga Creek downstream of Hellman Avenue is <u>not</u> included in recommendations for changes to water quality standards based on this UAA analysis. The survey at this location (facing downstream at Hellman Avenue) was conducted to provide basic information regarding recreational activity, if any, in the area and to assess whether any such activity might affect recreational use upstream in Reach 1 in the vicinity of Hellman Avenue.

Digital field observation cameras and data transfer technology, coupled with weekly on-location physical surveys to check the camera equipment were used to collect the data. Survey results for the two Hellman Avenue sites are described in the CC Technical Report. Results for the survey conducted at the RP1 site are discussed in the “Recreational Use Survey Data Report –

Cucamonga Creek at RP1", CDM, July 2, 2009 (Recreational Data Report). Camera views at the survey locations are shown in Figures CC-18, 19 and 20.

Figures CC-18 and 19. Camera views at two Recreational Use Survey Locations. Top: looking downstream at Hellman Avenue. Bottom: looking upstream at Hellman Avenue into Reach 1. (Source: Use Attainability Analysis Technical Report for Cucamonga Creek, CDM, August 2010 Figures 3-2 and 3-3)

Figure CC-20. Camera View at Cucamonga Creek at RP1 Survey Location, Looking upstream.
(Source: Recreational Use Survey Data Report – Cucamonga Creek at RP1, CDM, July 2009, Figure 2)

The survey duration and number of images collected for each location are shown in Table CC-2. An image was collected every fifteen minutes during daylight hours throughout the study duration unless signal strength fluctuations or equipment failures precluded collection and transmission. Images were not collected at night due to darkness.

Table CC-2 Recreational Use Survey Duration and Number of Images Collected			
Survey Location	**Start Date**	**End Date**	**Number of Images**
Hellman Avenue Upstream	11/1/2005	11/1/2006	2,546
Hellman Avenue Downstream	7/26/2005	11/1/2006	17,678
RP1, facing upstream	10/2/07	10/10/08	27,122*

* During the first half of the survey period, additional images (beyond the standard 0-, 15-, 30- and 45-minute intervals) were occasionally collected as the result of a technical communication interchange error. This error was corrected in April 2008. See discussion in "Recreational Use Survey Data Report – Cucamonga Creek at RP1", CDM, July 2, 2009)

Any image containing a person or persons with channel fencing or boundaries was defined as a recreation event. If a person or persons were observed meeting these conditions during the weekly on-site surveys, these were also considered events. An event could include one or more persons. For each event, each person's activity and the estimated duration of the event were logged. If an activity was captured on only one image, an activity duration was reported as <30 minutes. Likewise, if the same activity by the same person or persons was observed in two consecutive fifteen-minute interval images, the duration was reported as <45 minutes.

The full recreational use survey information can be found in two reports prepared by CDM: "Recreational Use Survey Data Report – Cucamonga Creek", November 2006[4] and "Recreational Use Survey Data Report – Cucamonga Creek at RP1", July 2009[4]. Table CC-3 presents a summary of the activity recorded at the Cucamonga Creek survey locations. The seasonal periods defined in southern California NPDES stormwater permits were used to categorize the observations by season: dry season (April 1 to September 30) and wet season (October 1 to March 31).

[4] It should be noted that in these Recreational Use Survey Data Reports (and those prepared for the other waters for which UAAs are discussed in this staff report), recreational events were differentiated as contact or non-contact events. Where it appeared that there was or might be contact activity in an image, the type of that contact was categorized as: incidental contact, contact below the ankle, contact between the ankle and waist, contact between the waist and neck, contact above the neck, or non-recreation contact. However, subsequent analyses, discussed in the CC Technical Report, abandoned this categorization scheme. It was decided that the consultants' determination in the recreational use survey reports of whether an event should be categorized as contact or non-contact imposed a pre-determination of the nature of the event that was intended instead to be considered by the Task Force. Thus, the CC Technical Report identifies the type of activities recorded. Table V-CC-3 summarizes the types of activities observed.

Table CC-3 Recreation Activity Recorded for Cucamonga Creek, Reach 1					
Location	**Number of Individuals**			**Estimated Duration (min)**	**Types of Activities**
	Total	**Dry Season**	**Wet Season**		
Hellman Avenue Upstream	1	1	0	30	Vehicle Driving in Water
Hellman Avenue Downstream+	35	21	14	1,080	Walking, horseback riding in water
RP-1 upstream at RP1	0	0	0		

+ Cucamonga Creek downstream of Hellman Avenue is not included in the recommendations for REC beneficial use changes based on this UAA analysis.

Figures 3-4 through 3-15 in the CC Technical Report are photographs of observed activity. Figures 3-4 and 3-7 are reproduced below (Figures CC-21 and 22, respectively).

Figure CC-21. Photo of Activity (vehicle in channel) at Cucamonga Creek at Hellman Avenue looking upstream into Reach 1. (Source: Use Attainability Analysis Technical Report for Cucamonga Creek, CDM, August 2010, Figure 3-4)

Figure CC-22. Photo of Activity at Cucamonga Creek (Mill Creek) at Hellman Avenue looking downstream. (Source: Use Attainability Analysis Technical Report for Cucamonga Creek, CDM, August 2010, Figure 3-7)

Overall, the survey results indicate no recreation activity of any kind in Reach 1 of the Creek, with the sole exception of a vehicle observed being driven in the Creek (See Figure CC-21).

5.6.6.8.2 Physical Surveys and Other Information

In addition to the weekly physical surveys associated with maintenance of the digital cameras, Task Force members visited the site at Hellman Avenue at Cucamonga Creek on six weekends in July and August 2006. Task Force members were asked to stay at the location for half an hour and record what recreational activities they observed. No people were observed in the channel during the time Task Force members visited the site. The Task Force members described the water depth as ankle deep or less. Regional Board staff taking part in the survey noted that the extreme heat, lack of shade, shallow flows over a concrete bottom that was either mucky or very slippery, and swarms of flies contributed to poor conditions for water contact or non-contact recreation.

In the summer and early fall of 2011 Task Force members again visited Cucamonga Creek Reach 1 on weekends to assess whether conditions had changed at the site and whether there was evidence of recreational activity. This time Task Force members were encouraged to visit several locations in Reach 1. It was noted that the upper section of the channel had no (completely dry) to very little flows while the lower sections of the channel carried treated effluent, resulting in shallow (roughly ankle deep) flows. There was no evidence of either REC1

or REC2 activity. The channel remains entirely fenced, with access gates locked, and posted to prevent access. A bicycle trail follows the channel in the most upstream four mile section of Reach 1, but the trail appears lightly used and in disrepair.

SBCFCD staff who conduct maintenance activities in the channel have reported to Regional Board staff that they have seen no one in any segment of Reach 1. In addition, the City of Ontario Fire Department has reported to Regional Board staff that the swift water rescue devices in the channel have not been used for a rescue in at least ten years.

As stated previously, the CDM camera/physical surveys of Cucamonga Creek focused on the lower part of Reach 1, downstream of the confluence with Lower Deer Creek. The physical surveys conducted by Task Force members in July and August 2006 focused on the same area. Regional Board staff evaluated the entire Reach 1 in October 2009 and on May 3, 2011 the upper portion and prepared a brief report of observations, including any evidence of recreational activity. These observations are reflected in the preceding discussion. Once again, no evidence of current recreational activity in or near the Creek channel was observed.

5.6.6.8.3 Evidence Regarding Historic Use Recreational Use

To collect information regarding historical recreational use, inquiries to local jurisdictional agencies, online searches of California newspaper archives, databases (engineering and environmental trade journals), and search engines such Google News archive and Lexis-Nexis were conducted to identify any accounts or reference to recreational activities in the creek. No historical use information was identified from these searches.

5.6.6.8.4 Probable Future Use

Information regarding potential future recreational uses for Reach 1 of Cucamonga Creek was obtained through discussions with local agencies and review of relevant master plans. The findings are described in the CC Technical Report (Section 3.3) SBCFCD provided the *Recreation Master Plan for Cucamonga Creek and Tributaries, Feature Design Memorandum No. 3.*[5] This document describes concept plans for bicycle, equestrian, and hiking trails along the creek. Bicycle trails were planned for the eastern side of the creek; equestrian/hiking trails were planned for the western side of the creek. The design memorandum indicated that if funding were available in fiscal year 1975, construction of equestrian, hiking, and bicycle trails would occur adjacent to Cucamonga Creek from the Lower Deer Creek confluence to Hellman Avenue. This plan was never implemented. From discussions with City of Ontario and San Bernardino County Regional Parks Department, there are no current plans for development of future recreational uses for this reach of Cucamonga Creek (Communication with Steve Wilson, NPDES Coordinator, Water/Wastewater Engineer, City of Ontario, August 12, 2009; and Jim Canaday, Planner III, San Bernardino County Regional Parks Department, September 17, 2009).

In 2011, Task Force members had further discussions with City of Ontario, Rancho Cucamonga, and County staff concerning recreational plans for Cucamonga Creek. The city of Ontario and

[5] U.S. Army Engineer District, Los Angeles, Corps of Engineers. Recreation Master Plan for Cucamonga Creek and Tributaries, Feature Design memorandum No. 3, March 1974.

county staff indicated that there were still no plans for development of recreational facilities for Reach 1 of Cucamonga Creek. City of Rancho Cucamonga staff indicated that there were no plans to extend the existing bicycle trail located alongside the most upstream section of the channel beyond its current four mile length.

In addition to inquiries with local jurisdictional agencies, online searches of California newspaper archives, databases (engineering and environmental trade journals), and search engines such Google News archive and Lexis-Nexis were conducted to identify any accounts or reference to future recreational activities in the channel. No potential probable future recreational uses were identified from this search.

5.6.6.8.5 Summary – Evidence of Recreation Use

5.6.6.8.5.1 REC1

In summary, neither the intensive photographic surveys nor the field surveys showed any evidence of current REC1 use in Reach 1 of Cucamonga Creek. Further, there is no evidence of historic or reasonably possible future REC1 use in Reach 1 of the creek. The lack of REC1 use is a reflection of the various characteristics of Reach 1 that are described in detail in the preceding sections of this report. These include vertical or trapezoidal, concrete-lined walls for the entire length of Reach 1. Coupled with fencing along the length of the channel on both sides, these channel characteristics make access difficult and dangerous. Even the trapezoidal side walls of the channel are difficult to walk down. The channel bottom is slippery in many areas because of algae growth, making walking dangerous and contact activity unappealing. Regional Board staff noted the difficulty in scaling down the trapezoidal walls and walking without slipping on the algae covered bottom in the channel upstream of Hellman Avenue during dry weather in February of 2011 (see Figure CC-5). Low flow conditions predominate in the channel, making water contact leading to ingestion highly unlikely. High flows during storm events make recreational activity in the channel extremely unsafe (temporary suspension of recreation standards during certain high flow conditions is proposed; see Section 5.5).The conditions are so potentially unsafe that, as noted, the City of Ontario Fire Department has placed swift water rescue cable devices in the channel in mid–reach segments. Much of the channel is out of view from the general public since a significant portion of it is adjacent to agricultural and industrial lands uses (see Figure CC-14). These uses are not conducive to visiting the channel, let alone recreational activity in it. Residential land use predominates in the upper areas adjacent to Reach 1; however, the channel in these areas is characterized by vertical concrete walls, making entry highly dangerous and unlikely. There are few bicycle trails along the Reach that might encourage visitation. There are numerous public and private swimming pools in the watershed and more attractive recreational areas, including the headwaters of Cucamonga Creek (Reach 2) and the Santa Ana River, Reach 3 are in reasonably close proximity.

5.6.6.8.5.2 REC2

As shown in Table CC-3 (Recreation Activity Recorded for Cucamonga Creek, Reach 1) there are no observations or reports of individuals walking or recreating in or adjacent to the Reach 1 channel. As noted, the sole observation of human presence in Reach 1 was a vehicle being

driven in the channel. This may have been a County Flood Control Maintenance vehicle. As noted above, there is limited sight view of much of Reach 1, and much of the reach is also adjacent to commercial/industrial land uses. Channel morphology severely limits wildlife habitat and the potential for viewing wildlife. Therefore, Board staff recommends that the REC2 use be removed and de-designated for this reach.

5.6.6.9 UAA Factor Evaluation

As discussed in Section 5.6.2.1 Regulatory Background – UAAs, per federal regulation at 40 CFR 131.10 (h), a designated use may be removed or modified to allow the application of less stringent water quality objectives provided that the use is not an "existing use" and that the use cannot be attained by implementing effluent limits on point source discharges and/or cost-effective and reasonable best management practices for nonpoint source control.

The preceding evidence demonstrates that REC1 is not an "existing use" for Reach 1 of Cucamonga Creek. There is no evidence of actual REC1 use, either now or historically. Water quality objectives to protect REC1 have not been consistently attained.

POTW discharges to Reach 1 of Cucamonga creek already receive tertiary treatment and are required to meet coliform bacteria limitations (2.2 MPN/100mL) that are significantly more stringent than the fecal coliform objectives established in the Basin Plan to protect REC1 uses. (see Section 4.1). These POTW limitations in NPDES permits/Waste Discharge requirements are based on the recommendations of the California Department of Public Health (CDPH) to assure an essentially pathogen-free effluent and, thereby, the protection of the health of members of the public who may come into contact with the effluent[6]. As discussed above ("Expected Water Quality Improvement"), BMPs are being planned and implemented to address bacteria reductions in stormwater and nuisance runoff to Middle Santa Ana River tributaries pursuant to MS4 permit requirements. In locations, such as Reach 1 of Cucamonga Creek, where there is no REC1 activity or the potential for it, then BMP implementation to assure strict compliance with REC1 objectives would be neither reasonable nor cost-effective. (However, it is recognized that any REC1 use downstream of such areas must be protected through appropriate BMPs.)

In short, the REC1 use cannot be attained in Reach 1 by any more stringent limitations on POTW discharges. Evidence of the lack of actual and potential recreational use in Reach 1 indicates that requirements for BMP implementation to achieve REC1 objectives would not be reasonable.

Since there is no evidence that REC1 is an "existing use", and since there is now no evidence that the use could be attained through the implementation of effluent limitations or additional cost-effective and reasonable BMPs, then one or more of the UAA factors in 131.10(g) may

[6] CDPH has developed wastewater disinfection guidelines for discharges of wastewater to surface waters where REC1 is a beneficial use ("Wastewater Disinfection for Health Protection, February 1987). The disinfection guidelines recommend the same treatment requirements for wastewater discharges to REC1 waters as those stipulated in the California Code of Regulations, Title 22, Division 4, Chapter 3 (Water Recycling Criteria) for supply of recycled water to nonrestricted recreational impoundments since the public health risks under both scenarios are analogous.

justify the removal of the REC1 use. As stated previously, the 131.10(g) factors define the circumstances under which designated “swimmable” (REC1) (and “fishable”) uses may be removed or subcategorized to allow the application of less stringent water quality objectives. The UAA factor evaluation is discussed next.

The following describes the evaluation of the data and information presented above relevant to two of the UAA factors identified in 40 CFR 131.10(g). These are:

- Natural, ephemeral intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met. (131.10(g)(2))

- Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modifications in a way that would result in the attainment of the use. (131.10(g)(4))

5.6.6.9.1 Natural, Ephemeral, Intermittent or Low Flow Conditions or Water Levels [40 CFR 131.10(g)(2)]

Flow data and analyses are presented above and in the CC Technical Report (Section 4.2.1). The dominant dry weather flows in the lower sections of Reach 1 create perennial flows that are less than approximately 1.3 ft deep 95% of the time (See Figure CC-12). More recently (February 2011), Regional Board staff measured the deepest section of dry weather flow in Cucamonga Creek at Hellman Avenue to be 5 inches deep. There are no sources of additional effluent discharges that could be used to augment the flows in Reach 1 to enable the REC1 use be met. As noted, some highly treated effluent is already discharged to Reach 1; other effluent produced at the IEUA Regional Plants is used for water recycling, which conforms to the State Board’s “Policy for Water Quality Control for Recycled Water” and the intent of the California Legislature to support and encourage water recycling.

The predominant low flows in the Channel render the REC1 use unattainable, especially when considered in concert with the other relevant factors discussed above (access, safety, proximity to other, preferable recreational areas, etc.).

5.6.6.9.2 Dams, Diversions or Other Types of Hydrologic Modifications [40 CFR 131.10(g)(4)]

Reach 1 of Cucamonga Creek has been very significantly modified for flood control purposes. As described above and summarized in Table CC-1, the channel in Reach 1 is entirely concrete lined. The channel walls are vertical except for the lower four mile segment of the channel, which is trapezoidal. Representative photographs of the modified channel are shown in this report in Figures CC-5, 6, 7, 8, 9, 13, and 18, and additional images are provided in the CC

Technical Report (Figs 2-7, 2-8, 2-9, and 3-2). Given the existing level of development in the vicinity of the channel and rapid urbanization, there is an ongoing and increasing need to provide flood protection. Therefore, it is not considered feasible to restore the channel to its original condition or to operate the channel so as to attain the REC 1 use.

5.6.6.10 Conclusions and Recommendations

The preceding evidence and analyses demonstrate that:

- REC1 is not an "existing" use in Reach 1 of Cucamonga Creek, Reach 1 and the use cannot be attained by implementing effluent limits on point source discharges and/or cost-effective and reasonable best management practices for nonpoint source control. Therefore, it is appropriate to remove the REC1 designation for this Reach that i
- s currently included in the Basin Plan.

- The REC2 designation is not justified for Reach 1. Therefore, it is appropriate to remove the REC2 designation for this Reach that is currently included in the Basin Plan.

Recommendations regarding the REC1 and REC2 designations for Cucamonga Creek, Reach 1 are summarized in Table CC-4.

Table CC-4

	Reaches	Reach Boundary	REC1	REC2	Current Basin Plan Beneficial Use Designation
Cucamonga Creek	Reach 1	Mill Creek Confluence, at Hellman Avenue, to Cucamonga Canyon Dam near 23rd Street, Upland	Remove REC1 designation	Remove REC2 designation	REC1 and REC2

5.6.6.11 References

California Code of Regulations, Title 22, Division 4, Chapter 3 (Water Recycling Criteria).

California Department of Public Health (CDPH). February 1987. "Wastewater Disinfection for Health Protection."

California Regional Water Quality Control Board, Santa Ana Region. January 12, 2012. Staff Report – Basin Plan Amendments – Revisions to Recreational Standards for Inland Fresh Surface Waters in the Santa Ana Region.

CDM. November 24, 2006. Technical Memorandum: Recreational Use Survey Data Report – Cucamonga Creek.

CDM. July 2, 2009. Technical Report: "Recreational Use Survey Data Report – Cucamonga Creek at RP1.

CDM. August 2010. "Use Attainability Analysis Technical Report for Cucamonga Creek.

Riverside County Stormwater Program. December 31, 2010. Draft "Comprehensive Bacteria Reduction Plan."

San Bernardino County Stormwater Program. December 31, 2010. Draft "Comprehensive Bacteria Reduction Plan (CBRP)."

State Water Resources Control Board. 2009. "Recycled Water Policy."

U.S. Army Engineer District, Los Angeles, Corps of Engineers. March 1974. Recreation Master Plan for Cucamonga Creek and Tributaries, Feature Design Memorandum No. 3.

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Appendix 1 Table 3-3
Summary of Monthly *E. coli* and Fecal Coliform at Mill-Cucamonga Creek (2001-2009)

Month and Year	Fecal Coliform					*E. Coli*			
	Number of Samples Collected	Minimum Value (MPN /100ml)	Maximum Value (MPN /100ml)	Geometric Mean[1] (MPN/100mL)		Number of Samples Collected	Minimum Value (MPN /100mL)	Maximum Value (MPN /100mL)	Geometric Mean[1] (MPN /100mL)
Mill Creek at Chino Corona Road									
Feb-02	7	120	1,240	350		7	60	680	170
Mar-02	4	110	2,100			4	50	100	
Apr-02	1	170	170			1	80	80	
Jul-02	4	800	2,000			4	250	910	
Aug-02	1	1,000	1,000			1	500	500	
Sep-02	3	1,000	1,800			3	400	640	
Oct-02	2	700	2,000			2	210	410	
Jan-03	4	400	570			4	190	530	
Feb-03	1	240	240			1	260	260	
Mar-03	3	30	9,000			3	10	510	
Apr-03	2	400	16,000			2	70	210	
Jan-04	4	100	5,700			4	40	2,600	
Feb-04	4	160	360			4	40	210	
Mar-04	5	9	450	103		5	9	440	67
Apr-04	2	300	340			2	60	110	
Jul-07	3	2,600	9,000			3	1,000	5,700	
Aug-07	4	1,600	2,800			4	720	1,170	
Sep-07	5	1,300	4,200	1,951		5	550	1,150	765
Oct-07	3	480	2,400			3	500	910	
Dec-07	6	170	22,000	647		6	120	5,000	457
Jan-08	4	180	480			4	100	360	
Feb-08	4	70	7,700			4	50	5,200	
May-08	3	540	3,500			3	590	1,260	
Jun-08	4	1,140	3,000			4	810	1,240	
Jul-08	3	1,300	5,900			3	620	8,700	
Sep-08	4	380	2,800			4	540	2,100	
Oct-08	4	40	18,000			4	140	2,800	

Appendix 1 Table 3-3
Summary of Monthly *E. coli* and Fecal Coliform at Mill-Cucamonga Creek (2001-2009)

Month and Year	Fecal Coliform					*E. Coli*			
	Number of Samples Collected	Minimum Value (MPN /100ml)	Maximum Value (MPN /100ml)	Geometric Mean[1] (MPN/100mL)		Number of Samples Collected	Minimum Value (MPN /100mL)	Maximum Value (MPN /100mL)	Geometric Mean[1] (MPN /100mL)
Nov-08	2	420	3,800			2	340	440	
Dec-08	6	140	5,900	1,033		6	210	7,200	1,311
Jan-09	5	180	850	411		5	270	660	444
Feb-09	3	280	450			3	380	580	
Cucamonga Creek at Hellman									
Jan-01	1	1,300	1,300			1	340	340	
Feb-01	1	2,300	2,300			1	2300	2,300	
Apr-01	1	24,000	24,000			1	24000	24,000	
Nov-01	2	22,000	23,000			2	17000	23,000	
Jan-02	1	1,100	1,100			1	1100	1,100	
Mar-02	1	3,000	3,000			1	5000	5,000	
Nov-02	1	5,000	5,000			1	5000	5,000	
Feb-03	1	5,000	5,000			1	5000	5,000	
Mar-03	1	24,000	24,000			1	24,000	24,000	
Feb-04	2	9,000	14,000			2	5,000	160,000	
Oct-04	1	16,000	16,000			1	16,000	16,000	
Dec-04	1	8,000	8,000			1	8,000	8,000	
Feb-05	1	8,000	8,000			1	8,000	8,000	
Mar-05	1	3,000	3,000			1	1,700	1,700	
Mar-06	1	8,000	8,000			1	5000	5,000	
Apr-06	1	30,000	30,000			1	30,000	30,000	
Dec-06	1	800	800			1	800	800	
Jan-07	1	400	400			1	400	400	
Feb-07	2	700	1,700			2	1,700	1,700	
Nov-07						1	13,000	13,000	
Jan-08	1	1,400	1,400			1	400	400	
Feb-08	1	8,000	8,000			1	5,000	5,000	
Nov-08	1	50,000	50,000			1	13,000	13,000	

Appendix 1 Table 3-3
Summary of Monthly *E. coli* and Fecal Coliform at Mill-Cucamonga Creek (2001-2009)

Month and Year	Fecal Coliform					*E. Coli*			
	Number of Samples Collected	Minimum Value (MPN /100ml)	Maximum Value (MPN /100ml)	Geometric Mean[1] (MPN/100mL)		Number of Samples Collected	Minimum Value (MPN /100mL)	Maximum Value (MPN /100mL)	Geometric Mean[1] (MPN /100mL)
Feb-09	1	1,700	1,700			1	1,700	1,700	
Cucamonga Creek Above RP-1									
Feb-02	5	1,300	7,100	3,662		5	2,500	5,600	3,836
Mar-02	4	2,400	3,900			4	880	4,800	
Apr-02	1	6,000	6,000			1	4,300	4,300	
Jul-02	4	4,500	50,000			4	570	23,000	
Aug-02	1	30,000	30,000			1	8,700	8,700	
Sep-02	3	4,800	13,000			3	600	1,970	
Oct-02	2	9,000	11,000			2	2,700	4,000	
Jan-03	4	2,200	20,000			4	700	11,000	
Feb-03	1	1,200	1,200			1	1,000	1,000	
Mar-03	3	10	700			3	10	260	
Apr-03	2	70	380			2	50	320	
Jan-04	4	470	9,300			4	200	3,100	
Feb-04	4	410	2,800			4	300	1,840	
Mar-04	5	9	700	169		5	9	410	150
Apr-04	2	310	400			2	9	180	
Cucamonga Creek at Icehouse Canyon									
Feb-02	7	9	10	10		7	10	10	10
Mar-02	6	10	10	10		6	10	10	10
Apr-02	1	10	10			1	10	10	
Jul-02	4	10	60			4	10	50	
Aug-02	1	20	20			1	50	50	
Sep-02	3	9	30			3	9	10	
Oct-02	2	10	50			2	10	50	
Jan-03	4	9	10			4	9	30	
Feb-03	1	10	10			1	10	10	

Appendix 1 Table 3-3
Summary of Monthly *E. coli* and Fecal Coliform at Mill-Cucamonga Creek (2001-2009)

Month and Year	Fecal Coliform					*E. Coli*			
	Number of Samples Collected	Minimum Value (MPN /100ml)	Maximum Value (MPN /100ml)	Geometric Mean[1] (MPN/100mL)		Number of Samples Collected	Minimum Value (MPN /100mL)	Maximum Value (MPN /100mL)	Geometric Mean[1] (MPN /100mL)
Mar-03	3	10	20			3	10	10	
Apr-03	2	10	10			2	10	20	
Jan-04	4	9	9			4	9	20	
Feb-04	3	9	9			3	9	9	
Mar-04	4	9	9			4	9	30	
Apr-04	2	9	9			2	9	9	

[1]Geometric mean calculated if at least five samples were collected during the calendar month.