



Technical Memorandum

To: Stormwater Quality Standards Task Force

From: CDM

Date: July 2, 2009

Subject: Recreational Use Survey Data Report – Perris Valley Channel

Introduction

To support basin planning efforts in the Santa Ana River watershed, an evaluation of the appropriateness of REC-1 beneficial use designations and associated bacteria water quality objectives in the Santa Ana River Watershed is being performed by the Stormwater Quality Standards Task Force (“Task Force”). The Task Force consists of representatives from a variety of stakeholder interests, including the Santa Ana Watershed Project Authority; the counties of Orange, Riverside, and San Bernardino; special districts; the Santa Ana Regional Water Quality Control Board; EPA Region 9; and local environmental groups. CDM and Risk Sciences, Inc. provide assistance to the Task Force. As part of study efforts, recreational use surveys were performed upon select waterbodies to obtain information regarding current levels of recreational use. This technical memorandum summarizes results from use surveys conducted at Perris Valley Channel.

Study Location

The location for this study was Perris Valley Channel adjacent to the Eastern Municipal Water District (EMWD) Moreno Valley Regional Water Reclamation Facility, just south of El Potrero Park in the City of Moreno Valley. Figure 1 presents an aerial photo of the survey location. The predominant land uses immediately surrounding the survey location are residential and open space/public park. As shown in Figure 2, Perris Valley Channel is a trapezoidal channel with concrete side slopes and a channel bottom that transitions from a natural to a concrete bottom in the vicinity of the survey location.



Figure 1
Perris Valley Channel Survey Location



Figure 2
Photo of Perris Valley Channel Survey Location

Survey Design

Digital field observation cameras and data transfer technology, coupled with weekly on-location physical surveys were used to collect recreational use data. Observer IV™ cameras were equipped with cellular data transmission equipment to collect an image every fifteen minutes, and transfer the image to a secure data storage server via a file transfer protocol (FTP) site. Site visits were conducted to log recreational use observations, and to monitor and maintain the image collection equipment. This survey design was selected to provide unprecedented levels of data to characterize recreational use.

A camera was installed on a light pole at the EMWD Moreno Valley Water Reclamation Facility facing upstream on Perris Valley Channel. Figure 3 shows the camera installation.



Figure 3
Photo of the Recreational Use Survey Camera Installation
for Perris Valley Channel

Table 1 summarizes the survey duration and number of images collected from Perris Valley Channel between October 3, 2007 and October 10, 2008. An image was collected every fifteen

minutes throughout the study duration unless signal strength fluctuations or equipment failures precluded collection and transmission. Images were not collected at night due to darkness.

During the first half of the survey period, additional images were occasionally posting to the FTP site in addition to the standard 0-, 15-, 30-, and 45-minute timestamp images. The additional image postings were a result of a technical communication interchange error between the camera and FTP site. The FTP site technical issue was resolved in early April 2008. The percent image capture rate of the camera over the second half of the survey period was approximately 79 percent. The capture rate over the first half of the year was skewed by the additional image posting.

Table 1 Recreational Use Survey Duration			
Survey Location	Start Date	End Date	Number of Images
Perris Valley Channel	10/3/07	10/10/08	21,962

Due to signal strength fluctuation issues and other equipment functionality issues, periodic, short term gaps in image collection occurred. These gaps ranged from relatively minor single, fifteen-minute interval image gaps, which occurred on numerous days, to gaps in image collection spanning several days. Table 2 summarizes the data gaps of one week or longer. The most significant data gap occurred from March 19 through April 14, 2008. During this period, significant camera troubleshooting and repair were necessary.

Table 2 Recreational Use Survey Data Gaps		
Location	Data Gap Period	Cause
Perris Valley Channel	November 30 – December 14, 2007	Camera Issue
	January 15 – February 5, 2008	FTP Site/Camera Issue
	February 19 – 27, 2008	Camera Issue
	March 19 – April 14, 2008	Camera Issue
	May 18 – 30, 2008	Camera Issue

Images were stored and individually reviewed for activity. A use/activity categorization protocol was established for logging and categorizing observed activity from both image review and physical surveys.

As part of the protocol, information regarding water contact activity (including the type or magnitude of contact) and non-water contact activity was collected and logged in the following categories:

- Date / Time
- Number of People
- Type of Contact
 - Incidental Contact
 - Contact below Ankle
 - Contact between Ankle and Waist
 - Contact between Waist and Neck
 - Contact above Neck
 - Non-Recreation Contact
- Non-Contact Activity

Images containing a person or persons within channel fencing or boundaries were considered “events”. On-site surveys where a person or persons were observed were also considered events.

An event could include one or more persons. For each event, each person’s activity (type), and its duration and magnitude were logged per the established protocol. If an activity was captured within one image, an activity duration was reported as <30 minutes. Similarly, if an activity was observed within two consecutive fifteen-minute interval images, the duration was reported as <45 minutes.

Images containing activity determined to be channel maintenance or repair were collected but not counted as water contact nor non-water contact activity within the survey.

Survey Results

At the Perris Valley Channel survey location, water contact activity was not observed over the one-year survey period. Non-water contact activity was observed throughout the survey period. The total number of individuals observed, estimated duration of activity, and seasonal patterns are included in Table 3. The commonly used seasonal periods in southern California NPDES stormwater permits were used to categorize the observations by season (April 1 to September 30 for the dry season; October 1 to March 31 for the wet season).

Table 3 Non-Water Contact Activity Recorded for Perris Valley Channel					
Location	Number of Individuals			Estimated Duration (min)	Types of Activities
	Total	Dry Season	Wet Season		
Perris Valley Channel	68	49	19	1,935	Walking and Biking

Appendix A of this report contains representative images of non-contact and channel maintenance activities. Channel maintenance activities, e.g., vehicles parked in the channel area, were observed on several occasions, but were not considered to be recreational use activity.

Summary of Findings

Approximately 22,000 recreational use data points (images) were collected over a one-year period from the Perris Valley Channel survey location. Results indicate no evidence of water contact recreational use over the survey period.

Non-water contact activity, such as walking, biking, or all-terrain vehicle riding in the channel area, was observed throughout the survey period with results indicating an increase in the frequency of non-contact activity during the dry season at the survey location.

Appendix A

Select Images from Perris Valley Channel Survey Location

Recreational Use Survey Data Report – Perris Valley Channel
July 2, 2009



No Activity: 06/01/2008 7:30

Recreational Use Survey Data Report – Perris Valley Channel
July 2, 2009



Maintenance Activity: 09/03/2008 15:00



Non-Contact Activity: 02/06/2008 7:47

Recreational Use Survey Data Report – Perris Valley Channel
July 2, 2009



Non-Contact Activity: 05/08/2008 16:30



Non-Contact Activity: 06/02/2008 11:15

Recreational Use Survey Data Report – Perris Valley Channel
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Non-Contact Activity: 06/03/2008 16:45

Recreational Use Survey Data Report – Perris Valley Channel
July 2, 2009



Non-Contact Activity: 09/21/2008 15:15