9 IDENTIFICATION OF DATA GAPS

9.1 Surface Water Hydrology

Currently, there is no documentation of the extent and severity of the (impacts of) hydromodifications of the San Diego River's fluvial geomorphology on water quality, beneficial uses, and flood capacity. To address hydromodification of creeks and rivers within the SDRW, field observations are required. Then, a prioritization scheme based on stream order and type of hydromodification can be created. Once that has been accomplished, a polling of people who know the various parts of the watershed would take place, leading to lists organized by mile number, order, reach, hydrologic subarea, and type of modification. The existing hydrologic monitoring systems in the SDRW are generally adequate for meeting the existing needs of the agencies. However, the more detailed analyses required for watershed management (e.g., TMDL development) would require installation of additional stream monitoring stations in some of the critical reaches of the San Diego River system that are not currently monitored. These reaches include Forester Creek and lower San Vicente Creek in the San Diego Management Area. Installation of stream monitoring stations in Boulder Creek, upper San Diego River, and upper San Vicente Creek is also desirable.

The FEMA study (FEMA 2004) on the post-fire flood hazards in the watershed employed methods based on data and regional regression equations that are not site-specific to the SDRW. In addition, the stream-choking potential due to sedimentation from mud flows and debris flows was not considered. While the study provided quick estimates of the effects of the Cedar Fire that are useful for short-term management response, long-term flood protection needs would have to be determined based on data generated from detailed hydrologic, hydraulic, and sedimentations studies that are site-specific and include the effects of stream sedimentation.

9.2 Surface Water Quality

There is a need for more extensive and more thorough monitoring and assessment of the waters in the SDRW. Monitoring and assessment, for both status and trends, need to be further planned and implemented in spite of budget set backs. Obtaining adequate funding to conduct adequate ambient water quality assessment programs is now one of the top priorities of the SDRWQCB. Monitoring and assessment is not and does not need to be

conducted only by the SDRWQCB. Academic and other research groups, dischargers, water districts, and other stakeholders all have a role in monitoring and assessment. Although there is certainly a need for more extensive and more thorough monitoring of the watershed, better coordination of monitoring efforts and better management of information is also needed in order to increase the value, usefulness, and accessibility, and use of data obtained from past, ongoing, and future monitoring efforts.

To obtain an accurate assessment of water quality, monitoring should be conducted throughout the year. Also, additional monitoring is needed in critical reaches of the San Diego River system that are not currently monitored, such as Boulder Creek, or San Diego River in the El Capitan Management Area, San Vicente Creek in the San Vicente Management Area, and Forester Creek in the San Diego Management Area. Monitoring in these locations should involve flow and water quality measurements during wet and dry weather.

Anchor (2003[1]) provides a qualitative rating of the extent and frequency of each of the monitoring programs in the SDRW, and summarizes constituents, or stressors that are consistently identified as being a concern in those programs today.

Based on these ratings, the programs that can be most improved involve stormwater and groundwater monitoring. Stormwater monitoring is important because it provides an indication of the chemical load associated with the largest flows in the watershed. This type of monitoring is especially important when you consider the large differences in flow (loading) between storm and non-storm periods in the San Diego River and its tributaries. The current stormwater monitoring program only involves sampling near the terminus of the freshwater system in the watershed at Fashion Valley (Figure 3-2). Water bodies in the SDRW on the 303(d) list are currently assigned low and medium priorities for TMDL development. If these priorities are elevated, or if new COC are identified, it will be beneficial to have stormwater monitoring information at other locations in the watershed.

Factors that should be considered in citing additional stormwater monitoring locations include:

- Land use changes

- Jurisdictional boundaries
- Intersections with major tributaries
- Critical locations/areas such as 303(d) water bodies and environmentally sensitive areas
- Previous or suspected problem areas

In addition, it is recommended that stream monitoring stations be installed in critical reaches of the San Diego River system that are not currently monitored. These reaches include Forester Creek and lower San Vicente Creek in the San Diego Management Area. Monitoring in these locations should involve flow and water quality measurements during wet and dry weather. A sediment transport study would be beneficial.

Other data gaps have been identified that relate to the elements that must be addressed before receiving USEPA funding for watershed-based planning grants. These elements include: modeling and estimation of load reduction expected through specific management measures; the development of lists of financial assistance, technical assistance, and costs associated with plan implementation; the development of measurable milestones for the NPS reduction plan; developing a set of criteria to analyze the effectiveness of load reduction measures; and specific monitoring related to implementation of NPS management measures.

9.3 Groundwater and Water Supply

Prior to the late 1960s, State of California funded studies periodically compiled groundwater use and groundwater quality data within the SDRW. State-funded studies such as CDWR (1967) characterized groundwater use, depth-to-water, and groundwater quality in a large number of private and public wells within the SDRW. The comprehensive CDWR effort demonstrated the high degree of variability in groundwater availability quality within the SDRW as a function of location, time of year, and hydrologic conditions (CDWR 1967).

A comprehensive field survey of well locations and groundwater use within the Santee/El Monte sub-basin was performed in the mid-1990s as part of the CSDWA ESP (NBS/Lowry 1995). The CSDWA effort, however, did not involve collecting depth-to-water data or groundwater quality data. Other than this CSDWA effort in the Santee/El Monte sub-basin,

no region-wide coordinated groundwater data collection efforts have occurred within the SDRW since the 1960s.

As summarized in the SDRW Water Quality Report (Anchor 2003[1]), recent or current groundwater quality monitoring programs within the SDRW are limited to:

- Water supply monitoring undertaken by potable water suppliers
- Monitoring associated with known contaminant spills
- Special groundwater monitoring associated with groundwater development studies.

Unfortunately, the existing monitoring efforts do not generate a great deal of information useful in characterizing groundwaters within the SDRW, in part, because:

- Almost all current monitoring data is concentrated within the Santee/El Monte sub-basin of the San Diego Management Area
- Few public supply wells exist within the SDRW
- Public agencies are required only to publicly report the blended quality of the public water supply, not individual components (such as wells) within the water supply
- Required water supply groundwater monitoring is infrequent and focuses on a few drinking water parameters such as bacteriological contaminants and nitrate
- Groundwater monitoring associated with contaminant spills is typically limited to shallow groundwaters in areas surrounding known contaminant sources (e.g. underground tanks), and focuses on suspected spill contaminants (hydrocarbons or MTBE)
- Special groundwater development studies have typically made use of historic data rather than developing new data, and if new data are developed, the data collection efforts are one-time or short-term
- Different agencies or groundwater well owners have different means of collecting and recording data
- The limited amount of water quality monitoring information collected by private well owners is normally kept confidential
- No system for coordinating, collecting, and compiling available water quality information currently exists within the SDRW

Adding to the difficulty in characterizing groundwater quality within the SDRW, available historic groundwater quality data indicate that significant variation in water quality exists depending on well location, depth of well screens, aquifer recharge source, time of year, and hydrologic conditions. (This variability is particularly evident within the fractured rock aquifers of the San Vicente and El Capitan Management Areas.) Because so many factors influence groundwater quality and availability, wide-by-side wells that withdraw

groundwater from different depths may show a significantly different production rates and water quality. Wells separated by only a few hundred feet that are withdrawing water from the same depth may also show significant differences in yield and quality.

As a result of this high degree of variability, it would be difficult to characterize groundwater quality and availability at any location within the SDRW even if a large quantity of data was available. The task of characterizing groundwater availability and quality (and how groundwater influences beneficial uses) is made more difficult by (1) the lack of groundwater quality and depth-to-water information being currently collected and (2) the lack of coordination and standardization in existing groundwater monitoring efforts.

A centralized, coordinated groundwater data collection effort would be required to allow for more complete characterization of groundwater availability and quality within the SDRW. It is recommended that consideration be given to implementing such a centralized, coordinated groundwater data collection effort. Such an effort would involve:

- Researching County of San Diego and CDWR records to identify active wells within SDRW
- Performing field inspections to update well locations and groundwater use;
- Identifying which wells have known screening depths
- Identifying existing water quality monitoring being performed by each well owner
- Selecting additional groundwater wells as being representative and appropriate for long-term monitoring and use in characterizing regional groundwater availability and quality within the San Diego, San Vicente, and El Capitan Management Areas
- Securing well owner approval for performing monitoring on the selected representative wells
- Implementing a program of periodic monitoring of the selected wells for (1) depth-to-water and (2) water quality monitoring for key groundwater contaminants of concern
- Compiling existing information collected by well owners and supplemental information collected as part of the regional groundwater monitoring program into a centralized data base

9.4 Biological Resources

Currently, the information available pertaining to the animal and plant communities found within the El Capitan Management Area is limited. Specific locations of many sensitive plant and animal species have not been pursued in this region of the watershed. The unique

habitats found within this basin likely support uncommon plant and animal species not yet identified and mapped. A large tract of land within the El Capitan Management Area is owned by private entities thus, there is limited information as to the biological resources in these locals. Additionally, restricted access to tribal lands in the El Capitan Management Area does not allow for a complete inventory of biological resources of this basin. Corridor use and locations in the El Capitan Management Area are not well studied. In general, data on fire recovery to the extent that it occurred in the watershed is not available. Also, information regarding fire recovery of some of the unique woodlands in El Capitan Management Area has not been documented.

San Vicente Management Area lacks biological inventory information in areas of private lands and by the tribal lands. Riparian species occurring in San Vicente Creek have not been specifically cataloged because much of the Creek occurs within privately owned lands. In addition, San Vicente Creek is currently being utilized as a conduit to transfer water from Lake Sutherland Reservoir to San Vicente Reservoir. Consequently, the potential impacts on aquatic and riparian associated species, due to the current practice of flooding the creek channel, is unknown. Also, fire recovery information is limited to test burn areas within typical vegetation found in this management area, thus, extensive fire damage effects and recovery from such a fire as seen in the Cedar Fire are not well documented. Little data are published about the direct and indirect impacts of fire on riparian species as represented in this basin.

In general, the San Diego Management Area has a good database for biological resources due to the mitigation and/or management requirements for associated development and land use. As noted in the other basins, biological inventories of private lands specifically in the eastern portion of this basin are also limited. Because this management area is highly developed, increased exotic communities dominate this region; therefore, additional information on exotic species location would be beneficial. It would also be useful to develop information that (1) identifies locations where habitats exist that are dependent on groundwater table elevations, and (2) develops a better understanding of the relations between groundwater table elevations and the health and extent of groundwater-dependent habitats

9.5 Land Use Planning

Existing and planned land use information is generally sufficient to analyze the effects of current and planned land use practices on the various systems within the SDRW. The planned land use information could benefit from improved correlation with existing ownership patterns and incorporation of. This is particularly true in respect to managing the lands that fall within the SDWD's Source Water Protection Guidelines 400 foot buffer zone. The current planned land use information simplifies the existing land uses into broader categories (e.g., various existing developed land uses within tribal lands are only represented as tribal lands) or makes wholesale assumptions about the conversion of a particular land use (e.g., all Agricultural and Undeveloped lands are to be developed, primarily to Rural Residential).

The coordinated efforts of the Copermittees under the Municipal Permit in developing model ordinances, programs, and reporting has laid the groundwork necessary for continued inter-jurisdictional coordination on other watershed planning issues as well. Consistent implementation and enforcement of ordinances related to land development and construction practices, habitat protection, and stormwater management will be instrumental in the successful long-term management of the SDRW.

An accurate assessment of impervious surface values for various land use categories throughout the SDRW will be required if imperviousness is to be used as a metric for guiding land planning and management activities. The analysis provided in Section 7, as well as the pilot project conducted by the County of San Diego in its USDRIP, illustrate the value of such analyses, but they also caution that the analytical methods need to be improved before drawing conclusions to guide specific land planning and management decisions. For now, the conclusions can only be used as general guidance in determining where more attention to land development activities needs to occur, such as by focusing on the sub-basins with imperviousness values in the 5 to 25 percent range.

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