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Palomar Airport Water Quality Basin Stream Bioassessment Description

Stream bioassessment of the benthic macroinvertebrate community was performed to determine the possible effects from the treatment facility installation. After a field reconnaissance of the facility site and superficial assessment of the storm drain system in the Faraday business park, and consultation with a City of Carlsbad Stormwater engineer, it was determined that the storm drain system discharged to a detention pond at the end of Aston Avenue. Field biologists then assessed the drainage route to Agua Hedionda Lagoon and located a suitable stream reach for bioassessment monitoring (Figure X: map of area) in Macario Canyon. The drainage discharges to a tidally influenced portion of Agua Hedionda Creek.

A pre-installation bioassessment survey was conducted on November 23, 2005. The survey followed the protocol of the California Stream Bioassessment Procedure (Harrington 1999) for macroinvertebrate collection and physical habitat assessment. Three separate transects of the stream were sampled for macroinvertebrates. From each transect sample, 300 organisms were randomly removed and identified. Other field parameters were assessed, including the physical habitat quality of the monitoring reach and water quality measures including temperature, specific conductivity, dissolved oxygen, and pH. The City of Carlsbad Municipal Golf Course was in the early stage of construction, but field biologists did not observe any apparent impact (i.e. sedimentation) from the project.

Results of the pre-installation bioassessment survey indicated that the site had a degraded macroinvertebrate community. An index of biotic integrity analysis gave the site a score of 10 (on a 0 to 70 scale) and a quality rating of Very Poor. This rating is typical of urban runoff influenced stream sites in San Diego County (Weston Solutions 2005) and particularly in the Agua Hedionda Watershed.

Although overall macroinvertebrate abundance was relatively low, diversity at the site was fairly high relative to other urban stream sites. A total of 23 different taxa were collected, with a moderate diversity of feeding strategies represented. Seventy five percent of the individual organisms were Collector Gatherers, which feed on fine particulate organic matter and typically dominate in urban influenced streams. Scrapers, Predators, and Shredders comprised the rest of the community.

The physical habitat conditions of the monitoring reach were marginal. The in-stream habitat lacked stable hard substrate that is considered optimal for macroinvertebrate colonization. The stream did have dense vegetation through the drainage area which provided good canopy cover and food source for certain organisms.

The location of the bioassessment monitoring reach was not ideal for monitoring possible improvements to water quality from the Palomar Airport water quality basin. There were no suitable locations for macroinvertebrate sampling between the water quality basin and the storm sewer system of Faraday Business Park. The system daylighted near the top of Macario Canyon,



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but field reconnaissance of the area led to the conclusion that the optimal location for macroinvertebrate sampling was near the Cannon Road over-crossing. Because of the distance between the water quality basin and the monitoring reach, there are numerous opportunities for urban runoff not associated with Palomar Airport to affect water quality and the benthic macroinvertebrates collected for this study.

Harrington, J.M. 1999. California stream bioassessment procedures. California Department of Fish and Game, Water Pollution Control Laboratory. Rancho Cordova, CA.

Weston Solutions, Inc. 2005. San Diego County Municipal Copermittees 2004-2005 Urban Runoff Monitoring. Prepared for the county of San Diego. December, 2005.

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