

Discharger Survey

Introduction

The Arid West Water Quality Research Project ("Project" or "AWWQRP") conducts scientific research on ephemeral and effluent created waters under an Assistance Agreement between the Environmental Protection Agency (EPA) and the Pima County Wastewater Management Department in Tucson, Arizona. The Project presents an opportunity for Pima County, EPA Region 9 and others to work together to conduct the scientific research necessary to develop appropriate water quality standards and criteria for the arid and semi-arid West ("arid West") watercourses and to improve the scientific basis for regulating water quality for effluent and stormwater discharges. For the purposes of the AWWQRP, the arid West is comprised of portions of 17 western states where annual rainfall is less than 20 inches.

The emphasis of AWWQRP research is on the development of scientifically based water quality standards and criteria that will protect the species and habitats characteristic of ephemeral and effluent-created ecosystems. These are ecosystems that have not received appropriate attention in the development of national water quality criteria. The data and conclusions resulting from this Project are being published and made available to the states, EPA, and the scientific community.

Project Purpose & Objectives

Prior to implementing specific research projects to support the purpose of the AWWQRP, Project advisors recommended that additional information be gathered to identify the nature of existing arid West receiving waters and the species or habitats that are affected by discharges to these waters. Accordingly,

a survey of dischargers (the "WQRP Pre-Research Survey of Municipal NPDES Dischargers in the Arid and Semi-Arid West" or "Discharger Survey") was to be conducted to gather basic data on each of their discharges. Examples of basic data include discharge rates, beneficial uses and the physical, chemical and biological characteristics associated with each discharge. In addition, dischargers were asked to identify key water quality issues of concern.



*Salt River upstream from the WWTP
Phoenix, Arizona*

Survey Data

The EPA database *Basins* for EPA Regions 6, 7, 8, 9 and 10 was queried in 1998 to identify all National Pollutant Discharge Elimination System (NPDES) permit holders in the arid West. Identified NPDES dischargers were separated into "major" (discharge > one million gallons per day [1 MGD]) and "minor" discharges (discharge < 1 MGD).

Questionnaires were sent to all major dischargers to gather basic data on the

wastewater facility, effluent discharge and characteristics of the receiving water. Phone calls were made as needed to follow-up on the questionnaires. Based on the survey results, the project identified a core set of dischargers consisting of locations where the effluent discharge creates an effluent-dependent or effluent-dominated water in an otherwise dry watercourse.

Project Results

Survey results demonstrated that effluent-created waters are a common phenomenon of the arid West. The EPA database query identified 4,515 NPDES permits within the 17 western states with portions classified as arid or semi-arid. Of these permits, 1,001 were classified as major municipal dischargers; of the 1,001 major dischargers, 251

were specifically located in areas considered part of the arid West. Within these 251 permitted discharges, there were 71 permit holders that resulted in 78 wastewater discharge sites that created effluent-dependent or effluent-dominated waters in what would otherwise be ephemeral or intermittent watercourses (Note: Additional information obtained since 1998, the year the Discharger Survey was conducted, suggests that currently the number of effluent-dependent and effluent-dominated waters is somewhat greater than 78).

The majority of wastewater treatment facilities in the arid West that discharge to ephemeral or intermittent watercourses are located in eastern California, Arizona, New Mexico, and west Texas (Table 1). These four states are collectively home to 65 percent of the discharge sites. The largest dischargers by volume are located in Arizona, Colorado, and Nevada. The issues of concern identified by dischargers ranged widely from specific chemical criteria to endangered species; however, three key areas were identified as common concerns: nutrient criteria, especially ammonia, chlorine and pesticides. Dischargers also noted that potential future water quality concerns included nitrogen, metals, dissolved solids and toxicity.

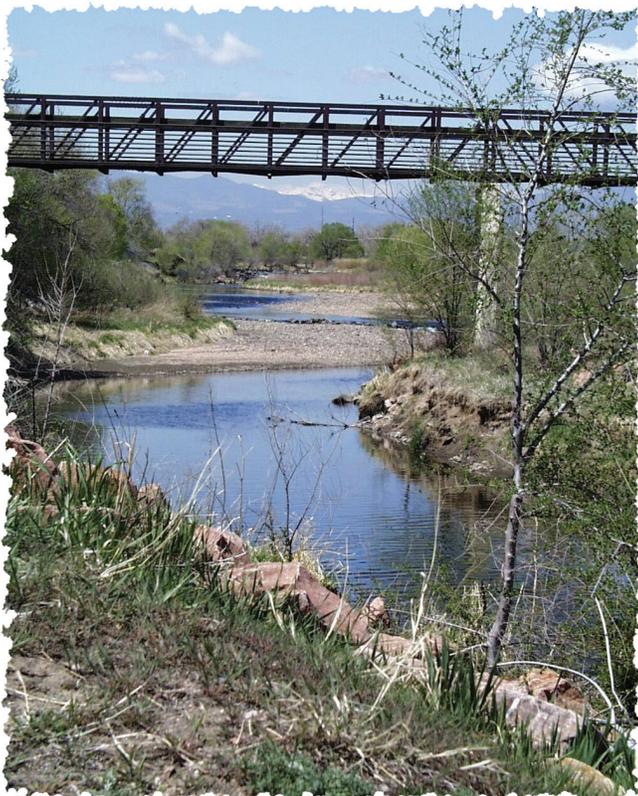
Table 1. Distribution by State and Discharge Volume of Discharges to Ephemeral or Intermittent Waters in the Arid West				
State	1-24 MGD	25-49 MGD	50-200 MGD	> 200 MGD
Arizona	12	0	4	0
California	11	2	0	0
Colorado	2	0	1	0
Kansas	2	0	0	0
Montana	2	0	0	0
North Dakota	0	1	1	0
Nebraska	1	0	0	0
New Mexico	10	0	0	0
Nevada	1	0	2	1
South Dakota	2	0	0	0
Texas	12	0	0	0
Utah	5	1	0	0
Washington	1	0	0	0
Wyoming	4	0	0	0
Totals	65	4	8	1

Project Outcome and Final Report

The Discharger Survey showed that dischargers have a firm understanding of effluent characteristics associated with their respective wastewater facilities. In contrast, the physical, chemical and biological attributes of the receiving waters were not well known. This key finding provided the stimulus for the AWWQRP-funded Habitat Characterization Study that focused research efforts on ten of the core discharges identified by the Discharger Survey. These ten discharges have served as case studies to provide greater understanding of the physical, chemical and biological characteristics of effluent-driven ecosystems. Both the Discharger Survey and Habitat Characterization Study may be downloaded from the AWWQRP website.

Additional Project Information

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*South Platt River
 Denver, Colorado*