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EVALUATING USE ATTAINMENT IN AN EFFLUENT-DEPENDENT WATER

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The Arid West Water Quality Research Project (WQRP), established in 1995, has provided Pima County, EPA Region 9 and others throughout the West the opportunity to work together to conduct scientific research to develop appropriate uses and water quality criteria for effluent-dependent and ephemeral waters, stream types that have not received sufficient attention in the development of national water quality standards. The results from this Project are expected to improve the scientific basis for regulating water quality through standards development and permit implementation. Project results, although intended to focus directly on arid West issues, could provide data and knowledge applicable to a broader region.

The WQRP recently completed the Habitat Characterization Study, a project commissioned to characterize the physical, chemical and biological characteristics of effluent-dependent waters in the arid West. Effluent-dependent waters are unique stream ecosystems created by the discharge of treated effluent into normally dry streambeds or streams that otherwise would have minimal flow during part of the year. Findings from this study demonstrate that where the majority of flow is effluent-driven, the physical and chemical characteristics of the receiving water are to a large degree directly related to the characteristics of the effluent, both quality and quantity.

A fundamental element of the water quality standards setting process is the establishment of designated uses that correctly reflect existing or attainable uses. In this regard, determining what is the existing or attainable use for uses such as aquatic life is problematical. For example, aquatic life colonizes effluent-dependent waters and accordingly the establishment of an aquatic life use to protect colonizers is warranted. However, because the types of aquatic life colonizing the created waterbody are highly dependent on the characteristics of the discharge, what is existing or attainable is not constant, but dynamic. Moreover, any change to the discharge or receiving water, whether flow, habitat or quality related, further influences what may be existing or attainable over any given period of time.

While we may argue what uses are applicable and attainable in the effluent-created ecosystem, we often ignore an important ancillary benefit of effluent-created habitats: the creation of riparian habitat. The Clean Water Act explicitly provides for the protection of aquatic life and wildlife, but the emphasis to date has been almost solely on the protection of aquatic species. Little to no consideration is placed on wildlife protection, especially from the perspective of supporting and potentially enhancing riparian habitat. This may be shortsighted given the significant but unrecognized environmental benefits achieved from effluent supported riparian ecosystems. Accordingly, for effluent-created ecosystems we recommend that use designations and evaluations of use attainment be focused less on the water column and more focused on the watershed. The result of such a shift in emphasis would benefit not only terrestrial communities supported by effluent, but provide an additional means to maintain and even restore riparian habitats in the arid West.