

**Milestones**

Table 5 lists significant milestones that have been achieved by the AWWQRP since 1997. Implementation of Work Plan elements will provide critical support to achievement of future milestones.

<b>Table 5. Key AWWQRP Milestones 1997 to Present</b>		
<b>Activity</b>	<b>Responsibility</b>	<b>Time Period</b>
Select WQRP Staff	Pima County	March 1997 - August 1998
Establish Regulatory Working Group (RWG)	Pima County	March 1997
WQRP Stakeholder Conference	Pima County	April 1997
Regulatory Working Group Meeting	Pima County/RM/RWG	April 1997
Develop Research Agenda	RWG/RM/Pima County	April 1997 - March 1998
Regulatory Working Group Meeting	Pima County/RM/RWG	July 1997
Selection of Research Manager (RM) – University of Arizona	Pima County	October 1997
Development of AWWQRP Web Site	Pima County	November 1997
Regulatory Working Group Meeting	Pima County/RM/RWG	March 1998
Establish Scientific Advisory Group (SAG)	Pima County	October 1998
Finalize Research Agenda	Pima County/RM	January 1999
Finalize Research Plan	Pima County/RM	March 1999
Discharger Survey	Pima County/RM/Contractor	March 1998 - March 2000
Habitat Characterization Study	Pima County/RM/Contractor	December 1999 - April 2002
Public Outreach (2 activities)	Pima County/RM/Contractor	January 2000 – June 2000
American Fisheries Society, <i>Water Quality Matters</i> article	Pima County/SAG	Spring 2000
Selection of New Research Manager (RM) – CDM	Pima County	Summer 2000
WERF <i>Progress</i> article	Pima County	Summer 2000
Public Outreach (10 activities)	Pima County/RM/Contractor	July 2000 – December 2000
Regulatory Working Group Meeting	Pima County/RWG/RM	July 2000
EPA Headquarters & WERF briefing	Pima County/RM	October 2000
Public Outreach (9 activities)	Pima County/RM/Contractor	January 2001 – June 2001
Extant Criteria Evaluation Study	Pima County/RM/Contractor	January 2001 – October 2002
Public Outreach (14 activities)	Pima County/RM/Contractor	July 2001 – December 2001

<b>Table 5. Key AWWQRP Milestones 1997 to Present</b>		
<b>Activity</b>	<b>Responsibility</b>	<b>Time Period</b>
Regulatory Working Group Meeting	Pima County/RWG/RM	July 2001
Supplemental Appropriation (PL 107-73)	Pima County	November 2001
Public Outreach (9 activities)	Pima County/RM/Contractor	January 2002 – June 2002
EPA Headquarters & WERF Briefing	Pima County/RM	January 2002
Regulatory Working Group Meeting	Pima County/RWG/RM	April 2002
Refine Research Agenda	Pima County/RWG/RM	April 2002 –July 2002
<i>Comparative Biochemistry and Physiology</i> manuscript accepted (Extant Criteria Evaluation)	Pima County/RM/Contractor	May 2002
SETAC <i>Arid Ecosystems</i> special session approved for fall annual meeting	Pima County/RM/Contractor	June 2002
WEF <i>Watershed &amp; Wet Weather</i> article	Pima County/RM/Contractor	July 2002
SETAC book proposal for Extant Criteria Evaluation	Pima County/RM/Contractor	August 2002

**Close-Out/Audit**

Upon expenditure of all EPA grant funds, the AWWQRP will implement appropriate grant close-out/audit procedures to fulfill EPA grant requirements.

**Bibliography**

Association of Metropolitan Sewerage Agencies (AMSA). Position Statement adopted May 1992. Position 7 - Water quality standards for ephemeral and effluent-dependent streams. Washington, D.C. 20036. 2 p.

Arizona Administrative Code. 1996. Title 18, Chapter 11, Article 1, Water Quality Standards for Surface Waters. Phoenix, AZ.

Arizona Department of Environmental Quality. 1992. Letter from W.D. Wiley to G.A. Brinsko, Pima County Wastewater Management, Tucson, AZ.

Arizona Department of Environmental Quality. 1996. Arizona Water Quality Assessment Report-1996: Phoenix, Ariz. 218 p. plus appendices.

Atkins, C. 1990. The Need for New Strategies in Wastewater Treatment. *Water Environment & Technology*, 1990, 2(10): 94-95.

- Baker, L.A. 1993. Introduction to nonpoint source pollution and wetland mitigation, pp7-41 in R.K. Olson, Ed. *Created and Natural Wetlands for Controlling Nonpoint Source Pollution*. Office of Wetlands, Oceans, and Watersheds. U.S. Environmental Protection Agency. CRC Press, Boca Raton, Florida 216 p.
- Baumgartner, D.J. 1998. *Attaining Quality in the Products of the Arid West Water Quality Research Project*. Report to Pima County Wastewater Management, Tucson, AZ. 17 p.
- Baumgartner, D.J. 1998. *Geographic and Technical Scope of the Water Quality Research Project*. Report to Pima County Wastewater Management Department, Tucson, AZ. 22 p.
- Baumgartner, D.J., E.L. Smith, R.J. Frye, J.J. Riley, and K.A. Smith-Otero. 1993. Rationale for a program of research to develop water quality criteria for effluent-dependent ephemeral streams and riparian habitats in the arid west. Report to Pima County Wastewater Management. Environmental Research Laboratory Report # 93-1. University of Arizona, Tucson, AZ. 54 p.
- Bevans, H.E., Lico, M.S., and Lawrence, S.J. 1998. *Water Quality in the Las Vegas Valley Area and the Carson and Truckee River Basins, Nevada and California, 1992-96*: U.S. Geological Survey Circular 1170, 47 p.
- Carlson, A.R., W.A. Brungs, G.A. Chapman, and D.J. Hansen. 1984. *Guidelines for Deriving Numerical Aquatic Site-Specific Water Quality Criteria by Modifying National Criteria*. U.S. EPA, Environmental Research Laboratory, Duluth, MN. EPA-600/3-84-099.
- Chadwick & Associates, Inc., and Regulatory Management, Inc. 1992. *Santa Ana River Use-Attainability Analysis. Volume 6: Review of Chronic Toxicity Test Reliability*. Final Report submitted to the Santa Ana Watershed Authority, 1992. 69 p. and 49 appendices.
- Davis, W.S., and T.P. Simon, editors. 1995. *Biological Assessment and Criteria: Tools for Water Resource Planning and Decision Making*. CRC Press. 415 p.
- DeGraeve, G.M., G.J. Smith, W.H. Clement, D.O. McIntyre, and Trae Forgette. 1998. *WET Testing Programs: Evaluation of Practices and Implementation*. Water Environment Research Federation. Project 94-HHE-1. Alexandria VA.
- Gerritsen, J., J. Green, R. Preston. 1993. *Establishment of Regional Reference Conditions for Stream Biological Assessment and Watershed Management*. Watershed '93, Conference Proceedings.
- Grothe, D.R., K.L. Dickson, and D.K. Reed-Judkins, editors. 1996. *Whole Effluent Toxicity Testing: An Evaluation of Methods and Prediction of Receiving Water Impacts*. SETAC Publications. Pensacola, Florida. 346 p.

- Harding Lawson Associates. 1986. Site-specific Water Quality Criteria Study for the Santa Cruz River, Pima County, Arizona. Report submitted to Pima County Wastewater Management, Tucson, AZ. 116 p. with 7 appendices.
- Hook, L. A., M. D. Cheng, and T.A. Boden. 1998. Appendix A, NARSTO Quality Planning Handbook. Environmental Sciences Division Publication No.4786. Oak Ridge National Laboratory. Oak Ridge, TN. 56 p.
- Hornig, C. Evan, et al. 1995. Development of Regionally Based Biological Criteria in Texas. Chapter 10 in Davis, W.S. and T.P. Simon, editors. Biological Assessment and Criteria: Tools for Water Resource Planning and Decision Making. CRC Press. 415 p.
- Hughes, R.M. 1995. Defining Acceptable Biological Status by Comparing with Reference Conditions. Chapter 4 in Davis, W.S. and T.P. Simon, editors. Biological Assessment and Criteria: Tools for Water Resource Planning and Decision Making. 1995. CRC Press. 415 p.
- Kuehl, R.O. 1994. Statistical Principles of Research Design and Analysis, Duxbury Press, Belmont, CA. 686 p.
- Langbein, W.B. and Iseri, K.T. 1973. General Introduction and Hydrologic Terms: U.S. Geological Survey Water-Supply paper 1541-A. 29 p.
- Lazorchak, J. M., and D. J. Klemm, editors. 1997. Environmental Monitoring and Assessment Program - Surface Waters: Field Operations and Methods for measuring the Ecological Condition of Wadeable Streams. EPA/620/R-94/004. EPA National Exposure Research Laboratory. Cincinnati, OH. 160 p.
- Marcus, Felicia. 1995. Letter approval of Arizona Use Attainability Analysis for fish consumption in effluent-dominated waters and for fish consumption and full body contact for ephemeral waters. Environmental Protection Agency Region 9, San Francisco, CA. November 29, 1995.
- Nevada Division of Environmental Protection. 1996. Nevada Water Quality Assessment: Carson City, Nev., 69 p.
- New Mexico Administrative Code. 1995. Standards for Interstate and Intrastate Streams. Santa Fe, NM.
- New Mexico Water Quality Control Commission. 1996. Water Quality and Water Pollution Control in New Mexico - 1996: Santa Fe, NM. 163 p. plus appendices.
- Omernik, J.M. 1987. Ecoregions of the Conterminous United States: Annals of the Association of American Geographers, v. 77, p. 118-125.

- Omernik, J.M. and Bailey, R.G. 1997. Distinguishing Between Watersheds and Ecoregions. *Journal of the American Water Resources Association* 33: 935-949.
- Omernik, J.M. and Gallant, A.L. 1989. Aggregated Arid Ecoregions of the United States. U.S. Environmental Protection Agency, Environmental Research Laboratory, Corvallis, OR.
- Pima County Wastewater Management. 1996. Arid West Water Quality Research Project. Workplan. Tucson, AZ. 27 p.
- Pima County Wastewater Management. 1997. Arid West Water Quality Project, First Annual Conference Summary, April 23-25, 1997. Pima County Wastewater Management Department, Tucson, Arizona. 60 p.
- Pima County Wastewater Management. 1998. Minutes of the July, 1997 Regulatory Working Group Meeting. November 18, 1998. 16 p.
- Pima County Wastewater Management. 1999. Minutes of the March, 1998 Regulatory Working Group Meeting. January 5, 1999. 28 p.
- Platts, et al. 1987. Methods for Evaluating Riparian Habitats with Applications to Management. Intermountain Research Station, USDA Forest Service, Ogden Utah. 177p.
- Potter, D.U. 1985. Intensive Survey (II) of the Santa Fe River in Santa Fe and Sandoval Counties, New Mexico. Santa Fe, New Mexico: Surveillance and Standards Section, Surface Water Quality Bureau, New Mexico Environmental Improvement Division.
- Potter, D.U., and G.Z. Jacobi. 1984. Intensive Survey of the Santa Fe River in Santa Fe and Sandoval Counties, August 7-8 and September 5-6. Santa Fe, New Mexico: Surveillance and Standards Section, Surface Water Quality Bureau, New Mexico Environmental Improvement Division.
- Potter, D.U., and D.F. Tague. 1986. Intensive Survey of the Rio San Jose near Grants, Cibola County, New Mexico. Santa Fe, New Mexico: Surveillance and Standards Section, Surface Water Quality Bureau, New Mexico Environmental Improvement Division.
- Rabeni, C.F., and G.S. Wallace. 1998. The Influence of Flow Variation on the Ability to Evaluate the Biological Health of Headwater Streams. Pages 411-417 in Kovar et al., editors, *Hydrology, Water Resources, and Ecology of Headwaters*. Proceedings of the Headwater 1998 Conference. IAHS Pub. # 248.
- Rankin, E.T. 1995. Habitat Indices in Water Resource Quality Assessments. Chapter 13 in Davis, W.S., and T.P. Simon, editors. *Biological Assessment and Criteria: Tools for Water Resource Planning and Decision Making*. CRC Press. 415 p.

- Reilly, W.K. 1991. U.S. Environmental Protection Agency Administrator. Speech to the Western Governors Association, July 22, 1991.
- Ricklefs, R.E. 1973. Ecology, Chiron Press, Newton, MA
- Skaggs, R.W., Breve, M.A., and Gilliam, J.W. 1994. Hydrologic and Water Quality Impacts of Agricultural Drainage. *Critical Reviews in Environmental Science and Technology* 24: 1-32.
- Smith, E.L., and G.L. Bender. 1973. Salt River between 91st and 115th Avenues, Report No. 7. Natural Area Establishment Proposal submitted to the State of Arizona, Dept. of Economic Planning and Development. 4 p.
- Sokal, R.F. and F.J. Rohlf. 1995. Biometry: the Principles and Practice of Statistics in Biological Research. W. H. Freeman and Company, New York. 887 p.
- Stanley, E.H., Fisher, S.G., and Grimm, N.B. 1997. Ecosystem Expansion and Contraction in Streams. *Bioscience* 47: 427-435.
- Stephan, C.E., D.I. Mount, D.J. Hansen, J.H. Gentile, G.A. Chapman, and W.A. Brungs. 1985. Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and their Uses. U.S. Environmental Protection Agency. 98 p.
- Tague, D.F. 1984. Intensive Survey of the Rio San Jose near Grants, Cibola County, New Mexico. Surveillance and Standards Section, Surface Water Quality Bureau, New Mexico Environmental Improvement Division, Santa Fe, NM.
- Tellman, B., Yarde, R., and Wallace, M.G. 1997. Arizona's Changing Rivers: How People Have Affected the Rivers. Water Resources Research Center, The University of Arizona, Tucson, Arizona.
- Tetra Tech, Inc. Lake Management; Biological Assessment; Nonpoint Source Pollution Control: Using Bioassessment to Address Nonpoint Source Pollution, Surface Water Management.
- Thomann, R.V., and T. F. Parkerton. 1991. Preliminary Development and Testing of a Methodology for Developing Water Quality Criteria Intended to Protect Wildlife. Progress report to U.S. Environmental Protection Agency for the period 6/1/91 to 9/30/91. U.S. Environmental Protection Agency, Washington, DC. 36 p.
- Tuden, R., D. Smith, and M. Rea. 1992. Guidance for Modifying Water Quality Standards and Protecting Effluent-Dependent Ecosystems. EPA Region 9 Guidance Interim Final. 18 p.
- U.S. Environmental Protection Agency. 1980. Ambient Water Quality Criteria for Mercury. EPA 440/5-80-058.

- U.S. Environmental Protection Agency. 1986. Quality Criteria for Water (Gold Book). EPA 440/5-86-001.
- U.S. Environmental Protection Agency. 1989. Water Quality Criteria to Protect Wildlife Resources. EPA 600/3-81-067.
- U.S. Environmental Protection Agency. 1990. Biological Criteria: National Program Guidance For Surface Waters. EPA-440/5-90-004. 57 p.
- U.S. Environmental Protection Agency. 1990. Biological Criteria: National Program Guidance For Surface Waters. EPA-440/5-90-004. 57 p.
- U.S. Environmental Protection Agency. 1991. Technical Support Document for Water Quality-based Toxics Control. EPA 505/2-90-001.
- U.S. Environmental Protection Agency. 1991. Great Lakes Water Quality Initiative. Procedure for Deriving Criteria for Protection of Wildlife Draft Report. 19 p.
- U.S. Environmental Protection Agency. 1991. Biological Criteria: Guide to Technical Literature. EPA-440/5-91-004.
- U.S. Environmental Protection Agency. 1991. Technical Support Document for Water Quality-Based Toxics Control. EPA-505/2-90-001.
- U.S. Environmental Protection Agency. 1991. Biological Criteria: Research and Regulation. EPA-440/5-91-005. 171 p.
- U.S. Environmental Protection Agency. 1992. Interim Guidance on Interpretation and Implementation of Aquatic Life Criteria for Metals. 24 p.
- U.S. Environmental Protection Agency. 1992. Framework for Ecological Risk Assessment. EPA-630/R-92/001.
- U.S. Environmental Protection Agency. 1994. Water Quality Standards Handbook: Second Edition. EPA-823-B-94-005a.
- U.S. Environmental Protection Agency. 1994. Conference on Water Quality Criteria and Standards for the 21st Century, September 13-15, 1994, Doubletree Hotel at Crystal City, Arlington, VA.
- U.S. Environmental Protection Agency. 1994. Introduction to Water Quality Standards. EPA-823-B-95-004. Washington DC. 39 p.

- U.S. Environmental Protection Agency. 1994. Multi-Regional Criteria and Standards Meeting, Session on Biological Criteria: Development & Implementation. Seattle, WA.
- U.S. Environmental Protection Agency. 1995. Federal Register, Great Lakes Initiative.
- U.S. Environmental Protection Agency. 1995. Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water.
- U.S. Environmental Protection Agency. 1996. Biological Criteria: Technical Guidance for Streams and Small Rivers. Revised Edition. EPA 822-B-96-001. 162 p.
- U.S. Environmental Protection Agency. 1996. Biological Criteria: Technical Guidance for Streams and Small Rivers, Revised Edition. EPA 822-B-96-001. 162 p.
- U.S. Environmental Protection Agency. 1997. Federal Register, Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California; Proposed Rule.
- U.S. Environmental Protection Agency. 1998. EPA Guidance for Quality Assurance Project Plans: EPA QA/G-5. EPA/600R-98/018. Office of Research and Development. U.S. Environmental Protection Agency. Washington, D.C.
- U.S. Environmental Protection Agency. 1998. Water Quality Criteria and Standards Plan: Priorities for the Future. 822-R-98-003. 57 p.
- U.S. Environmental Protection Agency. 1998. Advance Notice of Proposed Rulemaking. Water Quality Standards Regulation, 63 Federal Register, July 7, 1998. Washington D.C. 129 p.
- U.S. Environmental Protection Agency. 1998. Clean Water Action Plan.
- U.S. Environmental Protection Agency. 1998. Draft Water Quality Criteria Methodology Revisions: Human Health.
- U.S. Environmental Protection Agency. 1998. Federal Register, National Recommended Water Quality Criteria.
- Water Environment Federation. 1997. Biomonitoring in the Water Environment. Alexandria, VA. 159 p.
- Water Environment Research Foundation. 1997. Use Attainability Analysis: A comprehensive UAA Technical Reference. Project 91-NPS-1. Alexandria VA.
- Weber, C.I., W.H. Peltier, T.J. Norberg-King, W.B. Horning, F.A. Kessler, J.R. Menkedick, T.W. Neiheisel, P.A. Lewis, D.J. Klemm, Q.H. Pickering, E.L. Robinson, J.M. Lazorchak, L.J. Wymer, and R.W. Freyberg. 1989. Short-Term Methods for Estimating the Chronic

Toxicity of Effluents and Receiving Waters to Freshwater Organisms. EPA/600/4-89/001  
258 p.

Yoder, C.O. 1995. Policy Issues and Management Applications of Biological Criteria. Chapter 21 in Davis, W.S., and T.P. Simon, editors. *Biological Assessment and Criteria: Tools for Water Resource Planning and Decision Making*. CRC Press. 415 p.

Zander, M., and M. Jennings. 1986. *Site-Specific Water Quality Criteria Study for the Santa Cruz River, Pima County, Arizona*. Novato, California: Harding Lawson Associates, Novato, California. Report prepared for Pima County Wastewater Management Department. 116 p.