



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
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STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

September 20, 2006
Honolulu, Oahu

Cooperative Agreement (Phase 2) with U.S. Geological Survey and the
Commission on Water Resource Management for
Streamflow and Stream-Macrofauna Characteristics, Central Maui, Hawaii

BACKGROUND:

The State Water Code mandates that the Commission on Water Resource Management (Commission) establish a statewide instream use protection program (State Water Code, Hawaii Revised Statutes, chapter 174C, section 71). The principle mechanism that the Commission has for protection of instream uses is to establish instream flow standards. "Each instream flow standard shall describe the flows necessary to protect the public interest in the particular stream. Flows shall be expressed in terms of variable flows of water necessary to protect adequately fishery, wildlife, recreational, aesthetic, scenic, or other beneficial instream uses in the stream in light of existing and potential water developments including the economic impact of restriction of such use" (State Water Code, section 174C-71(1)(C)). The State Water Code has recognized certain instream uses as beneficial, including: (1) maintenance of fish and wildlife habitat, (2) outdoor recreational activities, (3) maintenance of ecosystems such as estuaries, wetlands, and stream vegetation, (4) aesthetic values such as waterfalls and scenic waterways, (5) maintenance of water quality, (6) the conveyance of irrigation and domestic water supplies to downstream points of diversion, and (7) the protection of traditional and customary Hawaiian rights.

On October 19, 1988, the Commission set interim instream flow standards for all streams in West Maui. The interim instream flow standard was defined as "that amount of water flowing in each stream on the effective date of this standard, and as that flow may naturally vary throughout the year and from year to year without further amounts of water being diverted offshore through new or expanded diversions, and under the stream conditions existing on the effective date of the standard..." (Hawaii Administrative Rules, chapter 169, section 13-169-48). The interim instream flow standards allowed diversions existing as of October 1988 to continue operating

unless the Commission amended the standard or established new standards, based on supplemental or additional information.

In recent years, interim instream flow standards have been challenged as demand for water has increased and the ecological, cultural, and aesthetic significance of streams has been increasingly recognized. In June 2004, Earthjustice filed a petition with the Commission, on behalf of Hui o Na Wai Eha and Maui Tomorrow Foundation, Inc., to amend the interim instream flow standards for Waihee River and Waiehu, Iao, and Waikapu Streams in central Maui, and filed a complaint that water diverted from these streams was being wasted. It is becoming increasingly apparent that competition exists for the limited surface-water resources in Hawaii. In the past, conflicts such as the Waiahole contested case on Oahu have led to costly litigation over rights to water.

The County of Maui Department of Water Supply currently uses water diverted directly from the four streams of Na Wai Eha and may divert additional water from these streams in the future. The County also withdraws ground water from the aquifers potentially recharged by these streams. (Iao Stream flows through an area designated by the Commission as a ground-water management area.) Thus, an understanding of the effects of the diversions on streamflow characteristics, aquatic habitat, and ground-water recharge are essential to the Commission (and the County) for proper planning and management of the resource. Furthermore, the use of stream water for agriculture, protection of traditional and customary Hawaiian rights, maintenance of ecologic balance, aesthetics related to flowing streams, and recreational use of the streams (fishing, swimming, sight-seeing) are factors that will play a role in planning and management decisions by the Commission and the County. The results generated by this cooperative study will assist the Commission in determining equitable, reasonable, and beneficial instream and off-stream uses of the surface-water resources in central Maui. This study will help the Commission to fulfill its obligation to determine technically defensible instream flow standards for the streams of Na Wai Eha by providing scientific information addressing the hydrologic and aquatic-habitat aspects of the standards.

PHASE 1:

The Commission, on May 24, 2006, approved Phase 1 of the cooperative study by the USGS on Waikapu, Iao, and Waiehu Streams and Waihee River. Phase 1 was designed to address work elements that can be completed during federal fiscal year 2006 (ending September 30, 2006) prior to any controlled releases. Proposed work elements were limited to those elements that were not dependent on the controlled releases but that were necessary for the overall study, and included (1) compiling and analyzing existing information relevant to the study, (2) conducting baseline reconnaissance surveys of the streams, (3) establishing low-flow partial-record stations in reaches with flowing water, (4) establishing temperature-monitoring sites in reaches with flowing water, (5) monitoring the frequency of dry days in selected reaches of the diverted streams, (6) surveying the presence or absence of native and non-native aquatic species in selected stream reaches, and (7) collecting macrohabitat, microhabitat, and channel-geometry information in reaches with flowing water.

The initial phase of the study during federal fiscal year 2006 does not include a report product. However, because the study elements for the initial phase are part of a 3.5-year study, results from the initial phase will be included in the final Scientific Investigations Report series. Data

collected during the initial phase of the study will be made available via the internet as soon as it is reviewed and approved for release according to USGS Pacific Islands Water Science Center quality assurance plans.

The total cost for Phase 1 was about \$230,000. Funds for the cooperative study were provided by several partners including the USGS (\$115,000), County of Maui (\$75,000), Commission (\$25,000), and State Office of Hawaiian Affairs (\$15,000).

PHASE 2:

The second (Phase 2) and third (Phase 3) years of study will include (1) establishing additional low-flow partial record stations, (2) establishing additional temperature-monitoring sites, (3) continued monitoring of the frequency of dry days in the diverted streams, (4) surveying the abundances of native stream fauna in selected study reaches, (5) collecting macrohabitat, microhabitat, and channel-geometry information in selected study reaches downstream from existing diversions, and (6) analyzing data and producing a report summarizing the study findings.

CONTROLLED RELEASES OF WATER INTO STREAMS:

Controlled releases are being requested to allow measurements of streamflow, infiltration, and physical habitat (and possibly recruitment and larval drift) for different flow conditions in sections of the stream that commonly are dry under diverted conditions. As part of a recent biology workshop held on Maui during August 8-9, 2006, scientists from the U.S. Geological Survey, Hawaii Department of Land and Natural Resources Division of Aquatic Resources, Hawaii Department of Health, University of Hawaii, Michigan State University, Bishop Museum, and private consulting firms agreed that temporary controlled releases are needed to properly study instream flow needs. Cooperation from the users of the diverted water will be sought to insure that these controlled releases provide conditions necessary for successful studies.

REPORT:

The anticipated product of this study is a report in the Scientific Investigations Report (SIR) series. The report will describe (1) streamflow characteristics in the study area and an assessment of the effects of surface-water diversions on streamflow; (2) the effects of diversions on potential recharge from the streams to the underlying Iao and Waihee aquifers; (3) temperature variations of instream flows above and below diversions; (4) the native fauna present in the streams under current diverted conditions; and (5) the effects of selected diversion scenarios on habitat availability. The report will be made available through the internet. The probable report title, report outlet, and milestone dates are listed in Table 1.

Table 1. Milestone dates for planned reports.

Probable title	Report outlet	First draft	Review	Approval	Publication
Streamflow and habitat characteristics under natural and diverted conditions, central Maui, Hawaii	SIR	01/2009	05/2009	07/2009	10/2010

BUDGET:

A total of about \$1,212,000 is needed for the 3.5-year project. The breakdown by federal fiscal year is provided in Table 2. Funds for Phase 2 of the cooperative study in federal fiscal year 2007

(October 1, 2006 to September 30, 2007) will be provided by several partners including the U.S. Geological Survey (\$194,500), State Commission on Water Resource Management (\$25,000), State Office of Hawaiian Affairs (\$15,000), and County of Maui (\$150,000).

Category	FY06	FY07	FY08	FY09	FY10	Total
Labor	189,800	318,720	344,440	121,370	56,800	1,031,130
Travel	29,200	55,600	38,800	9,300	3,600	136,500
Communications	1,000	550	120	120	120	1,910
Supplies	10,000	6,420	1,140	1,210	1,280	20,050
Training	0	3,210	0	0	0	3,210
Publication	0	0	0	0	19,200	19,200
Total	230,000	384,500	384,500	132,000	81,000	1,212,000

RECOMMENDATION:

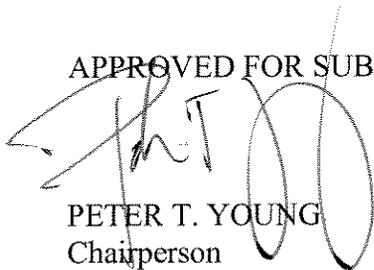
Staff recommends that the Commission authorize the Chairperson to enter into Phase 2 of the cooperative agreement between the Commission and the U.S. Geological Survey to undertake the specified monitoring activities and analyses. The terms of this agreement will be subject to the approval of the Chairperson and the Department's Deputy Attorney General. Contract execution will be done in accordance with Chapter 103D, HRS, and Chapter 3-122, Hawaii Administrative Rules.

Respectfully submitted,



DEAN A. NAKANO
Acting Deputy Director

APPROVED FOR SUBMITTAL:



PETER T. YOUNG
Chairperson