



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

STAFF SUBMITTAL

COMMISSION ON WATER RESOURCE MANAGEMENT

September 19, 2012
Honolulu, Hawaii

Request to Enter into a Joint Funding Agreement with U.S. Geological Survey
For Statewide Hydrologic Data Collection and
Water Resource Monitoring for Federal Fiscal Year (FFY) 2013

SUMMARY OF REQUEST

Staff is recommending that the Commission on Water Resource Management (Commission) enter into a joint funding agreement with the U.S. Geological Survey (USGS) for the inventory and investigation of Hawaii's water resources.

BACKGROUND

The cooperative monitoring of Hawaii's hydrologic resources began in 1909 when the USGS entered into an agreement with the Territory of Hawaii, and at its inception, monitoring was focused mainly on surface water. Initially only 12 streams were being gaged continuously. By 1914 there were 87 continuous-record stations. The program continued to grow, reaching its peak in 1966 when 197 gages were operational under the agreement. Over the years, some gages were discontinued for a variety of reasons, which include shifting fiscal priorities, changing economic realities, completed data acquisition objectives, and dwindling partnership engagement in monitoring and data collection.

In 1972, groundwater data collection became an integral part of the agreement and began establishing the baseline data throughout the State with 170 observation wells. For reasons similar to the surface water gages, observation well data recording has steadily declined over the years such that only 18 well sites now remain to provide data continuity in FFY 2012.

Beginning in 1998, the Commission streamlined the cooperative agreement by transferring the crest-stage stream-gaging program to civil defense agencies where these data (e.g. flooding issues) are more relevant to disaster response rather than sustainability issues, and by eliminating duplication of groundwater data collection efforts in wells. Groundwater data gathering changed and expanded to incorporate the data provided by water system purveyors and well owners, who were required by law and rule to report their water use and groundwater and chloride levels.

Partnership with the Division of Forestry and Wildlife (DOFAW) through its Watershed Management Grant Program (WMGP) had boosted the operation of gaging stations on watershed partnership lands. However, in these challenging economic times, the WMGP has withdrawn its

support for gaging operations in watershed management areas, disengaging the watershed partnerships from Commission and USGS efforts in monitoring the water resources in watershed areas. However, to support the recent DOFAW Rain Follows the Forest initiative, the Commission will fund a continuous-record streamflow gage on the Moanalua Stream in the recently acquired Moanalua Valley State Forest Reserve. The data gathered from this gage will help DOFAW evaluate the impact of their watershed restoration efforts.

The Waiahole Trust Fund continues to help defray the cost of monitoring the Waiahole Ditch system and its sources. Exhibit 1 provides a summary of changes to the program, including the operational cost, since FFY 2007. Exhibit 2 displays the changes in the total number of monitoring stations since the inception of the program.

The cooperative monitoring of Hawaii's hydrologic resources fulfills the Commission's mandate to "maintain an inventory of all water uses and water resources". Haw. Rev. Stat. §174C-5(14) The program also allows the Commission to assess water resource impacts from climate variability, changing land use, and increasing water demands. Maintaining a long-term hydrologic monitoring program with the USGS is an essential component of the Commission's mission to manage Hawaii's water resources.

CURRENT AGREEMENT

Although the nature of the agreement and relationship of the parties involved remains the same as the previous year's agreement, the total number of stations has increased to include the continuous-record streamflow gage on Moanalua Stream. A proposed list of stations to be funded in the FFY 2013 agreement is attached (Exhibit 4). The total cost of the agreement will not exceed \$699,760, with the Commission's share not exceeding \$417,650. The lower total cost of the agreement is a result of an increase in contribution from the USGS from their Washington D.C. headquarters. Due to USGS internal accounting requirements this contribution increase does not appear on the attached agreement.

Under the Joint Funding Agreement for FFY 2013, the USGS will collect basic hydrologic data and provide data summary reports on water resources throughout the State of Hawaii. A proposed scope of services outlines the expectations of the agreement in Exhibit 3. The period for the agreement will span the duration of FFY 2013 (October 1, 2012 to September 30, 2013).

The table below summarizes the annual changes in funding requirements for this joint funding agreement.

COST	FFY2011	FFY2012	FFY2013
Total Joint Funding Requirement	\$809,980	\$857,760	\$699,760
Expected (full-year) CWRM cost-share not to exceed	\$404,990	\$487,760	\$417,650
Percentage CWRM cost-share	50%	57%	59%
DOFAW Watershed Management Grant	\$0	\$0	\$0
Waiahole Ditch Monitoring Fund	\$35,495	\$41,850	\$39,850
Ground water well continuous monitoring	\$6,000	\$6,800	\$6,090
Rain gage continuous recording	\$9,790	\$10,800	\$9,670
Continuous recording stream gage	\$20,400	\$22,500	\$20,150

OTHER

I. Chapter 343 – Environmental Assessment (EA) Compliance

EA Triggers

In accordance with §HRS 343-5(a), the proposed action triggers the need for an EA based on the use of state funds.

EA Exemption

The proposed action qualifies for an exemption from an EA based on §HAR11-200-8(a), basic data collection, research, experimental management and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource.

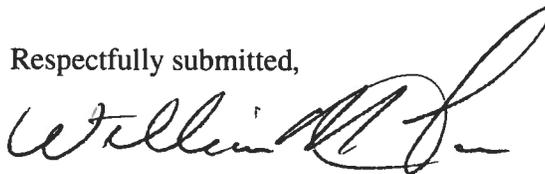
RECOMMENDATIONS

Staff recommends that the Commission:

- 1) Authorize the Chairperson to enter into a joint funding agreement with the U.S. Geological Survey in FFY 2013 to undertake the specified monitoring activities subject to the availability of funds, and
- 2) Authorize the Chairperson to amend or modify the joint funding agreement provided that such amendment or modification does not require additional Commission funding.

The terms of this agreement will be subject to the approval of 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,



WILLIAM M. TAM
Deputy Director

- Exhibits:
- 1 Summary of Changes to the Cooperative Program: 2007-2013
 - 2 Graph of Declining Stations
 - 3 Proposed Scope of Services
 - 4 USGS Joint Funding Agreement for FFY 2013

APPROVED FOR SUBMITTAL:



WILLIAM J. AILA, JR.
Chairperson

EXHIBIT 1

SUMMARY OF CHANGES TO THE COOPERATIVE PROGRAM: 2006 to 2012

Federal Fiscal Year	No. of Stream Gages	No. of Wells Ground Water	No. of Rain Gages	CWRM Contribution \$	<u>Changes and Comments</u>
2007	32	31	22	\$459,020	<ol style="list-style-type: none"> 1. USGS monitoring costs increased by 31% 2. Addition of \$132,000 from the Watershed Management Grant Program 3. Waiahole Trust Fund provided \$42,713 for Waiahole gages
2008	32	34	21	\$526,600	<ol style="list-style-type: none"> 1. Addition of \$118,175 from the Watershed Management Grant Program 2. Waiahole Trust Fund provided \$41,040 for Waiahole stations
2009	27	26	18	\$504,000	<ol style="list-style-type: none"> 1. Watershed Management Grant Program support was reduced to \$48,896 2. Waiahole Trust Fund provided \$48,000 for Waiahole stations
2010	25	17	14	\$405,500	<ol style="list-style-type: none"> 1. Quarterly implementation of the agreement 2. Watershed Management Grant Program withdraws support 3. Waiahole Trust Fund provided \$50,500 for Waiahole stations
2011	28	20	14	\$404,900	<ol style="list-style-type: none"> 1. USGS cost share increases to 50% 2. Additional Federal match used to reinstate monitoring stations 3. Waiahole Trust Fund provided \$35,495 for Waiahole stations
2012	27	18	14	Not to exceed \$487,760	<ol style="list-style-type: none"> 1. CWRM cost share increases to 57% 2. Waiahole Trust Fund to provide \$41,850 for Waiahole stations 3. USGS monitoring costs increased by about 10%
2013	28	18	14	\$417,650	<ol style="list-style-type: none"> 1. Waiahole Trust Fund to provide \$39,850 for Waiahole stations 2. Moanalua Stream station added to support Rain Follows the Forest Initiative

History of USGS Gaging Stations in Hawaii

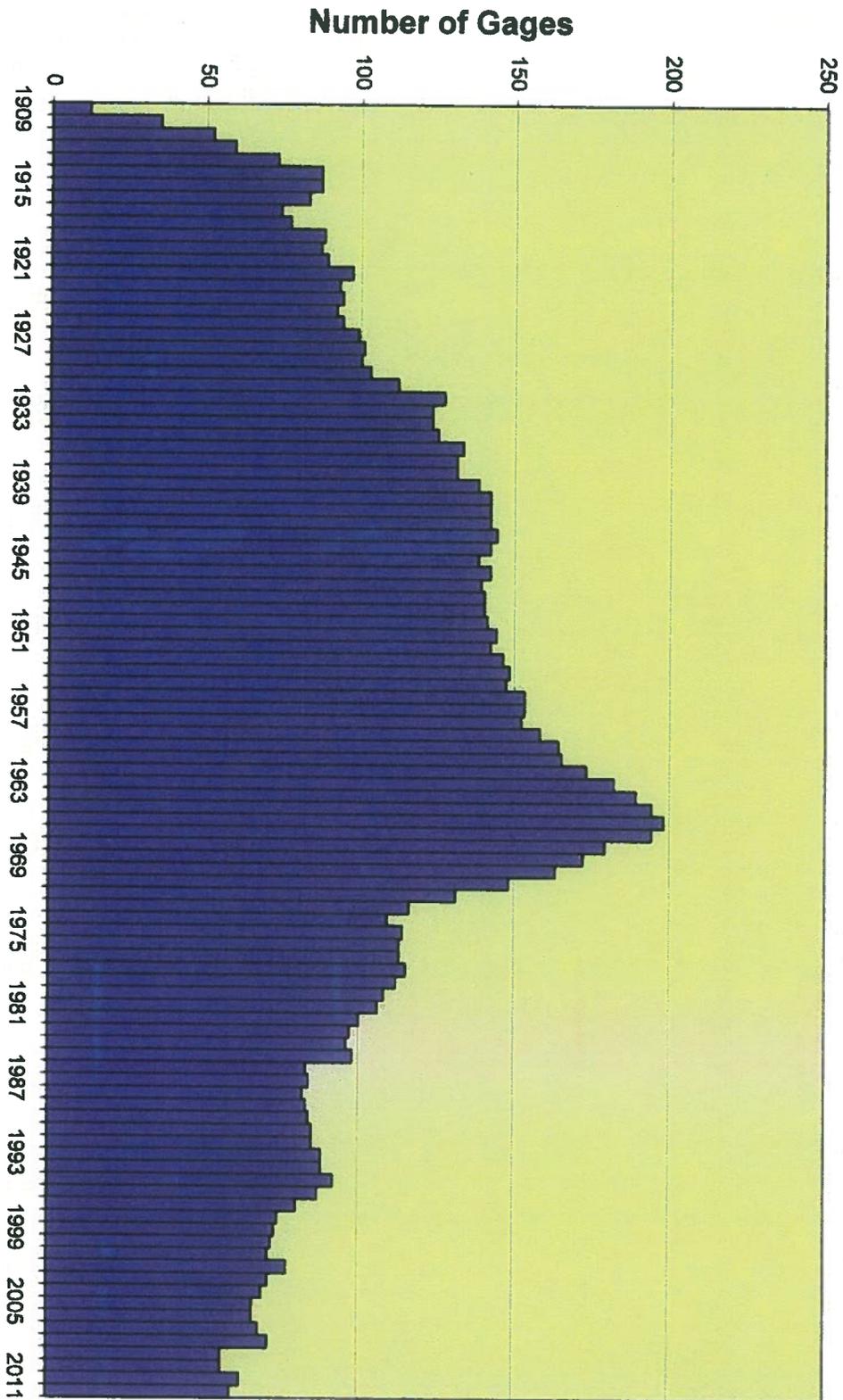


EXHIBIT 2

Exhibit 2

EXHIBIT 3

SCOPE OF SERVICES

1. This Joint Funding Agreement is a continuation of the joint funding agreement for the collection of hydrological data in the State of Hawaii between the U.S. Geological Survey, United States Department of the Interior and the Commission on Water Resource Management, Department of Land and Natural Resources, State of Hawaii.
2. The scope of services involves the collection and computation of data on water resources collected in multiple locations throughout the State of Hawaii.
3. U.S. Geological Survey shall collect data at an agreed upon list of surface water stations, ground water monitoring stations, and rainfall stations, as set forth in Exhibit 3 which is attached hereto and incorporated by reference.
4. U.S. Geological Survey shall provide data summary reports and review of historical data sets.
5. U.S. Geological Survey shall host the maps, data, and reports resulting from this program in a publicly-accessible website, and shall provide the Commission staff direct and easy access to acquire, download, or transfer the data and report from a USGS server. The parties shall use good faith efforts to resolve any disagreements in the scope and validation of data acquisition and the contents of the report.
6. U.S. Geological Survey shall provide a readable statement of cooperative relations and visually identifiable symbol of the Commission as a cooperator in print, digital, and online publications of the data and reports of the monitoring stations that are included in the current cooperative program, and as well as the stations that were historically supported and funded by the Commission.
7. At least quarterly and upon request by the Commission on Water Resource Management, the U.S. Geological Survey will update the Commission on the progress of its work on this Joint Funding Agreement.
8. The Commission on Water Resource Management shall assist the U.S. Geological Survey in its work under the Joint Funding Agreement to the extent feasible and practicable under existing resources of the Commission.



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Pacific Islands Water Science Center
677 Ala Moana Blvd., Suite 415
Honolulu, Hawaii 96813
Phone: (808) 587-2400/Fax: (808) 587-2401

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August 14, 2012

Mr. William Tam, Deputy Director
State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

Attention: Jeremy Kimura

Dear Mr. Tam:

Subject: Joint Funding Agreement to continue our cooperative water-resource monitoring program during the period October 1, 2012 to September 30, 2013

Enclosed is a Joint Funding Agreement (JFA) between the State of Hawaii Department of Land and Natural Resources Commission on Water Resource Management (CWRM) and the U.S. Geological Survey (USGS) to continue our cooperative water-resource monitoring program during the period October 1, 2012 to September 30, 2013. The total cost of the program will be \$699,760 of which \$417,650 will be provided by the CWRM and \$282,110 will be provided by the USGS.

The purpose of the water-resource monitoring program is to collect data needed to evaluate the status and trends of surface-water and groundwater resources in Hawaii. Data are collected by the USGS at selected rainfall, streamflow, and groundwater monitoring stations in accordance with well-documented techniques and quality-assurance procedures. Data are stored in the USGS National Water Information System database and are publicly available on the internet website (<http://hi.water.usgs.gov>). The number and type of monitoring stations is periodically adjusted to meet current priorities and available funds.

A complete list of monitoring stations and associated costs for the period October 1, 2012 to September 30, 2013 (Federal Fiscal Year 2013) is attached. There are no proposed changes to the list of stations and cost to the CWRM except for reestablishing the continuous-record streamflow gage on Moanalua Stream near Kaneohe. Each station will cost the CWRM the same in FY 2013 as in FY 2012 even though we have a difference in internal accounting that changes and decreases the on-paper USGS contribution. The cost to reestablish the continuous-record streamflow on Moanalua Stream near Kaneohe includes permitting, installation and testing of equipment, and establishment of vertical datum. There will be no additional cost for operation and maintenance of this gage in FY 2013 should the gage become operational prior to September 30, 2013.

EXHIBIT 4

Mr. William Tam, Deputy Director

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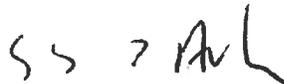
If you are in agreement with this program, please sign and return a copy of the enclosed JFA by September 30, 2012, or at your earliest convenience.

The legal authority for the USGS to enter into this program is 43 USC 50. Work performed with funds from this agreement will be conducted on a fixed-price basis. This means that invoices will be based on the agreed-upon amount, rather than actual itemized expenses. Your agency will be billed using Form DI-1040, according to the terms of the agreement. The results of all work under the agreement will be available for publication by the USGS.

If you have any questions concerning this program, please feel free to contact Ronald Rickman of my staff at 587-2407 or by e-mail (rrickman@usgs.gov).

Thank you for your continued interest in working with the USGS to provide water resource information for the State of Hawaii.

Sincerely,


Stephen S. Anthony
Center Director

Enclosure/Attachment

**U.S. Department of the Interior
U.S. Geological Survey
Joint Funding Agreement**

Customer #: 6000001189
Agreement #: 13WSHI000000003
Project #: ZH0090A
TIN #: 99-0266119
Fixed Cost Agreement Yes No

**FOR
WATER RESOURCES INVESTIGATIONS**

THIS AGREEMENT is entered into as of the 1st day of October, 2012, by the U.S. GEOLOGICAL SURVEY, UNITED STATES DEPARTMENT OF THE INTERIOR, party of the first part, and the COMMISSION ON WATER RESOURCE MANAGEMENT, DEPARTMENT OF LAND AND NATURAL RESOURCES, STATE OF HAWAII, party of the second part.

1. The parties hereto agree that subject to availability of appropriations and in accordance with their respective authorities there shall be maintained in cooperation a water-resource monitoring program in the State of Hawaii, according to the list of monitoring stations provided in Attachment 1, herein called the program. The USGS legal authority is 43 USC 36C; 43 USC 50; and 43 USC 50b.
2. The following amounts shall be contributed to cover all of the cost of the necessary field and analytical work directly related to this program. 2(b) includes In-Kind Services in the amount of \$0.00.

(a) \$282,110.00 by the party of the first part during the period
October 1, 2012 to September 30, 2013

(b) \$417,650.00 by the party of the second part during the period
October 1, 2012 to September 30, 2013

(c) Additional or reduced amounts by each party during the above period or succeeding periods as may be determined by mutual agreement and set forth in an exchange of letters between the parties.

(d) The performance period may be changed by mutual agreement and set forth in an exchange of letters between the parties.

3. The costs of this program may be paid by either party in conformity with the laws and regulations respectively governing each party.
4. The field and analytical work pertaining to this program shall be under the direction of or subject to periodic review by an authorized representative of the party of the first part.
5. The areas to be included in the program shall be determined by mutual agreement between the parties hereto or their authorized representatives. The methods employed in the field and office shall be those adopted by the party of the first part to insure the required standards of accuracy subject to modification by mutual agreement.
6. During the course of this program, all field and analytical work of either party pertaining to this program shall be open to the inspection of the other party, and if the work is not being carried on in a mutually satisfactory manner, either party may terminate this agreement upon 60 days written notice to the other party.
7. The original records resulting from this program will be deposited in the office of origin of those records. Upon request, copies of the original records will be provided to the office of the other party.

Form 9-1366
continued

U.S. Department of the Interior
U.S. Geological Survey
Joint Funding Agreement

Customer #: 6000001189
Agreement #: 13WSHI000000003
Project #: ZH009OA
TIN #: 99-0266119

- 8. The maps, records, or reports resulting from this program shall be made available to the public as promptly as possible. The maps, records, or reports normally will be published by the party of the first part. However, the party of the second part reserves the right to publish the results of this program and, if already published by the party of the first part shall, upon request, be furnished by the party of the first part, at costs, impressions suitable for purposes of reproduction similar to that for which the original copy was prepared. The maps, records, or reports published by either party shall contain a statement of the cooperative relations between the parties.
- 9. USGS will issue billings utilizing Department of the Interior Bill for Collection (form DI-1040). Billing documents are to be rendered quarterly. Payments of bills are due within 60 days after the billing date. If not paid by the due date, interest will be charged at the current Treasury rate for each 30 day period, or portion thereof, that the payment is delayed beyond the due date. (31 USC 3717; Comptroller General File B-212222, August 23, 1983).

U.S. Geological Survey
United States
Department of the Interior

Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii

USGS Point of Contact

Name: Ronald Rickman
Address: USGS-PIWSC
677 Ala Moana Blvd., Ste 415
Honolulu, HI 96813
Telephone: 808-587-2407
Email: rrickman@usgs.gov

Customer Point of Contact

Name: Jeremy Kimura
Address: CWRM
P.O. Box 621
Honolulu, HI 96809
Telephone: 808-587-0269
Email: jeremy.l.kimura@hawaii.gov

Signatures

By SSA Date 8/14/12
Name: Stephen S. Anthony
Title: Center Director

Signatures

By _____ Date _____
Name: _____
Title: _____

Scope of Investigations

Monitoring Stations to be operated as part of the cooperative water-resource monitoring program between the State of Hawaii Department of Land and Natural Resources Commission on Water Resource Management and the U.S. Geological Survey during the period October 1, 2012 to September 30, 2013.

[RT, real-time telemetry to make data accessible over the internet through the USGS National Water Information System]

<u>USGS Station No.</u>	<u>Island</u>	<u>USGS Station Name</u>	<u>Station Type</u>	<u>Frequency</u>	<u>CWRM</u>	<u>USGS</u>	<u>Total</u>
215607159344301	Kauai	2-5634-01 Hanapepe Ridge	Groundwater level	Quarterly	1,950	1,540	3,490
212154158015201	Oahu	3-2101-03 Honouliuli	Groundwater level	Quarterly	2,400	1,090	3,490
212738158034301	Oahu	3-2703-02 Kunia Basal Monitor Well	Groundwater level	Quarterly	2,400	1,090	3,490
213438158091101	Oahu	3-3409-16 Mokuleia	Groundwater level	Quarterly	2,700	790	3,490
211832157515501	Oahu	3-1851-19 Halekauwila Street, Pipe A	Groundwater level + Chloride	Quarterly	4,200	820	5,020
211832157515502	Oahu	3-1851-19 Halekauwila Street, Pipe B	Groundwater level + Chloride	Quarterly	4,200	820	5,020
212238157561101	Oahu	3-2256-10 Aiea US Navy, (187-B)	Groundwater level	7 times per year	3,200	830	4,030
210402156495801	Molokai	4-0449-01 Ualapue	Groundwater level	Quarterly	2,400	1,540	3,940
210825157004301	Molokai	4-0800-01 Kualapuu Deep Monitor Well	Salinity profile	2 times per year	2,600	1,340	3,940
205140156304501	Maui	6-5130-01 Waikapu 1	Groundwater level	Quarterly	2,400	1,090	3,490
205405156305401	Maui	6-5430-05 Waiehu Deep Monitor Well	Groundwater level	Continuous	4,400	1,690	6,090
194327156002301	Hawaii	4360-01 Kalaea N Kona (W12-11)	Groundwater level	Continuous	4,800	1,290	6,090
190423155371501	Hawaii	8-0437-01 Waiohinu*	Groundwater level	Quarterly	400	320	720
200132155471101	Hawaii	8-6147-01 Kawaihae W-3	Groundwater level	Quarterly	2,900	590	3,490
220356159281401	Kauai	1051.0 N. Wailua Ditch near Lihue	Rainfall	Continuous - RT	6,600	3,070	9,670
220713159361201	Kauai	1083.0 Mohihi Crossing near Waimea	Rainfall	Continuous - RT	6,600	3,070	9,670
220739159373001	Kauai	1082.0 Waiakoali near Waimea	Rainfall	Continuous - RT	6,600	3,070	9,670
220927159355001	Kauai	1084.0 Kilohana near Hanalei	Rainfall	Continuous - RT	6,600	3,070	9,670
220523159341201	Kauai	1042.0 Waialae near Waimea	Rainfall	Continuous - RT	6,600	3,070	9,670
212359157502601	Oahu	772.3 Moanalua No. 1 at alt. 1,000 ft	Rainfall	Continuous - RT	6,600	3,070	9,670
212855157504501	Oahu	837.0 Waiahole at Kamehameha Hwy.	Rainfall	Continuous - RT	6,100	1,960	8,060
213215157552800	Oahu	883.12 Poamoho No. 1, nr Wahiawa	Rainfall	Continuous - RT	5,650	4,020	9,670
213237157530701	Oahu	886.4 Kahana at alt. 95 ft.	Rainfall	Continuous - RT	6,100	1,960	8,060
213608158011101	Oahu	897.9 Pupukea at alt. 1,160 ft.	Rainfall	Continuous - RT	6,600	3,070	9,670
213732158010201	Oahu	897.11 Kamananui at alt. 720 ft.	Rainfall	Continuous - RT	6,100	3,570	9,670
203721156151601	Maui	255.0 Kepuni Gulch	Rainfall	Continuous - RT	6,100	3,570	9,670
194117155174801	Hawaii	83.0 Quarry at Saddle Road	Rainfall	Continuous - RT	6,600	3,070	9,670
194945155534402	Hawaii	92.5 Kiholo	Rainfall	Continuous - RT	6,800	2,870	9,670
200518155405801	Hawaii	185.7 Kawaiinui near Kamuela	Rainfall	Continuous - RT	5,800	2,260	8,060

<u>USGS Station No.</u>	<u>Island</u>	<u>USGS Station Name</u>	<u>Station Type</u>	<u>Frequency</u>	<u>CWRM</u>	<u>USGS</u>	<u>Total</u>
16049000	Kauai	Hanapepe Riv below Manuahi Str nr Eleele	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16060000	Kauai	SF Wailua River near Lihue	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16068000	Kauai	East Branch of North Fork Wailua River nr Lihue	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16071500	Kauai	Left Branch Opaekaa Stream near Kapaa	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16097500	Kauai	Halaulani Stream at alt 400 ft. near Kilauea	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16103000	Kauai	Hanalei River near Hanalei	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16227500	Oahu	Moanalua Stream near Kaneohe	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16229000	Oahu	Kalihi Stream near Honolulu	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16240500	Oahu	Waiakeakua Stream at Honolulu	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16294900	Oahu	Waikane Stream at alt. 75 ft. at Waikane	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16345000	Oahu	Opaekula Stream near Wahiawa	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16294100	Oahu	Waiahole Stream above Kamehameha Hwy.	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16296500	Oahu	Kahana Stream at alt. 30 ft. nr Kahana	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16301050	Oahu	Punaluu Stream above Diversion near Punaluu	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16508000	Maui	Hanawi Stream near Nahiku	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16604500	Maui	Iao Stream at Kepaniwai Park near Wailuku	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16614000	Maui	Waihee River abv Waihee Ditch Intake nr Waihee	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16620000	Maui	Honokohau Stream near Honokohau	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16518000	Maui	West Wailuaiki Stream near Keanae	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16587000	Maui	Honopou Stream near Huelo	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16704000	Hawaii	Wailuku River at Piilhonua	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16720000	Hawaii	Kawainui Stream nr Kamuela	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16770500	Hawaii	Paaau Gulch at Pahala	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16717000	Hawaii	Honolii Stream nr Papaikou	SW RT-Cont	Continuous - RT	11,250	8,900	20,150
16725000	Hawaii	Alakahi Stream near Kamuela	SW RT-Cont	Continuous - RT	11,250	8,900	20,150

* \$3,100 funded by the USGS CBR program

Total = 417,650 282,110 699,760