



STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES | KA 'OIHANA KUMUWAIWAI 'ĀINA
COMMISSION ON WATER RESOURCE MANAGEMENT | KE KAHUWAI PONO
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STAFF SUBMITTAL

COMMISSION ON WATER RESOURCE MANAGEMENT

August 20, 2024
Honolulu, Hawai'i

Request and Delegation of Authority to Chairperson to
Enter into a Joint Funding Agreement with the U.S. Geological Survey
For Statewide Hydrologic Data Collection and
Water Resource Monitoring for Federal Fiscal Year (FFY) 2025; and

Declare that Project is Exempt from Environmental Assessment Requirements under
Hawaii Revised Statutes Chapter 343, and Hawaii Administrative Rules Chapter 11-200.1

SUMMARY OF REQUEST

Staff recommends that the Commission on Water Resource Management (Commission) enter into a Joint Funding Agreement (Agreement) with the U.S. Geological Survey (USGS) for the inventory and investigation of Hawai'i's water resources.

BACKGROUND

The cooperative monitoring of Hawai'i's hydrologic resources began in 1909 when the USGS entered into an Agreement with the Territory of Hawai'i. Initially, monitoring was focused on surface water, and 12 streams were gaged continuously. By 1914, there were 87 continuous-record stations, largely serving sugarcane plantation data needs. Following statehood, the Division of Water and Land Development (DOWALD) managed the Agreement with USGS for the Department of Land and Natural Resources (DLNR) to maintain funding for many gages. The program continued to grow, reaching a peak in 1966 when 197 stream gages were operational. In 1972, ground water data collection became an integral part of the Agreement. Baseline data throughout the State covered 170 observation wells. Various monitoring programs and data collection objectives were funded cooperatively between the State and the USGS through various mechanisms.

With the passage of the State Water Code in 1987, responsibility to coordinate monitoring programs and activities concerning water resource protection and management were transferred to the Commission. The cooperative monitoring of Hawai'i's hydrologic resources is part of the

Commission's mandate to "maintain an inventory of all water uses and water resources" [Haw. Rev. Stat. §174C-5(14)]. The program also helps the Commission to assess how climate variability, changing land use, and increasing water demands affect water resources. Maintaining a long-term hydrologic monitoring program with the USGS is an essential component of the Commission's Water Resource Protection Plan, including:

...the effect on the environment, procreation of aquatic life and wildlife, and water quality; study the quantity and quality of water needed for existing and contemplated uses, including irrigation, power development, geothermal power, industrial, and municipal uses; study such other related matters as drainage, reclamation, flood hazards, floodplain zoning, dam safety, and selection of reservoir sites, as they relate to the protection, conservation, quantity, and quality of water. (HAR §13-170-21)

Over the years, stream and well observation gages were discontinued for a variety of reasons. There was a shift in fiscal priorities, economic realities, completed data acquisition objectives, and reduced plantation partnership engagement as plantations ceased operations. Beginning in 1998, the Commission streamlined the Agreement by transferring the crest-stage stream-gaging program to the City and County of Honolulu (for O'ahu) or the Department of Transportation (for neighbor islands) where this data (e.g., flooding issues) are more relevant to disaster response rather than resource management or sustainability issues. In addition, the Waiāhole Trust Fund was established in 1997 to defray the cost of monitoring stream and rainfall gages within the region impacted by the Waiāhole Ditch.

Duplication of groundwater data collection sites were eliminated in 1998. Groundwater data gathering changed and expanded to incorporate data provided by water system purveyors and well owners, who were required by law and rule to report their water-use, water levels, and chloride levels. Further, Commission staff has developed in-house capacity and expertise to take over monitoring of selected well sites on a quarterly basis. As a result, the Commission's Survey Branch is assuming the monitoring of many wells previously monitored by the USGS. With this Agreement, an additional 6 groundwater monitoring wells are maintained.

During the economic recession of the mid-2000s, watershed management grant funding through the Division of Forestry and Wildlife that supported many stream gaging stations was discontinued. In order to maintain the continuity of important monitoring records, money from the Commission budget was dedicated to the operation and maintenance costs for these stations as part of the Agreement. In 2011, the Commission's Stream Protection and Management (SPAM) Branch started monitoring interim instream flow standards (interim IFS) on the island of Maui. Since that time, additional monitoring has been needed to ensure the compliance of interim IFS throughout the State.

Commission staff has also developed the in-house capacity and expertise to install, maintain, and monitor selected surface water locations. While the overall installation cost and the operation and maintenance cost per station can be much lower when Commission staff maintains a stream gaging station, staff time dedicated to this type of work takes away from the Stream Protection and Management Branch's other duties, including the development of interim instream flow

standards. Currently, Commission staff monitors 50 observation wells and maintains approximately 50 stream or ditch gaging stations across the state. Commission staff are currently over-extended and do not have the capacity to expand the existing gaging network. With this Agreement, an additional 44 streamflow and one ditchflow monitoring stations are maintained.

The 2019 Update to the Water Resource Protection Plan¹ identified a need to monitor the hydrological consequences of climate change across the State. Further, the 2020 USGS Hydrological Monitoring Needs Assessment for the State of Hawai‘i² identified the location of new streamflow monitoring stations needed to fully implement a hydrological monitoring network to characterize the consequences of climate change. Stations re-established in locations with previous long-term streamflow monitoring can also be used to help track shifts in water availability or hydrological processes associated with climate change.

USGS also maintains high quality assurance and quality control standards which can be challenging for the Commission to replicate with limited staffing. An overall increase in monitoring needs as a result of new interim IFS, and a need to better understand how changes in climate patterns are affecting surface water availability, has led to an increase in the number of CWRM-funded USGS stream gaging stations. Commission staff have also worked with other state, county, and federal agencies to support the collection of hydrological data. The Commission is the largest, cooperator of the USGS in the State of Hawai‘i (Table 1).

Table 1. Summary of current (FFY2025) total USGS monitoring efforts as well as the breakdown of the number of CWRM co-funded USGS monitoring stations and the other cooperators in the State of Hawai‘i.

	rainfall stations	groundwater well stations	continuous stream monitoring stations (not real-time)	real-time stream monitoring stations	continuous ditch monitoring stations
USGS total	23	37	6	86	1
CWRM-USGS co-funded	17	6	6	37	1
Other cooperators	6	31	0	49	0

¹ <https://dlnr.hawaii.gov/cwrmp/planing/hiwaterplan/wrpp/>

² <https://pubs.er.usgs.gov/publication/sir20205115>. To build out the full network of water resource monitoring needs in the USGS report will cost approximately \$177 million in FY2021. This cost includes rainfall, streamflow, and monitor wells.

The total cost of the Agreement, the Commission share, and the costs for operating and maintaining each type of rainfall, stream, and groundwater monitoring station has been standardized across stations and the most recent years are provided in Table 2.

Table 2. Summary of annual cost requirements for various stations and the source of funds for the CWRM-USGS statewide hydrologic data collection agreement by Federal Fiscal Year (FFY).

Cost of services or source of funds	FFY2021	FFY2022	FFY2023	FFY2024	FFY2025
Total Joint Funding Requirement	\$932,770	\$1,133,144 ¹	\$1,261,031	\$1,231,072	\$1,277,633
Expected (full-year) CWRM cost-share not to exceed	\$711,475	\$909,076 ¹	\$1,005,646	\$999,964	\$1,021,806
Percentage CWRM cost-share ²	76%	80%	80%	82%	80%

¹Does not reflect discount applied due to FFY2021 reduced services associated with the SARS-COV-2 pandemic

²Does not include contributions from other agencies including HI DOT, USDA Forest Service, Maui County, Hawai'i County, Kauai County, Mahi Pono, or Kamehameha Schools

CURRENT AGREEMENT

Rainfall Monitoring

The defacto State Climate Office was originally located under DOWALD within DLNR. DOWALD acted as a repository for climate data collected by disparate entities (mostly private agricultural companies). With the passage of the State Water Code and the establishment of the Commission, the Climate Office was transferred to the University of Hawai'i (UH) Department of Meteorology. While UH does not serve the same function as DOWALD, they continue to be a repository for climate data and field data requests. Through the Agreement, the Commission has funded the monitoring of rainfall in important locations throughout the state for the last few decades. Rainfall stations all provide real-time continuous data that are relied upon by the Commission, Federal (e.g., National Weather Service), State and County (e.g., Departments of Civil Defense, Emergency Management, Public Works) agencies, and the public to closely monitor weather conditions. Commission staff continue to work with UH staff to implement the Hawai'i Mesonet real-time climate monitoring network across the state. Rainfall data are utilized to assess short-term and long-term climate patterns and their effects on watershed hydrology. The state cost-shares the operation of real-time rainfall data collection at mostly inaccessible locations where streamflow data is already being gathered.

Groundwater Monitoring

The general nature of the FFY 2025 Agreement and relationship of the parties remains mostly the same as FFY 2024 for groundwater data collection. USGS will monitor six (6) ground water observation wells for the Commission, taking quarterly or bi-monthly depth and/or conductivity, temperature, and depth (CTD) profiles. In a few locations, ground water levels are monitored in real-time. Together with data gathered by the Commission, these data help with the assessment of groundwater conditions over time in response to changes in pumpage, rainfall-recharge, and historical land use patterns. It's estimated that approximately 204 additional groundwater monitoring sites are needed to fulfill the statewide monitoring needs as identified by Cheng 2020.

Streamflow Monitoring

Despite the increase in streamflow monitoring statewide in recent years, an additional 24-30 natural (i.e., unregulated) streamflow monitoring stations, plus many more monitoring stations (i.e., regulated) are needed to fulfill the statewide monitoring needs as identified by Cheng 2020. The FFY 2025 Agreement remains the same with the following modifications:

1. USGS has had issues regarding the installation and maintenance of station 16408000 Waikolu Stream for monitoring the entire range of streamflows. This station was originally intended to be an interim IFS monitoring station below the Department of Agriculture's Moloka'i Irrigation System. USGS and CWRM agreed that operating this station as a low-flow station serves that purpose, and that re-establishing USGS 16405500 Waikolu Str at alt 900 ft, which is also an interim IFS location, might be more practical for monitoring the entire range of flows. This location is more accessible via the Moloka'i Irrigation System Tunnel.
2. USGS 16522950 Pi'ina'au Str 470ft US Ko'olau Ditch will be dropped from the Agreement. This station operated as a low-flow monitoring station from 2018-2024 as part of the Statewide Low-Flow Study. Pi'ina'au streamflow has been fully restored by the Commission.
3. USGS 16103000 Hanalei Stream will be dropped from the Agreement. CWRM does not intend to utilize this station for any management action and USGS has indicated it would reallocate Federal money to maintain this station.
4. USGS 16751500 'Āwini Puali Gulch will be maintained as a low-flow station, but permitting to upgrade to a real-time monitoring station will be paid for in FFY 2025.
5. USGS 16757000 Waikoloa Stream will be maintained as a low-flow station, but permitting to upgrade to a real-time monitoring station will be paid for in FFY 2025.
6. USGS 16409000 Waihanau Stream will be maintained as a low-flow station for six months, and installation of real-time monitoring will be done in FFY 2025.
7. USGS 16545000 Puohokamoa Stream will be maintained as a low-flow station for six months, and installation of real-time monitoring will be done in FFY 2025.

OTHER

I. Chapter 343 – Environmental Assessment (EA) Compliance

Environmental Assessment (“EA”) Triggers

Under Hawaii Revised Statutes §343-5(a), the use of state funds triggers the need for an EA.

EA Exemption

The proposed action is exempt from an EA based on Hawaii Administrative Rule §11-200.1-15(c)(5) and the Exemption List for the Commission on Water Resource Management approved by the Environmental Council on January 5, 2021, and falls under Exemption Class 5, Part 1, No. 3, which provides for “Installation of new, small groundwater, surface water, or climatological monitoring and data collection equipment, structures that house or protect this equipment, and installation of electrical, telemetry, or communications systems to service these equipment or structures.” No exemption notice is required.

Consistency with the Hawai‘i Water Plan

The Water Resource Protection Plan, updated in 2019, reiterates the need for reliable, long-term data to make sound water management decisions. Monitoring of ground water and streams allows for an accounting of the quantity and variability of water, whether streamflows are sufficient to meet environmental and cultural needs, and how water is made available for human use.

RECOMMENDATIONS:

Staff recommends that the Commission:

- 1) Authorize the Chairperson to enter into a Joint Funding Agreement with the U.S. Geological Survey for FFY 2025 to undertake the specified monitoring activities;
- 2) Delegate authority to the Chairperson to modify the Agreement, provided that there is no increase in cost to the Commission; and
- 3) Find that this Joint Funding Agreement is exempt from the preparation of an environmental assessment under Hawaii Revised Statutes §343 based on Hawai'i Administrative Rules §11-200-8(a)(5) and the Exemption List for the Commission on Water Resource Management approved by the Environmental Council on January 5, 2021.

The terms of this Agreement are subject to the approval of the Attorney General's Office. Contract execution will be done in accordance with Hawai'i Revised Statute Chapter 103D and Hawai'i Administrative Rules, Chapter 3-122.

Ola i ka wai,



DEAN D. UYENO
Acting Deputy Director

- Exhibit (s):
1. Summary of Changes to the Cooperative Program: FFY 2017 to 2025
 2. Proposed Scope of Services
 3. Monitoring Stations to be funded in the FFY 2025 Agreement

APPROVED FOR SUBMITTAL:



DAWN N. S. CHANG
Chairperson

SUMMARY OF CHANGES TO THE COOPERATIVE PROGRAM: 2017 to 2025

Federal Fiscal Year	Streamflow stations	Groundwater stations	Rainfall stations	CWRM contribution	Changes and Comments
2017	27	12	17	\$494,148	1. Waiāhole Trust Fund to provide \$45,264 for Waiāhole stations 2. Waimea River nr Waimea stream gage (16031000) added
2018	27	9	17	\$495,520	1. CWRM cost share increases to 67% 2. CWRM staff to assume monitoring of three wells previously monitored by the USGS
2019	32	8	17	\$624,317	1. Waiāhole Trust Fund to provide \$67,200 for Waiāhole stations 2. Five new gaging stations added to agreement (4 stream, 1 ditch): Waiahi on Kaua'i; Honomanū, Kahoma, Wailuku, Kau'aula on Maui; Kauaula Ditch (Maui)
2020	39	8	17	\$859,139	1. Waiāhole Trust Fund to provide \$91,564 for Waiāhole stations 2. Seven new stream gaging stations added to the agreement: Waimea River, North Fork Wailua River, and Huleia Stream on Kaua'i; Kamananui Stream on O'ahu; Waikolu Stream and East Fork Kawela Stream on Moloka'i; Naili'iliiha'ele Stream on Maui.
2021	39	8	15	\$696,864	1. Honolulu BWS assumes responsibility for providing cooperative funds for four streamflow gaging stations and two rainfall stations on Oahu. 2. CWRM will assume responsibility for providing cooperative funds for one station previously funded by HiEMA on Wainiha Stream, Kauai (USGS 16108000) 3. The reconnaissance costs for three new stations are provided in FY2021
2022	42	8	18	\$775,932	1. Installation costs for Ukumehame, Maui, Kaupuni, Oahu, and Wailuku, Hawaii whose permitting costs were paid for in FY2021 2. Permitting costs for three new stream gaging stations added to the Agreement: Waihanau Stream, Moloka'i; Waikapū Stream, Maui; Manowai'ōpae Stream, Hawai'i
2023	48	8	18	\$1,005,646	1. Installation costs for two new stream gaging stations added to the Agreement: Hakalau Stream, Hawai'i; Manowai'ōpae Stream, Hawai'i 2. Four low-flow stations previously funded separately added to the Agreement: 16522950 Pi'ina'au Stream, Maui; 16417800 LB Hono'ulimalo'o Stream, Moloka'i; 16409000 Waihanau Stream, Moloka'i; 16751500 Awini Puali, Hawai'i 3. Requested HI DOT take responsibility for funding 16049000 Hanapēpē River
2024	46	6	17	\$999,964	1. Data collection at two wells was discontinued due to poor site conditions 2. Kauai DOW assumes responsibility for funding two stream and one rainfall station 3. One low-flow station will be removed from Kaua'ula Stream (16643100) and one low-flow station will be added to Puohokamo Stream (16545000).
2025	44	6	17	\$1,021,806	1. Data collection at two stations was discontinued: 16522950 Pi'ina'au Stream, Maui; 160103000 Hanalei Stream 2. Two low-flow stations will be upgraded to real-time: 16409000 Waihanau Stream, Moloka'i; 16545000 Puohokamo, Maui

EXHIBIT 1

PROPOSED SCOPE OF SERVICES

1. This Joint Funding Agreement (“Agreement”) is a continuation of the joint funding agreement for the collection of hydrological data in the State of Hawai‘i 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 Hawai‘i (“Commission”).
2. The scope of services involves the collection and computation of data on water resources collected in multiple locations throughout the State of Hawai‘i.
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.

MONITORING STATIONS TO BE FUNDED IN THE FFY 2025 AGREEMENT

Site name	Site number	Data Type
Waimea River US of Kekaha-Waiahulu Int., Kauai, HI	16016000	QCONT
Waimea River near Waimea, Kauai, HI	16031000	QCONT
RB Lawai Stream 300ft US of fork, Kauai, HI	16052400	QCONT
NF Wailua Riv abv N Wailua Ditch Int, Kauai, HI	16060950	QCONT
EB of NF Wailua River nr Lihue, Kauai, HI	16068000	QCONT
Left Branch Opaekaa Str nr Kapaa, Kauai, HI	16071500	QCONT
Halaulani Str at alt 400 ft nr Kilauea, Kauai, HI	16097500	QCONT
Wainiha River nr Hanalei, Kauai, HI	16108000	QCONT
Wahiawa Ditch at Wahiawa, Oahu, HI	16210100	QCONT
Kaukonahua Stream blw Wahiawa Reservoir, Oahu, HI	16210200	QCONT
Kaupuni Str at alt 374 ft nr Waianae, Oahu, HI	16211800	QCONT
Waiahole Stream above Kamehameha Hwy, Oahu, HI	16294100	QCONT
Waikane Str at alt 75 ft at Waikane, Oahu, HI	16294900	QCONT
Kahana Str at alt 30 ft nr Kahana, Oahu, HI	16296500	QCONT
Punaluu Str abv Punaluu Ditch Intake, Oahu, HI	16301050	QCONT
Kamananui Str at Pupukeya Mil Rd, Oahu, HI	16325000	QCONT
Opaepala Str nr Wahiawa, Oahu, HI	16345000	QCONT
Waikolu Str blw pipe nr Kalaupapa, Molokai, HI	16408000	QCONT
Waihanau Stream nr Kalaupapa, Molokai, HI	16409000	QCONT
EF Kawela Gulch nr Kamalo, Molokai, HI	16415000	QCONT
LB Honoulimaloo Str US diversion, Molokai, HI	16417800	QCONT
Hanawi Stream near Nahiku, Maui, HI	16508000	QCONT
West Wailuaiki Stream near Keanae, Maui, HI	16518000	QCONT
Honomanu Stream near Hana Hwy, Maui, HI	16527500	QCONT
Puohokamoa Str ab Spreckels Ditch, Maui, HI	16545000	QCONT
Nailiilihaele Stream near Huelo, Maui, HI	16570000	QCONT
Honopou Stream near Huelo, Maui, HI	16587000	QCONT
Wailuku River at Kepaniwai Park, Maui, HI	16604500	QCONT
Waihee Rv abv Waihee Ditch intake nr Waihee, Maui, HI	16614000	QCONT
Honokohau Stream near Honokohau, Maui, HI	16620000	QCONT
Kahoma Stream at Lahaina, Maui, HI	16638500	QCONT
Kauaula Stream US of ditch diversion, Maui, HI	16641000	QCONT
Ukumehame Gulch nr Olowalu, Maui, HI	16647000	QCONT
Waikapu Str US of S Waikapu Dt intake, Maui, HI	16647900	QCONT
Wailuku River nr Kaumana, HI	16701800	QCONT
Wailuku River at Piionua, HI	16704000	QCONT
Honolii Stream nr Papaikou, HI	16717000	QCONT
Hakalau Stream nr alt 1300 ft, HI	16717700	QCONT
Manowaiopae Stream near Spencer Road, HI	16717815	QCONT
Kawainui Stream nr Kamuela, HI	16720000	QCONT

Site name	Site number	Data Type
Alakahi Stream near Kamuela, HI	16725000	QCONT
Awini Puali Gulch US of Kohala Ditch, HI	16751500	QCONT
Waikoloa Stream nr Kamuela, HI	16757000	QCONT
Paauau Gulch at Pahala, HI	16770500	QCONT
83.0 Quarry Rain Gage at Saddle Rd, HI	194117155174801	PRECIPCONT
125.12 Honolii Rain Gage near Papaikou, HI	194602155091801	PRECIPCONT
92.5 Kiholo Rain Gage, HI	194945155534402	PRECIPCONT
185.7 Kawainui Rain Gage near Kamuela, HI	200518155405801	PRECIPCONT
255.0 Kepuni Gulch Rain Gage, Maui, HI	203721156151601	PRECIPCONT
348.5 West Wailuaiki Rain Gage nr Keanae, Maui, HI	204916156083701	PRECIPCONT
6-5430-05 Waiehu Deep Monitor Well, Maui, HI	205405156305401	GWCONT
Honokohau Rain Gage at alt 940 ft, Maui, HI	205735156351301	PRECIPCONT
4-0449-01 Ualapue Shaft (S6), Molokai, HI	210402156495801	GWMEAS
4-0800-01 Kualapuu Deep Monitor Well, Molokai, HI	210825157004301	WQMEAS
3-2101-03 Honouliuli (W266), Oahu, HI	212154158015201	GWMEAS
3-2256-10 Aiea Bay nr Naval Res (187-B), Oahu, HI	212238157561101	GWCONT
837.7 Waiahole RG at Kamehameha Hwy., Oahu, HI	212855157504501	PRECIPCONT
886.4 Kahana Rain Gage at alt. 95 ft., Oahu, HI	213237157530701	PRECIPCONT
897.9 Pupukea Rd Rain Gage at alt 1,160 ft,Oahu,HI	213608158011101	PRECIPCONT
897.11 Kamananui Rain Gage at alt. 720 ft, Oahu,HI	213732158010201	PRECIPCONT
2-5634-01 Hanapepe Ridge, Kauai, HI	215607159344301	GWMEAS
1051.0 N Wailua Ditch Rain Gage nr Lihue, Kauai,HI	220356159281401	PRECIPCONT
1047.0 Mt. Waialeale Rain Gage nr Lihue, Kauai, HI	220427159300201	PRECIPCONT
1042.0 Waialae Rain Gage nr Waimea, Kauai, HI	220523159341201	PRECIPCONT
1083.0 Mohihi Crsg Rain Gage nr Waimea, Kauai, HI	220713159361201	PRECIPCONT
1082.0 Waiakoali Rain Gage nr Waimea, Kauai, HI	220739159373001	PRECIPCONT
1084.0 Kilohana Rain Gage nr Hanalei, Kauai, HI	220927159355001	PRECIPCONT