



**STATE OF HAWAII**  
**DEPARTMENT OF LAND AND NATURAL RESOURCES**  
**COMMISSION ON WATER RESOURCE MANAGEMENT**  
 Stream Protection and Management Branch

**FIELD INVESTIGATION REPORT**  
**FI2008102301 (East Maui, Honopou IIFS Site A)**

<b>Date of Field Investigation:</b>	October 23, 2008	<b>Time (24-hour):</b>	0500 - 0930
<b>CWRM Staff:</b>	Dean Uyeno, Ken Kawahara, Chui Ling Cheng		
<b>Individuals Present:</b>	Agency staff - Matt Wong (USGS-Maui field technician), Skippy Hau (DAR staff); Honopou community - Lynn Scott, Beatrice Kekahuna, Sanford Kekahuna, Boni Kekahuna, and Wanda Vierra		
<b>Hydrologic Unit:</b>	Honopou (6034)		
<b>Stream Name:</b>	Honopou Stream		

**Findings:**

CWRM staff departed Oahu for Maui at 0500 hours. On Maui, staff picked up vehicle at the Division of Forestry and Wildlife (DOFAW) base yard. Then, met with Skippy Hau at the Division of Aquatic Resources (DAR) base yard. CWRM staff and Skippy drove (in one vehicle) to the USGS warehouse to meet with Matt Wong, who chose to take his own vehicle for the entire field visit. CWRM staff, Skippy Hau and Matt Wong will be referred as the staff crew in the remainder of this report.

At approximately 0800 hours, staff crew met with members of the Honopou community at the Haiku Ditch diversion on Honopou Stream. Everyone then drove to the bridge that crosses Honopou Stream further downstream. Staff crew evaluated the section of the stream from the pond upstream to the bridge. Matt Wong recommended two locations: 1) one for flow measurement; and 2) another with a gage pool to record gage height as well as for the possible installation of a staff gage. Together, these represent interim instream flow standard (IIFS) Site A as indicated in the staff submittal. The flow measurement location is approximately 60 feet upstream of the gage pool. The gage pool is approximately 10 feet upstream from the bridge, and is bounded by a concrete wall. Matt inspected the concrete wall and noted a minor leakage in the wall, towards the right stream bank.

Under Matt Wong's supervision, staff crew prepared the site for flow measurement. The site was flagged with yellow tape, labeled with the stream name, IIFS site, and the date. While CWRM staff and Skippy Hau were taking the flow measurement, Matt Wong set up a reference point at the gage pool downstream to record changes in gage height (if any) during the flow measurement. Matt used a hammer drill to install an anchor bolt to the old staff plate structure, concrete-reinforced masonry (CRM), on the right stream bank, then used red spray paint to mark the site. Staff crew completed the entire flow measurement in 40 minutes. Gage height readings were taken at the downstream gage pool at the start and finish of flow measurement. In addition to flow measurement, staff crew also recorded wind velocity, air temperature, water temperature and weather conditions. As computed back in the Honolulu Office, the flow at IIFS Site A was 0.229 cubic feet per second (0.148 million gallons per day), with a gage height change of +0.01 feet.

Staff crew left Honopou IIFS Site A at approximately 0930 hours, and continued further downstream to select IIFS Site B on Honopou Stream. Refer to Field Investigation Report FI2008102302 (East Maui, Honopou IIFS Site B) for more information.

**Image Listing:** (Attach PDF of image contact sheet)

<b>File Name:</b>	<b>Brief Description:</b>
20081023001	Bridge crossing Honopou Stream.
20081023002	Gage pool and concrete wall on Honopou Stream.
20081023003	Right bank of the gage pool where the reference point was set, Honopou Stream.
20081023004	Gage pool and concrete wall taken from the left bank of Honopou Stream.
20081023006	Staff crew setting up flow measuring station on Honopou Stream.
20081023008	Staff crew setting up flow measuring station on Honopou Stream.
20081023010	Staff crew conducting flow measurement on Honopou Stream.
20081023013	Wading rod and measuring tape indicating height of water level on Honopou Stream.
20081023014	Chui Ling Cheng recording flow measurement on Honopou Stream with the help of Matt Wong.
20081023016	Dean Uyeno adjusting the wading rod during flow measurement on Honopou Stream.
20081023017	Staff crew conducting flow measurement on Honopou Stream.
20081023019	Staff crew conducting flow measurement on Honopou Stream.
20081023020	Matt Wong installing anchor bolt into rock as the reference point on Honopou Stream.

20081023021 Matt Wong installing anchor bolt into rock as the reference point on Honopou Stream.  
 20081023023 Dean Uyeno and Matt Wong conducting flow measurement on Honopou Stream.  
 20081023026 Dean Uyeno conducting flow measurement on Honopou Stream.  
 20081023028 Staff crew conducting flow measurement on Honopou Stream. Also in the photo are members from the Kekahuna family.  
 20081023032 Chui Ling Cheng taking wind velocity measurement on Honopou Stream.  
 20081023033 Skippy Hau taking water temperature measurement on Honopou Stream.  
 20081023035 Matt Wong taking gage height measurement on Honopou Stream.  
 20081023036 Matt Wong taking gage height measurement on Honopou Stream.  
 20081023037 Matt Wong explaining to CWRM staff how to take gage height measurement on Honopou Stream.

**GPS Listing:**

**Shapefiles:** (List file names of all shapefiles created and a brief description of each)

<b>File Name:</b>	<b>Brief Description:</b>
East_Maui_POI.shp	Points of interest (POI) recorded with the GPS unit during the field visit. The file includes POI recorded from all the East Maui field investigations.

**Waypoints:** (List all waypoints in decimal degrees and provide a brief description of each)

<u>WP No.</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Brief Description:</u>
6	20.916212	-156.245203	Bridge on Honopou Stream
7	20.916187	-156.245174	IIFS Site A Reference Point on Honopou Stream
8	20.916096	-156.245077	IIFS Site A Flow Measurement on Honopou Stream

**Attachments:**

- Brief Description:**
1. Image Contact Sheet
  2. Discharge Measurement and Gage Inspection Notes

**Recommendations:**

# IMAGE CONTACT SHEET



**20081023001.JPG**



**20081023002.JPG**



**20081023003.JPG**



**20081023004.JPG**



**20081023006.JPG**



**20081023008.JPG**



**20081023010.JPG**



**20081023013.JPG**



**20081023014.JPG**



**20081023016.JPG**



**20081023017.JPG**



**20081023019.JPG**

# IMAGE CONTACT SHEET



**20081023020.JPG**



**20081023021.JPG**



**20081023023.JPG**



**20081023026.JPG**



**20081023028.JPG**



**20081023032.JPG**



**20081023033.JPG**



**20081023035.JPG**



**20081023036.JPG**



**20081023037.JPG**

**U.S. DEPARTMENT OF THE INTERIOR  
U.S. Geological Survey  
WATER RESOURCES DIVISION  
DISCHARGE MEASUREMENT AND  
GAGE INSPECTION NOTES**

Meas. No. \_\_\_\_\_

Comp. by Chui

Checked by DDA

Sta. No. Honopou HFS Site A

Sta. Name \_\_\_\_\_

Date 10/23, 2008 Party Chui, Dean, Ken, Skippy, Matt Wong

Width 3.0 Area 1.176 Vel. 0.19 G.H. 0.85-0.86 Disch. 0.229 CFS

Method Wading No. secs. 40 G.H. change +0.01 in 0.5 hrs.

Method coef. \_\_\_\_\_ Horiz. angle coef. \_\_\_\_\_ Susp. \_\_\_\_\_ Tags checked \_\_\_\_\_

Meter Type \_\_\_\_\_ Meter No. \_\_\_\_\_ Meter \_\_\_\_\_ ft. above bottom of wt.

Rating used \_\_\_\_\_ Spin test before meas. \_\_\_\_\_ ; after \_\_\_\_\_

Meas. plots \_\_\_\_\_ % diff. from rating no. \_\_\_\_\_ Indicated shift \_\_\_\_\_

GAGE READINGS					
Time				Inside	Outside
Start	8:30	AM		1.00 (RPI) - 0.15	
	LEW	@ 3.1		= 0.85	
Finish	09:09	AM		1.00 (RPI) - 0.14	
	REIN	@ 6.1		= 0.86	
Weighted MGH					
GH correction					
Correct MGH					

Samples collected: water quality, sediment, biological, other \_\_\_\_\_

Measurements documented on separate sheets: water quality, aux./base gage, other \_\_\_\_\_

Rain gage serviced/calibrated \_\_\_\_\_

Weather: overcast, light sprinkle

Air Temp. 19 °C at 09:13

Water Temp. 22.5 °C at 09:14

Check bar/chain found \_\_\_\_\_

Changed to \_\_\_\_\_ at \_\_\_\_\_

Correct \_\_\_\_\_

downstr

Wading, cable, ice, boat, upstr., downstr. side bridge, 60 ft. mi. upstr., downstr. of gage. control  
Measurement rated excellent (2%), good (5%), fair (8%), poor (> 8%); based on following conditions:  
Flow: good laminar flow; Rating 5% good, fairly even velocity  
Cross section: fairly uniform, cobble, bedrock

Gage operating: \_\_\_\_\_ Record Removed \_\_\_\_\_

Battery voltage: \_\_\_\_\_ Intake/Orifice cleaned/purged: \_\_\_\_\_

Bubble-gage pressure, psi: Tank \_\_\_\_\_, Line \_\_\_\_\_; Bubble-rate \_\_\_\_\_ /min.

Extreme-GH indicators: max \_\_\_\_\_, min \_\_\_\_\_

CSG checked: \_\_\_\_\_ HWM height on stick \_\_\_\_\_ Ref. elev. \_\_\_\_\_ HWM elev. \_\_\_\_\_

HWM inside/outside: \_\_\_\_\_

Control: concrete dam

Remarks: wind: 0 km/h

GH of zero flow = GH \_\_\_\_\_ - depth at control \_\_\_\_\_ = \_\_\_\_\_ ft., rated \_\_\_\_\_

upstr.

.0      .10      .20      .30      .40      .50      .60      .70      .75  
 River at -

ANGLE COEF. FICIENT	DIST. FROM INITIAL POINT	WIDTH	DEPTH	OBSERVATION DEPTH	REVO. LUTIONS	TIME IN SEC. ONDS	VELOCITY		ADJUST. ED FOR HOR. ANGLE OR	AREA	DISCHARGE
							AT POINT	MEAN IN VER. TICAL			
LEW	@ 08:30		(40 sec average)				GHT = 1.00	(RPI)	0.15	= 0.85	.80
	3.1	.05	0								.85
	3.2	.1	.11		ESTN = .5 (.15)		0.075		.011	.001	
	3.3	.1	.31		40		0.15		.031	.005	
	3.4	.1	.5		40		0.11		.050	.006	.90
	3.5	.1	.51		40		0.14		.051	.007	.92
	3.6	.1	.48		40		0.17		.048	.008	.94
	3.7	.1	.45		40		0.20		.045	.009	.96
	3.8	.1	.45		40		0.21		.045	.009	.96
	3.9	.1	<del>50</del> <sup>48</sup>		40		<del>0.15</del>	0.22	.048	.011	.97
	4.0	.1	<del>50</del> <sup>45</sup>		40		<del>0.17</del>	0.24	.045	.011	.98
	4.1	.1	.49		40		0.23		.049	.011	.99
	4.2	.1	.45		40		0.22		.045	.010	
	4.3	.1	.49		40		0.25		.049	.012	
o	4.4	.1	.48		40		0.24		.048	.012	1.00
	4.5	.1	.52		40		0.24		.052	.012	
	4.6	.1	.50		40		0.23		.050	.012	
	4.7	.1	.50		40		0.25		.050	.013	.99
	4.8	.1	.50		40		0.26		.050	.013	.98
	4.9	.1	.50		40		0.23		.050	.012	.97
	5.0	.1	.52		40		0.25		.052	.013	.96
	5.1	.1	.50		40		0.21		.050	.011	
	5.2	.1	.47		40		0.22		.047	.010	.94
	5.3	.1	.48		40		0.21		.048	.010	.92
	5.4	.1	.47		40		0.14		.047	.007	.90
	5.5	.1	.32		40		0.08		.032	.003	
	5.6	.15	.30		40		0.02		.045	.001	
	5.8	.25	.15		40		ESTN = .5 (0.02) = 0.01		.038	0	.85
	6.1	.15	0								
	REW @ 09:09										
	3.0	3.0					AVE = 0.19		1.176	0.229	.80

LEW  
 left 08:30  
 edge  
 H2O

09:02