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

FIELD INVESTIGATION REPORT

FI2008120901 (East Maui, Palauhulu IIFS Site B)

Date of Field Investigation: December 9, 2008	**Time** (24-hour)**:** 0820 - 0910
CWRM Staff:	Ken Kawahara, Ed Sakoda, Dean Uyeno, and Chui Ling Cheng
Individuals Present:	
Hydrologic Unit:	Piinaau (6053)
Stream Name:	Palauhulu Stream

Findings:

At 0820 hours, CWRM staff arrived at the Hana Highway bridge that crosses Palauhulu Stream. The bridge is near the entrance to Piinaau Road. Staff hiked upstream approximately 100 yards from the bridge on Hana Highway, crossed the stream to the right bank, and hiked back downstream to the measurement site directly below the bridge (IIFS Site B).

While Ken, Ed, and Chui prepared the site for flow measurement, Dean set up a reference point 20 feet upstream of the IIFS site to record changes in gage height (if any) during the flow measurement. Dean used a hammer drill to install an anchor bolt on the right stream bank. Then, he used orange spray paint and orange flagging tape to mark the location. Flow measurement was completed in 35 minutes. Staff also recorded air temperature, water temperature and weather conditions. Weather was overcast with no rain. As computed back in the Honolulu Office, the flow at the IIFS site was 2.033 cubic feet per second (1.314 million gallons per day), with gage height at 3.83 feet.

Staff left Palauhulu IIFS Site B at approximately 0910 hours, and proceeded to take flow measurements at Wailuanui IIFS Site. Refer to Field Investigation Report FI2008120902 (East Maui, Wailuanui IIFS Site) for more information.

Image Listing: (Attach PDF of image contact sheet)

File Name:	Brief Description:
20081209001	CWRM staff setting up reference point on right bank of Palauhulu Stream.
20081209004	Reference point on right bank of Palauhulu Stream.
20081209007	CWRM staff taking gage height readings on right bank of Palauhulu Stream.
20081209008	CWRM staff taking gage height readings on right bank of Palauhulu Stream.
20081209009	CWRM staff taking gage height readings on right bank of Palauhulu Stream.
20081209012	Palauhulu Stream upstream of Hana Highway.

GPS Listing:

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

File Name:	Brief Description:
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)

WP No.	Latitude	Longitude	Brief Description:
26	20.856333	-156.146474	IIFS Site B on Palauhulu Stream at Hana Highway

Attachments:

Brief Description:

1. Image Contact Sheet
2. Discharge Measurement and Gage Inspection Notes

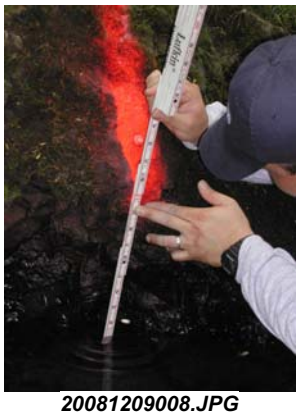
Recommendations:

IMAGE CONTACT SHEET

20081209001.JPG

20081209004.JPG

20081209007.JPG



20081209008.JPG

20081209009.JPG

20081209012.JPG

Form 9-275F
(Apr. 2001)

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 _____

Sta. No. PALAUHULU IIFS B

Sta. Name _____

Date 12/9 , 20 08 Party Dean, Chui, Ed, Ken (M)

Width 4.85 Area 3.311 Vel. .61 G.H. 3.83 Disch. 2.033 CFS

Method Wading No. secs. 40 G.H. change _____ in _____ 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	LEW	@ 0830			
	Finish	REW	@ 0906			
					~	35 min
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

Air Temp. 17 °C at 0906

Water Temp. 18 °C at 0906

Check bar/chain found _____

Changed to _____ at _____

Correct _____

Wading, cable, ice, boat, upstr., downstr., side bridge, 1 (ft), mi. upstr., downstr. of gage. bridge

Measurement rated excellent (2%), good (5%), fair (8%), poor (> 8%); based on following conditions: Flow: fairly uniform, laminar

Cross section: bedrock, uneven

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: _____

Remarks: Dean sink anchor bolt on right bank, 20 ft upstream of IIFS site B.

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

Sheet No. _____ of _____ sheets

.0 .10 .20 .30 .40 .50 .60 .70 .75

River at -

ANGLE COEFFICIENT	DIST. FROM INITIAL POINT	WIDTH	DEPTH	OBSERVATION DEPTH	REVOLUTIONS	TIME IN SECONDS	VELOCITY AT POINT	VELOCITY MEAN IN VERTICAL	ADJUSTED FOR HOR. ANGLE OR	AREA	DISCHARGE	.80
	LEW	@	0830									
												.85
	2.7	.1	0							0	—	
	2.9	.2	0.74			40		0.36		.148	.053	
	3.1	.2	0.98			40		0.55		.196	.108	.90
	3.3	.2	1.01			40		0.69		.202	.139	.92
	3.5	.2	0.95			40		0.69		.190	.131	
	3.7	.2	0.90			40		0.66		.180	.119	.94
	3.9	.2	0.86			40		0.63	1.088	.172	.108	.96 .650
	4.1	.2	0.85			40		0.41		.170	.070	.97
	4.3	.2	0.83			40		0.53		.166	.088	.98
	4.5	.2	0.79			40		0.61		.158	.096	.99
	4.7	.2	0.82			40		0.66		.164	.108	
	4.9	.2	0.85			40		0.65	1.916	.170	.111	1.131
⊙	5.1	.2	0.83			40		0.65		.166	.108	1.00
	5.3	.2	0.72			40		0.68		.144	.098	
	5.5	.2	0.72			40		0.70		.144	.101	
	5.7	.2	0.65			40		0.72		.130	.094	.99
	5.9	.2	0.62			40		0.70	2.624	.124	.087	.98 1.619
	6.1	.2	0.62			40		0.63		.124	.078	.97
	6.3	.2	0.61			40		0.66		.122	.081	.96
	6.5	.2	0.55			40		0.69		.110	.076	
	6.7	.2	0.48			40		0.68		.096	.065	.94
	6.9	.2	0.47			40		0.65		.094	.061	.92 1.98
	7.1	.2	0.34			40		0.54		.068	.037	.90
	7.3	.2	0.30			40		0.24		.060	.014	
	7.5	.125	0.10			EST=	½(.24)=	0.12		.013	.002	
	7.55	.025	0							0	—	.85
	4.85	4.85					EST=			3.311	2.033	
							AVE=	.61				
	REW	@	0906		GH =	5 - 1.17 = 3.83						.80