

# Surface-Water Availability Study

## Anahola, Kauai, Hawaii

Community Meeting  
Anahola Clubhouse  
January 26, 2011, 6-8PM



# *United States Geological Survey Pacific Islands Water Science Center*

Our mission is to collect, analyze and disseminate impartial hydrologic data and information needed by others to effectively manage water resources.

*Website: <http://hi.water.usgs.gov/>*

# PRESENTATION OUTLINE

## Introduction

- Aquifer system
- Water budget
- Streamflow

## Project Overview

- Background
- Study objectives
- Study area
- Available data
- Products
- Timeline

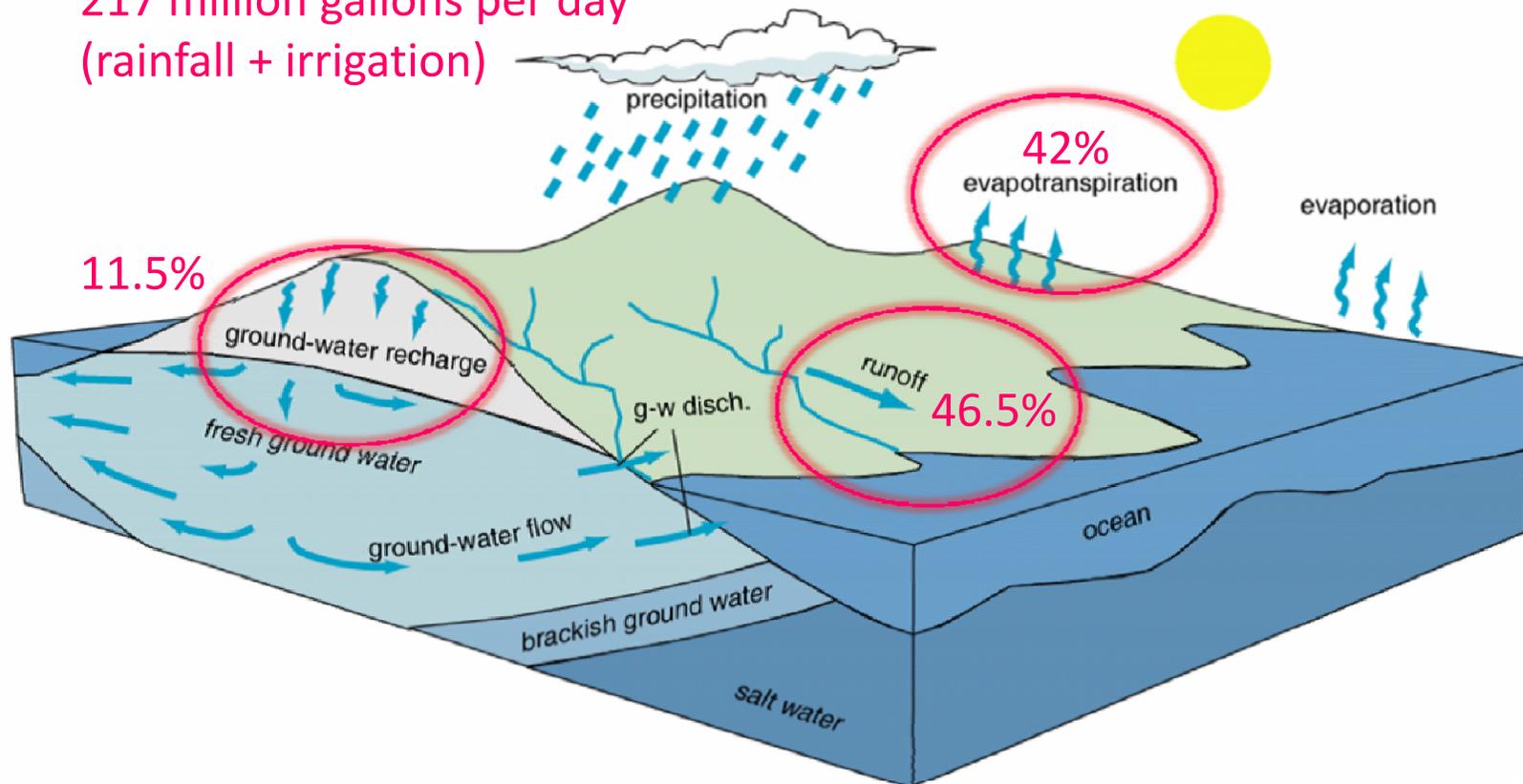
# ANAHOLA AQUIFER SYSTEM



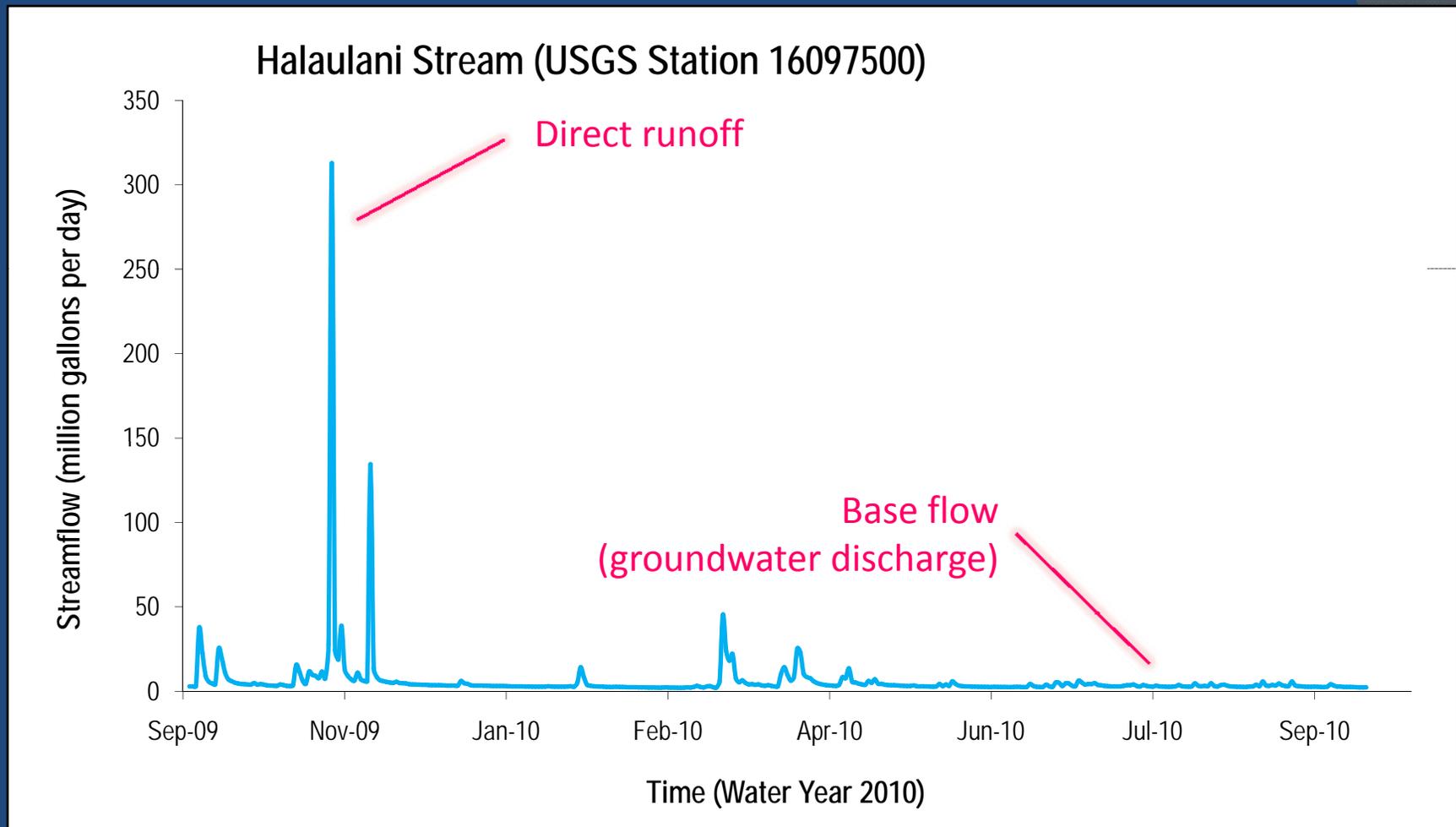
# WATER BUDGET

## Average Conditions for Anahola Aquifer System

217 million gallons per day  
(rainfall + irrigation)

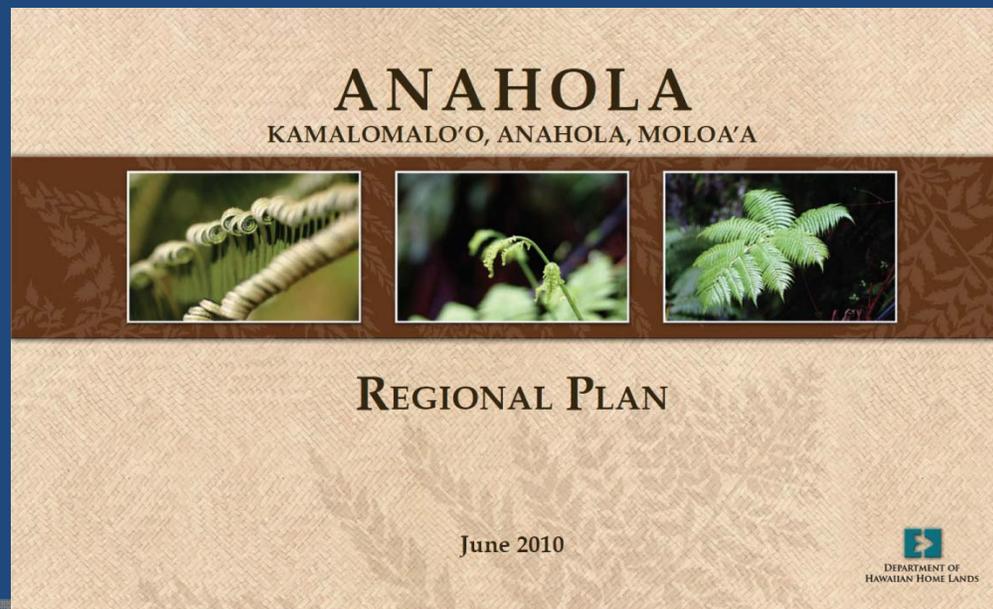


# STREAMFLOW



# BACKGROUND

- Lack of data in Anahola
- Improve understanding of water availability in Anahola
- Priority project in the Anahola Regional Plan



# STUDY OBJECTIVES

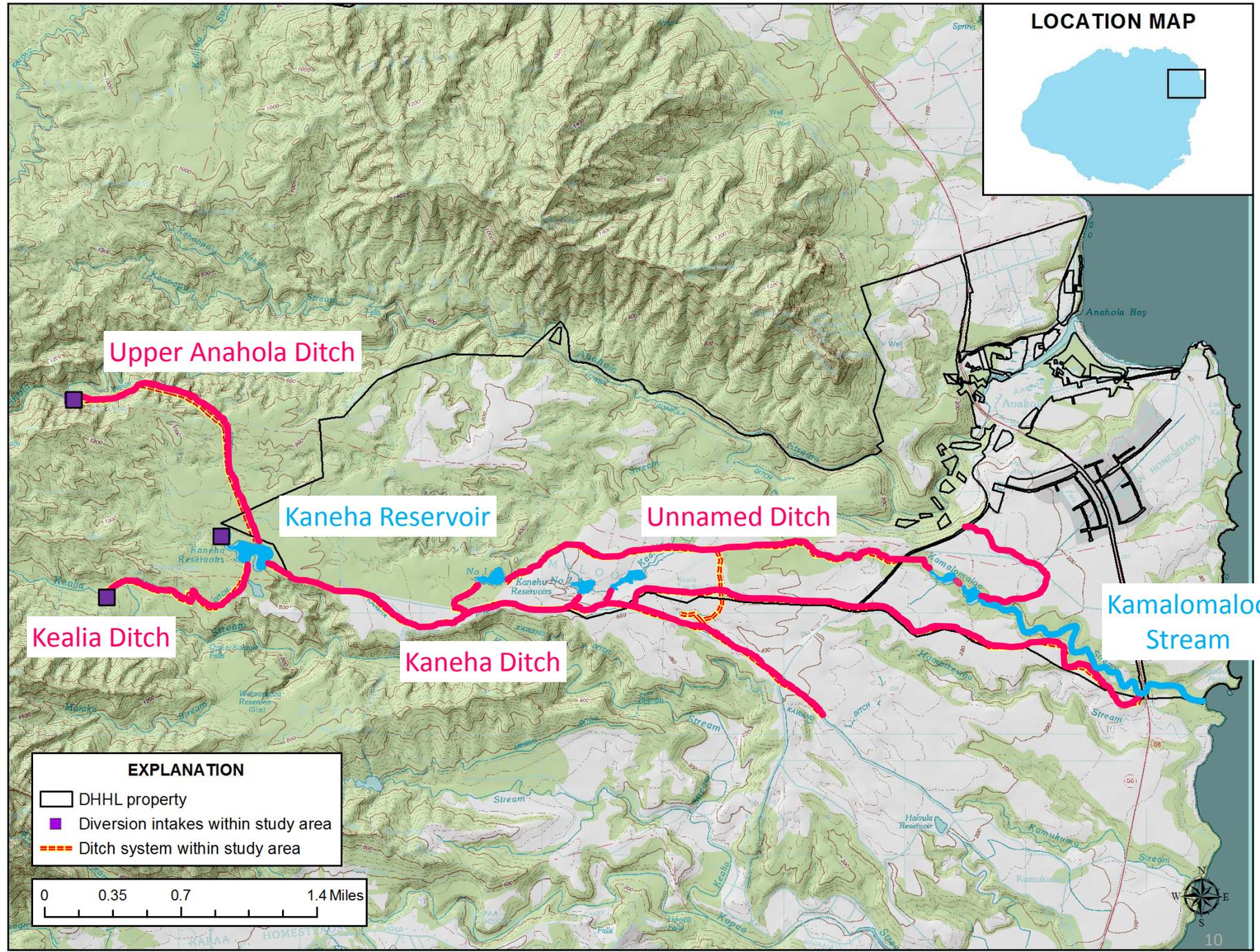
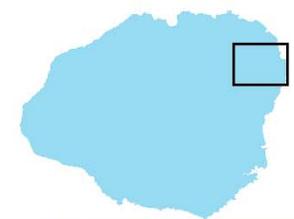
- Streams
  - Water availability during low-flow conditions
  - Survey stream animals
- Ditch flow
  - Seepage gains and losses

# NOT ADDRESSED IN STUDY

- Reservoirs
- Recommendations

Our focus is to provide data and information to help the community, landowners, and other agencies to make informed water-resource decisions.

**LOCATION MAP**



Upper Anahola Ditch

Kaneha Reservoir

Unnamed Ditch

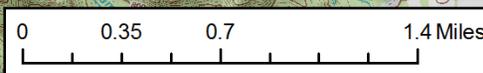
Kealia Ditch

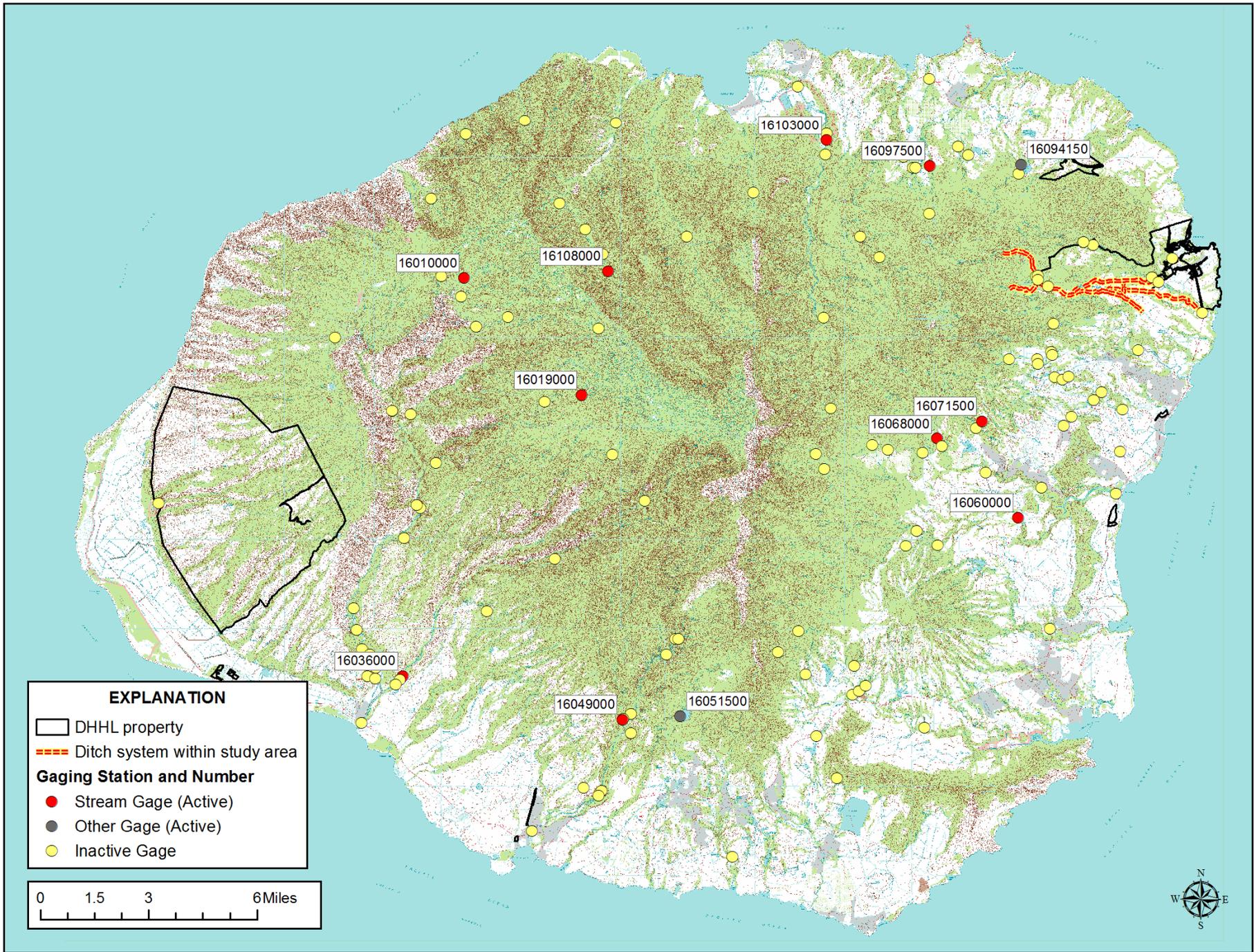
Kaneha Ditch

Kalomaloo Stream

**EXPLANATION**

- DHH property
- Diversion intakes within study area
- Ditch system within study area



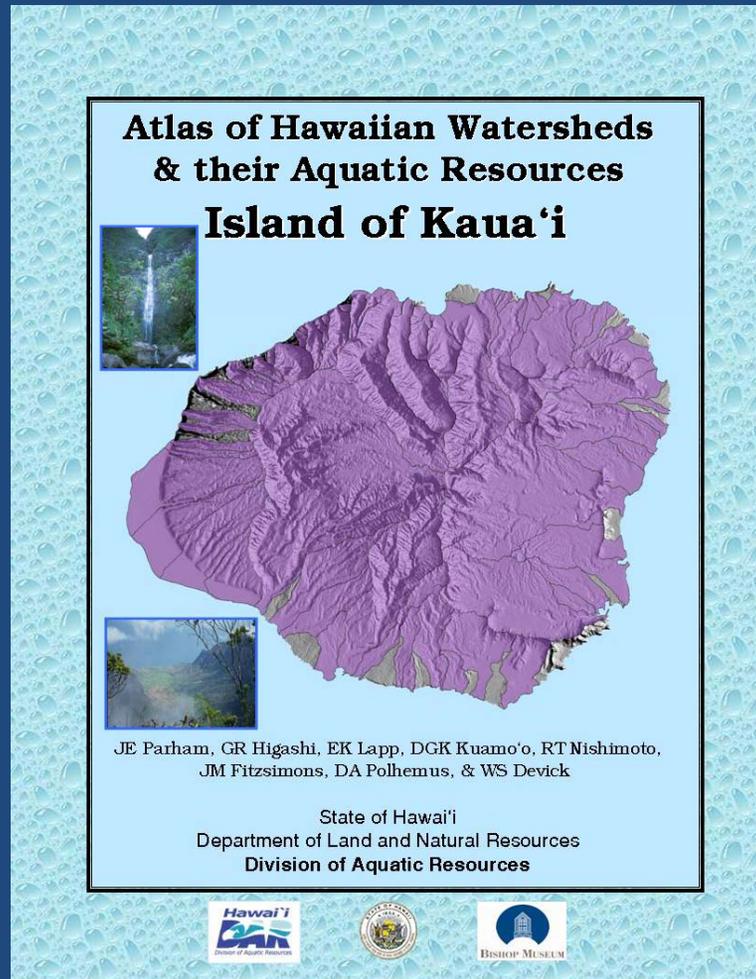


# AVAILABLE STREAMFLOW DATA

## Active Gaging Stations

Station #	Location	Years of Record
16010000	Kawaikoi Stream	93
16019000	Waialae Stream	68
16036000	Makaweli River	66
16049000	Hanapepe River	85
<b>16060000</b>	<b>South Fork of Wailua River</b>	<b>92</b>
<b>16068000</b>	<b>North Fork Wailua River</b>	<b>94</b>
<b>16071500</b>	<b>Left Branch of Opaekaa Stream</b>	<b>49</b>
<b>16097500</b>	<b>Halaulani Stream</b>	<b>51</b>
<b>16103000</b>	<b>Hanalei River</b>	<b>46</b>
16108000	Wainiha River	54

# AVAILABLE BIOLOGICAL DATA



- Hawaii Stream Assessment (1990)
- A Biological Assessment of Streams in the Kealia-Anahola Forest Reserve (Kido, 1996)
- Atlas of Hawaiian Watersheds & their Aquatic Resources (DAR, 2009)

# STUDY APPROACH

Background research for historical data

- Community participation

Field data

- Ditch
- Streams
- Aquatic fauna

# COMMUNITY PARTICIPATION

## Data Gathering

- Interview former plantation staff
- Photos of the ditch system and streams
- Maps of the study area and the plantation
- Ditch-flow data, water-use data

## Education Opportunities

- Define current and future water demands in DHHL lands

# STUDY APPROACH

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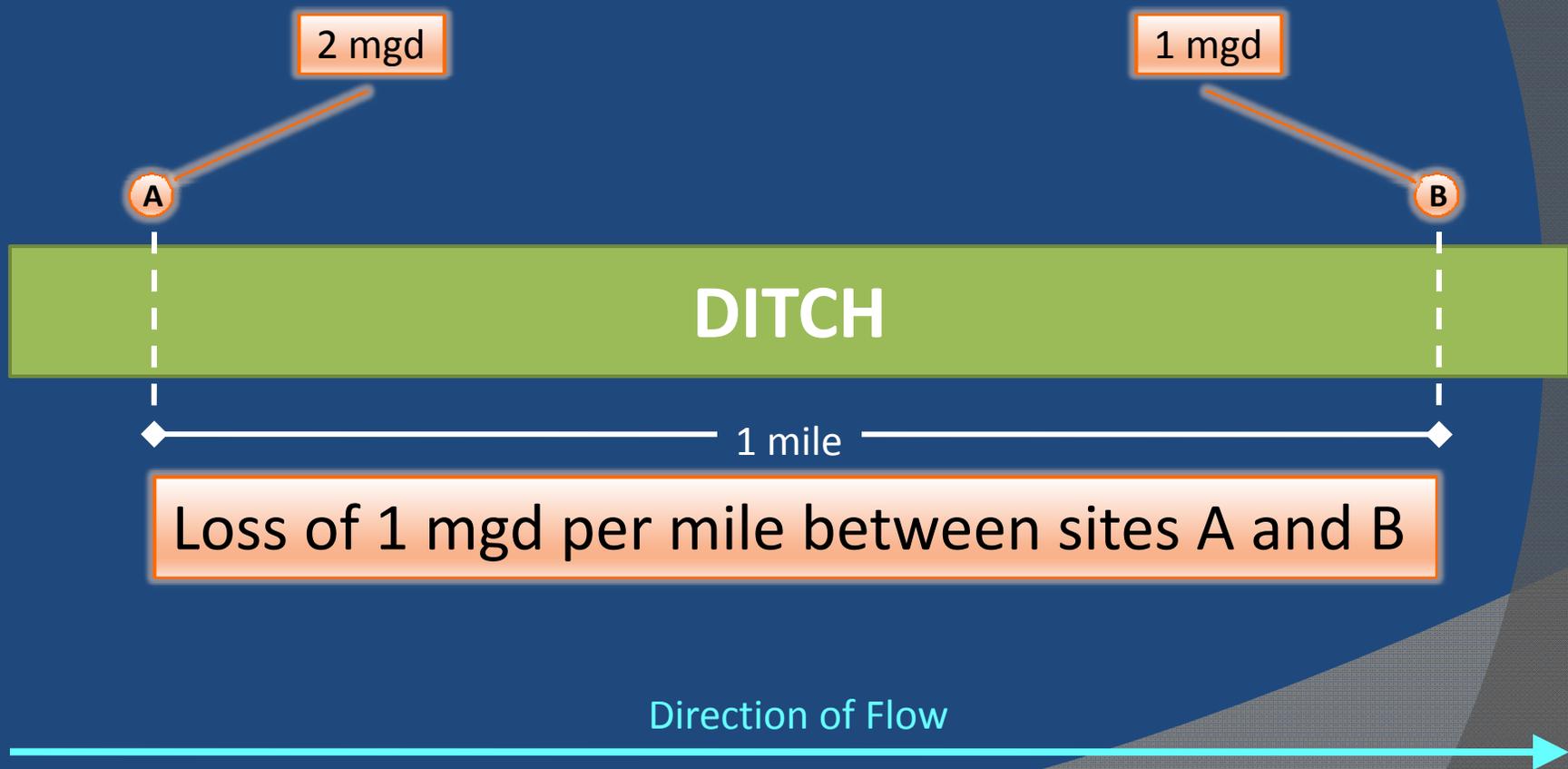
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Field data

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# DITCH-FLOW MEASUREMENTS

## A Hypothetical Example



# STUDY APPROACH

Background research for historical data

- Community participation

Collect field data

- Ditch
- Streams
- Aquatic fauna

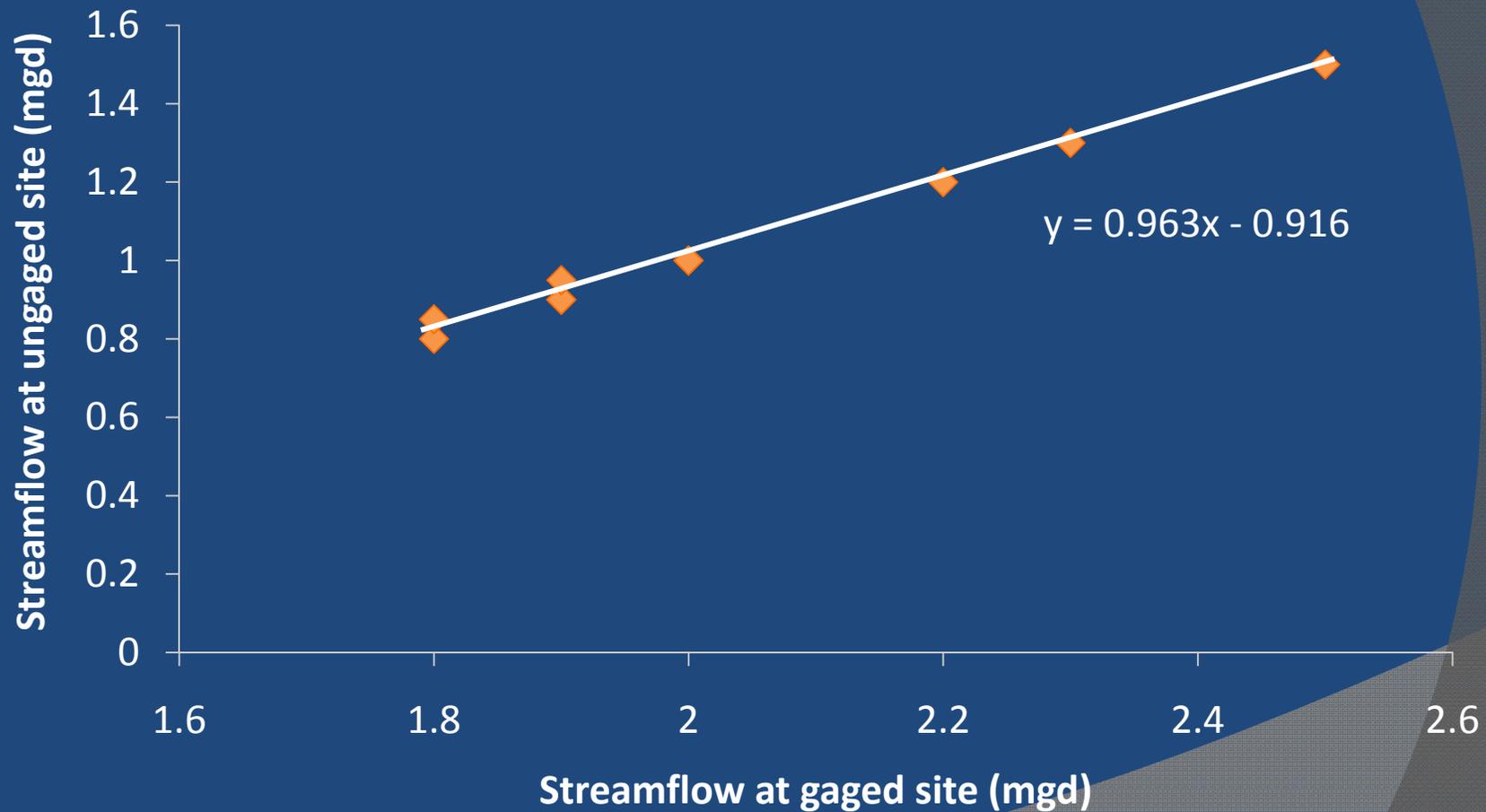
# STREAMFLOW MEASUREMENTS

## A Hypothetical Example

Date	Streamflow at <u>ungaged</u> site	Streamflow at <u>gaged</u> site
1/15/2010	1.0 mgd	2.0 mgd
2/10/2010	1.2 mgd	2.2 mgd
3/18/2010	1.5 mgd	2.5 mgd
4/22/2010	1.0 mgd	2.0 mgd
5/20/2010	.90 mgd	1.9 mgd
6/10/2010	.80 mgd	1.8 mgd
7/12/2010	.85 mgd	1.8 mgd
8/30/2010	.90 mgd	1.9 mgd
9/21/2010	.95 mgd	1.9 mgd
10/5/2010	1.0 mgd	2.0 mgd
11/8/2010	1.3 mgd	2.3 mgd

# STREAMFLOW MEASUREMENTS

## A Hypothetical Example



# STUDY APPROACH

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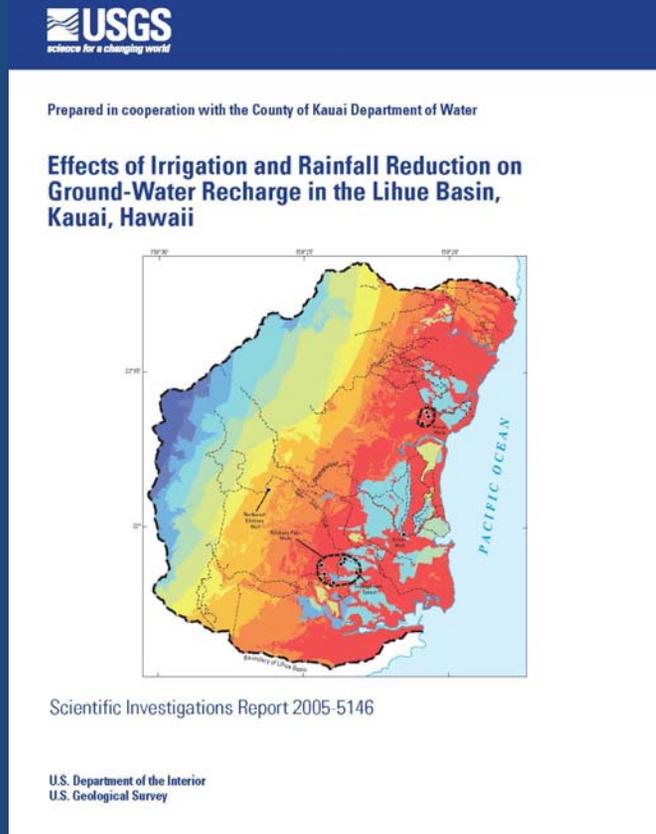
Collect field data

- Ditch
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*Lentipes concolor* ("O'opu 'alamo'o)

# PRODUCTS



## Report documenting:

- Methodology
- Flow data
- Data analysis
- Maps documenting
  - Photographed sites
  - Flow-measurement sites
  - Aquatic-survey sites

Flow measurements available on the web at  
<http://waterdata.usgs.gov/hi/nwis/nwis>

