Surface-water availability during low-flow conditions in Anahola Stream, Kaua‘i, Hawai‘i

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Anahola Community Meeting

November 26, 2013

DEPARTMENT OF HAWAIIAN HOME LANDS

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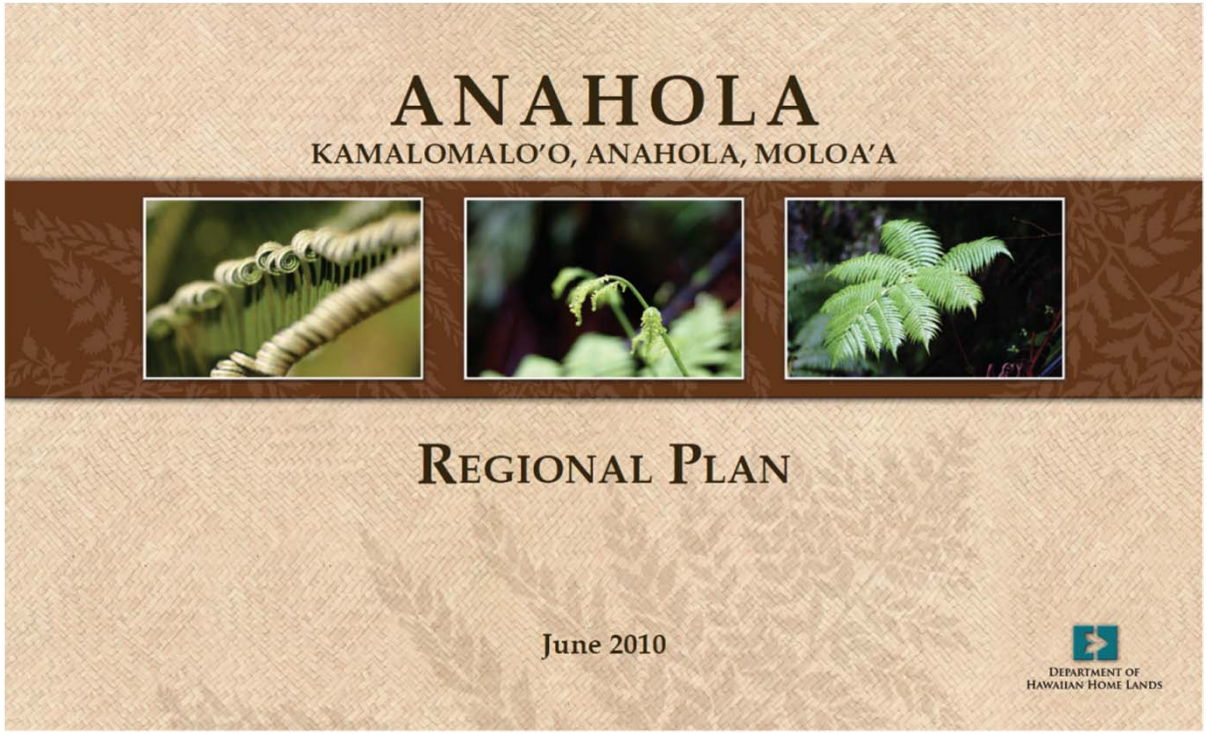
Why do the study?

Water is needed but information on water availability is limited.



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Publication

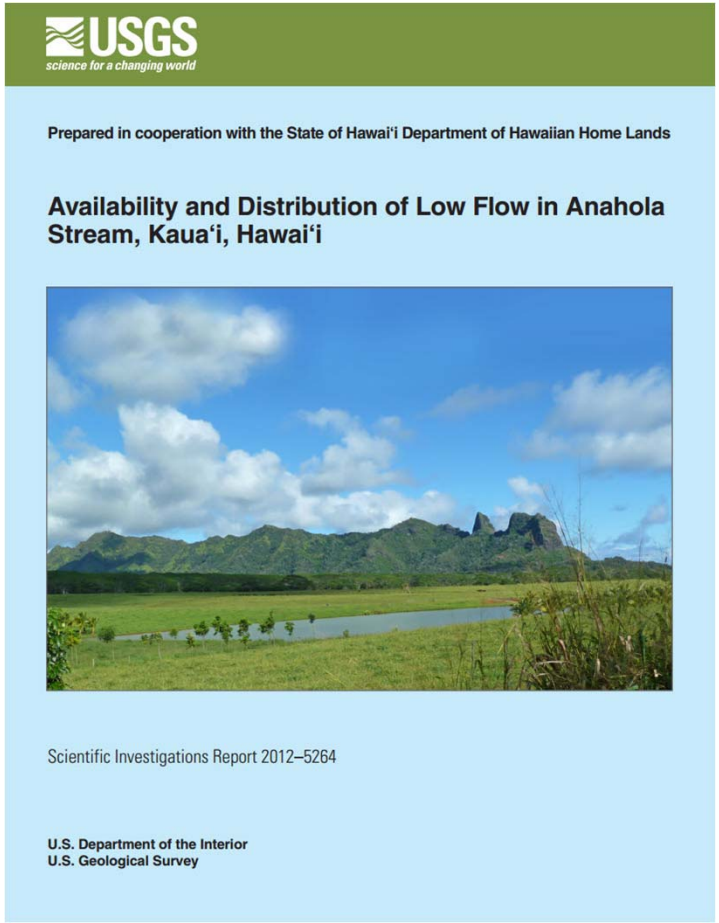
Cooperator

State of Hawai‘i, Department of Hawaiian Home Lands

Objective

Determine how much water is available in Anahola Stream for agriculture and stream animals

Report available at http://hi.water.usgs.gov/



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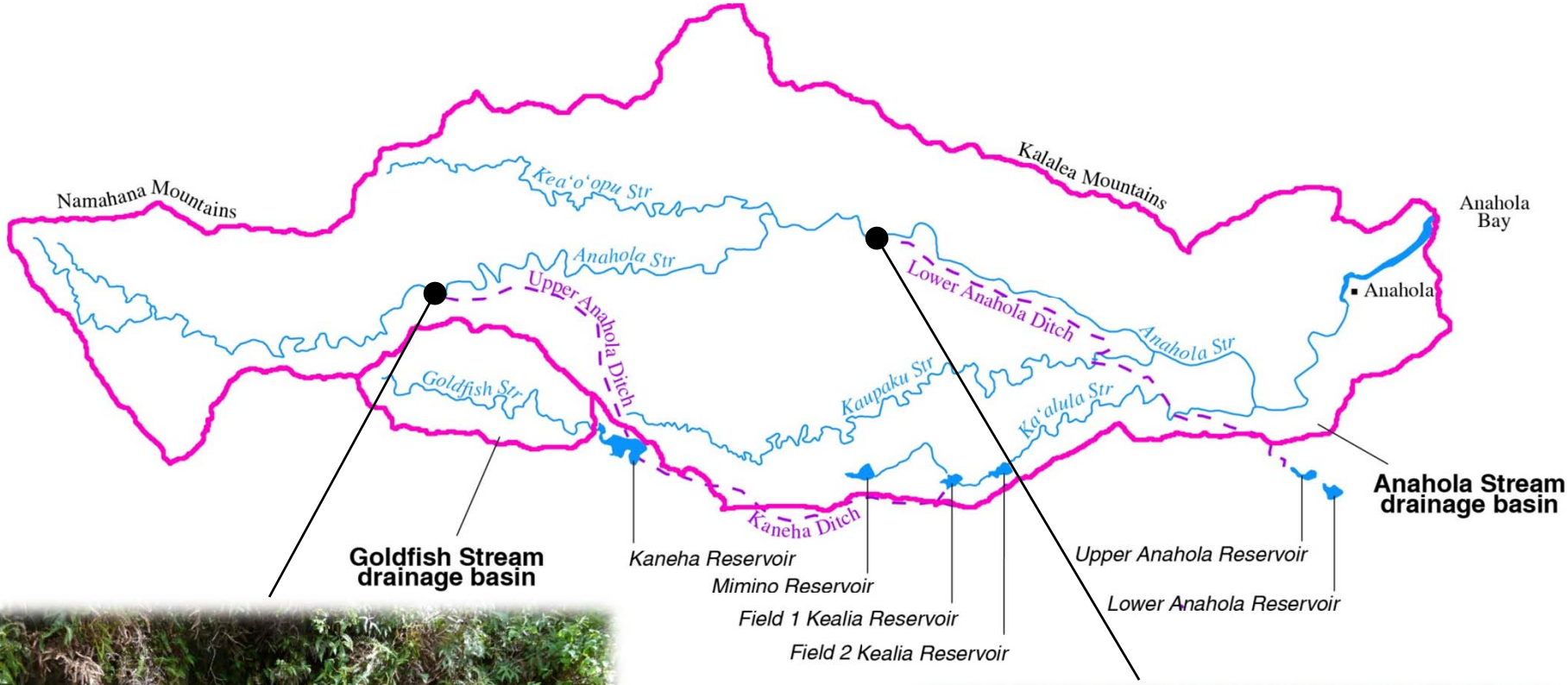
Prepared in cooperation with the State of Hawai‘i Department of Hawaiian Home Lands

Availability and Distribution of Low Flow in Anahola Stream, Kaua‘i, Hawai‘i

Scientific Investigations Report 2012–5264

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



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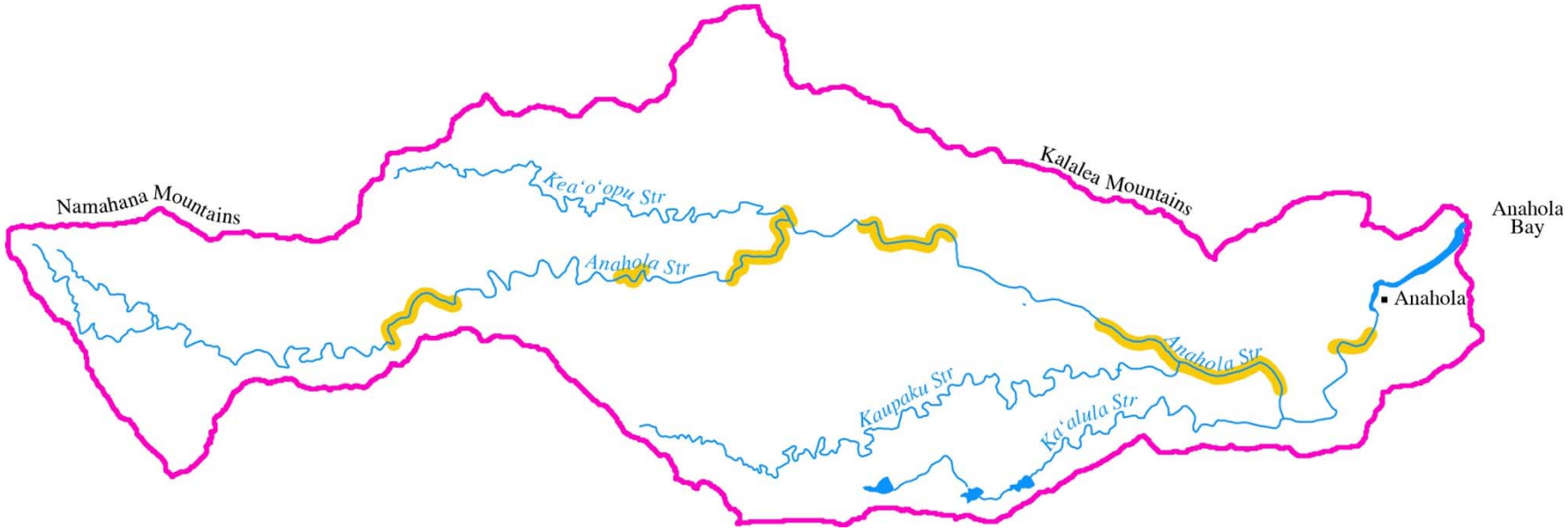
Stream Animals

- Surveyed 6 reaches on Anahola Stream
- Presence and absence of native and nonnative species



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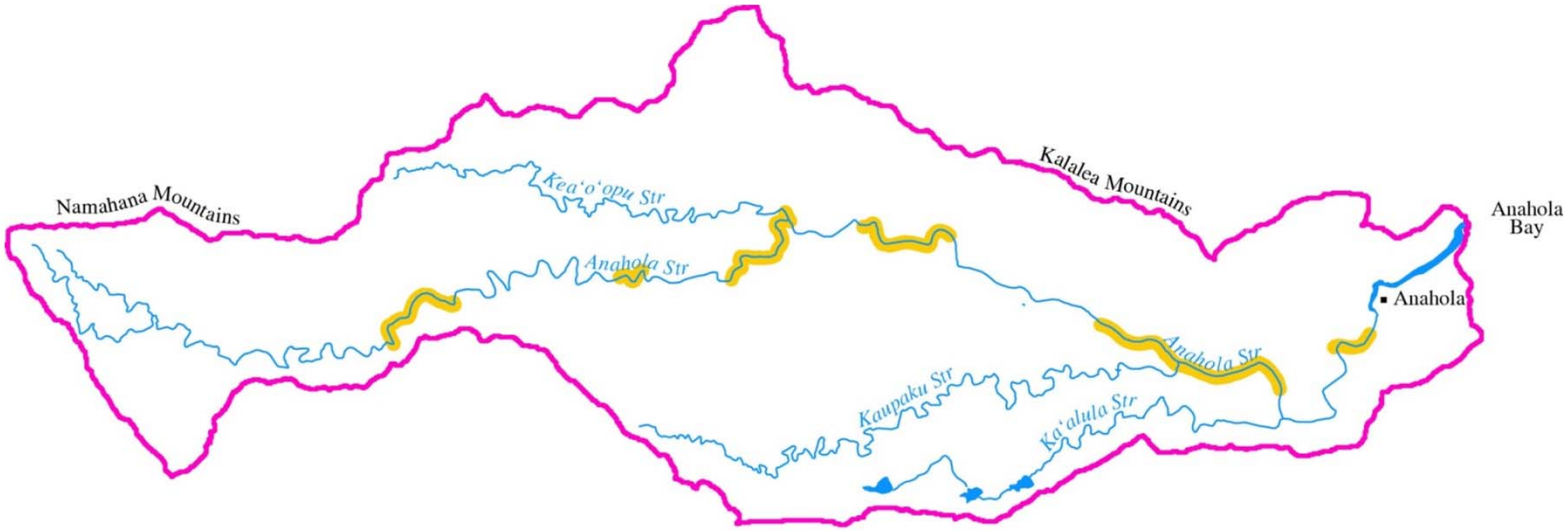
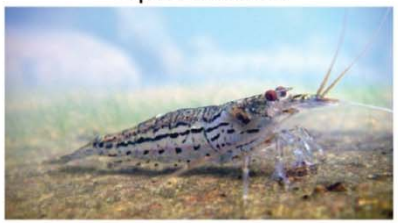
Native Stream Animals

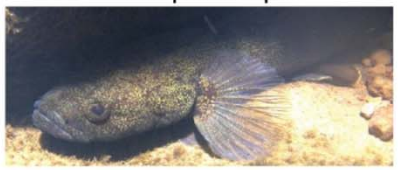


'Ōpae kala'ole



'O'opu nākea

'O'opu 'akupa



'O'opu nōpili

'O'opu naniha

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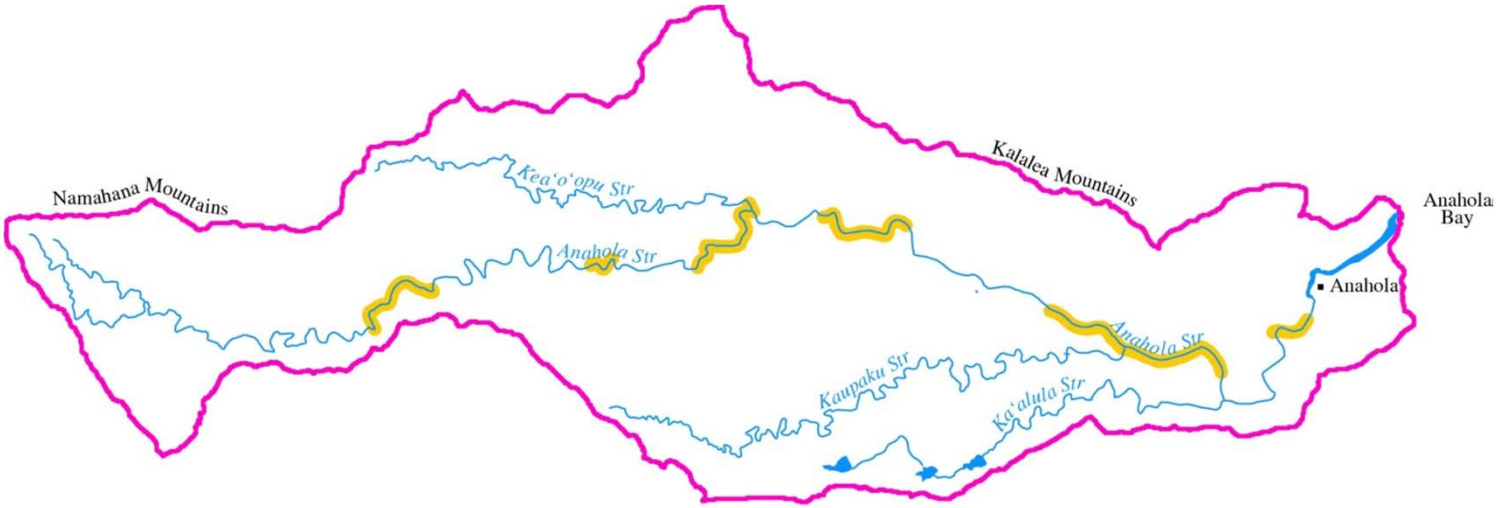
Nonnative Stream Animals



Green swordtails

Cane toad

Flatworm

Tahitian prawn

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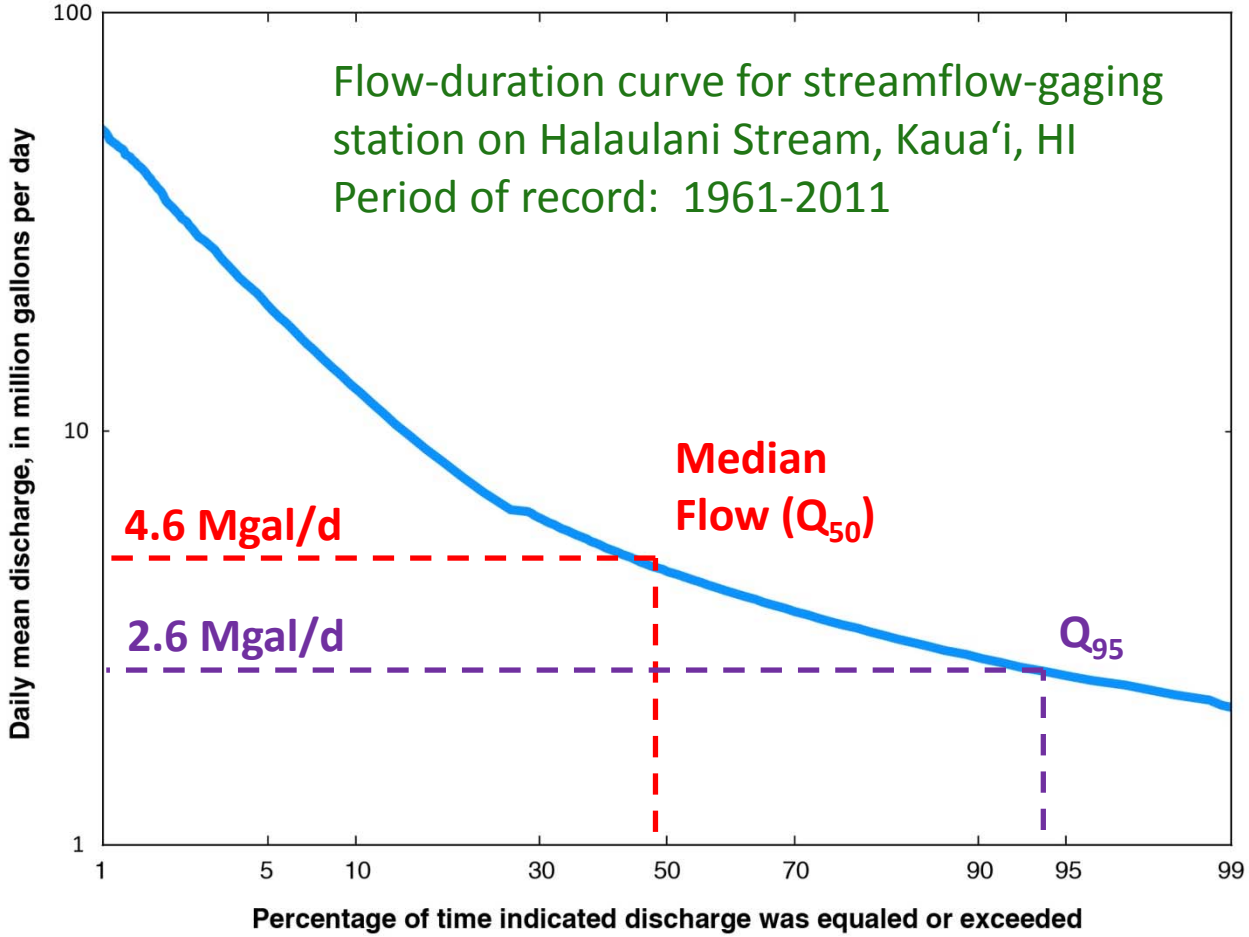
Surface-water Availability

Water availability is oftentimes characterized with duration discharges



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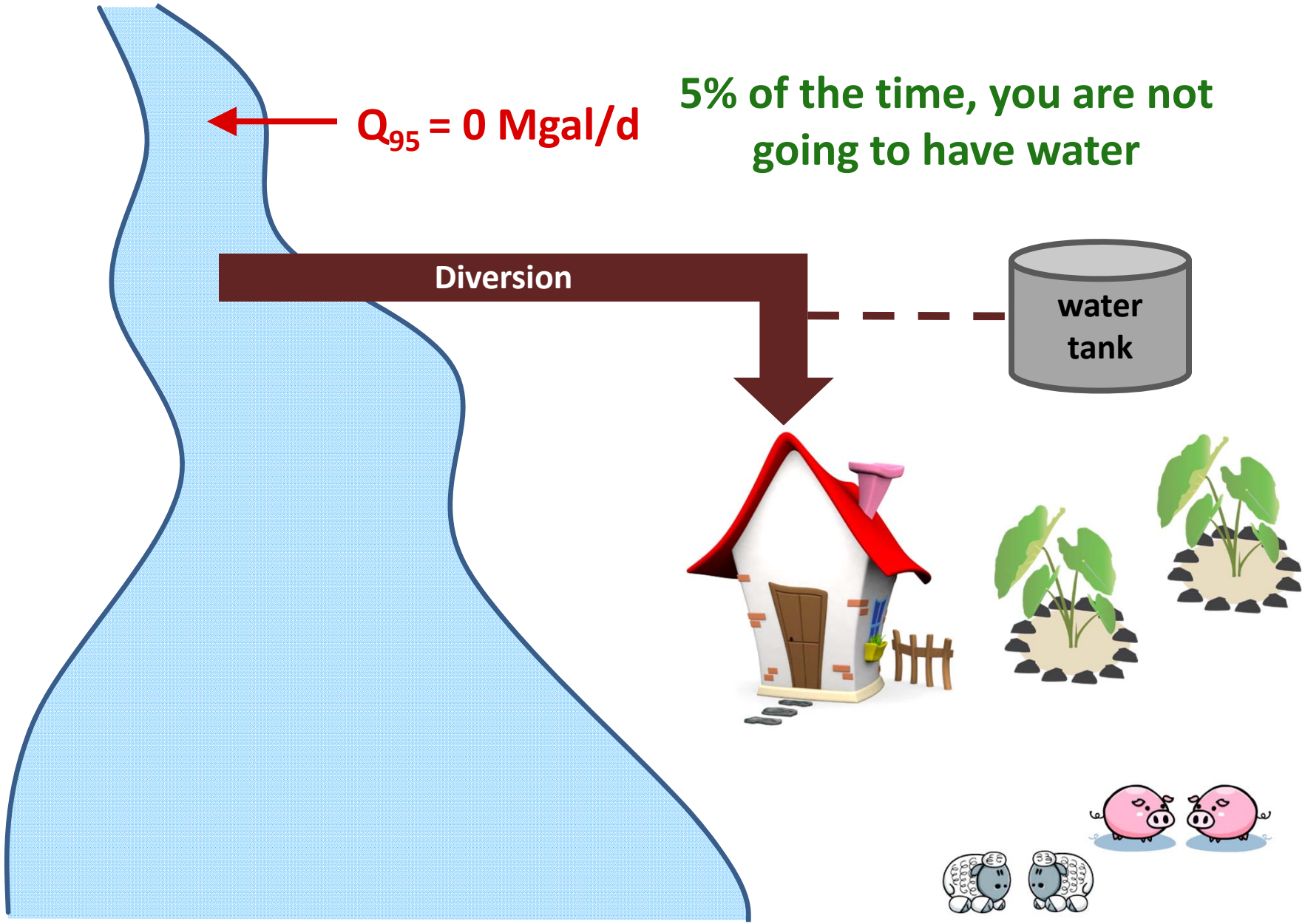

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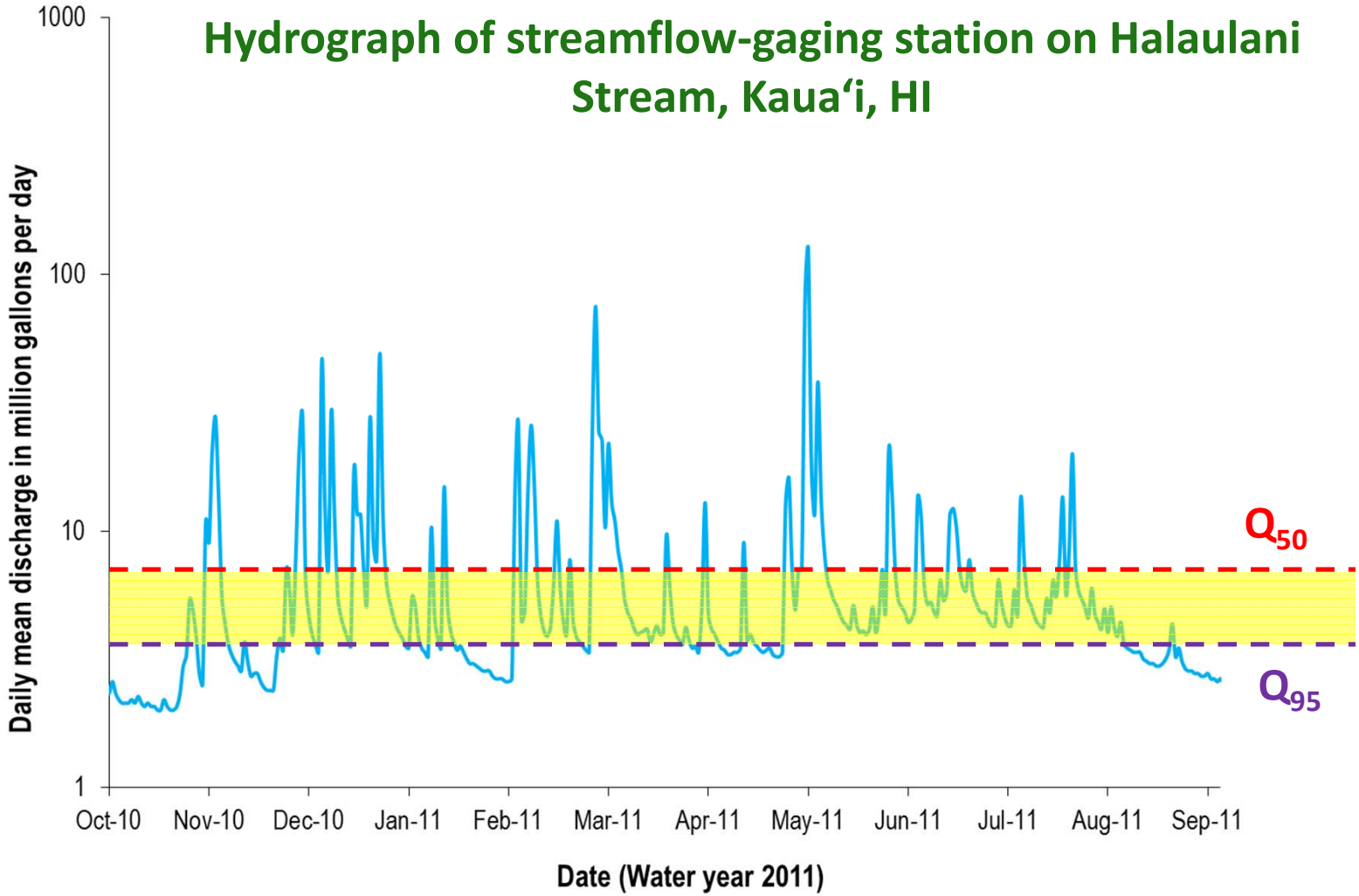
Low Flow Statistics



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Surface-Water Availability

- How much flow is in the stream above the diversions?

Measurement site on Anahola Stream upstream of upper Anahola Ditch intake, Kaua‘i, Hawai‘i

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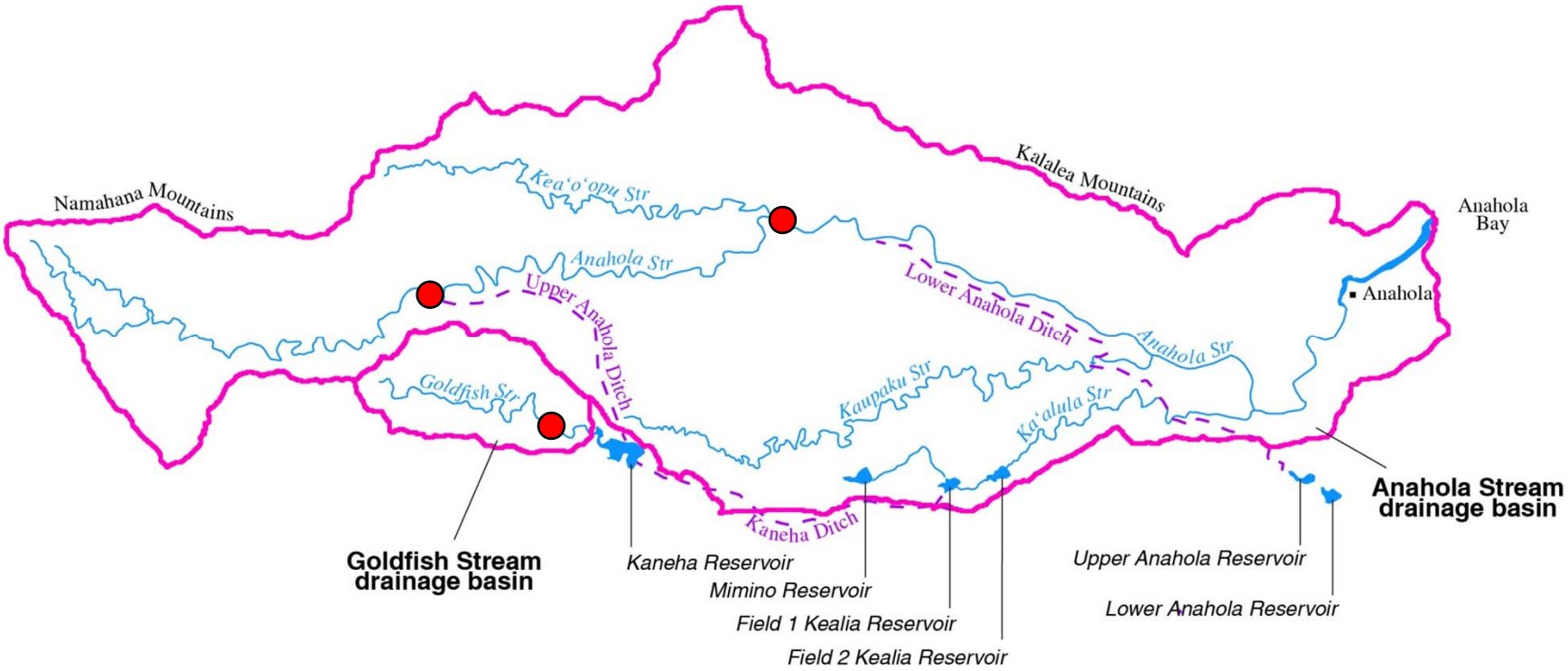
Surface-Water Availability



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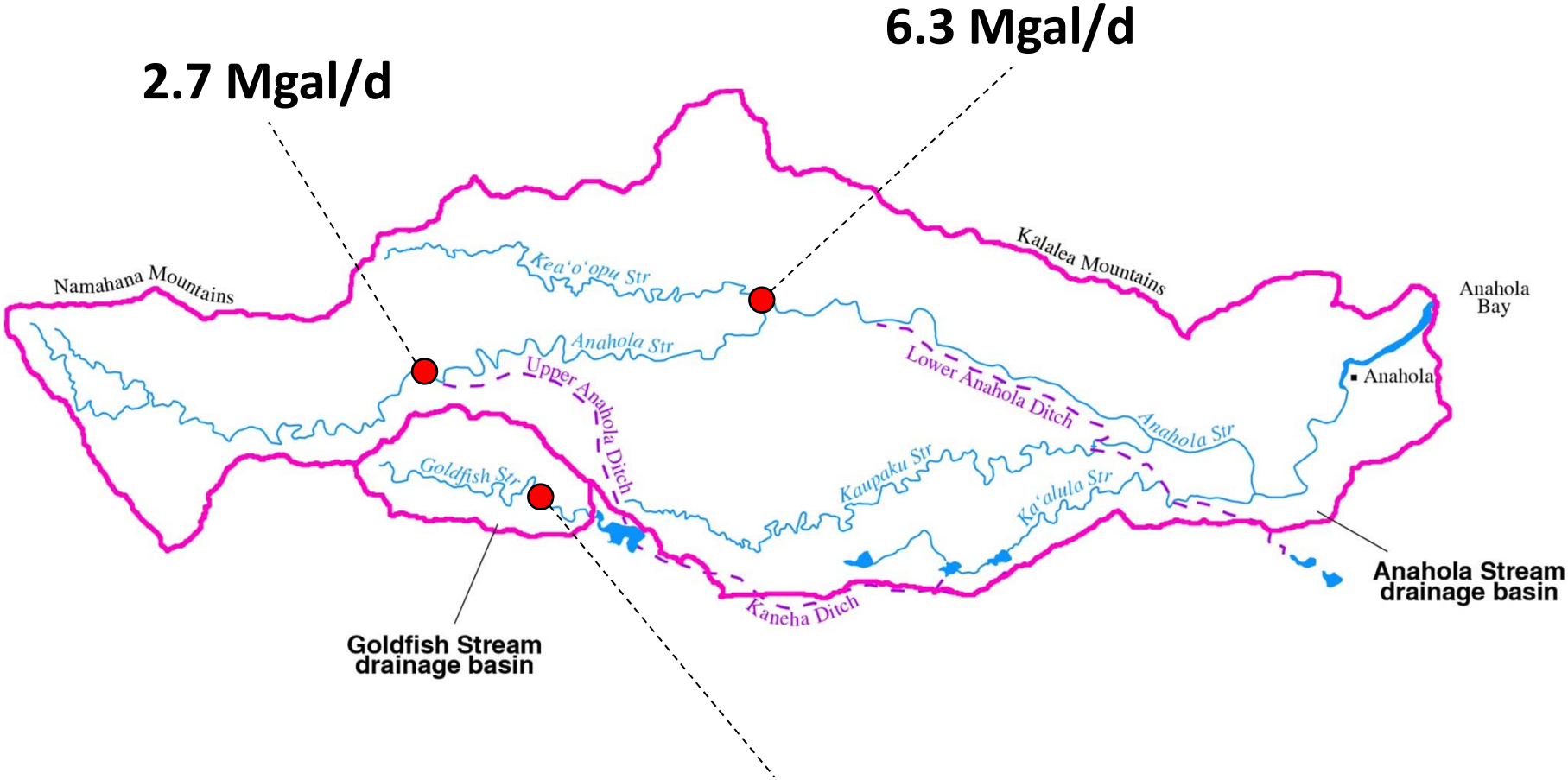
Median Flows



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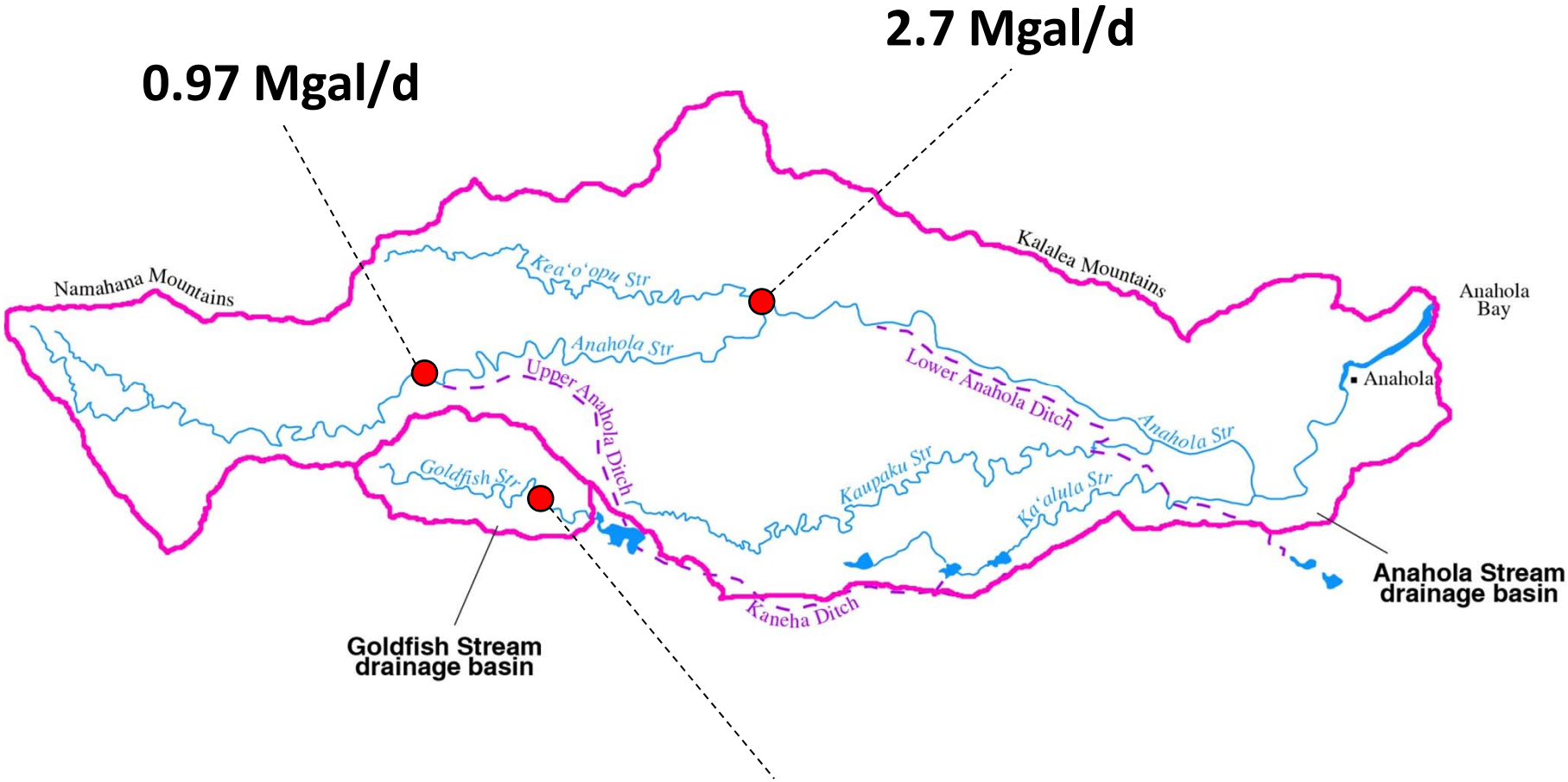
95-Percentile Flows



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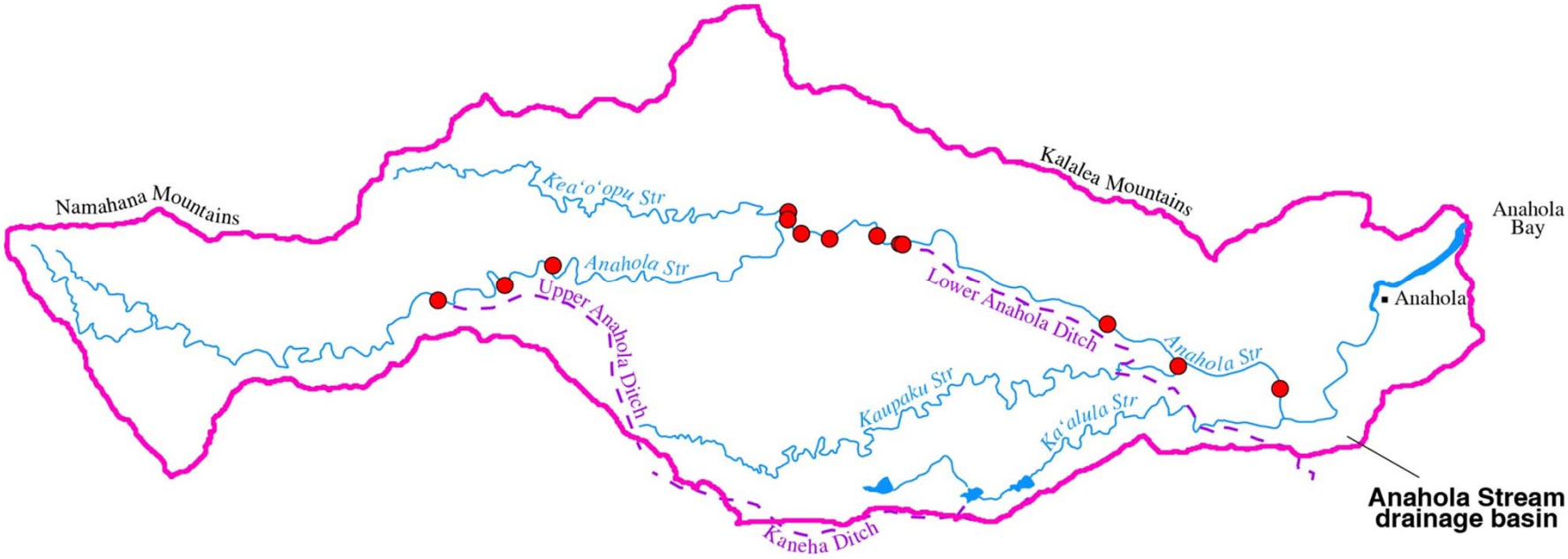
Surface-Water Availability

- How much flow is in the stream above the diversions?
- Is the stream gaining or losing flow below the diversions?

Anahola Stream, Kaua‘i, Hawai‘i

Surface-Water Availability

- Completed 2 seepage runs – wet season and dry season



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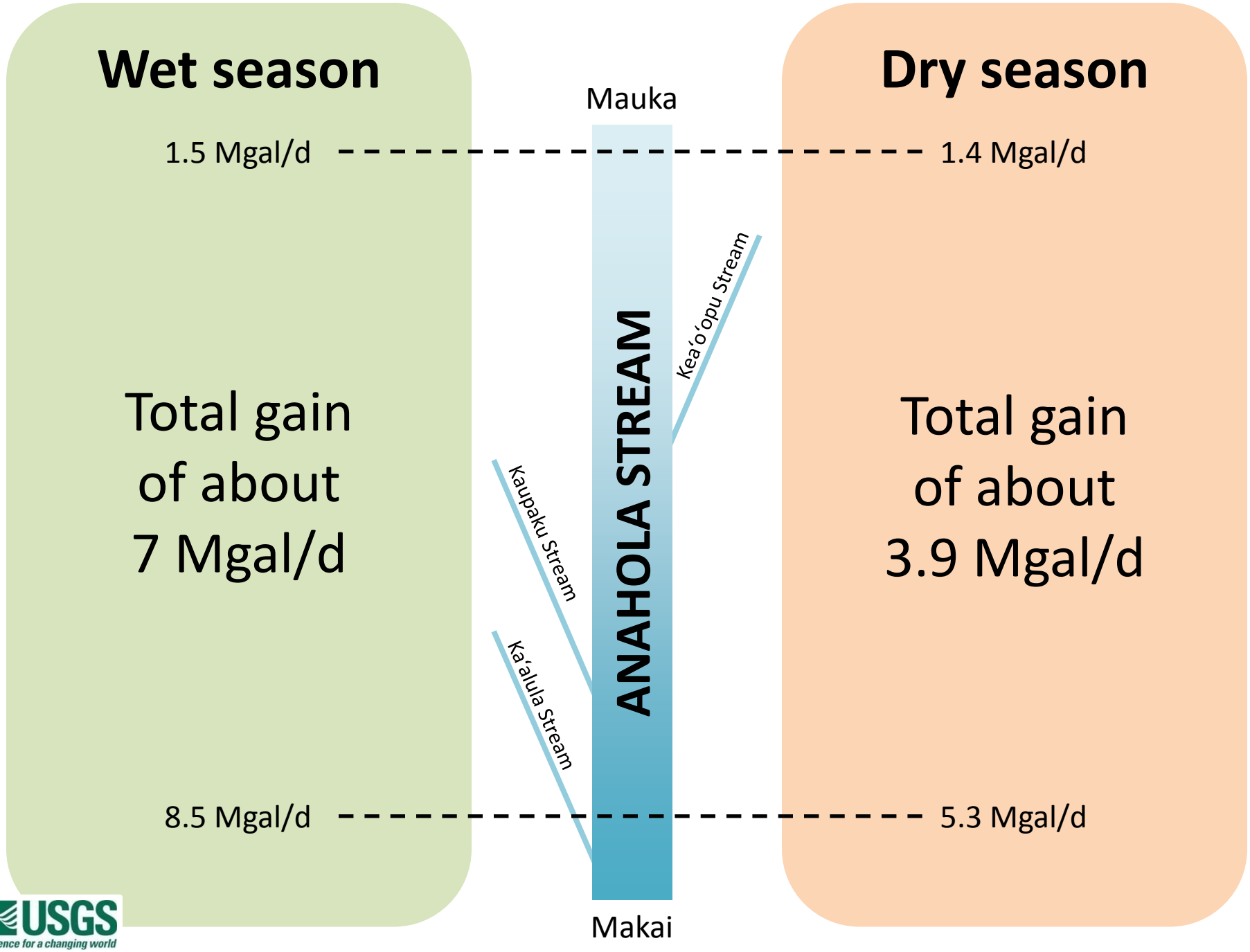
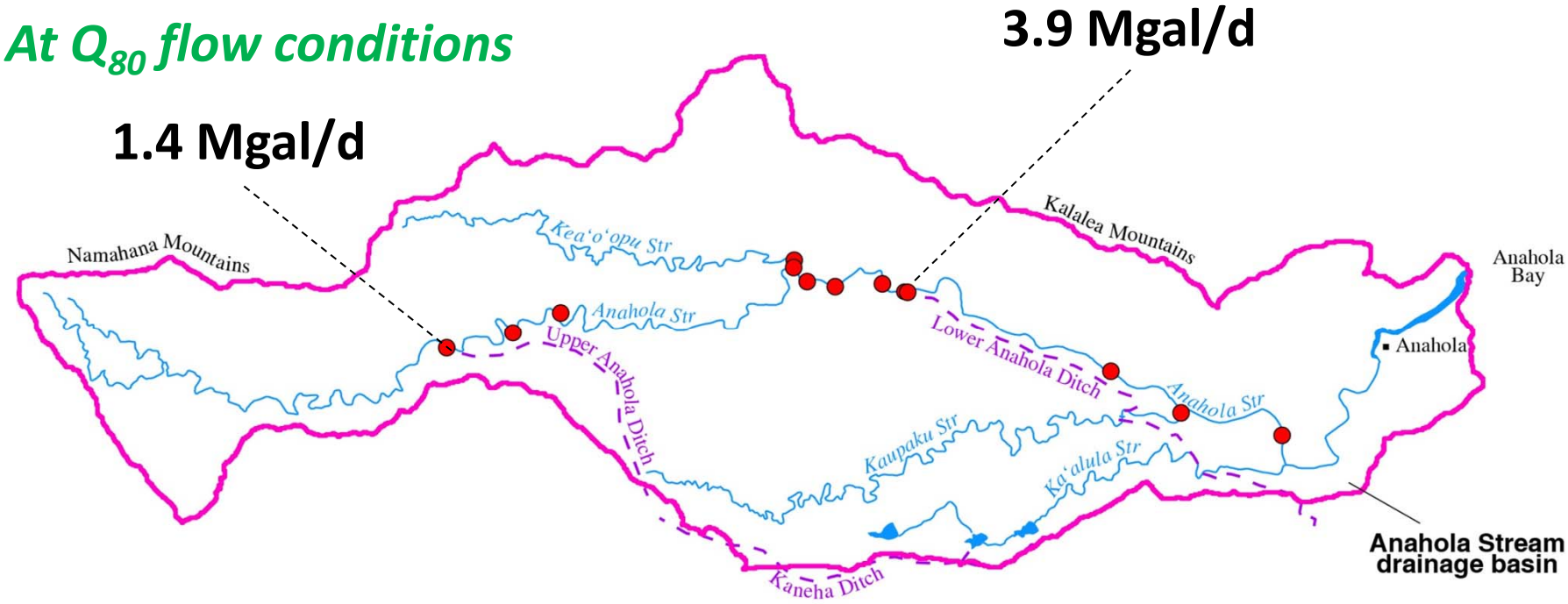

Wet season
Dry season
Mauka
1.5 Mgal/d
1.4 Mgal/d
Total gain of about 7 Mgal/d
Total gain of about 3.9 Mgal/d
ANAHOLA STREAM
Kea'o'opu Stream
Kaupaku Stream
Ka'alula Stream
8.5 Mgal/d
5.3 Mgal/d
Makai

Flow Reduction by Diversion

At Q_{80} flow conditions



The amount of flow left near the lower intake is about 2.5 Mgal/d (3.9 - 1.4 Mgal/d).

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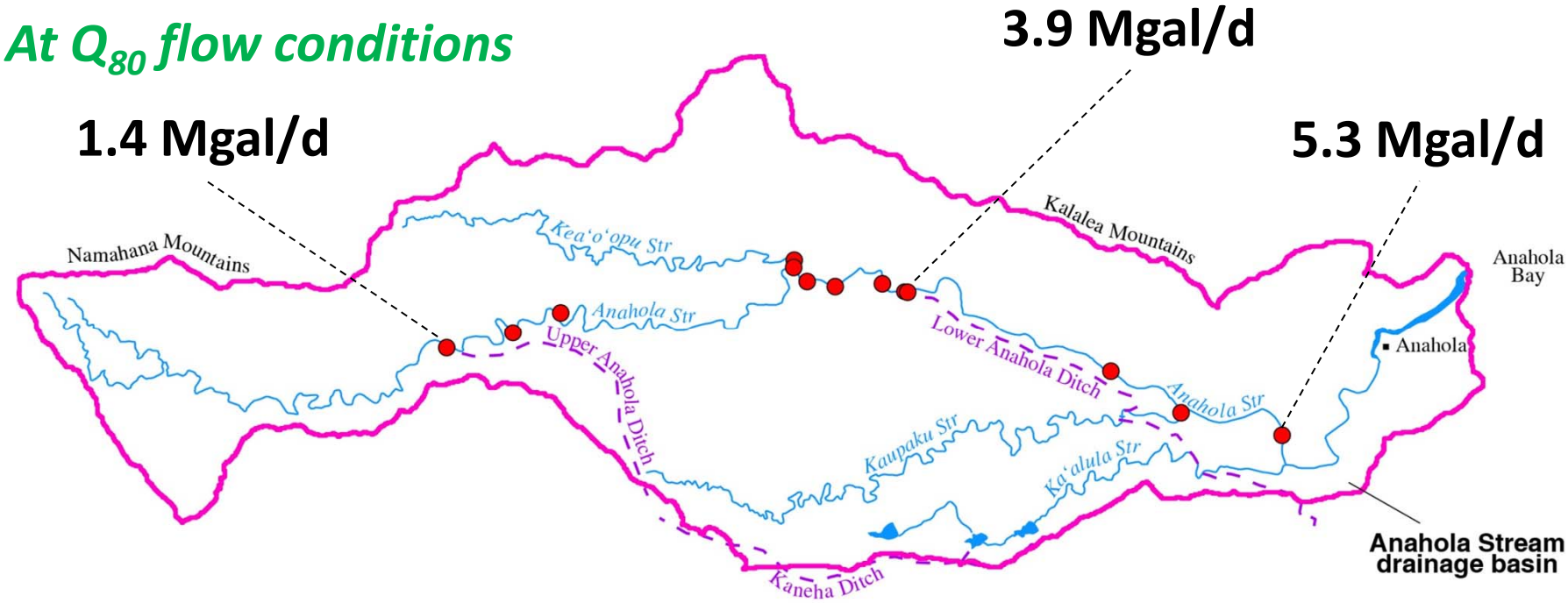
Flow Reduction by Diversion

At Q_{80} flow conditions



The amount of flow left at the most makai site is about 1.4 Mgal/d (5.3 – 3.9 Mgal/d).

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SO WHAT

This study shows

how much water is available in Anahola Stream under low-flow conditions

Decisions that can be made from study results include:

- how much is potentially available for downstream use
- which intakes and ditches to restore and to what capacity
- adjust use based on seasonal flow variability

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Mahalo!

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