Waipi'o Valley Stream Management Plan

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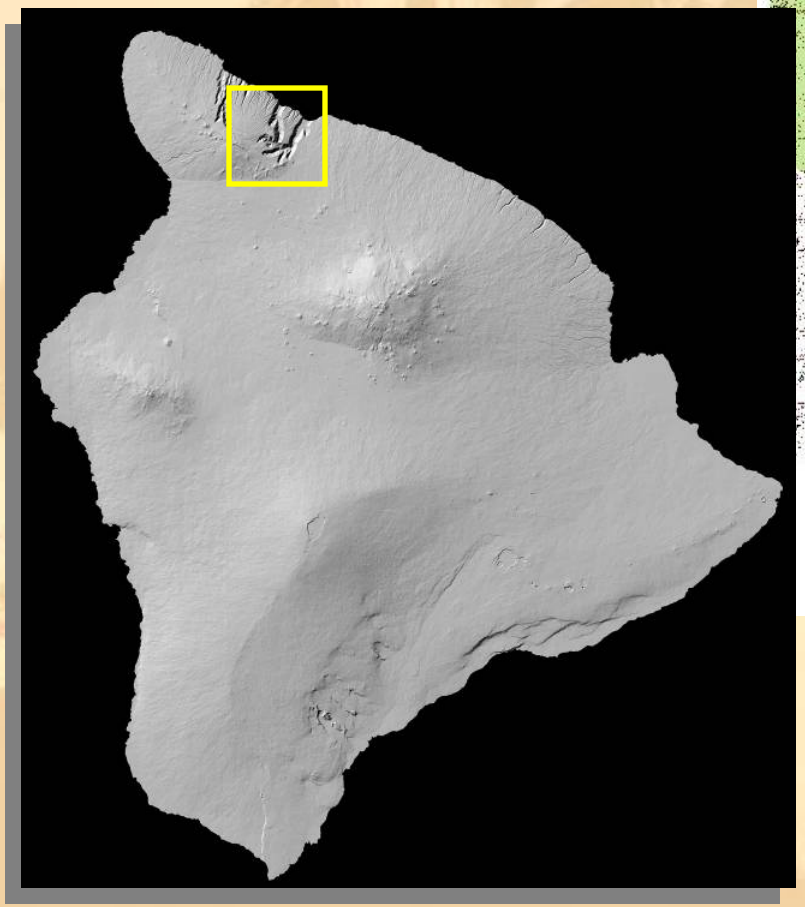
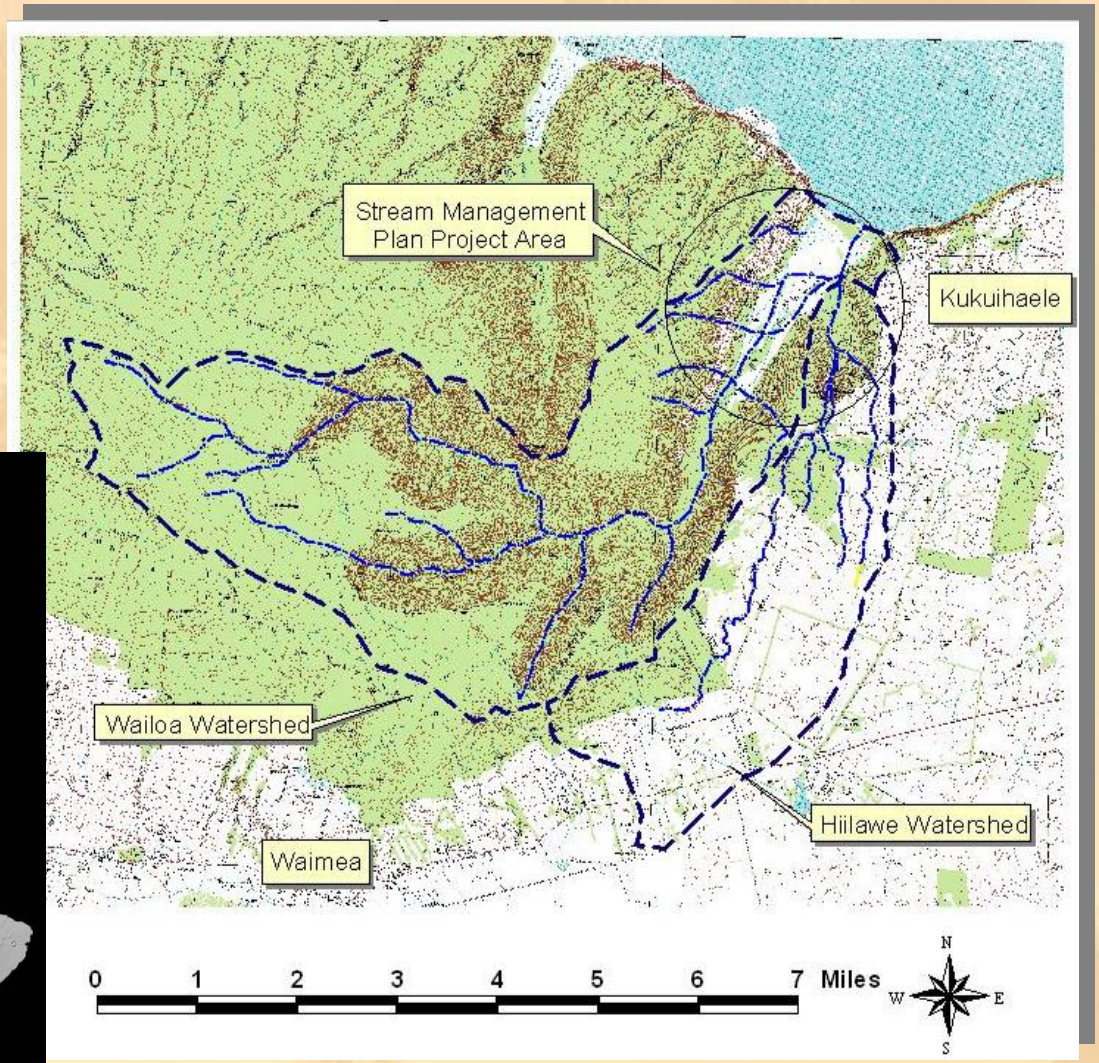
USDA NRCS

May 22, 2008

Waipi'o

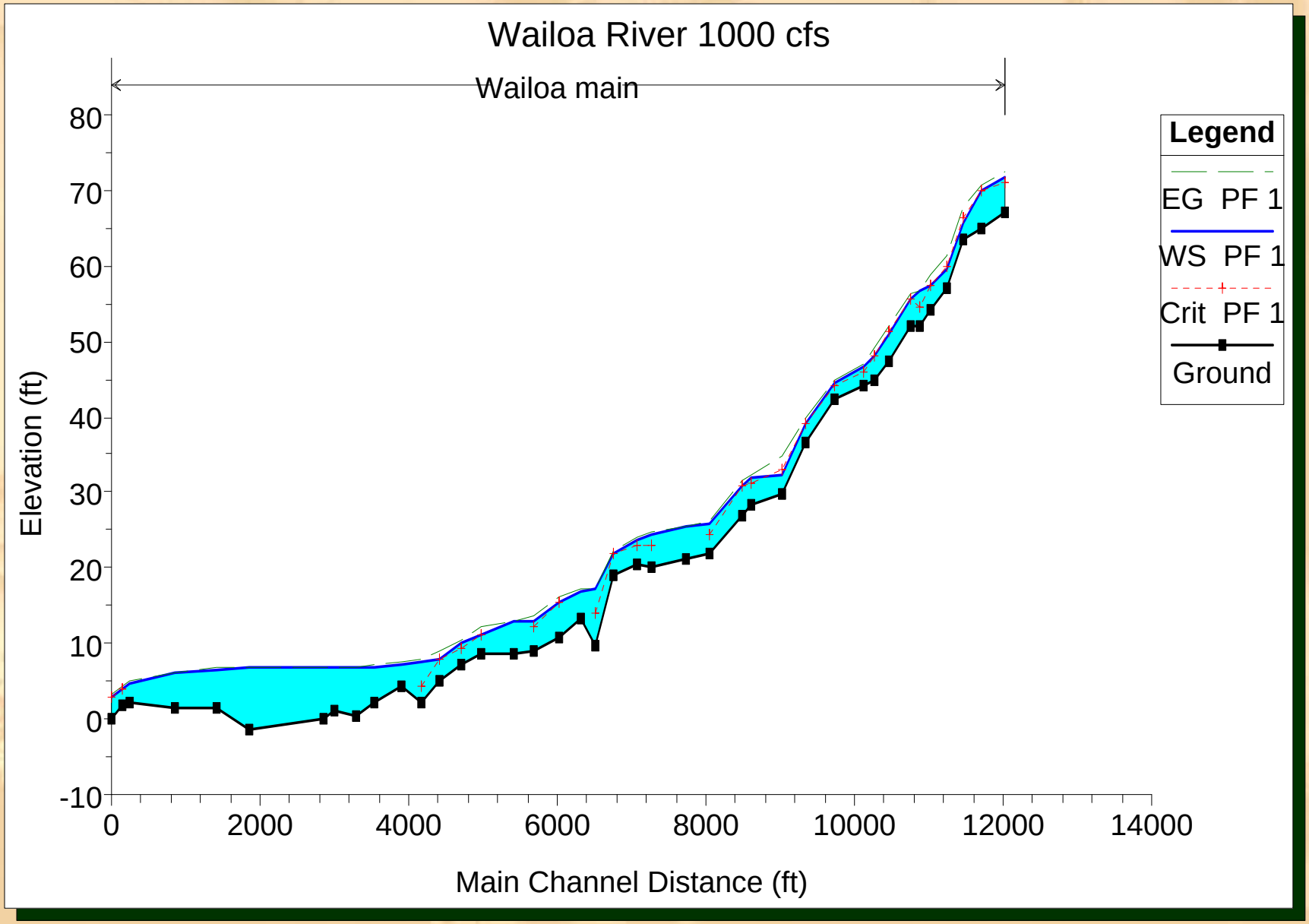
Location: North Coast of the Big Island





Total Drainage Area of Wailoa and Hi'ilawe: 24.7 square miles

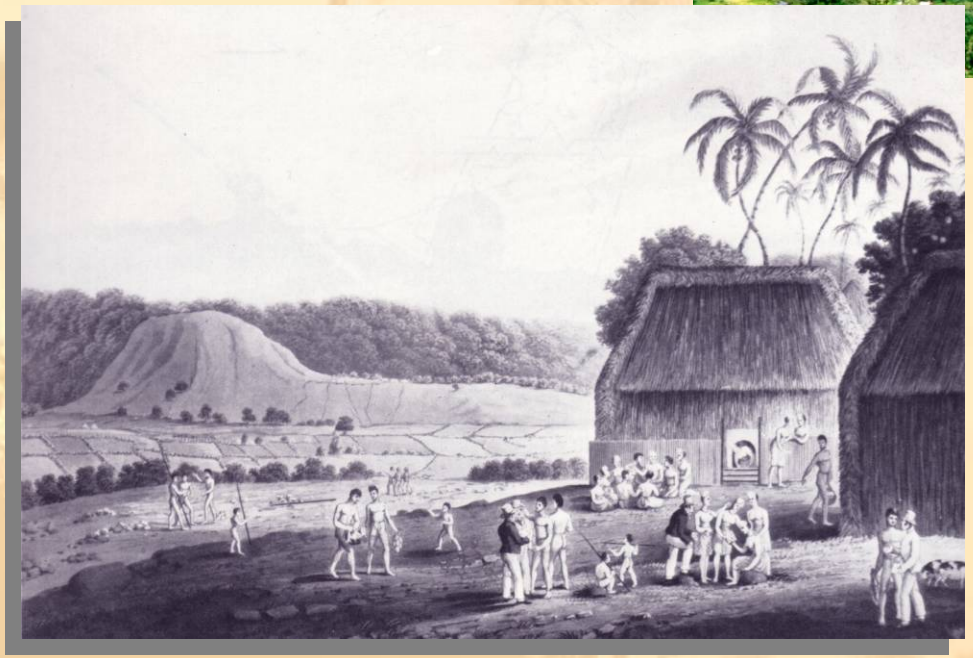
Waipi'o Valley Stream Profile – 2.5 Miles



NRCS Assistance to Waipi'o Community

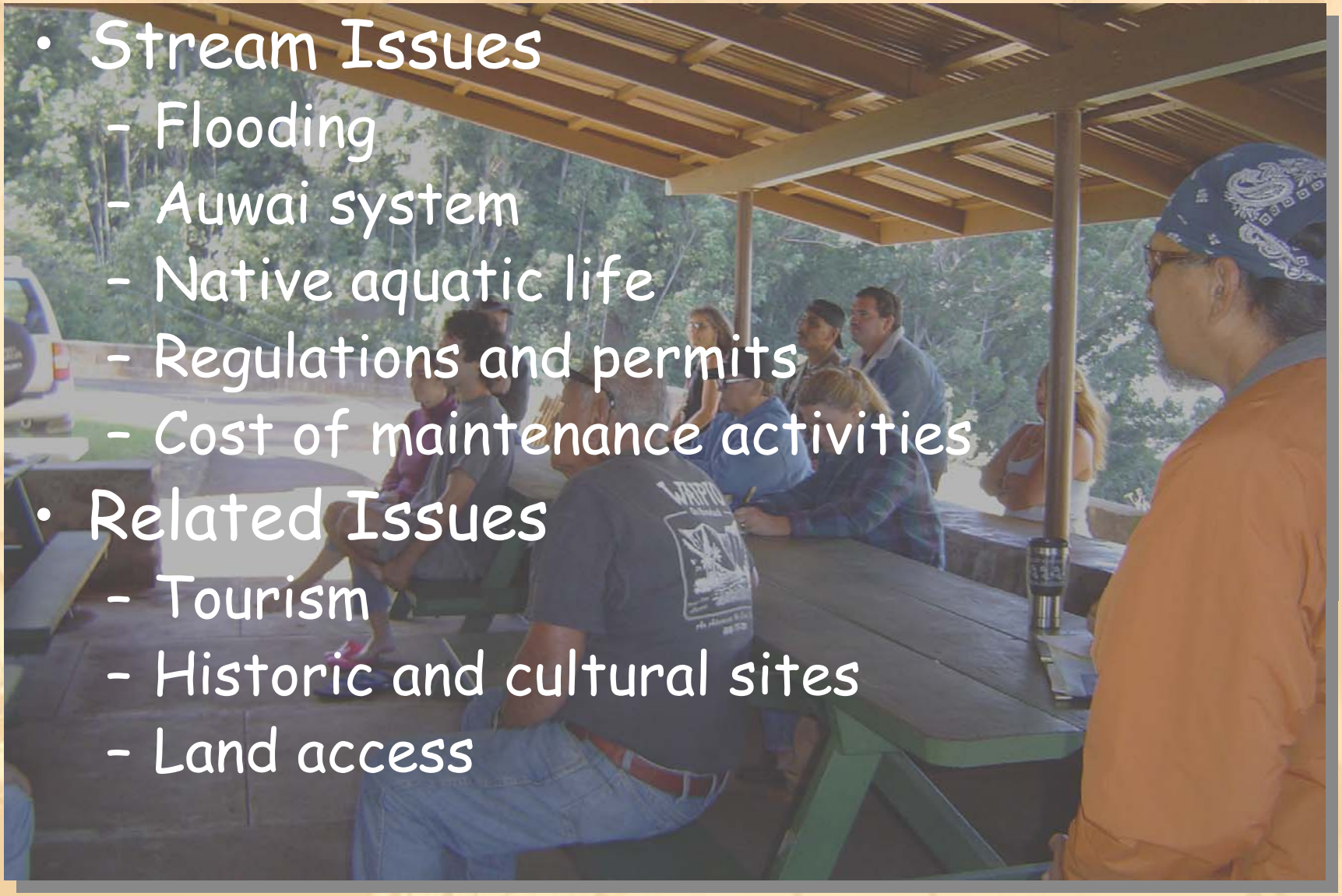
- Part of Lower Hamakua Ditch Watershed Project
- Partial restoration of LHD diversion flows
- Repair and restoration of Hakalaoa Falls
- Stream Management Plan
- Technical and financial assistance to farmers

Waipi'o - Important Center of Hawaiian Culture



Over 1,000 years of kalo cultivation

Waipi'o Community Concerns



- Stream Issues
  - Flooding
  - Auwai system
  - Native aquatic life
  - Regulations and permits
  - Cost of maintenance activities
- Related Issues
  - Tourism
  - Historic and cultural sites
  - Land access

Stream Management Plan

Available at:

http://www.hi.nrcs.usda.gov/programs/waipio_stream.html

Waipi‘o Valley
Stream Management Plan

February 24, 2006

NRCS

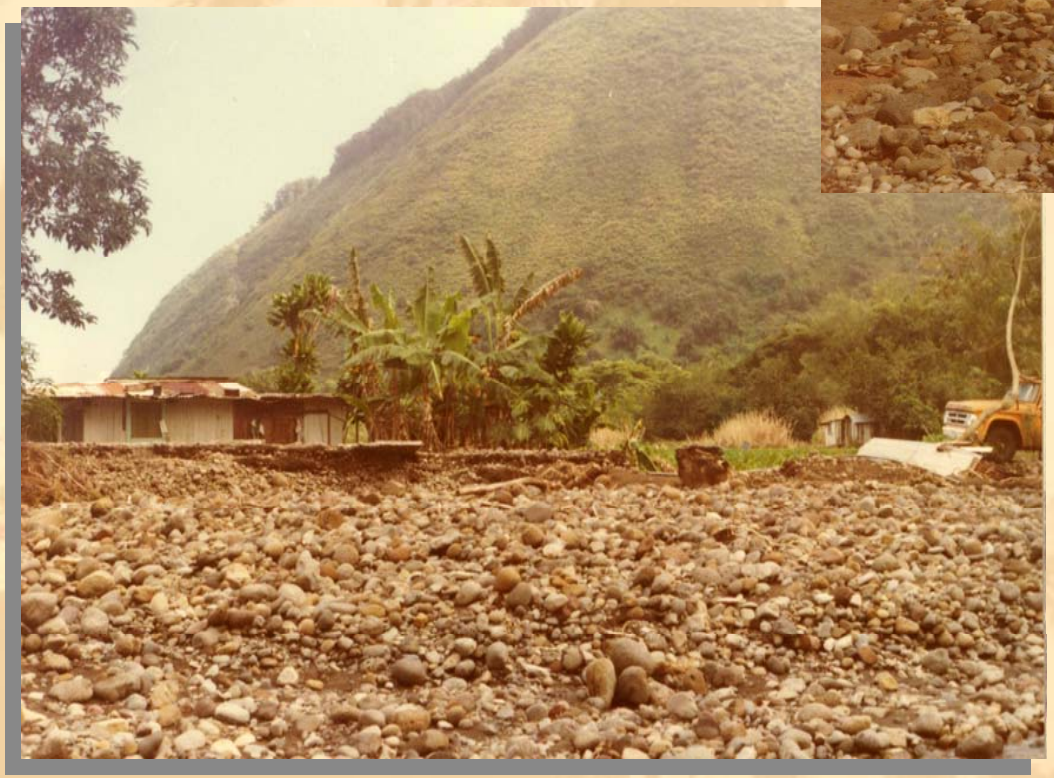
Waipi'o Valley Stream Management Plan

- Contents
  - Introduction
  - Background
  - Public Participation
  - Need for the Management Plan
  - Alternatives
  - Permits and Approvals
  - Strategies for Implementation
  - Funding Opportunities
  - References
  - Appendices

Waipi'o Valley Stream Management Plan

- Problem - Flooding
  - Recurring, inevitable
- Approach
  - Reduce damage
  - Improve recovery
  - Increase stream stability
- Alternatives
  - Stream Corridor establishment
  - Keep bedload in corridor, water flows out

1979 Flood Damage

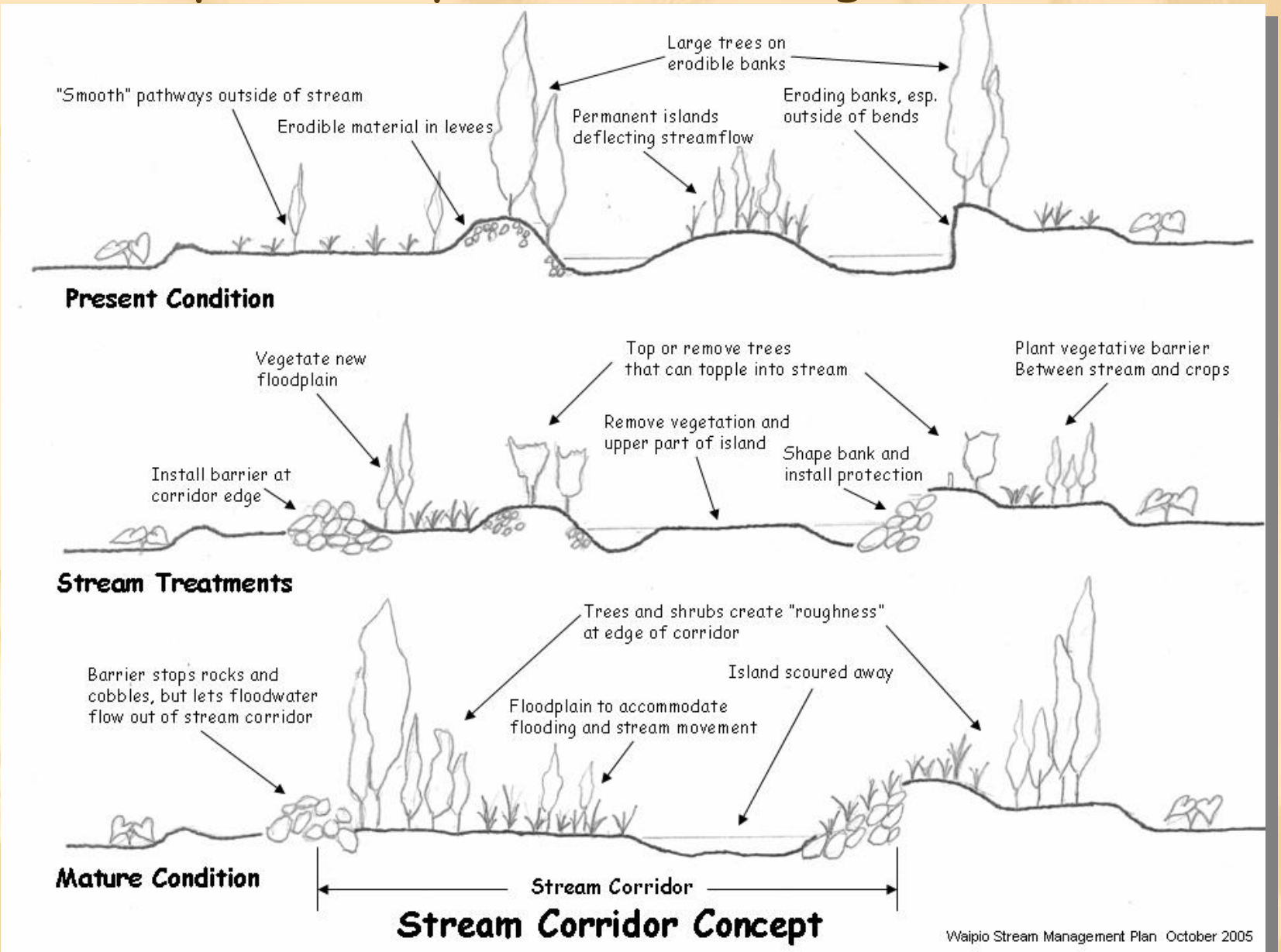


2002 Flood Damage

Sediment Deposition

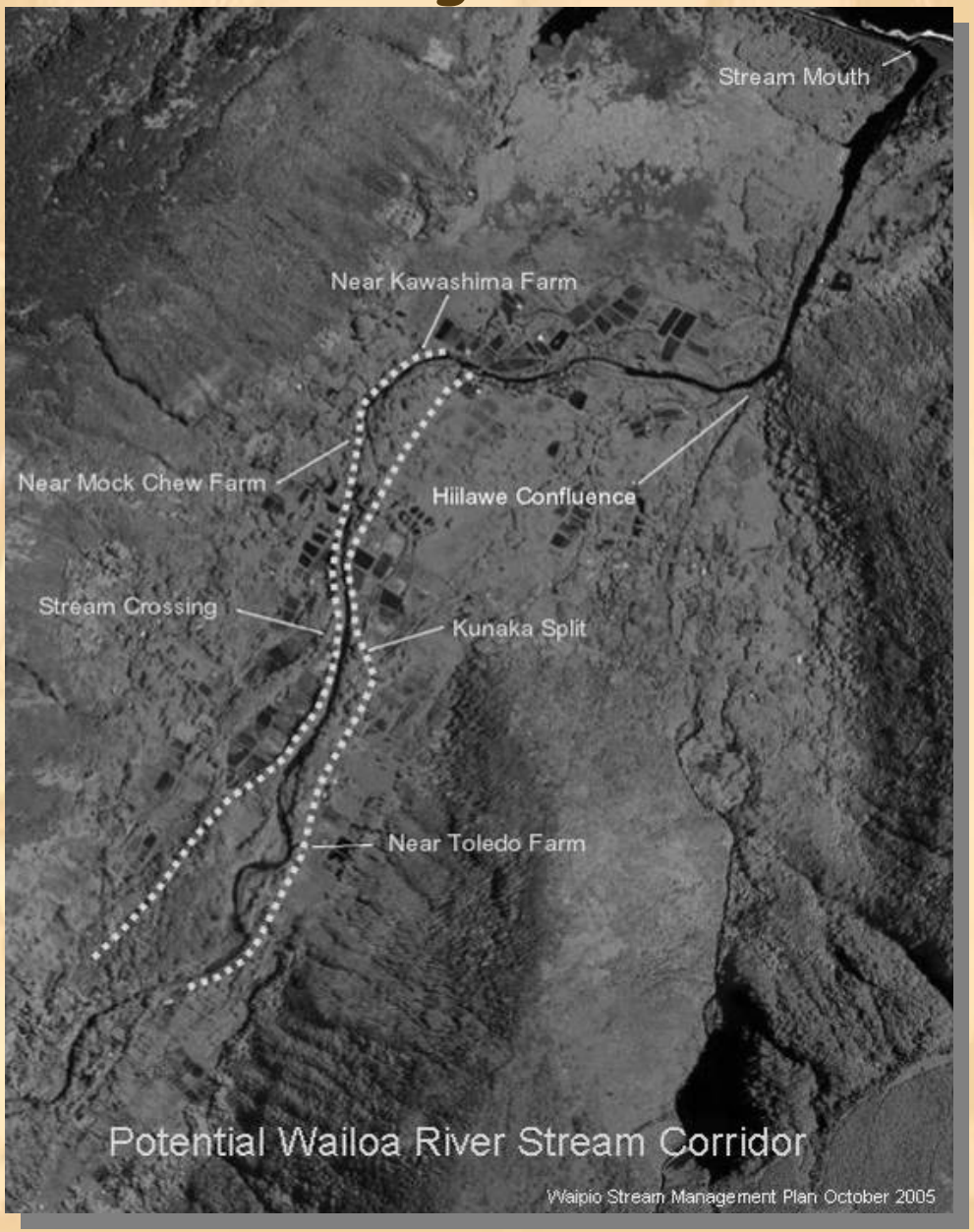
Flood Debris

Waipi'o Valley Stream Management Plan



Waipi'o Valley Stream Management Plan

Application of Stream Corridor Concept



Waipi'o Valley Stream Management Plan

- Problem – Bank Erosion
  - Stream meander
  - Directed streamflow
  - Toppled trees
  - Unsuitable fill
- Approach
  - Redirect streamflows
  - Protect and stabilize streambanks
  - Reduce topple load

Stream Bank Problems

Waipi'o Valley Stream Management Plan

- Problem – Gravel Bars
  - Become permanent meanders and islands with vegetation growth.
  - Cause for channel movement and stream avulsion
- Approach
  - Remove vegetation
  - Remove sediments to water level

Bars and Islands in Channel

Waipi'o Valley Stream Management Plan

- Problem – Blocked River Mouth
  - Sand and rock bar pushed up by waves
  - Raises stream up to 5' causing flooding, stagnant pond
- Approach
  - Opening of River mouth without bulldozing
  - Pilot channel
  - Removal of surface material above water.

Wailoa River Mouth

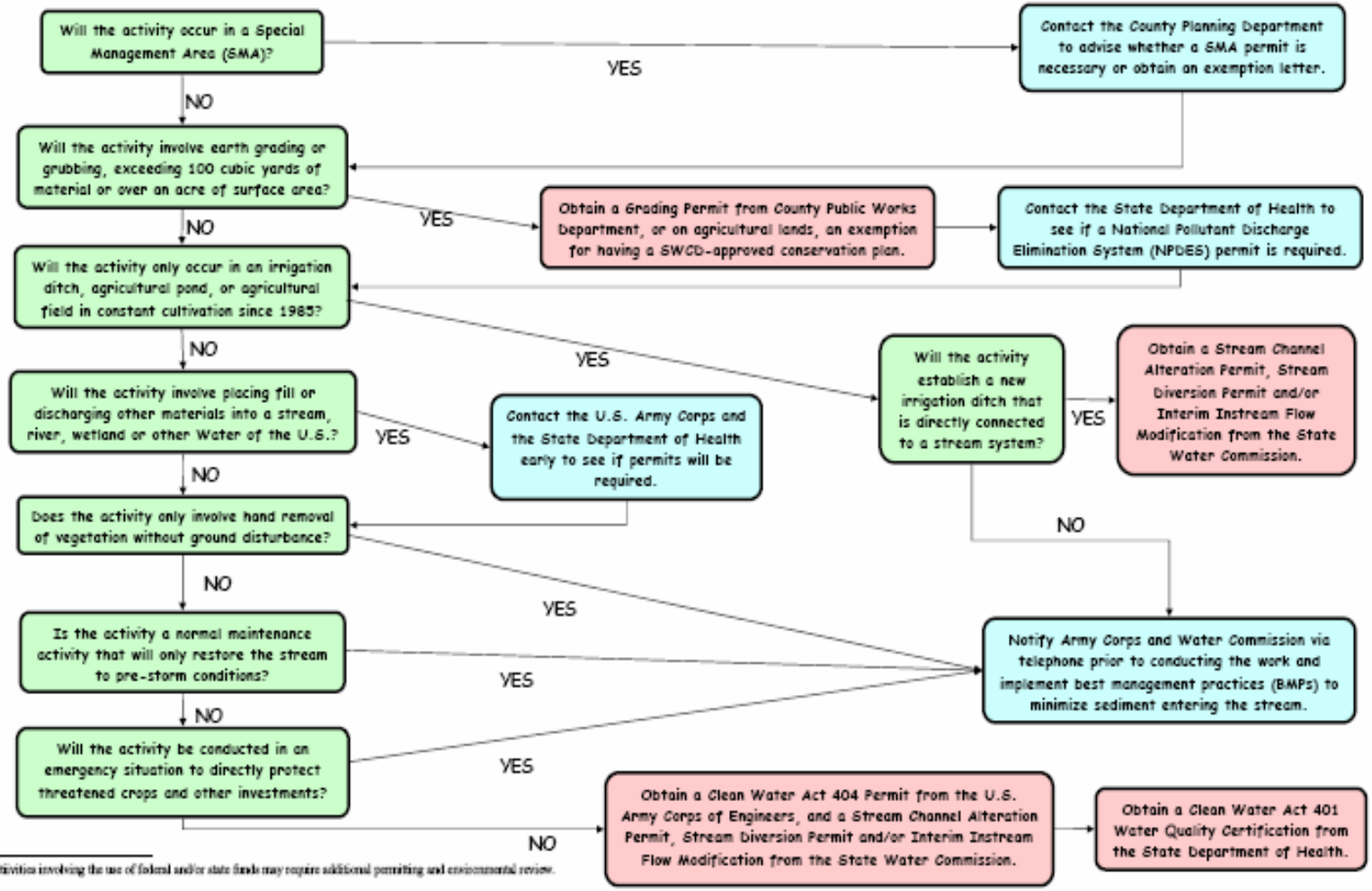
Waipi'o Valley Stream Management Plan

- Permits and Approvals
  - Corps of Engineers
  - Commission on Water Resources Mgt.
  - Department of Health
  - County Planning Department
  - County Public Works
  - State Civil Defense

Waipi'o Valley Stream Management Plan

Table 7: Permit Chart for Non-Structural Activities in Streams and Wetlands[5]

Examples: Stream Bank Stabilization, Sand-Gravel Bar Removal, Stream Obstruction Removal



[5] Activities involving the use of federal and/or state funds may require additional permitting and environmental review.

6-5

Permit Flow Chart

Waipi'o Valley Stream Management Plan

Hand Labor and Equipment Comparison Chart

Table 5: Hand Labor and Equipment Comparison Chart

Type of Equipment	Photo Description	Grading	Excavating (digging)	Carrying Material	Ability to reach into stream from bank	Ability to manipulate rock
Hand Labor		Very light	Very light	Very light loads, short distances	No impact working in stream	Very good for small rock
Farm Tractor		Light	Light, with backhoe attachment	Small loads in front loader	Yes, short reach with backhoe attachment	Good for small rock
Skid Loader		Moderate	Little	Moderate loads, short distances	No	Moderate for small to medium rock
Backhoe		Moderate	Moderate	Moderate loads, short distances	Yes, short reach	Good for small to medium rock
Excavator		Light	Moderate to Heavy	Small to moderate loads, very short distances	Yes, moderate to long reach	Good for moderate to large rock
Loader		Heavy	Little	Large loads, short distances	No	Moderate for moderate to large rock
Bulldozer		Heavy	Little	None	No	Poor
Dump Truck		None	None	Large loads, long distances	No	Poor

Implementation

- Community pursuing Waipi'o Community Circle action plan projects
- Individual farmers receiving technical and financial assistance from NRCS
- Group projects by Waterhead groups
- Permit applications and discussions for stream maintenance with regulatory agencies
- Formalization of the organization to seek grants and assistance

Mahalo!

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Photos also by: India Clark, Luciano Minerbi, and Katina Hanson

Waipi'o SMP - http://www.hi.nrcs.usda.gov/programs/waipio_stream.html