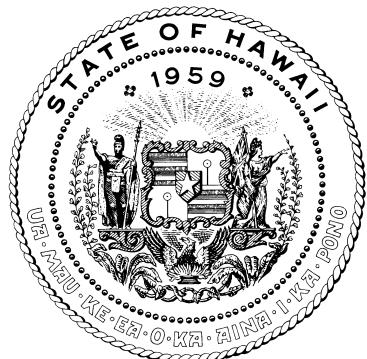


**REPORT TO THE TWENTY-SEVENTH LEGISLATURE  
RELATING TO THE IMPLEMENTATION OF THE WATERSHED INITIATIVE**



**PREPARED BY**  
**STATE OF HAWAI'I**  
**DEPARTMENT OF LAND AND NATURAL RESOURCES**  
**DIVISION OF FORESTRY AND WILDLIFE**

**IN RESPONSE TO**  
**SECTION 134 OF ACT 106, SESSIONS LAWS OF HAWAII 2012**

**HONOLULU, HAWAI'I**  
**DECEMBER 2012**

## REPORT TO THE TWENTY-SEVENTH LEGISLATURE RELATING TO THE IMPLEMENTATION OF THE WATERSHED INITIATIVE

The Watershed Initiative is working to ensure fresh water is available for the people of Hawai‘i in perpetuity by protecting our watershed forests. Safeguarding our water supplies is one of the central natural resource goals of the Abercrombie Administration’s *A New Day in Hawaii* plan.

Protecting *mauka* forests is the most cost effective and efficient way to maximize the absorption of rainwater so groundwater storage is replenished. In addition, forests are responsible for the condensation of mist and fog which increases water capture up to 50 percent more than through rainfall alone.<sup>i</sup> However, **over half of Hawaii’s forests have been lost in the last 200 years.** Without protection, forest degradation continues to accelerate. The longer Hawai‘i waits to take significant action, the higher the cost will be to reverse the damage, thereby threatening water supplies for future generations.

The Administration’s goal of doubling the number of acres of watershed forest being protected over the next decade requires approximately \$11 million per year. Act 106, Session Laws of Hawaii (SLH) 2012, included \$2,500,000 in special funds and \$2,500,000 in general obligation bonds. These funds accelerated progress however additional funding is still needed to reach this goal. **New legislation is needed to direct revenues toward the critical protection of Hawaii’s water supply.**

**PROGRESS ON THE IMPLEMENTATION OF THE PROGRAM**  
Implementation of the Watershed Initiative began immediately after the enactment of Act 106, SLH 2012. A competitive request for proposals for \$2.5 million in special funds was announced in June 2012, and projects were awarded in late August 2012. On August 25, 2012, Governor Abercrombie released \$2.5 million in General Obligation bond funds. Since then, progress has been made on the selection of contractors and procurement of materials for all eight capitol improvement projects. As awarded projects move through the lengthy state contracting process, staff have surveyed and cleared fencelines and begun invasive plant control.

State funds for the Watershed Initiative in Fiscal Year (FY) 2013 will support the creation or retention of a projected 61 direct local jobs.<sup>ii</sup> Additionally, funding will result in protection of large tracts of land statewide:<sup>iii</sup>



*Hawaii’s native forests collect rain and fog, providing water for human use*



*Funding is predicted to create or maintain 61 direct local jobs statewide*

<b>Areas Affected by FY13 State Funding</b>	<b>Total Acres</b>
Area Protected in FY13	15,579 Acres
Area in Process to be Protected in FY13	12,412 Acres
Area being Maintained in FY13	133,167 Acres
<b>Total Area Affected using FY13 Funds</b>	<b>161,158 Acres</b>

<b>High Priority Watershed Forests</b>	<b>Areas Buffering Impacts to Priority Forests</b>
7,727 Acres	7,852 Acres
8,608 Acres	3,804 Acres
75,591 Acres	57,576 Acres
91,926 Acres	69,232 Acres

Appendix 1 describes the progress and matching funds for each individual project for the fiscal year. Appendix 2 contains project descriptions.

## DISCUSSION OF ACHIEVEMENTS AND CHALLENGES ENCOUNTERED

### *Achievements*

The Watershed Plan was announced by Governor Abercrombie in November 2011. During FY 2012 (12), state funded projects resulted in over 5,600 new acres protected by completing fences that exclude hooved animals. Appendix 1 lists the additional future achievements for FY13 made possible by funding provided by Act 106, SLH 12. Fencing is the essential first step for forest watershed protection as Hawaii's forests are especially vulnerable to damage from non-native feral hooved animals that trample, uproot, and devour plants. In the Department of Land and Natural Resources' (Department) Division of Forestry and Wildlife (DOFAW) areas, step-overs and gates allow continued public access into fenced areas and public hunting will be a priority action in the first stage of ungulate removal in these fenced areas wherever safe, feasible, and effective. Progress has been made statewide in all action items listed in the watershed plan, including protective fencing, invasive plant control, reforestation, wildfire prevention and control, monitoring and education.

The Department and our partners are employing new cost-saving technologies to make management more efficient. For example, this funding has supplied a Forward-Looking InfraRed (FLIR) camera that enables staff to find locations of hooved animals that may be hiding in dense undergrowth and otherwise remain undetected. The University of Hawaii is developing innovative technologies for weed control and environmentally friendly materials.

### *Challenges*

Ninety percent of watershed forests are unprotected, and forest loss continues. Managers feel a sense of urgency to protect areas early, before the forests have become degraded,

which requires expensive and sometimes impossible restoration. Removing a weed like strawberry guava that has formed dense thickets can be over forty times more expensive per acre than removing the trees when they are still sparse.<sup>iv</sup> Controlling strawberry guava in East Hawaii now instead of waiting until the invasion has spread to its fullest potential could save over \$2.7 billion.<sup>v</sup> Clearly, the pace of watershed protection must be increased if we don't want to saddle future generations with huge costs. The Department is exploring legislation for the 2013 Legislative Session to provide dedicated funding to meet the Administration's urgent watershed protection goals. Hawaii's leaders must come together and incorporate funding policies within the State's overall financial plan.

## CONCLUSION

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<sup>i</sup> Maui County Department of Water Supply. 2010. Water Use Development and Protection Plan – Lāna`i. Submitted by the Department of Water Supply in consultation with the Lāna`i Water Advisory Committee.

<sup>ii</sup> WPPG salary and fringe budgets, plus 2/3 CIP funding divided by \$50,000 = total estimated FTE. Fence budgets vary however on average two-thirds of funds are used for personnel.

<sup>iii</sup> Area protected refers to fencing projects that result in complete exclusion of hooved animals, and often have animal and invasive plant removal projects ongoing. Area in process to be protected refers to fencing projects that need additional funding in future phases to complete. Areas being maintained refers to ongoing invasive plant and animal control or outplanting project areas. The Watershed Initiative plan, *The Rain Follows the Forest*, maps locations of watershed priority forests that receive the most rainfall and are essential to sustain the state's water resources. Acres outside the watershed priority forests in buffer zones may eventually re-grow into a native forest with protection.

<sup>iv</sup> Department of Land and Natural Resources. 2010. Draft Environmental Assessment: Biocontrol of Strawberry Guava by its Natural Control Agent for Preservation of Native Forests in the Hawaiian Islands. Published in the June 23, 2010 *Environmental Bulletin* of the Office of Environmental Quality Council of the Department of Health.

<sup>v</sup> *Ibid.*

## Appendix 1. Watershed Initiative Project Progress and Funding

<b>Project*</b>	<b>Land owner</b>	<b>Watershed Initiative Funds</b>	<b>Private Matching Contributions</b>	<b>Total Matching Funds</b>	<b>Progress</b>
<b>KAUAI</b>					
Hono O Na Pali Natural Area Reserve *	S	\$200,000		\$100,000	Staff have groundtruthed and flagged the entire fence alignment. Request for Proposals completed, contract being awarded.
Kauai Watershed Alliance	S&P	\$299,997		\$449,000	Contract finalized, project starting.
<b>OAHU</b>					
Ewa Forest Reserve*	S	\$500,000		\$200,000	Staff have groundtruthed and flagged the entire fence alignment. Request for Proposals completed, contract being awarded. US Army Natural Resources Program committed to funding a third of the fence.
Kaluanui Natural Area Reserve	S	\$200,000		\$200,000	Staff have groundtruthed fence alignment, surveys underway.
Koolau Mountains WP	S&P	\$125,000	\$126,532	\$340,532	PO in process, estimated final 12/15. Contract awarded.
Survey and Control of Miconia and Pampas Grass	S&P	\$27,909	\$640	\$23,178	PO in process, estimated final 12/15 for the Oahu Invasive Species Committee.
Waianae Mountains WP	S&P	\$160,000		\$360,862	PO in process, estimated final 12/15. Contract awarded.
<b>MOLOKAI</b>					
East Molokai WP	S&P	\$25,000	\$140,000	\$290,000	Contract finalized, project starting.
East Molokai WP Expansion	S&P	\$5,000	\$5,000	\$5,000	Project scope developed, Request For Quotes being prepared.
Molokai Forest Restoration, Kamakou Preserve	S&P	\$70,000	\$41,000	\$148,500	Staff have groundtruthed and flagged the entire fence alignment. Request for Proposals completed, contract being awarded.
<b>LANAI</b>					
Lanai Forest and WP	P	\$90,000	\$4,000	\$197,340	PO finalized, Project starting.
<b>MAUI</b>					
Kahikinui Forest Restoration*	S	\$415,000			Staff have groundtruthed and flagged the entire fence alignment. Request for Proposals completed, contract being awarded.
Hanawi Natural Area Reserve*	S	\$200,000			4.75 miles of fence already built, 1 mile needed to complete unit. Funds for purchasing helicopter and materials are being encumbered.

<b>Project*</b>	<b>Land owner</b>	<b>Watershed Initiative Funds</b>	<b>Private Matching Contributions</b>	<b>Total Matching Funds</b>	<b>Progress</b>
Hana Forest Reserve*	S	\$225,000	\$50,000	\$50,000	3 miles of fence already built, 3 miles more are needed to complete the unit. Funds for helicopter and materials encumbered. Funding for approximately 2 FTE jobs is being processed to be encumbered.
East Maui WP	S&P	\$198,000	\$9,663	\$229,126	Contract finalized, project starting.
West Maui Mountains WP	S&P	\$330,000	\$122,000	\$432,000	Contract finalized, project starting.
Leeward Haleakala WRP	S&P	\$185,000	\$60,000	\$359,263	Contract finalized, project starting.
Forward Looking Infrared for Ungulate Control	S&P	\$20,000		\$5,000	Funds spent, equipment to arrive in 1/13 for Maui County.
<b>HAWAII</b>					
Puu O Umi Natural Area Reserve*	S	\$250,000		\$50,000	4.5 miles of fence have been built, 2.4 more miles are needed to complete the unit. Funds have been encumbered to support 3 FTE jobs, and a majority of the fence materials.
Mauna Kea Forest Restoration Project*	S	\$200,000		\$288,000	Project initiated with 3,000 trees planted and 480 volunteer hours contributed. Funding supports 5 FTE jobs.
Kau Forest Reserve*	S	\$510,000			Fence materials have been purchased.
Kohala WP	S&P	\$115,000	\$32,380	\$109,380	Contract finalized, project starting.
Puu O Umi Natural Area Reserve Materials	S	\$40,635		\$40,000	Procurement of materials is ongoing.
North Kona Fencing	P	\$100,000	\$164,500	\$514,500	Contract finalized, project starting.
Three Mountain Alliance	S&P	\$180,000	\$91,200	\$394,875	PO in process, estimated final 12/15. Contract awarded.
Mauna Kea Watershed Alliance	S	\$131,000		\$175,555	PO finalized, project starting.
Feral Cattle Control, Hawaii Forest Reserves	S	\$40,000		\$35,000	Project initiated.
Pu`u Wa`awa`a Fencing	S	\$37,000			0.6 miles of fence have been built, 1 more mile is needed to complete the unit. Material purchase ongoing.
<b>STATEWIDE</b>					
Naio Thrips	S&P	\$40,500		\$88,139	PO finalized, project starting.

<b>Project*</b>	<b>Land owner</b>	<b>Watershed Initiative Funds</b>	<b>Private Matching Contributions</b>	<b>Total Matching Funds</b>	<b>Progress</b>
Building Watershed Data Management Capacity	S&P	\$10,000		\$5,000	Contract finalized, project starting.
Integrated Pest Management for Christmasberry and Miconia	S&P	\$50,000		\$50,000	PO in process, estimated final 12/15. Contract awarded.
Statewide Information on Watershed Protection and Management	S&P	\$19,959		\$5,000	Committees formed, Public Service Announcement outlines and budgeting prepared, Request For Quotes for air time prepared.
<b>TOTAL</b>		<b>\$5,000,000</b>	<b>\$846,915</b>	<b>\$5,145,250</b>	

\*Indicates project is funded by General Obligation Bonds. Otherwise, source is Special Funds.

WP= Watershed Partnership, S=Project on State land, P=Project on Private land, S&P=Project on both State and Private land, PO= Purchase Order, FTE=Full Time Equivalent.

Future commitments from private sources for FY14 include \$657,500 for the North Kona Fencing Project and \$253,064 for the Koolau Mountains Watershed Partnership.



*Hawaii's forests provide water for human use. Photo: Air Maui.*

## Appendix 2. Project Descriptions

<b>KAUAI</b>	
Hono O Na Pali Natural Area Reserve	Fence building to exclude non-native goats and pigs
Kauai Watershed Alliance	Inspect and maintain 6.2 miles of fence Complete compliance documents for 3 miles of new fence Control invasive weeds on 510 acres Aerial survey for invasive Australian Tree Fern on 1,300 acres Integrated Pest Management Strategy for Himalayan Ginger Control feral animals on 9,258 acres Monitor 3.1 miles of transects for weeds and feral animals
<b>OAHU</b>	
Ewa Forest Reserve	Fence building to exclude non-native pigs
Kaluanui Natural Area Reserve	Fence building to exclude non-native pigs
Koolau Mountains Watershed Partnership	Inspection and maintenance of 8.3 miles of fence upon completion Survey and control invasive species on 160 acres Feral animal control on 2,932 acres Public outreach re fence construction and animal control
Survey and Control of Miconia and Pampas Grass, Oahu Invasive Species Committee	Aerial surveys and imagery analysis for invasive species
Waianae Mountains Watershed Partnership	Fence planning and compliance for Mt. Kaala priority watersheds Invasive weed control in priority watersheds Feral goat control
<b>MOLOKAI</b>	
East Molokai Watershed Partnership	Feral animal control, new Forward Looking InfraRed technology
East Molokai Watershed Partnership Expansion	Management plan to include 10-14 new landowners
Forest Restoration, Kamakou Preserve	Fence construction at Kamakou, Molokai
<b>LANAI</b>	
Lanai Forest and Watershed Partnership	Inspect and maintain 7 miles of fencing to exclude deer Remove invasive species from 603 acres
<b>MAUI</b>	
Kahikinui Forest Restoration	Fence building to exclude non-native pigs, deer, cattle, and goats
Hanawi Natural Area Reserve	Fence building to exclude non-native pigs
Hana Forest Reserve	Fence building to exclude non-native pigs
East Maui Watershed Partnership	Inspect and maintain 7.8 miles of fence Monitor and remove priority invasive weeds from 7,000 acres Control feral animals on 7,000 acres Coordination of Hana Forest Reserve fence protecting 3,000 acres
West Maui Watershed Partnership	Interagency wildfire coordination planning Mapping fire infrastructure and important resources Construct 0.6 miles of new strategic fencing in 9 areas Brush and repair 1.75 miles of fence Inspect and maintain 7.2 miles of fence Aerial survey and ground control of 668 acres of invasive weeds Control feral animals on 5,870 acres Monitor weed and feral animal transects Monitor Honuaula Stream water quality

Leeward Haleakala Watershed Restoration Partnership	Survey and flag 3 miles, Phase 2, Department of Hawaiian Home Lands (DHHL) Kahikinui fence Inspection and maintenance of 22.6 miles of existing fences Coordinate and produce feral animal control plan DHHL Kahikinui Invasive weed control 708 acres Revegetation of 30 acres Community outreach Utilize 300 volunteers in reforestation Creation of a database management system
Forward Looking Infrared (FLIR) for Ungulate Control, Maui County	Purchase of a FLIR instrument for use in ungulate control
<b>HAWAII</b>	
Puu O Umi Natural Area Reserve	Fence building to exclude non-native pigs and goats
Mauna Kea Forest Restoration Project	Outplanting trees to restore forest
Kau Forest Reserve	Fence building to exclude non-native pigs, sheep, and goats
Kohala Watershed Partnership	Inspect and maintain 12.8 miles of existing fence Control feral cattle on 300 acres
Puu O Umi Natural Area Reserve Materials	Fence materials for 1.5 miles
North Kona Fencing	Fencing at Lupea, North Kona, 1 mile to complete entire fence
Three Mountain Alliance	Fence inspection and maintenance Conservation workline - Hawaii Community Correctional Center Invasive species control on 2,530 acres Reforestation at Kulani Data management development Outreach- Kapapala Koa Canoe Forest, Kulani Assist Big Island Invasive Species Committee Axis deer control
Feral Cattle Control, Hawaii Forest Reserves	Removal of feral cattle utilizing public and staff hunting
Puu Waawaa Fencing	Materials for completion of fencing 1.4 miles
Mauna Kea Watershed Alliance	Forest Reserve fence inspection and maintenance 63 miles Feral animal control Kanakaleonui, DHHL, 525 acres Gorse control 1,200 acres Wailuku Headwaters (DHHL) Community outreach
<b>STATEWIDE</b>	
Integrated Pest Management of Naio Thrips	Augment populations of native parasitic wasps to control an insect that is attacking Naio
Building Watershed Data Management Capacity	Development of statewide data standards and reporting framework for watershed management
Integrated Pest Management for Christmasberry and Miconia	Development of techniques to control widespread watershed altering weeds
Statewide Information on Watershed Protection and Management	Develop statewide information on watershed protection and management

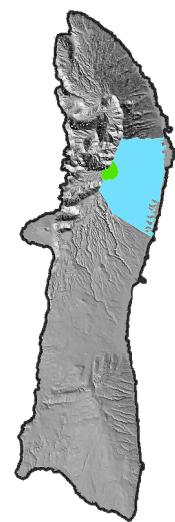
# FY13 Watershed Project Locations

Projected Accomplishments

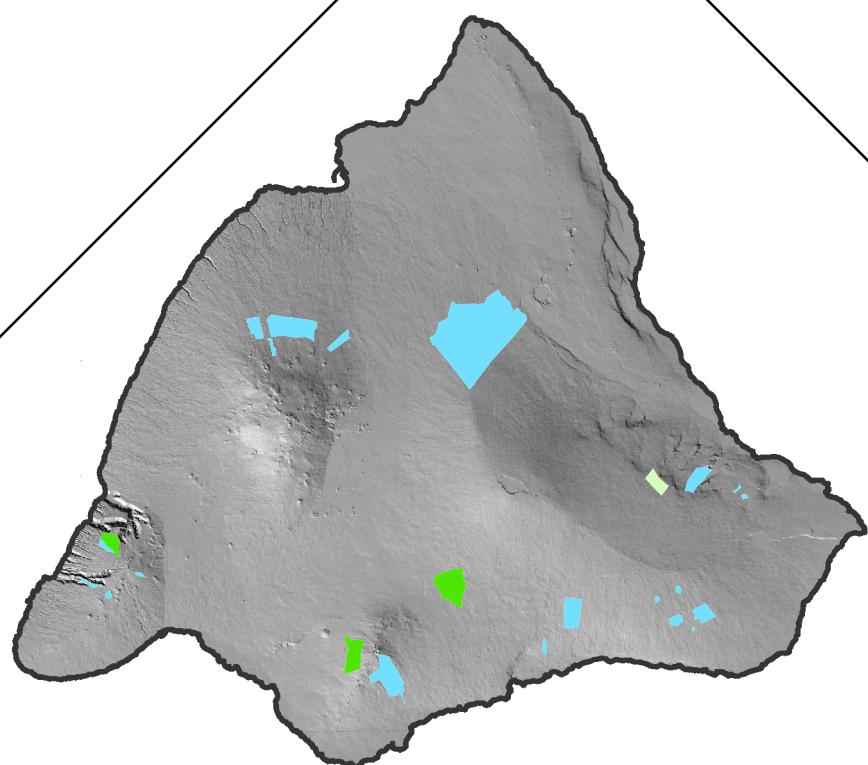


## Legend

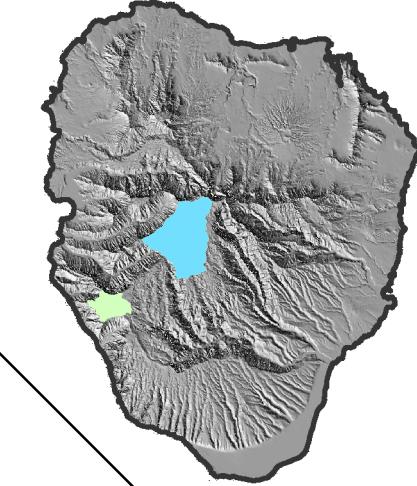
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- Protection in Progress (Light Green)
- Maintained (Blue)



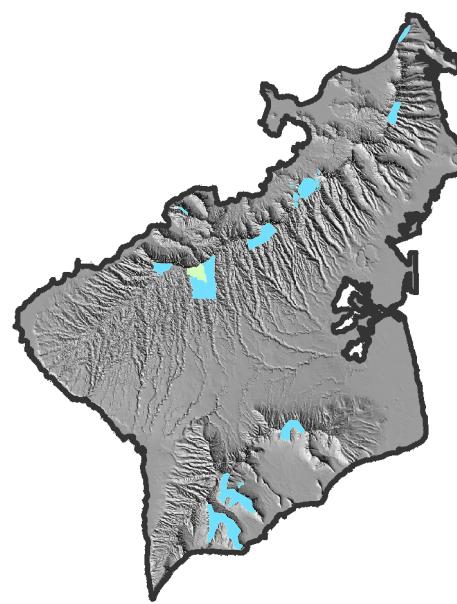
County of Maui



County of Hawaii



County of Kauai



City and County of Honolulu

Map created December 2012 and is subject to change. Division of Forestry and Wildlife 587-4170.  
Area protected refers to fencing projects that result in complete exclusion of hooved animals.  
Area in process to be protected refers to fencing projects that need additional funding to complete.  
Areas being maintained refers to ongoing invasive plant and animal control or outplanting project areas.