

## History

In 1955, the U.S. Bureau of Reclamation conducted a study on the Molokai Irrigation Project. The original project included irrigating approximately 13,000 acres, which mainly comprised of pineapple plantations. In 1956, the Federal Small Reclamation Projects Act, which qualified Molokai Irrigation Project for a loan to create the Molokai Irrigation System (MIS). The MIS was completed in 1967. The total cost of the project was approximately 10 million dollars with the Federal government supplementing 45% of the project cost.

## Molokai Irrigation System

The MIS sole water source is the Waikolu Valley Watershed. There are 4 intake diversion dams, three of which are in use. The three intakes divert flow into the Molokai Water Tunnel. There are also five wells that provide a supplemental supply of ground water from the valley. These wells are remotely operated from the MIS office. Diverted water is transferred into a five mile long water tunnel, which conveys water through the mountain by gravity then enters a 1500 ft concrete flume that flows into a transmission pipeline which supplies the 1.4 billion gallon Kualapuu Reservoir. From the reservoir the distribution pipelines feed farms thru laterals and water meters. The total length of the irrigation system is approximately 25 miles.

## Irrigation Staff

The system is operated by an irrigation manager and up to three irrigation workers employed by HDOA. Operation and maintenance costs of the system are provided by water delivery revenue and acreage assessments.

## Capital Improvement Projects

Electrical, Control and Telemetry – Replacement of the existing high voltage power line and installation of a new fiber optics through the Waikolu Tunnel to reduce power outages, provide a more stable energy source, and improve communication in the tunnel and for the new Supervisory Control and Data Acquisition (SCADA) system. This project also includes installation of flow monitoring devices and electrical upgrades to various components in the system.

State Irrigation System Reservoir Safety Improvements – Improvements to the Kualapuu Reservoir including embankment stabilization, and a new gantry crane to lift the emergency spillway grate, and installation of monitoring wells.

Replacement of Concrete Flume - This project consists of replacing the existing above ground concrete flume with a buried pipeline. The flume is located below the base of a small ridge and is susceptible to damage from rock slides. The improvements will help to prevent catastrophic loss of the flume and provide farmers with a more reliable source of irrigation water.

Molokai Hydropower Plant – Installation of a turbine which utilizes water in the MIS pipeline to generate renewable energy. SCADA will also be incorporated to enable remote monitoring and controlling of the system. The energy produced will reduce the department's electricity costs.

## Future Capital Improvement Projects

Replacement of Access Bridge – This project will replace a deteriorated access bridge which also supports a pipeline. Improvements will provide staff with safer access and increase the stability of the pipeline.

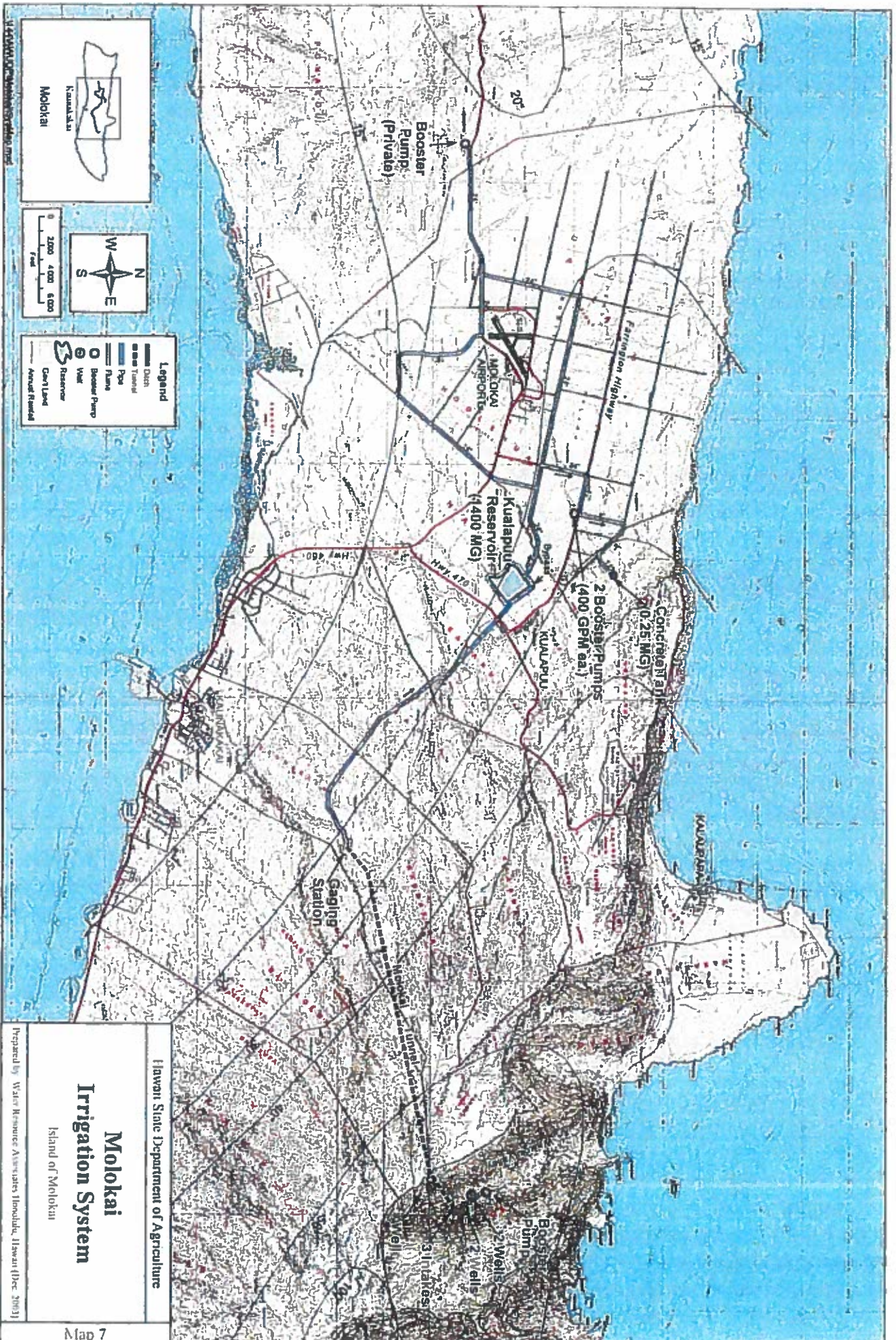
Additional Irrigation Water Source Study – This potential project will look at the feasibility of developing additional water sources and renewable energy alternatives.

## Distribution

Today the system has 240 homestead accounts, 32 non-homestead accounts, and services approximately 3,359 acres (June 2014). Due to drought for the past 8 years the MIS has been on a mandatory 10%-30% restriction. As of May 2015, we have finally dropped to a 10% voluntary restriction. Average annual water consumption varies between 850 and 1,250 MG. As of May 18, 2015, the current reservoir level is 36.25 ft (approx. 911 MG)

## Hawaii Revised Statutes 168-4

Hawaiian homes commission and lessees of the Hawaiian homes commission shall at all times, upon actual need therefor being shown to the board of agriculture, have a prior right to two-thirds of water developed for the Molokai Irrigation System. "Actual need" means the volume of irrigation water consumed by an irrigation customer.



Hawaii State Department of Agriculture

## Molokai Irrigation System

Island of Molokai

Prepared by Water Resource Associates Honolulu, Hawaii (Dec. 2003)

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