

Lanaʻi Island Water Use and Development Plan (WUDP)

Provisions Update

Action Items

Revised for January 1, 2017 Final

The provisions below are identified as elements of a plan for responsible use and development of Lanaʻi's water resources necessary to maintain the long term adequacy and quality of water supplies for existing and future Lanaʻi residents and businesses. Lanai Island Water Use and Development Plan (WUDP) – Dept. of Water Supply (DWS) Amended Draft - February 25, 2011 was approved by Maui County Council - April 2012. It was then approved by the State of Hawaii, Commission of Water Resource and Management.

This WUDP Provisions update is posted on the Lanai Water Company website, www.lanaiwatercompany.com. This website provides information on LWC, contacting LWC, water quality and conservation. It's an additional educational piece for the community to understand more about the water and its use. The report is for informational purposes and is subject to modifications/updates quarterly.

Watershed Protection Measures (Natural Resources)

The Lanaʻihale watershed area is an essential resource that supports the groundwater aquifers that provide all of Lanaʻi's water needs. It is crucial that sufficient programmatic measures are diligently implemented to reestablish and protect the indigenous flora in the Lanaʻihale watershed area. Herbivores and invasive plants must be removed and effectively excluded from the watershed area. The following measures have been identified as essential program components to improve and maintain the integrity of the Lanaʻihale watershed area:

Development of a new publicly reviewed and supported comprehensive watershed protection plan incorporating the watershed protection provisions identified in Chapter 6 of the Supporting Documentation. Pūlama Lanai (PL) is completing the draft of the Lānaʻi Natural Resources Management Plan (LNRP) which address the full range of resource management for Lānaʻi, including watershed protection. The Department of Natural Resources proposes to host a public informational meeting to present the policies and projects in the draft plan, and will initiate implementation upon its finalization.

- Installation and maintenance of fencing adequate to exclude deer, mouflon and other ungulates. Fencing of Increments I and II is installed and maintained on a quarterly inspection schedule, with the last survey completed on January 9, 2017. At present, the goal within the two fenced increments (some 2,200 acres) on Lānaʻihale is complete eradication of ungulates. While recent control activities have reduced numbers to very low levels, PL is exploring alternative strategies to achieve the goal of no animals within the increments. The terrain and ever increasing canopy heights of forest cover are prohibitive obtaining accurate game counts, so our estimates are limited to observations of animals, of sign, and use of wildlife cameras. Control efforts are ongoing in these areas as well as other locations on the island. Completion of the Increment III fence is included in the LNRP, as well as the proposed National Fish & Wildlife Foundation (NFWF) project.
- Maintain fencing Increments I and II and complete Increment III. See comments above.

Construction work or other activities are reviewed by the Natural Resources staff and monitored. No County ordinance has been approved.

- Aquifer monitoring and reporting: The existing required *Periodic Water Reports (PWR)* should be broken down by the 3 well service areas or the 5 individual districts and, if feasible, should be reported monthly. – The PWR currently in compliance by reporting the 4 systems, the Lanai City grid, the Palawai, Manele systems, and Kaumalapau. The Lanai City section includes Koele, Lanai City and K-Pau. This meter installation was part of the PUC requirements.
- Watershed monitoring: The County and CWRM should support appropriate research and monitoring to improve understanding of aquifer recharge and determine measures to maintain or improve effective groundwater sustainable yield. – LWC are currently discussing options with the USGS and the University of Hawai'i (UH) on a more comprehensive recharge study. A USGS working relationship has not materialized yet, but we are in discussions with them as well as other potential partners. We started two projects with the UH. The UH recently did water sampling for a portion of the study. We are awaiting the final results.
- The CWRM should monitor aquifer use, conditions and contested issues on an ongoing basis to determine whether any of Lana'i's aquifers should be designated as groundwater management areas. – PL and LWC will continue to work with CWRM on appropriate groundwater issues. Reporting is also done online into the CWRM data reports. Pulama Lanai has been monitoring well 5 for many years and is now used in the Drought Plan as the indicator well.
- All participating parties should abide by and enforce existing water management and allocation agreements. – PL and LWC concur.

Water Conservation Measures

Efficient use of water and reductions in supply system leakage are essential to reduce waste of Lana'i's limited water resources.

- Lana'i's water and wastewater utilities should implement water recycling and water conservation programs targeting landscape and indoor water uses to substantially reduce water consumption to the extent allowed by the Public Utilities Commission. – All wastewater on the island is currently reclaimed from the two wastewater plants. LWC currently promotes conservation messages in the monthly newspaper. A more extensive conservation program is being developed and LWC is working on implementation of the plan.

HRWA (Hawaii Rural Water Association) staff assisted with a residential "Direct Install" program to replace all existing, non-conserving toilets, showerheads and faucet aerators on the island. We are working to implement the plan in 2017 with trial homes to insure we work out the bugs of the plan. Rural Community Assistant Program (RCAP) is helping with forms for the Request and Audit and analysis. We have identified the homes we will start the program in to test the format and analysis.

Reduction in water use will also be promoted by the use of native species requiring less irrigation. These plant types will be promoted in the community, The Home Owners Associations (HOAs) have been given a list developed by Ed Jensen and others. A list for the City is being developed noting appropriate plants and natives.

Lanai Water Company is also working with Badger Meters and is testing a cellular-to-web meter program that will allow customers to review their water use online. This will induce conservation as customers see what their water use and change behaviors to more efficiently use their water. Meters

have arrived for all Pulama properties and we are scheduling the installations. We are awaiting approval to replace more meters.

- The County and public utilities should implement education and supporting measures to encourage planting of low-water-use plants for new and existing landscaping. – LWC currently promotes conservation messages in the monthly newspaper. Several xeriscaping projects have been implemented in the Manele area on roadside irrigation. LWC is working with homeowners and associations in the reduction of water use, install drip irrigation, and plant xeriscaping where appropriate. LWC encourages best practices in irrigation conservation for all our customers, homes, hotels, commercial space, etc.
- Lana'i's public water utility should reduce unaccounted for water to reasonable levels including implementation of the following measures:
 - Replace and/or repair deteriorating or leaking supply pipes including replacement of deteriorated Palawai grid pipeline – LWC has replaced the entire section from Hii to Miki pipeline with a new PVC pipe. Also a section from Miki Basin Base Yard to the end of the airport runway is being designed and completed in 2017. LWC has also budgeted amounts for future years to replace sections of pipe each year. Some of these funds are part of the approved PUC agreement and the \$10 million in funds for infrastructure improvements committed to by Pulama Lanai. A report is filed regularly with the PUC.
 - Implement programmatic leak detection and repair programs – LWC has implemented an unaccounted for water program to find unmetered water and leaks. Utilizing the SCADA data, leak detection equipment, meter information, meter installations, and monitoring water lines, we have reduced unaccounted for water. Also, by reducing the pressure in the Palawai Ag system utilizing a pressure reducing valve (PRV) station, we have significantly reduced the leaks in that area. We call on all departments and residents to report leaks or water loss. These actions have reduced the overall unaccounted for water on the island between pumping and billing from 28.36% in 2008 as reported in the WUDP to 17% in recent years and now down to 9% to 12% The WUDP calls for a reasonable goal of 15% and a better goal of 12%. We continue to look for leaks and unmetered water. We will be working on the 2016 unaccounted for water later in the first quarter when all the data is in.
 - Install floating ball or blanket type cover on existing 15MG brackish water reservoir – This is part of the PUC funding and the options of a solid cover versus the proposed floating balls are being explored. The project was delayed when the Desal project was suspended. LWC is obtaining costs from a new HDPE Float Ball manufacture on the west coast to determine if the cost is reasonable to move ahead in 2016. LWC conducted a test of a Monolayer technology to inhibit water evaporation but the results were in the 7-9% reduction range and not as much as hoped for (30-40%).

New Supply Resource Development

Sufficient new water supply resources are necessary to meet anticipated growth in water demands, distribute pumpage in the Leeward aquifer and, ultimately, to distribute pumpage as necessary to the Windward aquifer. Based on the analysis performed in the preparation of this plan, implementation of the following specific new supply resources is recommended in conjunction with any other measures necessary to provide economical and reliable water service:

- Develop planned Brackish Well 15 to distribute brackish groundwater withdrawals. – Well #15 was on line in June 2012 and provides brackish non-potable water to the system.

- Replace Potable Well 2-A equipment as necessary to provide operable system reliability. – The plan is to move the pump and controls to the surface above the existing potable well/shaft. The project will start in January of February 2017. Permitting was being finalized in January 2017. This well will provide more management control of the Leeward aquifer. The pump is on Oahu and other long lead time items are being ordered.
- Replace Potable Well 3 equipment or drill new well as necessary to provide system reliability and distribution of groundwater withdrawals. – The new potable well has been drilled and tested and put on line into the City System in May 2014. The pumped water is being recorded on the Periodic Water Report.
- Evaluate and implement future expansion of wastewater recycling facilities. – Any wastewater will be reclaimed and utilized. Each node of development (Nodes are the areas identified on the Community Plan map for zoning) is planned to have onsite wastewater treatment. Approved on-site treatment units by the DOH may also be utilized in more remote areas to use the effluent for onsite landscaping irrigation.
- Plan and ultimately develop operable groundwater sources in the Windward aquifer to distribute groundwater pumping and provide resources, as necessary, to provide for system growth beyond the capacity of the Leeward aquifer. – Windward well sites have been identified by the PL/LWC hydro-geologist to tie into the City Grid (see WUDP section 5, Supply Options). This is in the WUDP, Page 5-2,

Land Use Entitlements

Water demand for build-out of projects with existing land use entitlements would exceed the capacity of the existing water system infrastructure. With implementation of the conservation and supply system leak reduction measures identified in this plan, build-out of these projects would exceed the sustainable yield of the currently developed Leeward aquifer. Prior to issuing new land use development entitlements or subdivision approvals, the determining County agencies and any other determining administrative and regulatory agencies should ensure that sufficient water resources and infrastructure are available to meet resulting additional water demands without unreasonable risk or harm to existing or previously entitled water users and without overtaxing Lana'i's water resources. In making determinations the following factors should be considered:

- No groundwater aquifer should be drafted exceeding the 90% existing trigger for groundwater management area designation of the aquifer sustainable yield as periodically amended by the CWRM. – PL concurs with this requirement and LWC will ensure adequate and safe water sources are developed for expansion of system demands. CWRM has set forth the sustainable yield the WUDP utilizes this data for future planning and development.
- 500,000 GPD should be reserved for development of an agricultural park on Lana'i. – this amount is in the WUDP
- Projections of future water resource development should be based on resources that are identified and funded, with firm commitments for implementation. – Facility Reserve Charge has been set forth by LWC for any developer adding to the system. Projections will follow the Community Plan and resources developed for any demands that could exceed source capacity. A resource development plan is in the WUDP. A revised Community Plan is underway and the WUDP will be reviewed if the new plan exceeds the resource plan in the WUDP. As of this report the population and demands in the proposed Community Plan are similar to the existing plan.