Closing America's Wastewater Access Gap:
Addressing Cesspools in the Wai'anae Valley Homestead – Alternatives for Long Term Solutions

Why address cesspools in Wai'anae Valley Homestead?

Out of concern for public health and environmental degradation, the Hawai'i State Legislature passed Act 125 in 2017, which requires replacement of all cesspools with modern wastewater treatment methods by the year 2050. As a landowner, the Department of Hawaiian Home Lands (DHHL) is required to meet state and federal requirements on their properties, meaning they must develop plans to successfully convert cesspools. DHHL is unique since it manages a land trust and must ensure that all lessees comply with Act 125. However, following conversion, wastewater maintenance responsibilities still rest with lessees. Wai'anae Valley Homestead has 112 cesspools. DHHL joined in a request by the Wai'anae Valley Homestead Community Association (WVHCA) to receive free technical assistance for the conversion of the cesspools. DHHL staff will go through the process with the 112 lessees as a pilot project that could serve as a template and a basis for a strategic plan to deploy resources necessary to convert all of the cesspools on DHHL's land.

As noted in the image, cesspools contaminate groundwater, nearby streams and eventually the ocean with human waste, which creates human health and environmental hazards. Groundwater in the Wai'anae Valley originates mauka and flows underground as it finds its way to the coast. The natural terrain/topography directs water through Kaupuni Stream and eventually into Pōka'ī Bay. Kingdom Pathways (KP) and the Blue Water Task Force (BWTF) conduct ongoing

Image of how a cesspool contaminates groundwater and marine resources. Untreated human waste flows from open spaces in the cesspool to groundwater which eventually connects to seeps in the ocean potentially transferring pathogens and nutrients to reefs. Source: Elle Wibisono; Ka Pili Kai.

water quality testing in Kaupuni Stream near Pōkaʻī Bay and have observed evidence suggesting that nearby cesspools may be contributing to this contamination. Sampling in these waterways indicates high levels of enterococcus bacteria (indicators of human waste) occur regularly at Kaupuni Stream near Pokai Bay. There can be several causes for these bacteria levels, including surface runoff from agricultural activities, but cesspools are considered a contributing factor.

What is being done for this project?

DHHL applied for technical assistance through EPA's Closing America's Wastewater Access Gap program to understand options to address cesspool conversions in the Waiʻanae Valley Homestead. EPA contractors, including AECOM and ERG, have been evaluating alternatives that include:

- Extending the City and County of Honolulu's (CCH) sewer system to reach cesspool properties,
- Replacing cesspools with Individual Wastewater Systems (IWS); and
- Building a small sewer system and wastewater plant in the Waiʻanae Valley Homestead that would receive waste and provide reclaimed water.

This technical assistance is provided at no cost to the homestead lessees and will help DHHL and the community develop an application for funding (loans or grants) to support any part of the project that may be chosen. The decision-making process stays with DHHL and the local community, as EPA does not regulate IWS.

The project team recognizes that there are several concerns with addressing cesspools including affordability of sewer rates, concern about damage during construction, and the presence of other cesspools in the area that are not being addressed. DHHL and WVHCA leadership are committed to developing strategies for the community so that long-term solutions can be found and implemented.

Wastewater system alternatives for Waiʻanae Valley Homestead

The EPA contractor team evaluated several alternatives to address the 112 cesspools in the Waiʻanae Valley Homestead. Because the area has a mix of residential and agricultural properties, one solution may not fit all types of properties. There may need to be multiple approaches considered to address the range of lot sizes in the community.

Options include:

- Where there is enough room on the property (roughly 1,000 square feet of unimproved land), and sewer is not available nearby, an IWS could be used to replace the cesspool. This option would be most suitable for the larger agricultural lease properties.
- DHHL already has sewers in the Waiʻanae Valley Homestead that connect to CCH sewers, serving many of the homestead properties. The sewer system could be extended to all or a portion of the properties to convey flow to the Waiʻanae Wastewater Treatment Plant.
- The project team heard from community members about their interest in reclaimed water for the community. This would require a separate, small wastewater treatment plant for the community, often referred to as a "decentralized/cluster wastewater system". This evaluation includes the advanced wastewater treatment plant and onsite disposal system only – it does not include a distribution system for recycled water use and provisions for the permitting, operations, and maintenance of a recycled water system.

Constructing sewers in Waiʻanae Valley Homestead is complicated by the terrain of the community. For nearly all residential lots, a traditional sewer lateral to gravity sewer is feasible and recommended. However, for a few downgradient lots, wastewater may need to be pumped up slope to reach existing infrastructure. Multiple options were considered to address these issues, including:

- Use a lift station for the properties along Halapoe Place that would be located on a small parcel of land in the green space.

- Use all gravity sewers, including along the Kaupuni Stream, that would require easements in the backyards of some homes and in the green space versus roadways (“cross-country sewer”).
- Use grinder pumps (which chop up solid waste into a liquid form, often used in small diameter pressurized pipe) for the four homes at the lowest elevation on Halapoe Place.
- Only construct sewer connections in the residential area.

Evaluation of Alternatives

The remainder of this document outlines the alternatives for converting cesspools, including maps of the areas affected, associated costs, and key considerations for each alternative. Please refer to the Alternatives Analysis document, which will be posted to DHHL’s website, for more detailed information. Alternatives will be explained in greater detail, and the community will have the opportunity to provide input and ask questions at the upcoming community engagement meeting scheduled for November 24, 2025.

Figures 1-4 show the sewer configuration options and the remaining cesspools in Waiʻanae Valley Homestead. Table 1 provides capital and operating costs of each of the alternatives considered and Table 2 provides considerations of the alternatives.

Figure 1 (Figure 1-1 in Preliminary Engineering Report (PER)). Agricultural Lots, Alternative 1: All IWS.

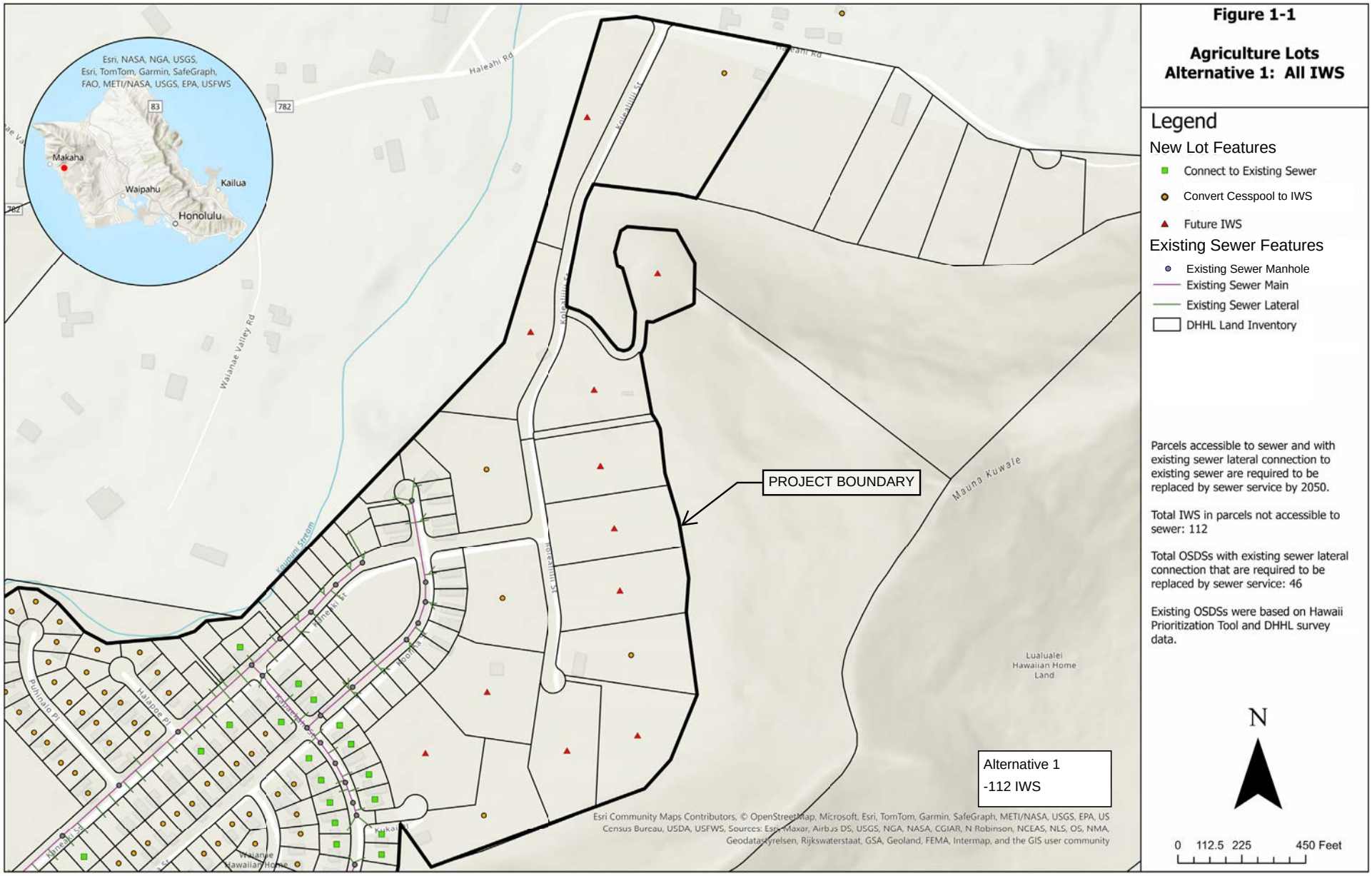

Figure 2 (Figure 1-2 in PER). Residential Lots, Alternative 2A: IWS and Connecting to Existing City Sewer with All Gravity Sewer.

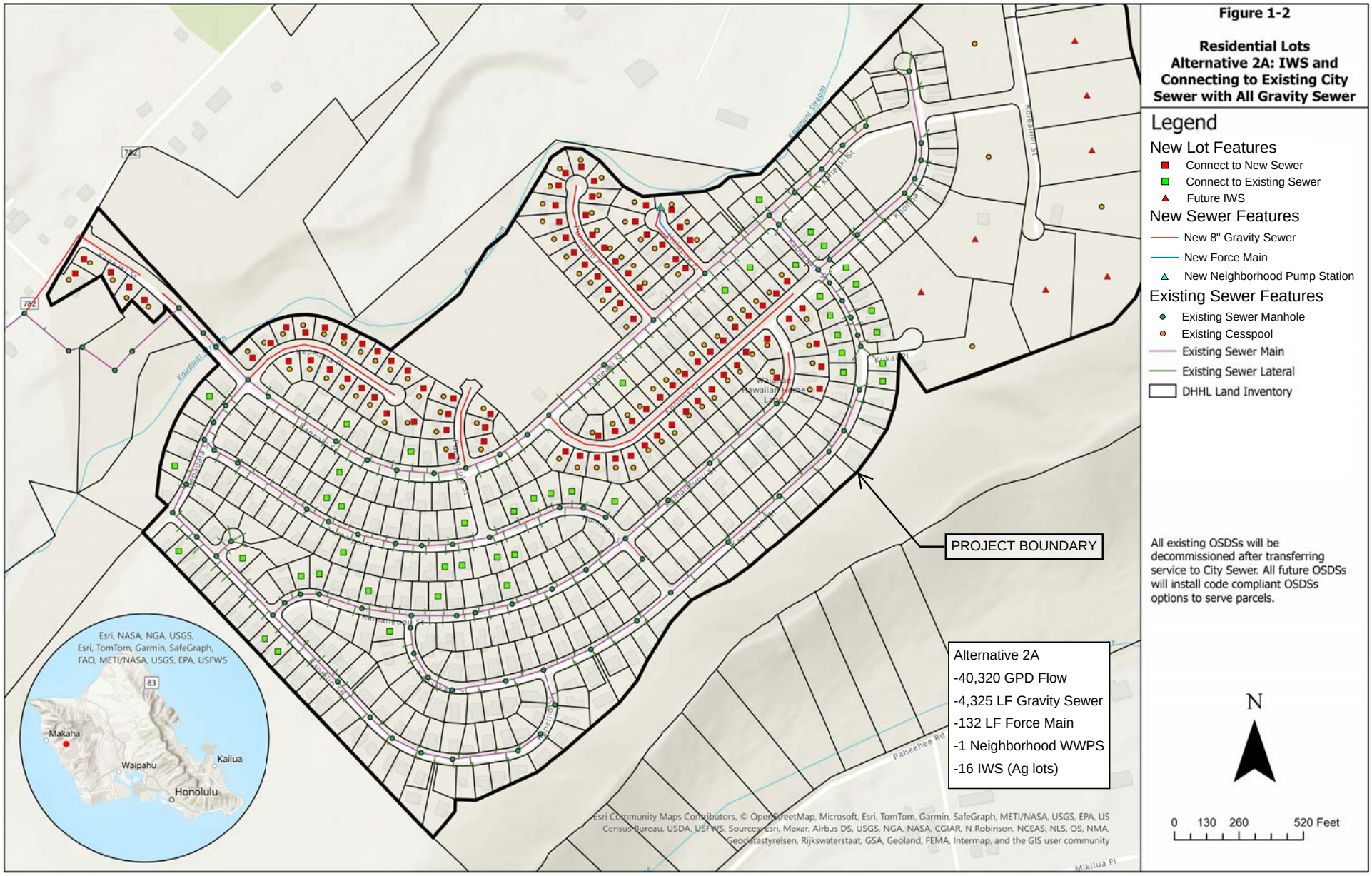

Figure 3 (Figure 1-4 in PER). Residential Lots, Alternative 2B: IWS and Connecting to Existing City Sewer with Both Gravity Sewer and Low-Pressure Sewer.

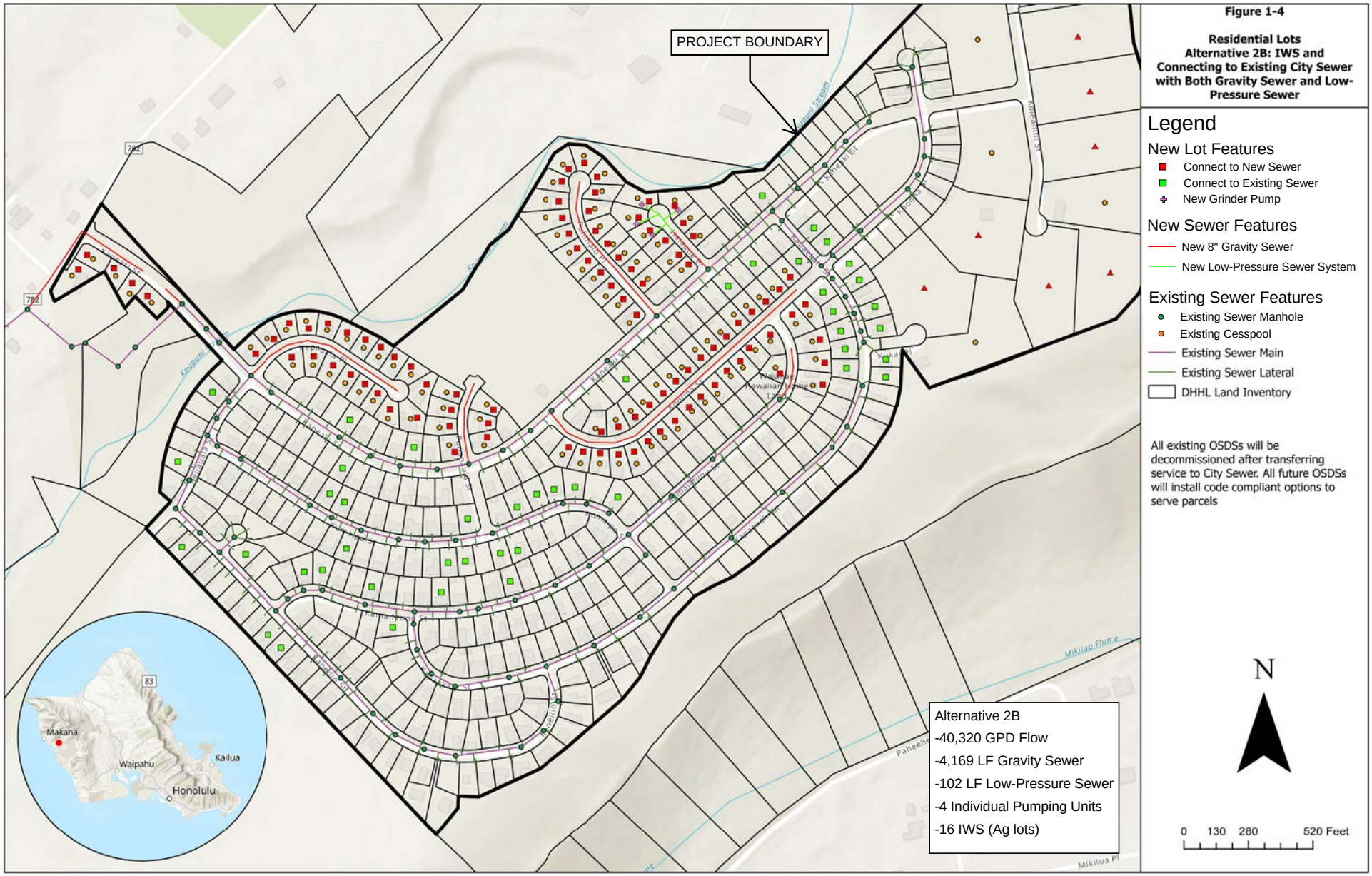

Figure 4 (Figure 4-15 in PER). Residential Lots, Alternative 2C: IWS and Connecting to Existing City Sewer with Cross Country Sewer.

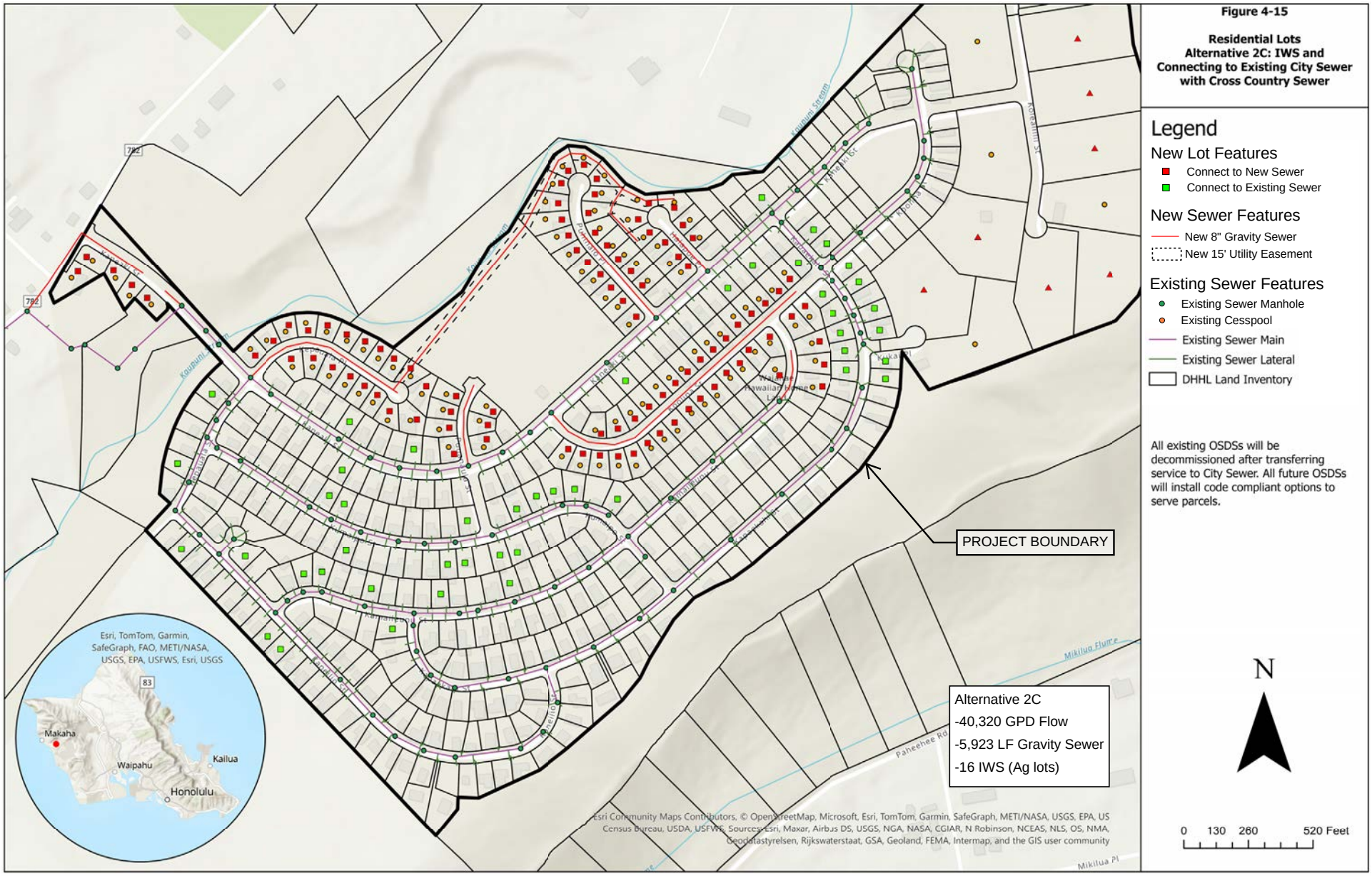

Table 1. Lifecycle Cost Estimate (LCC)

Alternative	Description	Capital Cost	Net Present Value of Operation and Maintenance Cost[1]	Residual Value	Total LCC
1	**All Individual Wastewater Systems (IWSs)**	**$11.0M**	**$1.4M**	**$0.0M**	**$12.4M**
2	**Connect to Existing City Sewer, and IWS for Agricultural Lots**				
	2A: Connect to Existing City Sewer by Gravity and Neighborhood Pump Station, treat at existing Waianae Wastewater Treatment Plant (WWTP), and IWS	$33.5M	$0.7M	$4.1M	$30.0M
	2B: Connect to Existing City Sewer by Gravity and low-pressure sewer system (LPS), treat at existing Waianae WWTP, and IWS	$30.2M	$0.3M	$3.5M	$27.0M
	2C: Connect to Existing City Sewer with Cross Country Sewer, treat at existing Waianae WWTP, and IWS	$41.6M	$0.3M	$4.9M	$37.0M
3	**Proposed Wai‘anae Homestead WWTP, and IWS for Agricultural Lots**				
	3A: Proposed Wai‘anae Homestead WWTP by Gravity and Neighborhood Pump Station, and IWS	$63.0M	$3.6M	$8.1M	$58.5M
	3B: Proposed Wai‘anae Homestead WWTP by Gravity and LPS, and IWS	$58.8M	$3.3M	$7.5M	$54.7M
	3C: Proposed Wai‘anae Homestead WWTP with Cross Country Sewer, and IWS	$70.4M	$3.3M	$8.9M	$64.8M
4	**Connect to Existing City Sewer for All Lots, No IWS**				
	4A: Connect to Existing City Sewer by Gravity and Neighborhood Pump Station, treat at existing Waianae WWTP, No IWS	$52.0M	$0.7M	$6.8M	$45.9M
	4B: Connect to Existing City Sewer by Gravity and LPS, treat at existing Waianae WWTP, No IWS	$44.4M	$0.1M	$7.2M	$37.4M
	4C: Connect to Existing City Sewer with Cross Country Sewer, treat at existing Waianae WWTP, No IWS	$59.1M	$0.1M	$7.5M	$51.7M
5	**Proposed Wai‘anae Homestead WWTP for All Lots, No IWS**				
	5A: Proposed Wai‘anae Homestead WWTP by Gravity and Neighborhood Pump Station, No IWS	$82.0M	$3.7M	$14.0M	$71.8M
	5B: Proposed Wai‘anae Homestead WWTP by Gravity and LPS, No IWS	$75.7M	$3.1M	$9.9M	$68.9M
	5C: Proposed Wai‘anae Homestead WWTP with Cross Country Sewer, No IWS	$91.8M	$3.0M	$11.9M	$82.9M

[1] Present value of 20 years of operation and maintenance costs.

Table 2. Considerations for Long-Term Solutions to Wastewater Needs in Waiʻanae Valley Homestead

Option	Alternative	Key Considerations
Individual Wastewater System	Residential Properties (Alternative 1)	Insufficient lot space and permitting risks create concern for long-term use and this is not recommended for a long-term solution.
	Agricultural Properties (Alternatives 1, 2, and 3)	Large lots with replacement drainfield space make these lots good candidates for use of IWS.
Sewer Options	Lift station on Halapoe Place (“A” Alternatives)	Requires a 2,000 SF portion of the homestead property for lift station construction. DHHL would need to manage operation and maintenance contract.
	Grinder Pumps for five lots on Halapoe Place (“B” Alternatives)	Lowest capital costs with least impact to the Halapoe Open Space but has higher maintenance costs. Does require a small piece of land on each lot. There is a relatively small electrical cost that would be incurred by the homeowners.
	Cross-Country/Backyard Sewer Options (“C” Alternatives)	A small gravity sewer is required in some backyards and Kaupuni Park to connect some Halapoe Place homes to Kepauala Street cul-de-sac and sewer construction in the open space. This alternative does have a higher capital cost, but easier operations, maintenance, and resilience without the need for pumps or electrical systems. One home on the Kepaula Street cul-de-sac, four homes on Halapoe Place cul-de-sac, and six homes on Puhinalo Place cul-de sac would require sewer easements for construction and access for maintenance when needed. The easement would need to remain unimproved in perpetuity.
Wastewater Treatment Options	Connect to CCH Waiʻanae Treatment Plant (Alternatives 2 and 4)	Greatest operational efficiency but doesn’t allow for reclaimed water. Planned rate increases by CCH is a concern.
	New Waiʻanae Valley Homestead WWTP (Alternatives 3 and 5)	Allows for reclaimed water use by Waiʻanae Valley Homestead. Has highest capital and operating costs and uses the most undeveloped land. Has significant operational, maintenance, and staffing risks.

Additional Notes:

- **Affected Homes for Cross-Country Easement Sewer:** Including 85-1364 Halapoe Place, 85-1366 Halapoe Place, 85-1367 Halapoe Place, 85-1364 Halapoe Place, 85-1363 Puhinalo Place, 85-1373 Puhinalo Place, 85-1377 Puhinalo Place, 85-1379 Puhinalo Place, 85-1378 Puhinalo Place, 85-1374 Puhinalo Place, 85-1370 Puhinalo Place, 85-1364 Puhinalo Place, 85-1126 Kepauala Place
- **Maintenance Responsibility:** DHHL is expected to manage operation and maintenance contracts for certain options, such as the neighborhood pump station and potentially grinder pump maintenance.

Next Steps

- The project team will host additional conversations for the lessees that will need either grinder pumps installed on their lots or a hookup to a pump station.
- Based on the current analysis, the project team would lean towards one of the Alternative 2 approaches. These approaches leverage existing infrastructure where available, provide a moderate cost alternative, and minimize the risk of maintenance and siting issues associated with some of the other options. Additional community engagement is scheduled for November 24, 2025, to gather feedback from the community.
- DHHL staff are still working with the Department of Health (DOH) on the legal aspects of a funding pathway for this project.
- The draft Alternatives Analysis Report will be finalized to support a funding application.
- A project will not proceed unless DHHL, the lessees, and DOH agree on a path forward.
  - If chosen as a path forward for this project, a Clean Water State Revolving Fund (CWSRF) application is due in February 2026 to be eligible for funding.
  - If funded through CWSRF, a typical project takes three to five years to design and construct. The final decision to move forward with a project will not be made until there is an agreement between DHHL and DOH for funding.
  - The Final Report, community engagement meeting, and Site Visit 3 are scheduled for Spring 2026. These steps, not the application for funding, serve as the final say on the project.

What is the Goal of this Initiative?

This project will help DHHL and the Wai'anae Valley Homestead Community get the information and resources needed to identify the type of wastewater system(s) best-suited for the community and to position them to apply for federal funding. The local community will provide input and feedback on the solutions that best fit their needs.

Additional Questions?

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EPA United States Environmental Protection Agency

HAWAII STATE DEPARTMENT OF HEALTH

Hawai'i RURAL WATER ASSOCIATION

HAWAIIAN HOME LANDS
HAWAIIAN HOMES COMMISSION
DEPARTMENT OF HAWAIIAN HOME LANDS

CITY AND COUNTY OF HONOLULU