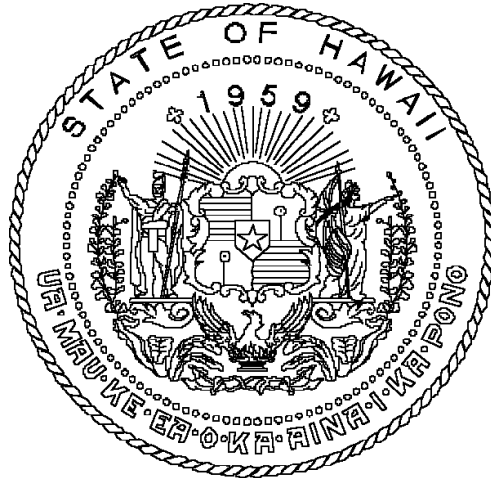


Report to the Thirty-First Legislature

State of Hawaii

2021



Prepared by the

State of Hawaii Department of Health

In response to Act 170 of 2019

Interim Report for the Cesspool Conversion Working Group

December 2020

INTERIM REPORT TO THE LEGISLATURE
STATE OF HAWAII
2021 REGULAR SESSION

Relating to: Progress Update from the Cesspool Conversion Working Group

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Executive Summary

Hawaii has nearly 88,000 cesspools that put fifty-three (53) million gallons of raw sewage into the State's groundwater and surface waters every day. Cesspools are an antiquated technology for disposal of untreated sewage that have the potential to pollute groundwater. The State relies on groundwater for over 90% of its drinking water. Cesspools also present a risk of illness to island residents and a significant harm to streams and coastal resources, including coral reefs.

The Legislature has recognized the serious health and environmental concerns of cesspool pollution. During the 2018 regular session, the Legislature passed Act 132 which:

- Establishes a cesspool conversion working group to develop a long-range, comprehensive plan for cesspool conversion statewide of all cesspools by 2050; and
- Commissions a statewide study of sewage contamination in nearshore marine areas to further supplement the studies and reports conducted by the department of health related to cesspools.

For administrative purposes, the Cesspool Conversion Working Group (CCWG) was established within the Department of Health (Department). Starting with the first CCWG meeting in September 2018, this report outlines any updates along with next steps for 2021.

A. Working Group Formation

Act 132 authorized the establishment of the Cesspool Conversion Working Group and requested the following representatives be included:

- 1) The director of health or the director's designee, who shall serve as chairperson;
- 2) The branch chief of the wastewater branch of the department of health or the branch chief's designee;
- 3) Four members representing the appropriate wastewater agency from each county appointed by the mayor of the county in which the agency is located;
- 4) A member representing the wastewater industry, appointed by the president of the senate;
- 5) A member representing the financial and banking sectors, appointed by the speaker of the house of representatives;
- 6) A member of the University of Hawaii, Hawaii institute of marine biology appointed by the director of the Hawaii institute of marine biology;
- 7) A member of the University of Hawaii water resources research center appointed by the director of the water resources research center;
- 8) A member of the Hawaii Association of REALTORS appointed by the speaker of the house of representatives;
- 9) A member of the Surfrider Foundation appointed by the president of the senate;
- 10) One representative appointed by the speaker of the house of representatives; and
- 11) One senator appointed by the president of the senate.

Act 132 also gave the authority to the director of health to approve of additional working group members. In addition to the list above, representatives from the Coral Reef Alliance, United

States Environmental Protection Agency (USEPA), State of Hawaii, Deputy Attorney General's Office and the University of Hawaii (UH) Sea Grant and the Pacific Islands Climate Center were approved by the director to be on the working group. Below is a list of current members serving on the CCWG.

1	Dr. Elizabeth Char, Chair	Director, Department of Health
2	Edward (Ted) Bohlen	Deputy Attorney General's Office
3	Stuart Coleman	Surfrider Organization
4	Senator Kalani English	Senate
5	Charlene Lani Fernandez	Bank of Hawaii
6	Ken Hiraki	Hawaii Association of Realtors
7	Jason Kagimoto	Chief, Wastewater Division, County of Kauai
8	Lori Kahikina	Director, City and County of Honolulu, Department of Environmental Services
9	William Kucharski	Director, County of Hawaii, Department of Environmental Management
10	Dr. Darren T. Lerner	Director, University of Hawaii Sea Grant and the Pacific Islands Climate Science Center
11	Representative Nicole Lowen	House of Representatives
12	David Smith	USEPA Region 9
13	Eric Nakagawa	Director, County of Maui, Department of Environmental Management
14	Erica Perez	Coral Reef Alliance
15	Sina Pruder	Wastewater Branch, Department of Health
16	Dr. Kawika Winter	Manager, He'eia National Estuarine Research Reserve, Hawaii Institute for Marine Biology
17	Michael Mezzacapo	University of Hawaii Water Resources Research Center

B. Number of Cesspools in Hawaii

There are nearly 88,000 inventoried cesspools in the State. The following table includes estimates of the number of cesspools by island, as well as the estimated total discharge represented by those cesspools. This data was generated in 2009 and 2014 through a joint effort of the UH, DOH and the USEPA. Housing data is estimated from the Census taken that same year.

Island	Housing Units	Number of Cesspools	Cesspool Effluent Discharges (million gallons per day)
Hawaii	82,000	49,300	27.3
Kaua'i	29,800	13,700	9.5
Maui	65,200	12,200	7.9
O'ahu	336,900	11,300	7.5
Moloka'i	3,700	1,400	0.8
Total		87,900	53.0

C. Working Group Objectives

The following sections outline progress made to date in the Cesspool Conversion Working Group's subgroups (finance, technology, and data and prioritization), and updates on outreach and collaboration along with long range planning. Each of these sections relate directly to the fifteen objectives outlined in Act 132, which can also be found on the Department's website: <https://health.hawaii.gov/wastewater/files/2018/09/objectives.pdf>.

1	Develop a long-range, comprehensive plan for cesspool conversion statewide of all cesspools by 2050, to be known as the cesspool conversion plan.
2	Consider and recommend means by which the department of health can ensure that cesspools are converted to more environmentally-responsible waste treatment systems or connected to sewer systems.
3	Identify areas where data is insufficient to determine a priority classification of cesspools for conversion and determine methods and resources needed to collect that data and conduct analysis of those areas.
4	Modify, amend, and develop definitions and criteria for priority upgrade areas, as identified in the Department's report conducted pursuant to Act 125; Session Laws of Hawaii 2017, identify the preferred alternative waste treatment systems or sewerage connections for these priority areas, and consider and make recommendations on whether cesspools in these priority areas should be required to convert sooner than 2050.
5	Examine financing issues and the feasibility of various mechanisms, including grants, loans, tax credits, fees, special assessment districts, requirements for conversion at point of sale, and any other appropriate mechanisms for accomplishing and funding cesspool conversion, or any combination of these mechanisms.
6	Consider owners' ability to pay for cesspool conversions, and, especially how assistance can be provided for lower-income homeowners.
7	Consider the most cost-effective approach to cesspool conversion.
8	Identify physical, practical, and financial impediments that may be encountered by land owners who are required to connect pre-existing cesspools to a sewer system or convert cesspools to individual waste treatment system and recommend solutions to those impediments.
9	Consider best policies, practices, and laws from other jurisdictions related to cesspool conversions, including but not limited to Rhode Island and New Jersey that have undertaken large efforts to phase-out cesspools in their jurisdictions.
10	Include feedback from each county's community members, wastewater divisions, and boards of water supply.
11	Consider alternative wastewater equipment and technologies appropriate to the various areas where cesspools are located that may better protect the environment at lower or comparable cost and how the equipment or technologies can be incorporated as part of the long-term solution to wastewater treatment issues. These alternatives may include, without limitation, graywater systems, constructed wetlands, and other available technologies.

12	Research and recommend measures to encourage and stimulate research and innovation for new wastewater technologies, including systems that treat waste not only for bacteria but also to remove nutrients and contaminants that impact the environment.
13	Evaluate mandatory versus voluntary participation in the cesspool conversion plan.
14	Consider whether exemptions should be granted for some mandatory conversions based upon geology, topography, soil type, availability of land, or other relevant factors and make recommendations to the department relating to establishing rules for those exemptions.
15	Consider any other information deemed necessary or appropriate by the department, the cesspool conversion working group, or any third-party consultants.

I. Cesspool Conversion Working Group Update

A. Group Structure

Since Act 132 was signed into law, progress has been made towards both the establishment of the CCWG and the objectives mandated for the group.

To start, a contractor was hired to organize and facilitate meetings and develop a work plan for meeting the objectives outlined in the Act 132. The first task of the working group was to develop a structure for reaching the fifteen (15) objectives outlined in Section I. To most efficiently research, understand, and discuss each objective, three main subgroups were developed within the working group: Finance, Technology, and Data and Prioritization. Within each subgroup, Permitted Interaction Groups (PIG) were established to review data and information and provide key updates to the main subgroup, who were then in charge of making decisions. See Figure 1 for an outline of the Cesspool Conversion Working Group structure.

Once the fifteen (15) objectives were assigned to each of the three subgroups, Request for Proposals were developed to seek assistance in research and analysis from qualified consultants. Carollo Engineers, Inc. was selected as the consultants to support the Finance and Technology Subgroups, and UH was chosen to assist the Data and Prioritization Subgroup. The following sections outline the specific objectives and updates from each subgroup.

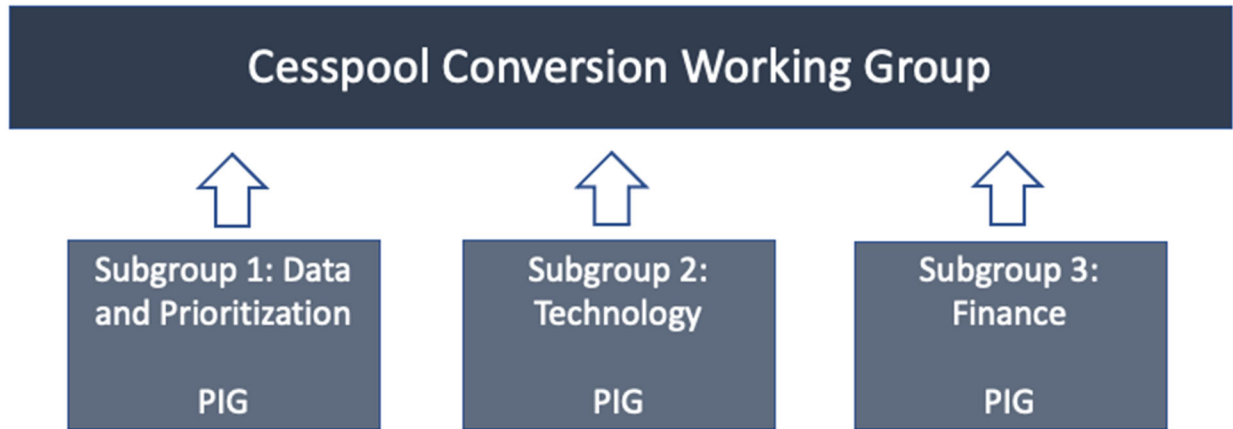


Figure 1. Cesspool Conversion Working Group Structure

B. Meeting Overviews

The CCWG has met eleven (11) times between September 2018 and October 2020 to discuss updates from subgroups and contractors and progress on the 15 objectives. The CCWG has helped inform the scopes and research objectives of each subgroup. Further details on the duties of each subgroup are outlined in the following sections.

Minutes and agendas from all meetings can be found on the Department’s website: <https://health.hawaii.gov/wastewater/ccwg/>. Highlights from each meeting are as follows:

- September 13th, 2018:
 - Decision to hire a facilitator to help organize working group structure and organize meetings.
 - Discussion on potential subgroups to examine the objectives outlined in Act 132.
- October 9th, 2018:
 - Three established subgroups developed, Finance, Technology, and Data and Prioritization.
 - Discussed potential UH expertise for research objectives. Reviewed the need for additional expertise.
- November 15th, 2018
 - Scope and budget agreed for facilitating contractor, One World One Water, LLC.
 - Confirmed working group members for each subgroup.
 - Assigned objectives to each subgroup for discussion and vetting.
 - Agreement on the use of Permitted Interaction Groups for each subgroup meeting.
- January 18th, 2019
 - Approval of Finance, Technology, and Data and Prioritization scopes.
 - Evaluation criteria and process for vetting proposals identified.

- March 28th, 2019
 - Approval of Department moving forward with One World One Water, LLC contract for facilitation, reflecting that Water Resource Research Center will assist with key research.
 - Update on procurement process for Technology and Finance consultants.
 - Overview by UH on cesspool regulations in other states and an overview on the state funded sewage contamination study.
 - Agreement that previous research demonstrates indications of cesspool pollution in groundwater and nearshore waters, but degree of harm or risk is not currently well quantified.
- June 21st, 2019
 - Technology and Finance contractor Request For Proposal review in progress, the Department to make final decision.
 - UH to review case studies from other states and share with Data and Prioritization subgroup, key insights shared with main Working Group.
 - Legislative Bill HB551 update.
- October 2nd, 2019
 - Carollo Engineering awarded contracts for both Finance and Technology research scopes. Suggestions to create a matrix of technology options for on-site treatment and to engage with homeowners to understand what information they need for guidelines on conversion technologies.
 - UH presentation on cesspool conversion approaches of other states.
 - Suggestion to invite UH to share insights on near-shore water study funded by state legislature.
- December 3rd, 2019
 - UH research update including overview of relevant case studies.
- April 3rd, 2020
 - Reviewed and approved Data Collection and Prioritization subgroup goals including five key objectives.
 - UH research updates.
 - 2020 legislative session update.
- June 19th, 2020
 - Scope updates for Finance, Technology, and Data and Prioritization approved.
 - Lessons learned from Stony Brook and Suffolk County cesspool conversion program shared.

II. Subgroup Update: Data and Prioritization

A. Overview

This subgroup was developed in order to re-evaluate the prioritization of cesspool upgrades across Hawaii. This includes identifying where data is insufficient and where resources are required to fill data gaps. Ultimately, this subgroup should result in a priority classification system that can inform a cesspool conversion plan.

B. Act 132 Objectives

The subgroup was required to evaluate objectives **1, 2, 3, 4, 5, 9, 11, 12, 13** and **14**.

C. Progress to Date

UH was awarded a one-year contract starting on September 1, 2020 to assist the Data and Prioritization Group by performing the following:

- Modify, amend, and develop definitions and criteria (as needed) for priority upgrade groups/areas, as identified in the Report to the Twenty-Ninth Legislature State of Hawaii, 2018 Regular Session, Relating to Cesspools and Prioritization for Replacement.
- Create a process to assign cesspools to priority upgrade categories.
- Make recommendations, based on the estimated severity of impacts, from obtained data, on which cesspools in high priority areas should be required to convert sooner than 2050.
- Identify areas where data is insufficient to determine a priority classification of cesspools and determine the methods and resources needed to conduct and complete analysis for prioritization.
- Consider exemption criteria for cesspool conversion.

To start understanding what cesspools need to be prioritized for conversion, UH started with researching what other states have done to tackle eliminate cesspools and switch to alternate systems. In addition, UH has inventoried any relevant data in Hawaii that could help build a baseline to address the objectives outlined for this subgroup. UH has published two reports that outline the research conducted so far:

- *Identifying Potential Knowledge Gaps for Hawaii's Cesspool Conversion Plan*, Michael Mezzacapo, University of Hawaii SeaGrant, 2020. This white paper evaluates current and past research, evidence, and information relating to the impacts of cesspool and wastewater pollution, as well as highlighting any knowledge gaps. It was developed through analyzing academic research, theses, and other relevant published works relating to wastewater indicator identifications, policies, modeling, human health, and the potential impacts to Hawaii's ecosystems. Sections in this report include wastewater pollution indicators, ocean/ coastal/ groundwater impairment and human health concerns, water resource modeling/ monitoring/ risk analysis, and policy and community engagement.
https://health.hawaii.gov/wastewater/files/2020/04/Identifying_Potential_Knowledge_Gaps.pdf
- *A Multi-State Regulation and Policy Survey of Onsite Wastewater Treatment System Upgrade Programs*, Michael Mezzacapo, University of Hawaii SeaGrant, 2019. This report was commissioned by the CCWG to evaluate and analyze cesspool and conventional on-site wastewater treatment system conversion methods in other states. States were chosen based on proximity to a coastal environment, the number of

cesspools, and recent legislation. This report briefly summarizes other state efforts, policies, and procedures regarding on-site wastewater treatment system upgrades. <https://health.hawaii.gov/wastewater/files/2019/11/OnsiteReport.pdf>

III. Subgroup Update: Technology

A. Overview

The Technology Subgroup was developed to evaluate the best and most economical technology available, including the feasibility of connecting to lines. Recommendations from this subgroup are intended to be site-specific, taking into consideration geographical constraints.

B. Act 132 Objectives

The subgroup was required to evaluate objectives **1, 2, 4, 7, 8, 9, 10, 11, 13** and **14**.

C. Progress to Date

The CCWG developed a scope of work and request for proposal to address the objectives outlined for the technology subgroup. Carollo Engineers was selected and awarded a one-year contract that started on January 15, 2020 to perform the following work:

- Evaluate existing technologies for onsite systems.
- Evaluate septic tank and leach field systems.
- Provide a matrix focused on homeowners and outlines the different cesspool conversion technologies that are available.
- Develop a Homeowner's Guide for cesspool upgrades.
- Perform an assessment of emerging and innovative onsite treatment technologies used by other states.
- Perform an assessment of decentralized and cluster systems as cesspool upgrade option.

As part of the research contract, Carollo Engineers has been evaluating various technologies for cesspool conversions. Although septic tanks are the simplest conversion technology, they are not viable options for all cesspool locations in Hawaii. Carollo is analyzing and will report the factors that are needed for septic tanks to work effectively. A properly sited septic tank is critical to ensuring proper treatment and preventing pollution.

For areas where septic tanks are not a viable conversion option, other technologies are also being explored as part of the Technology Subgroup. Both onsite wastewater technology systems are being evaluated and decentralized cluster systems. Each option is being reviewed for potential siting restrictions, treatment performance, replacement intervals, benefits, challenges, and the cost per solution. It has been an important recognition by the CCWG that no single technological solution will provide for all cesspool conversions in Hawaii, and that a variety of solutions will need to be offered that provide for the unique geographical and environmental context of each location.

IV. Subgroup Update: Finance

A. Overview

The finance subgroup was developed in order to evaluate potential financial mechanisms to fund cesspool conversions.

B. Act 132 Objectives

The subgroup was required to evaluate objectives **1, 5, 6, 7, 8, 9, 13 and 14**.

C. Progress to Date

The CCWG developed a scope of work and request for proposal to address the objectives outlined for the financial subgroup. Carollo Engineers was selected and awarded a one-year contract that started on January 15, 2020 to perform the following work:

- Develop a matrix of funding mechanisms available for cesspool conversions.
- Provide a list of potential avenues for the equitable distribution of funds to homeowners with focus on an analysis of affordability.
- Research other factors inhibiting cesspool conversions.

It has been recognized by the CCWG that it is critical to carefully consider conversion requirements that are socially equitable and financially feasible. Cesspool conversion costs are high, especially in remote locations, meaning that conversion options must be practical and regionally specific. Research to date has revealed that there is no simple, single solution to replace Hawaii's cesspools. For this reason, it is important to use comprehensive data when making decisions while leaving room for adaptive management to learn as we move ahead. Each community's risk of health and environmental harm is different, along with the costs of conversions, when geography, hydrology, cesspool density, and proximities to both groundwater and the ocean are taken into consideration. These challenges that have been identified through the research and collaboration of the CCWG will all be key factors as the cesspool conversion plan is developed.

V. Next Steps

The CCWG objectives defined by Act 132 will ultimately result in the formation of Objective 1: Develop a long-range, comprehensive plan for cesspool conversion statewide of all cesspools by 2050, to be known as the cesspool conversion plan. This will consider the best policies, practices, and laws from other jurisdictions related to cesspool conversions, and the discussions with the CCWG and each specific subgroup. Research to-date has highlighted the importance that the resulting plan be feasible and cost effective, taking into consideration the dynamics of each region impacted by cesspools.

For next steps, the CCWG will continue in 2021 with regular CCWG meetings and subgroup meetings. The CCWG will continue the research and analysis needed to cover all the key considerations outlined in Act 132. Since there is no singular solution that meets all of Hawaii's needs, the conversion plan will include a list of potential options that can be matched to different geographies and challenges. It will also prioritize cesspool conversions that have a higher risk to either human or environmental health.

In line with Act 170, which extends the timeline of the CCWG, a second interim Cesspool Conversion Working Group Report to Legislature will be provided ahead of the 2022 legislative session, and a final report with recommendations, key findings, and proposed legislation will be provided to the Legislature as soon as it is compiled, but no later than 60 days ahead of convening the 2023 legislative session.