

**STATE OF HAWAII**  
**DEPARTMENT OF HEALTH**  
P. O. BOX 3378  
HONOLULU, HI 96801-3378

In reply, please refer to:

December 23, 2021

The Honorable Ronald D. Kouchi,  
President and Members of the Senate  
Thirty-first State Legislature  
State Capitol, Room 409  
Honolulu, Hawaii 96813

The Honorable Scott K. Saiki, Speaker  
and Members of the House of  
Representatives  
Thirty-first State Legislature  
State Capitol, Room 431  
Honolulu, Hawaii 96813

Dear President Kouchi, Speaker Saiki, and Members of the Legislature:

For your information and consideration, I am transmitting a copy of "Report Relating to: Progress update from the Cesspool Conversion Working Group," pursuant to Act 132 of 2018 and Act 170 of 2019.

In accordance with Section 93-16, Hawaii Revised Statutes, I am also informing you that the report may be viewed electronically at:

<https://health.hawaii.gov/opppd/departments-of-health-reports-to-2022-legislature/>

Sincerely,

A handwritten signature in black ink, appearing to read "Elizabeth A. Char", is written over a horizontal line.

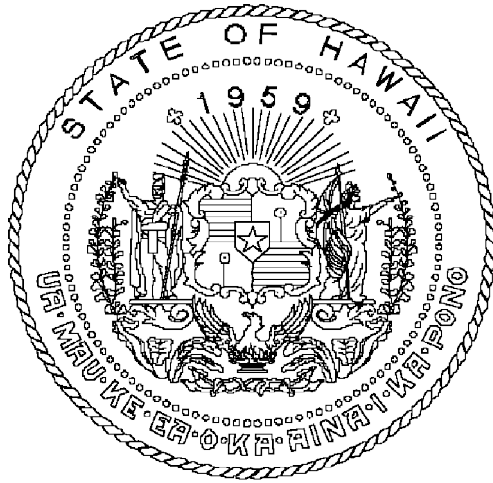
Elizabeth A. Char, M.D.  
Director of Health

Enclosures

c: Legislative Reference Bureau  
Hawaii State Library System (2)  
Hamilton Library

Report to the Legislature 2022 Regular Session

**CESSPOOL CONVERSION WORKING GROUP**



Prepared by the  
State of Hawai'i Department of Health  
In response to  
Act 132 of 2018 and Act 170 of 2019  
December 2021

INTERIM REPORT TO THE LEGISLATURE  
STATE OF HAWAI‘I  
2021 REGULAR SESSION

Relating to: Progress update from the Cesspool Conversion Working Group

**Table of Contents**

<b>Executive Summary .....</b>	<b>1</b>
<b>I. Working Group Formation .....</b>	<b>1</b>
<b>II. Number of Cesspools in Hawai‘i .....</b>	<b>2</b>
<b>III. Working Group Objectives .....</b>	<b>3</b>
<b>IV. Cesspool Conversion Working Group Update .....</b>	<b>4</b>
<b>A. Group Structure .....</b>	<b>4</b>
<b>B. Meeting Overviews .....</b>	<b>5</b>
<b>V. Subgroup Update: Data and Prioritization .....</b>	<b>6</b>
<b>A. Overview .....</b>	<b>6</b>
<b>B. Act 132 Objectives .....</b>	<b>7</b>
<b>C. Progress through 2021 .....</b>	<b>7</b>
<b>VI. Subgroup Update: Technology .....</b>	<b>9</b>
<b>A. Overview .....</b>	<b>9</b>
<b>B. Act 132 Objectives .....</b>	<b>9</b>
<b>C. Progress through 2021 .....</b>	<b>10</b>
<b>VII. Subgroup Update: Finance .....</b>	<b>11</b>
<b>A. Overview .....</b>	<b>11</b>
<b>B. Act 132 Objectives .....</b>	<b>11</b>
<b>C. Progress through 2021 .....</b>	<b>12</b>
<b>VIII. Cesspool Conversion Plan Update .....</b>	<b>13</b>
<b>IX. Next Steps .....</b>	<b>13</b>

## **Executive Summary**

Hawai‘i has nearly 88,000 cesspools that put 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 (DOH). This report outlines progress and key milestones in 2021.

### **I. 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 Hawai‘i, Hawai‘i institute of marine biology appointed by the director of the Hawai‘i institute of marine biology.
7. A member of the University of Hawai‘i water resources research center appointed by the director of the water resources research center.
8. A member of the Hawai‘i 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.
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 General Public, Coral

Reef Alliance, United States Environmental Protection Agency, State of Hawaii, and the University of Hawaii Sea Grant Program 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	Hawaii Resident
3	Stuart Coleman	Surfrider Organization
4	Charlene Lani Fernandez	Bank of Hawaii
5	Ken Hiraki	Hawai'i Association of Realtors
6	Troy Tanigawa	Acting County Chief, Department of Public Works, County of Kauai
7	Wesley Yokoyama	Director, City and County of Honolulu, Department of Environmental Services
8	Ramzi Mansour	Director, County of Hawaii, Department of Environmental Management
9	Dr. Darren T. Lerner	Director, University of Hawaii Sea Grant and the Pacific Islands Climate Science Center
10	Representative Nicole Lowen	House of Representatives
11	David Smith	USEPA Region 9
12	Eric Nakagawa	Director, County of Maui, Department of Environmental Management
13	Erica Perez	Coral Reef Alliance
14	Sina Pruder	Wastewater Branch, Department of Health
15	Dr. Kawika Winter	Manager, He'eia National Estuarine Research Reserve, Hawai'i Institute for Marine Biology
16	Michael Mezzacapo	University of Hawaii Water Resources Research Center

## II. Number of Cesspools in Hawai'i

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 University of Hawai'i (UH), DOH and the U.S. Environmental Protection Agency (EPA). Housing data is estimated from the Census taken that same year.

Island	Housing Units	Number of Cesspools	Cesspool Effluent Discharges (million gallons per day)
Hawai'i	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
<b>Total</b>		<b>87,900</b>	<b>53.0</b>

### III. 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 DOH'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 Hawai'i 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

#### IV. 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 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 sub-group, 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 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 experts for the Finance Subgroup and the Technology Subgroup, and UH was chosen as the expert to assist Data and Prioritization. The following sections outline the specific objectives and updates from each subgroup.

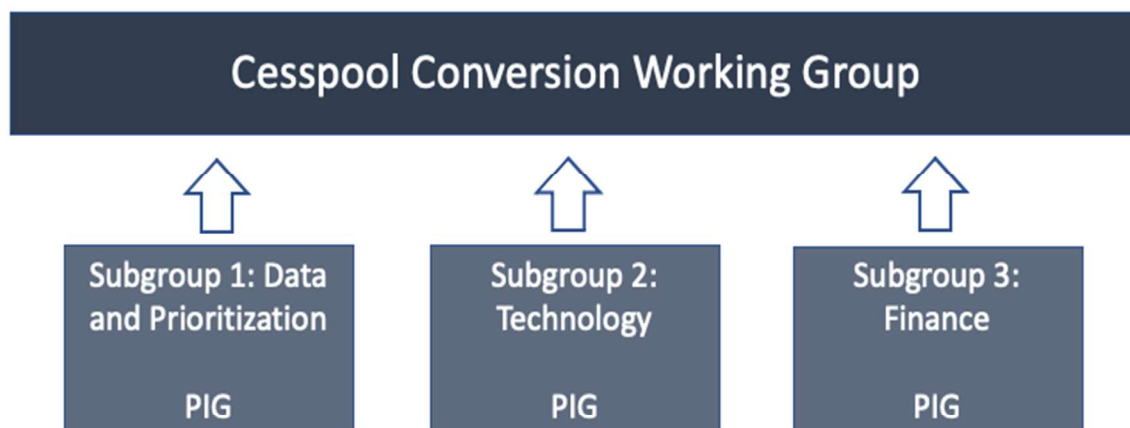


Figure 1. Cesspool Conversion Working Group Structure

## **B. Meeting Overviews**

The CCWG has met fourteen times between September 2018 and May 2021 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 DOH's website: <https://health.hawaii.gov/wastewater/ccwg/>. Highlights from each meeting are as follows:

- September 13<sup>th</sup>, 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 9<sup>th</sup>, 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 15<sup>th</sup>, 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 18<sup>th</sup>, 2019:
  - Approval of Finance, Technology, and Data and Prioritization scopes.
  - Evaluation criteria and process for vetting proposals identified.
- March 28<sup>th</sup>, 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 21<sup>st</sup>, 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 2<sup>nd</sup>, 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 3<sup>rd</sup>, 2019:
  - UH research update including overview of relevant case studies.
- April 3<sup>rd</sup>, 2020:
  - Reviewed and approved Data Collection and Prioritization subgroup goals including five key objectives.
  - UH research updates.
  - 2020 legislative session update.
- June 19<sup>th</sup>, 2020:
  - Scope updates for Finance, Technology, and Data and Prioritization approved.
  - Lessons learned from Stony Brook and Suffolk County cesspool conversion program shared.
- October 29<sup>th</sup>, 2020:
  - Reviewed financial estimates of cesspool conversions and statewide affordability mechanisms.
  - Update on complementary initiative Work-4-Water.
- March 30<sup>th</sup>, 2021:
  - Overview of progress on data and prioritization including discussions on exemptions and federal financing opportunities.
  - Legislative bill SB369 update.
  - Update on future sewer expansions through 2050.
- April 20<sup>th</sup>, 2021:
  - Discussion on federal funding options and the opportunity of climate change as a driver of different wastewater models.
- May 18<sup>th</sup>, 2021:
  - Update on final Hawaii Cesspool Conversion Plan draft scheduled for end of 2021 and discussion on recommended inclusions. Final report is due by end of 2022.

## **V. Subgroup Update: Data and Prioritization**

### **A. Overview**

This subgroup was developed in order to re-evaluate the prioritization of cesspool upgrades across Hawai‘i. 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**

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 Hawai'i 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
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
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

**C. Progress through 2021**

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 Hawai'i 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](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>

In 2021, progress towards the data and prioritization objectives of Act 132 included developing the 2021 Hawaii Cesspool Hazard Assessment & Prioritization Tool (HCPT). Prepared by University of Hawai'i Sea Grant College Program and Water Resources Research Center, this tool expands upon previous efforts to provide a quantitative, up-to-date hazard assessment of geographic areas in Hawaii at risk of cesspool pollution. It includes the following key elements:

1. Identifying a comprehensive list of factors that will assist in the creation of a new prioritization hazard assessment;
2. Examining and categorizing previously uncategorized (Priority level 4) cesspools;
3. Reevaluating the 2017 Cesspool Legislative report prioritization recommendations based on new findings and provide recommendations where appropriate;
4. Identifying possible exemption criteria for cesspools in areas not in need of time sensitive cesspool upgrades; and
5. Developing a web-based tool to prioritize specific cesspools based on identified attributes and data.

HCPT is a dynamic data tool that can support additional analyses of cesspool conversion strategies and policies. Additional data can be layered onto the prioritization results, meaning there are numerous possibilities to explore interdisciplinary connections

between cesspool conversion and social factors such as household income, language spoken, or internet connectivity. By analyzing various data types with priority conversion areas, outreach and education methods can become highly specialized and targeted to have the greatest impacts, saving money, time, and human resources.

As next steps, future database refinement is recommended, including some level of results ground-truthing. This will help ensure that the HCPT results are accurate, allowing DOH to track maintenance and upgrades more efficiently and effectively. The identified hazard areas can also inform future permit requirements and prioritization plans, including mandating larger lot sizes for future developments, increased setback distances to the coast, and requiring advanced technologies where appropriate. County offices may wish to use the tool for future planning of subdivisions to avoid carrying capacity issues on the land, such as poor soil or proximity to sensitive habitat or drinking water. Watershed or conservation organizations may find value in understanding areas most at risk from cesspool pollution and use the data for educational or management strategies. Finally, the HCPT can also identify areas where maintenance and inspection of onsite sewage disposal systems will be critical to preserving water quality.

This tool, which uses geographic information system (GIS), will assist the Cesspool Conversion Working Group in creating a long-term cesspool upgrade plan for delivery to the State Legislature of Hawai‘i.

## **VI. 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**

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
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 Hawai‘i 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
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
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

### C. Progress through 2021

The CCWG has developed a scope of work and request for proposal to address the objectives outlined for the technology subgroup. Carollo Engineers was chosen, with a contract to be completed at the end of 2020 in collaboration with the CCWG, subgroups, and the CCWG facilitator.

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 Hawai'i. 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.

In 2021, the Cesspool Conversion Technologies Research Summary Report was finalized by Carollo Engineers, including onsite wastewater treatment and disposal technologies, testing and approval procedures, decentralized cluster wastewater systems, challenges, and recommendations. Technical memorandums were also created to support this report, including:

- Review of testing and approval processes in other states including Delaware, Florida, Maryland, Massachusetts, New Jersey, New York, Rhode Island, and Texas. Key takeaways included standardizing application forms and templates, requiring an application fee, additional and specific water quality standards, approved certified laboratories for testing, and providing trainings. More information can include Technical Memorandum 1 Assessment of Onsite Treatment Technology Testing and Approval Procedures Utilized by Other States.
- Septic tanks review. If designed, sited, and maintained properly, septic tank systems can provide water quality benefits beyond those achieved by cesspools and are relatively low cost. Their simplicity and reliability make them a viable option for cesspool replacement in Hawaii. More information can be found in Technical Memorandum 2 Septic Tank Systems Review.
- Onsite treatment technologies: Including treatment and disposal options. DOH approved treatment options include septic tanks, aerobic treatment unit (ATU) with nitrification, ATU with nitrification and denitrification, chlorine disinfection, and UV disinfection. Approval is still needed for recirculating sand filters. Innovative and emerging options includes eliminate, NITREX, and recirculating gravel filter systems. Approved disposal options include absorption systems, seepage pit, Presby Advanced Enviro-Septic and De-Nyte. Approval is still needed for evapotranspiration, constructed wetlands, drip irrigation. Innovative and emerging options included passive treatment units, disposal by layered soil treatment, and disposal by nitrification/ denitrification biofilters. Each of these technologies are described further within Technical Memorandum 3 Onsite Treatment Technologies Evaluation.
- Decentralized cluster wastewater systems. Decentralized systems may be viable when converting cesspools that have a high density, are within high priority areas, and where there is community support. Benefits include the potential for rapid conversions, reduced administrative oversight, reduced burden on individual homeowners, proper design and maintenance is ensured, and a broadened range of funding opportunities. Key challenges are higher costs, the need for neighborhood-level coordination, skilled operators, and land space. More information can be found in Technical Memorandum 4 Evaluation of Decentralized Cluster Wastewater Systems.

## **VII. 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**

1	Develop a long-range, comprehensive plan for cesspool conversion statewide of all cesspools by 2050, to be known as the cesspool conversion plan
---	--

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
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

### C. **Progress through 2021**

The Finance Subgroup has developed scope of works and request for proposals from qualified engineering and finance experts to address the applicable objectives outlined in Act 132. Subsequently secured Finance and Technology contractor, Carollo Engineers has been chosen as the contractor with a scope of work to be completed at the end of 2020 in collaboration with the CCWG, subgroups, and the CCWG facilitator.

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 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.

In 2021, Carollo Engineers completed their scope and final report on finance objectives, outlined in Cesspool Conversion Finance Research Summary Report. This includes an outline of an ideal financing program, which should include equity and affordability issues, incentives, funding support for upfront costs, consideration

of the funding recipient, a balance of immediate, near, and long-term expenditures, a variety of funding options, and the minimization of administrative burdens.

Financing options reviewed are broken down into two categories: near term and long term. Near-term options include private or mortgage loans, state tax credits, and federal and state grants and loans. Long-term options include potential Clean Water State Revolving Fund (CWSRF) funding mechanisms which provide low interest loans for a wide range of water quality infrastructure projects. Further details on financial options can be found in Technical Memorandum 1 Cesspool Conversion Funding Mechanisms.

Affordability was also reviewed by Carollo Engineers as part of the finance objectives. This included the comparison of cesspool conversion costs to measures in affordability such as federal poverty and medium household income levels. This highlighted that many residents with cesspools will struggle with the costs required to upgrade them, notably in Hawaii County where income and poverty levels indicate the greatest number of households projected to need assistance. Affordability can be increased by reducing monthly costs or providing direct funding support. To reduce monthly costs, low-interest loan programs can help households with a stable but insufficient income to afford cesspool upgrades. Further analyses on financing support needs can be found in Technical Memorandum 2 Affordability Evaluation for Cesspool Conversions.

#### **VIII. Cesspool Conversion Plan Update**

Progress began in 2021 to outline the Cesspool Conversion Plan to include all objectives and results in one document. The Cesspool Conversion Plan will be completed in 2022. The plan will include recommendations of the CCWG and each subgroup and will include resources for identifying the best conversion upgrades that reduce public health risk and reduce financial burdens on local homeowners.

#### **IX. 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, CCWG meetings and subgroup meetings will continue. Focus will include drafting and then finalizing the Cesspool Conversion Plan.

In line with Act 170, which extends the timeline of the CCWG, 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.