

ENVIRONMENTAL REMEDiation WORKING GROUP

Draft Report
November 1, 2023

Purpose: To evaluate the cleanup of ground and ocean contamination, including the timeframe and techniques utilized, and to prepare recommendations for appropriate legislative action.

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Environmental Remediation Working Group

SUMMARY

The purpose of the Environmental Remediation Working Group (Working Group) is to evaluate the cleanup and ongoing monitoring of ground, water, air, and nearshore contamination due to the wildfires on Maui, including the timeframe and techniques utilized for remediation and monitoring, and to prepare recommendations for appropriate legislative action. Working Group members include Representatives Nicole E. Lowen (Co-Chair), Elle Cochran (Co-Chair), Bertrand Kobayashi, Scott Y. Nishimoto, Amy A. Perruso, Mahina Poepoe, Kanani Souza, and Gregg Takayama.

According to the World Health Organization, wildfires that engulf urban areas contain more toxic chemicals than wildfires that simply consume wood and natural materials.¹ Materials burned in urban fires can include household appliances, commercial appliances, vehicles, and construction materials, which can leave behind a variety of chemicals, contaminants, and debris that can persist in the ecosystem.

To evaluate the short- and long-term risks of the wildfires to the ecosystem, community, and environment, the Working Group engaged in discussions with state departments, Maui County departments, and other stakeholders and subject-matter experts to determine what appropriate legislative action should be taken to aid in environmental remediation of the Lahaina area. These meetings provided crucial background information on hazardous contaminants, monitoring efforts, and the cleanup process, including status updates on, among other things, debris removal efforts, water and air quality, and impacts to harbors and marine life.

The Department of Land and Natural Resources' Division of Boating and Ocean Recreation informed the Working Group that 68 vessels destroyed in the Lahaina fires deposited debris and fuel into the harbor and that approximately 280,000 gallons of fuel has been removed.

¹ "Study Shows Some Household Materials Burned in Wildfires Can Be More Toxic Than Others | US EPA." Environmental Protection Agency, 1 Mar. 2022, www.epa.gov/sciencematters/study-shows-some-household-materials-burned-wildfires-can-be-more-toxic-others. Accessed 28 Oct. 2023.

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Additionally, the destroyed vessels are in the process of being removed from the harbor in cooperation with the United States Coast Guard.

The Department of Land and Natural Resources' Division of Aquatic Resources informed the Working Group that the impact zone of water contamination due to runoff, debris, and other contaminants includes the entire Lahaina coastline. Additionally, the Division of Aquatic Resources, in cooperation with the University of Hawaii, Hui O Ka Wai Ola, and United States Geological Survey, is conducting nearshore coastal water quality testing and contaminant testing.

The Maui County Department of Environmental Management provided updates on the process of securing a location for temporary debris storage and removal site. The Working Group also made attempts to meet with the Maui County Departments of Water Supply and Public Works, but they were unable to find a time to meet.

The Working Group also repeatedly reached out to the United States Environmental Protection Agency but to date has not heard back to schedule a meeting time.

The recommendations of the Working Group primarily call for additional funding resources for long-term monitoring of air and water quality, as well as support for research efforts to better understand the environmental concerns linked to urban fires.

FINDINGS

MONITORING FOR ENVIRONMENTAL CONTAMINATION

Environmental contamination due to runoff, debris, and other hazardous materials is inevitable following an urban fire. In the case of the Maui wildfires, various state departments and organizations are conducting testing and monitoring of water and air samples to determine any immediate risks. Long-term monitoring is preferable to evaluate whether there are any long-term risks to human health and the ecosystem.

As the impact zone of water contamination due to runoff, debris, and other contaminants includes the entire Lahaina coastline, the Department of Land and Natural Resources' Division of Aquatic Resources, in cooperation with the University of Hawaii, Hui O Ka Wai Ola, and United

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States Geological Survey, will be conducting nearshore coastal water quality testing and contaminant testing. The University of Hawaii has conducted testing for chemical contaminants, accumulation of contaminants in fish, and impact on coastal ecosystems to provide an early warning of certain risks and hazards that can then be addressed on land or in water, as appropriate. Hui O Ka Wai Ola has been simultaneously conducting physical and chemical water quality testing, and the United States Geological Survey has deployed instrumentation to measure contaminant intake by biological organisms. The information gathered from these sources will be analyzed on a long-term basis and compared to baseline data to inform authorities of emerging concerns and changes in water quality over time. The samples are collected and analyzed under Hawaii Department of Health standards, and the samples collected by the University of Hawaii and Hui O Ka Wai Ola are funded through the Hawaii Emergency Management Agency for the first year following the fire.

Additionally, sediment samples and lipid-based collection samples are being collected to test for a wide range of contaminants including ash, heavy metals, and volatile organic compounds. To minimize further contamination of the nearshore reef, absorbent booming has been implemented along storm drains. However, threats to coastal waters will persist as runoff, debris removal, and rebuilding efforts will potentially release more toxic ash and contaminated sediment. There is a possibility that the reef and coastal areas will be further impacted through bioaccumulation, including issues such as long-term disease or other unknown repercussions that will become apparent in the future. Therefore, sustained long-term monitoring is recommended for at least five years following the disaster to understand the scope of the contamination.

Another issue regarding water contamination is wastewater treatment plant contamination. The Maui County Department of Environmental Management informed the Working Group that the Lahaina Water Treatment Facility was compromised due to ash and saltwater intrusion into the system. The intrusion caused complications with the biological organism treatment system, and plans are underway to locate the sources of intrusion. Maui

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County is receiving guidance from California water treatment plants, who have experience with ash intrusion.

There are also drinking water concerns. The Maui County Department of Water Supply has collected over 800 samples of water from areas affected by the Maui wildfires. During a fire, water systems can become depressurized and volatile organic compounds can get drawn into the water system through the main line. Areas with many homes that caught fire had the potential to become depressurized and therefore cause an unsafe water advisory. The Maui County Department of Water Supply and Hawaii Department of Health will continue sampling water from various sources to provide long-term information on water contamination.

The Environmental Protection Agency and Hawaii Department of Health are providing air quality monitoring, testing for metals and volatile organic compounds through various continuous particulate monitoring systems including EVM environmental monitors and purple air sensors. Testing done to date has found that contaminants are not at levels of concern and not hazardous to human health. The Environmental Protection Agency is providing air quality testing under the Federal Emergency Management Agency, so once assistance from the Federal Emergency Management Agency is withdrawn, the Environmental Protection Agency will remove all of its provided monitoring systems. Thus, there is a need to provide funding for more monitoring systems long-term.

DEBRIS REMOVAL AND DISPOSAL

Debris removal in Lahaina is split into two phases: (1) removal of hazardous materials; and (2) consolidated debris removal. Phase 1 consists of hazardous materials dangerous to human health, animals, and the environment. The Environmental Protection Agency will handle disposal of these materials, which include gas cylinders, pesticides, paints, oils, fertilizers, ammunition, and batteries. Phase 2 will commence upon the completion of Phase 1 and consists of removing ash, remaining debris, and soil testing to ensure the area is free of any leached toxins.

The Department of Land and Natural Resources' Land Division provided the Working Group with updates on the proposed site to be used for disposal of debris. A temporary debris

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storage and removal site is proposed to be located at the current Olowalu Recycling and Refuse Center. Within the site, a previous cinder quarry will be used for temporary debris storage and removal and a separate area will be used for long-term material disposal. This location was chosen by Maui County over the current Central Maui Landfill to minimize any environmental impacts on residents. The Maui County Department of Environmental Management informed the Working Group of issues with the permitting timeline before disposal of debris may begin at Olowalu. The Hawaii Department of Health is the regulatory agency overseeing the Maui County Department of Environmental Management and has jurisdiction over landfill permitting requirements. However, Maui County may begin operations at the Olowalu site if plans are designed and constructed under the Governor's Emergency Proclamation, which suspends the need for regulatory oversight by the Department of Health. However, there are issues with Department of Health recommended compliance standards if the landfill is permitted under the Emergency Proclamation. Still, representatives from Maui County stated that once the Olowalu site is approved and permitted, debris removal can begin, which will minimize much of the air and water quality concerns stemming from the ash and other contaminants still in the area.

Lastly, the Maui County Environmental Protection and Sustainability Division within the Department of Environmental Management is handling abandoned vehicle disposal and recycling. The Department stated that vehicles damaged in the fire are actually more easily recycled than undamaged vehicles. Additionally, vehicles are considered abandoned if there are no open insurance claims on the vehicle and no one has claimed it. The vehicles are treated to remove contaminants and will be shipped to the continental United States to be recycled and disposed of.

RECOMMENDATIONS

The Working Group's recommendations highlight the need for resources for long-term initiatives, particularly for monitoring air and water quality. Additional support is needed to support research efforts to better understand the environmental concerns linked to urban fires, especially as they relate to the impact on marine resources; ongoing monitoring and sampling and testing activities; and adequate staffing at the Department of Land and Natural Resources

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and Department of Health to conduct these activities. Finally, long-term environmental considerations should be addressed, including incorporating restoration of coastal wetland areas in Lahaina as part of the rebuilding plans.

Restoration of the wetland area in Lahaina that had been drained and used for development was a possible longer-term recommendation that came up repeatedly in meetings with state and county officials. Wetland restoration provides a host of benefits that add to coastal resilience, including protection from flooding and erosion, habitat restoration for native species, filtering nutrients from runoff, carbon sequestration, and providing opportunities for cultural practices and education. Post-fire, the Lahaina community has rallied around the idea of possibly bringing back the historical wetland spaces. The destruction wrought by the fires provides an opportunity for re-development more in line with exiting knowledge that considers the need for resilience measures, climate adaptation, and environmental protection. Restoring the wetland area may be one of these opportunities.

Additionally, groundwater dependent ecosystems, like the former Mokuhina fishpond and wetland that surrounded Moku‘ula, historically are critical public trust resources. They provide habitat for waterbirds and wetland birds, brackish water fish and invertebrates, and wetland plants that are native to estuarine spaces. These wetland resources that were historically part of Lahaina are intertwined with water availability and land use decisions. Water continues to pool at 505 Front Street in one of the parking garages, showing that the groundwater table still emerges in the former location. In order to move forward to consider the feasibility of wetland restoration projects, it would be important to assess the historical boundaries of the former wetland complex and to conduct vegetation, hydrologic, and land surface elevation analyses to determine where the current landscape is today. Feasibility analyses would consider if water would need to be pumped into the area, if fill needs to be removed, and how vegetation will be replanted or encouraged to grow from an existing seedbank. Community and cultural engagement around the wetland to describe the spiritual, cultural, and environmental benefits would be a critical piece to long term success.

The table below includes specific legislative requests for funding:

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Lead	Description	Cost
Hui O Ka Wai Ola	Contract to support chemical/physical coastal water quality testing every three weeks, 25 sites + storm sampling 4 times at 11 sites (4-year contract)	\$596,000
University of Hawaii at Manoa - interdisciplinary team	Contract to support characterizing thousands of organic compounds (e.g., PCB, PAH, CEC, POPs, PFAS), fish/invertebrate contaminants, in-water and sediment contaminants, autosamplers to measure carbonate chemistry, with instrumentation for continuous measurement of flow, salinity, depth, temperature, pH, oxygen, chlorophyll, and dissolved organic fluorescence. (4-year contract)	\$1,800,000
Department of Land and Natural Resources – Division of Aquatic Resources	Aquatic Biologist III full-time equivalent position to support long-term water quality monitoring and pollution source detection	\$56,280
Department of Land and Natural Resources – Division of Aquatic Resources	Aquatic Biologist IV full-time equivalent position to support long-term water quality monitoring and pollution source detection	\$60,912
TOTAL REQUEST		\$2,513,192

Due to the wildfires on Maui, a consolidated and comprehensive plan for environmental monitoring and sampling is necessary to fully inform conditions and response actions. While individual branches or programs may conduct monitoring and sampling activities, a consolidated plan provides a complete and thorough review, exposing dependencies and nexuses between activities. Therefore, the Department of Health is in need of services to develop and execute a comprehensive environmental monitoring and sampling plan. The Department of Health is in the process of contracting with an entity to develop and execute a comprehensive environmental monitoring and sampling plan that will address characterization of environmental contamination in multiple media, including but not limited to air, ash, surface water, stormwater, wastewater, and drinking water. This contract will exceed the current funds available to the Department of Health and additional funds will be needed to conduct and perform its core functions. The

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Department of Health is also making a request to the Federal Emergency Management Agency to cover this cost.

Clean Air Branch efforts in response to the Maui fires:

1. Set up an air monitoring network to perform real time ambient air monitoring of PM 2.5 in the Lahaina, Kula, and Makawao/Olinda areas that may be impacted by the burn area. A total of 43 sensors/monitors have been deployed on Maui and Lanai (see attached current list of monitors and sensors deployed). Additional installations continue in preparation for Phase II debris removal work.
 - a. Plan and site locations for potential installations. Procure, setup, and deploy PurpleAir PM 2.5 sensors. Connect to EPA AirNow Fire and Smoke map for display to public. Air Technicians have been flying from Oahu to Maui to perform this work.
 - b. Coordinate and train on E-BAM (PM 2.5 monitors that provide comparable data to regulatory monitors) installation, operations, and maintenance with EPA. EPA currently operates and maintains the Maui E-BAMs and CAB will be taking over operation and maintenance of 6 E-BAMs when EPA leaves after Ph. I is complete. EPA will leave 2 E-BAMs in Hawaii with CAB. CAB is procuring 4 additional E-BAMs to replace 4 of the EPA E-BAMs that will be taken back when EPA leaves Hawaii.
 - c. Coordinating display of PurpleAir sensors and E-BAMS with EPA, PurpleAir, and IQAir on IQAir app as another method for the public to access air quality information and obtain alerts, in addition to the AirNow Fire and Smoke Map and AirNow app (these do not show PurpleAir sensors).

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2. Coordinate monitoring with USACE on air monitoring/sampling efforts as USACE will be conducting air monitoring/sampling for their work sites. Review of USACE Air Monitoring and Surveillance Plan.
3. Plan and procure services for community air sampling, including metals and asbestos, to take place during USACE Phase II debris removal work. Coordinating with US EPA, ATSDR (CDC), EMD, HEER, and Maui County to provide community air sampling to supplement air monitoring efforts and verify Ph. II debris removal work is not impacting communities.
4. Receive and respond to questions from public and others on air monitoring efforts regarding the Maui fires.

Clean Air Branch Needs:

1. Request One Air Quality Electronics Technician I position (general funded) to support added air monitoring needs. AQET I: Annual Salary: \$ 75,852.00
2. Request Funding for Community Air Sampling in Kula and Lahaina.
 - a. A three prong approach is being utilized to address air monitoring needs in response to the Maui wildfires:

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- i. Continuous real time PM2.5 monitoring with a network of E-BAMs and PurpleAir sensors displaying on EPA’s AirNow Fire and Smoke map.
 - ii. USACE air monitoring for their work sites.
 - iii. DOH community air sampling
- b. DOH community sampling costs anticipated include:
- i. Kula Community Air Sampling: \$325,497
 - ii. Lahaina Community Air Sampling: See cost table below. Cost would depend on number of stations, frequency of sampling, and duration of Ph. II work. Projections are for daily sampling. The cost shown below conservatively considers 10 stations (the number of stations are being assessed). Potential reductions in stations and/or sampling periodicity could reduce overall costs. Extension of project duration beyond 6 months would increase costs.

	W/O Excise Tax	with 4.5 Excise Tax
Total Month 1	\$726,534.38	\$759,228.42
Total Month 2	\$696,511.38	\$727,854.39
Total Month 3	\$696,511.38	\$727,854.39
3 month NTE	\$2,119,557.13	\$2,214,937.20
4 month NTE	\$2,816,068.50	\$2,942,791.58
5 Month NTE	\$3,512,579.88	\$3,670,645.97
6 month NTE	\$4,209,091.25	\$4,398,500.36
Subcontracts		9% Markup
ODCs		16.1% no Fee

- 3. Request Funding for E-BAM monitors and PurpleAir sensors annual maintenance and equipment and supplies needed for community air sampling in Kula and Lahaina:

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4. Total: \$123,656 (see below for breakdown):

- 4 E-BAMS to replace EPA E-BAMS - \$76,177
- 72 PurpleAir sensors - \$24,229
- Supplies needed to install PurpleAir sensors - \$6,000 estimated cost
- Quality control and maintenance checks total estimated cost for one year - \$17,250 (see below for breakdown):
 - Roundtrip Airfare for one AQET to travel to Maui 2x a month:
 - \$300 per travel
 - x 2 trips per month
 - \$600 per month
 - 12 trips per year
 - \$7,200 Total estimated annual cost
 - One year of tape (9 rolls) for E-BAM:
 - \$75 per roll
 - x 9 rolls per unit for one year
 - \$675 per E-BAM unit
 - 6 EBAM units
 - \$4,050 Total estimated annual cost
 - Spare pump for each E-BAM unit:

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- \$1,000 per pump
- x 6 E-BAM units
 - \$6,000 Total estimated cost.