

Price: \$5.00

Water Delayed Is Water Denied

The failure of the Water Commission to give a group of Maui taro farmers a written explanation of its denial of their request for a contested case hearing is simply unconscionable.

It has been more than a year since the commission denied their request. The farmers have appealed in court, but their efforts have been frustrated by the commission's apparent refusal to commit its decision to writing.

Whatever the reason for the delay, the result is to deny the petitioners their day in court – and, depending on the eventual outcome of their case, possibly deny them as well years of enjoyment of the water to which they believe they are entitled.

Water, from Kona to Kaua'i, is the subject of most of the other articles in this issue as well.

Dive in!

Water Commission Inaction Frustrates Legal Appeal of East Maui Stream Decision

Na Moku 'Aupuni o Ko'olau Hui's decade-long fight to get more water released into East Maui streams has hit a snag.

On September 15, the Hawai'i Intermediate Court of Appeals affirmed its August 31 decision to dismiss Na Moku's appeal of the decision by the state Commission on Water Resource Management (CWRM) to deny the group's request for a contested case hearing.

The court found it lacked jurisdiction because the Water Commission had not issued a formal, appealable decision on Na Moku's request.

Last October, Na Moku, composed of native Hawaiian residents of East Maui, some of them taro farmers, sought a contested case hearing over the commission's decision in May 2010 to amend the interim instream flow standards (IIFS) for several East Maui streams.

The Native Hawaiian Legal Corporation, on behalf of Na Moku and other native Hawaiian taro farmers in the area, had filed petitions in May 2001 to amend the IIFS for more than two dozen streams diverted by the East Maui Irrigation Company (EMI) to central Maui.

Continuous flow would not only provide water for taro, but it would also benefit native

stream animals and nearshore fisheries and was, therefore, necessary to support the exercise of traditional and customary practices, the NHLC argued.

In September 2008, the commission voted to allow some 10 million gallons of water a day (mgd) to flow into the eight most important streams for taro growing in the Wailuanui-Keanae and Honopou valleys—a decision Na Moku did not contest.

On May 25, 2010, the commission decided on the remaining stream flows.

To ensure the needs of Hawaiian Commercial & Sugar Co., Maui County, and other central Maui farmers were met, the commission decided to leave just enough water in five of the streams (East Wailuaiki, West Wailuaiki, Waiohue, Waikamoi, and Hanawi) during dry times to allow stream organisms to survive. During the wet season, roughly 9 mgd would be returned.

The commission also decided to add a small amount of water to Makapipi Stream year-round and to leave untouched the IIFS for the remaining 13 streams that Na Moku sought to have restored.

Dissatisfied, Na Moku quickly petitioned for a contested case hearing. NHLC attorney Alan Murakami also asked then-CWRM chair Laura Thielen for a written explanation of the commission's decision regarding the IIFS for the 19 Streams.

"Those affected wish to see the exact ruling, aside from news reports. For example, residents in Nahiku are reporting that EMI is not complying with the IIFS for Makapipi stream," he wrote in an email to Thielen.

The commission had not issued any formal decision regarding its September 2008 decision. But, in that case, Murakami noted, the commission adopted without amendment its staff's recommendations, "so there



A diversion on Makapipi Stream, one of those where flow standards are in dispute.

IN THIS ISSUE

2

*Albatrosses, Ants,
And an Agricultural Liaison*

3

*Cost of Corrective Actions Could
Drive Owners to Tear Down Dams*

4

*Kaua'i Hydropower Company Seeks Accord
With Agibusiness Development Corporation*

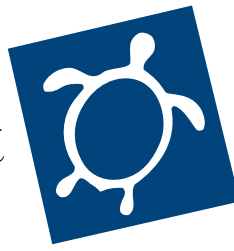
9

*Kaloko-Honokohau Park
Worried Over Kona Water Plan*

11

*Flooding Forecasts a Casualty
Of Stream Gage Losses*

Environment



Hawai'i

Volume 22, No. 4

November 2011

NEW AND NOTEWORTHY

Black-footed Albatross Not Endangered: That's the final determination of the U.S. Fish and Wildlife Service in response to a petition to list the species *Phoebastria nigripes* as endangered. The petition was filed seven years ago by Turtle Island Restoration Network and the Center for Biological Diversity, prompted in part by the decision of the International Union for the Conservation of Nature to change the bird's status from "vulnerable" to "endangered."

According to the FWS notice of the decision, published October 7 in the *Federal Register*, since the IUCN reclassification, several regulations imposed on the U.S. longline fishing industry over the last decade by the National Marine Fisheries Service have "been effective in increasing survivorship" of birds accidentally caught.

Other risks considered by the FWS include ingestion of plastics, effects of mercury and chemical contaminants, and rising sea level and

the anticipated impact on habitat.

"The service acknowledges the presence of threats to the black-footed albatross," it said in a press release, "but finds the scientific data available are insufficient to demonstrate that these threats are having any population-level effect on the species, such that it would meet the definition of a threatened or endangered species."

The total number of breeding pairs of black-footed albatross stood at just over 67,000 in 2010. The vast majority (64,000) breed on atolls in the Northwestern Hawaiian Islands. The other population inhabits Torishima island and several smaller Japanese islands.



PHOTO: USFWS

Black-footed Albatross

tions over 4,000 meters in North America," the authors write, "there is serious cause for concern that, unlike most invasive ant species in Hawai'i, it will be capable of invading high elevation habitats."

Just how the ant arrived here is unknown. Among the species of ants intercepted by quarantine workers in Hawai'i and New Zealand, the odorous house ant is a rarity – but this, write Buczkowski and Krushelnycky, may simply be because the ant "is not very common in the regions that ship the majority of goods" to these destinations.

Still, given the fact that the ant has become "a much more common urban nuisance" in recent years, the authors write, "we believe that *T. sessile* should be watched for closely by quarantine officials."

Laura Thielen, Liaison: The former director of the state Department of Land and Natural Resources has a new office now, just steps from her old one. Thielen was recently appointed Honolulu's agricultural liaison by Mayor Peter Carlisle.

According to a news release issued by the mayor's office, the liaison "will become the city's first point of contact regarding agricultural issues, [will] enable the city to capitalize on agricultural funding opportunities provided by state and federal agencies, and [will] work with the state on issues of mutual concern."

The position was created by the City Council, which allocated \$70,000 a year for the position. According to the mayor's spokesperson Louise Kim McCoy, the civil-service exempt position was advertised on the county's website.

Environment Hawai'i

72 Kapi'olani Street
Hilo, Hawai'i 96720

Patricia Tummons, *Editor*
Teresa Dawson, *Staff Writer*
Susie Yong, *Office Administrator*

Environment Hawai'i is published monthly by Environment Hawai'i, Inc., a 501(c)(3) non-profit corporation. Subscriptions are \$65 individual; \$100 non-profits, libraries; \$130 corporate. Send subscription inquiries, address changes, and all other correspondence to *Environment Hawai'i*, 72 Kapi'olani Street, Hilo, Hawai'i 96720. Telephone: 808 934-0115. Toll-free: 877-934-0130. E-mail: pattummons@gmail.com Web page: <http://www.environment-hawaii.org> Twitter: Envhawaii

Environment Hawai'i is available in microform through University Microfilms' Alternative Press collection (300 North Zeeb Road, Ann Arbor, Michigan 48106-1346).

Production: For Color Publishing

Copyright © 2011 Environment Hawai'i, Inc.
ISSN 1050-3285

A publication of
Environment Hawai'i, Inc.

Officers

Patricia Tummons
*President and
Treasurer*

Teresa Dawson
*Vice President and
Secretary*

Directors

Kathy Baldwin
Robert Becker
Mary Evanson
Mina Morita

Oh, Those Odorous Ants: *Tapinoma sessile*, a.k.a. the odorous house ant, is moving up in the world – or, more specifically, it is moving up Maui.

The ant is native to North America. Its discovery in June 2009 near Kula, Maui, was the first time it had been detected outside its home range, according to Grzegorz Buczkowski of Purdue University and Paul Krushelnycky of the University of Hawai'i, as they report in an online edition of *Myrmecological News*, devoted to the study of ants. After surveying more than 2,600 locations in the Kula area, they determined that the ants probably belonged to one giant supercolony, ranging over 42 acres.

"Because the odorous house ant ranges as far north as southern Canada and occurs at eleva-

Quote of the Month

"Basic data collection is critical. Every day that goes by when you don't have that data point, you can't get it back."

— **Lenore Ohye, CWRM**

Correction: In our September edition, we erred when we stated that a federal judge had forbidden the state to regulate boating in Kaua'i's Hanalei Bay. Judge Helen Gillmor instead found that the state's regulations on commercial boating violated both "the doctrine on conflict pre-emption based on the Supremacy Clause of the United States Constitution" and the Constitution's Commerce Clause. She did not, however, find that the state could not regulate boating at all. Thank you, BR, for bringing this to our attention.

Cost of Corrective Actions Could Drive Owners to Tear Down Dams

Some of them leak like sieves, losing (or wasting, some might say) millions of gallons a day of diverted stream water into the ground. But achieving greater food security without the 130 or so earthen reservoirs throughout the state would, in many people's eyes, be nigh impossible.

More than half of the state's gross farm revenue comes from reservoir-dependent enterprises, according to a September 2010 report by the U.S. Department of Agriculture. And should the owners of the 113 "high-risk" reservoirs identified by the Department of Land and Natural Resources choose to dismantle them rather than bear improvement and maintenance expenses, the state would lose \$242 million in annual revenues, the report states. What's more, 7,234 jobs, including 5,589 farm jobs, would be lost.

The report, prepared for the state Department of Agriculture and submitted to the 2011 Legislature, points out that the projected losses are based on an unlikely worst-case scenario in which all of the reservoirs are lost at once.

But a large-scale abandonment of reservoirs could happen if Governor Neil Abercrombie signs the administrative rules approved by the state Board of Land and Natural Resources one year ago.

The rules, driven by the Dam and Reservoir Safety Act of 2007 (itself spurred by the fatal breach in 2006 of Ka Loko reservoir on Kaua'i), impose new fees and standards on dam owners. The fees are intended to help pay for the state's dam safety program, which, after scaling back inspections, came under heavy criticism following the Ka Loko breach.

"Since 2009, just three years after the Ka

Loko disaster, the Legislature eliminated all general funds previously appropriated for the dam safety program. Therefore... fees are needed to support the program. The department is unable to effectively perform the duties and meet the obligations mandated by law without these fees," states a report from the DLNR's Engineering Division on the new rules.

Also under the rules, all high-hazard dams must be capable of withstanding a probable maximum flood (PMF), which is the flood that "may be expected from the most severe combination of critical meteorologic and hydrologic conditions that are reasonably possible in the region."

The potential penalty for not meeting the DLNR's standards: \$25,000 per offense.

In addition to the rules, the DLNR had recently assessed all regulated dams and reservoirs in the state and recommended safety actions for each owner, including things like geotechnical/stability studies, hydraulic/hydrology studies, upstream control valve studies, vegetation removal and spillway improvements, among other things.

Many landowners with multiple reservoirs have said that the mounting cost to meet the DLNR's safety standards is simply too much.

"The additional costs required to meet dam and reservoir safety regulatory requirements may create an undue financial burden for dam and reservoir owners," according to Paul Oshiro, government relations manager for Alexander & Baldwin, Inc., which owns 18 regulated reservoirs on Kaua'i and 30 on Maui. (Regulated dams are those that are at least 25 feet tall or have an impounding capacity of 50 acre feet or more. Dams less than six feet in

height, regardless of storage capacity, or that have a storage capacity not in excess of 15 acre feet regardless of height, generally do not fall under state jurisdiction.)

"Smaller farmers and agricultural operations who utilize water from dams owned by others may be negatively impacted should the dam owner decide to permanently breach their facilities because of the undue increase in operating and capital expenses prompted by regulatory expenses and requirements of DLNR's dam and reservoir safety program. Owners of multiple dams will be particularly hard hit," Oshiro stated in testimony earlier this year on Senate Bill 1393. The bill, which failed to pass, would have allowed reservoirs and dams to be included as important agricultural lands so landowners could use the related tax credits to remediate dams as directed by the DLNR.

Monsanto's Alan Takemoto also testified, "We can't afford not to maintain our dams and reservoirs, especially when we are trying to move towards food sustainability. ... By providing dam owners with a financial incentive to meet additional dam regulations, the dam owners will be encouraged to keep their dams operating efficiently and safely."

Even with the rules in limbo, some landowners, including the DLNR, have opted to either dismantle their dams or alter them so that they are no longer regulated.

Between August 2009 and this past July, the Land Board approved dam removal or alteration permits for more than a dozen reservoirs, most of them entirely or partially owned by the DLNR.

Based on DLNR staff reports for those permits, at least 343 million gallons in storage capacity has been or will be lost. (DLNR staff was not able to confirm the status of removal/alteration activities by press time.) The removal of the privately owned, 160-million-gallon Pu'u Ka Ele reservoir on Kaua'i accounts for most of that loss.

Recognizing the potential impact the new rules might have, "the governor is holding onto the rules," says William Tam, the DLNR's deputy director for water. "A number of landowners looked at decommissioning rather than fixing."

Eventually, the governor will sign the rules, but he's waiting for the DLNR to prepare materials to help dam owners navigate them once they become effective, Tam says. "It's taken time to work it out," he adds.

In the meantime, the state Agribusiness Development Corporation has stepped in to save at least one of the DLNR-owned dams slated for downsizing, providing remediation assistance for the 71 million gallon A'ahoaka reservoir in east Kaua'i.

—T.D.

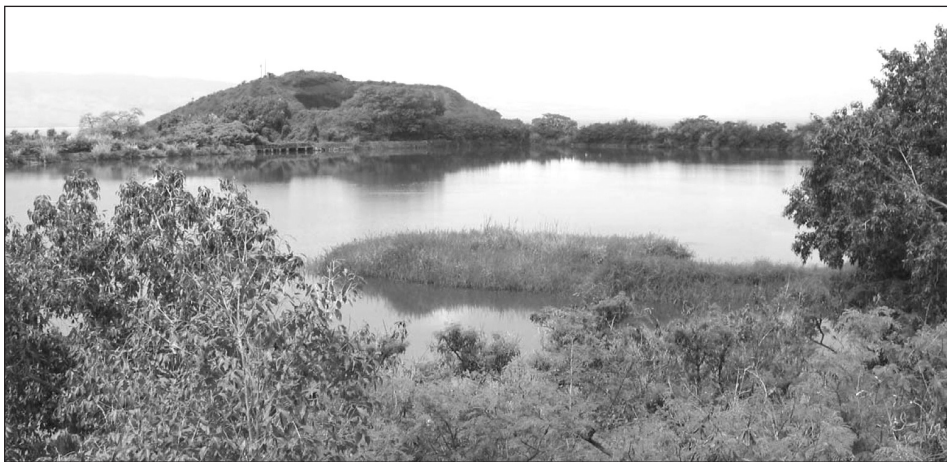


PHOTO: DLNR

"It's a shame to lose reservoirs," Board of Land and Natural Resources member Robert Pacheco said in July, as the board approved a permit to allow for the removal of Wahikuli reservoir on Maui.

Kaua'i Hydropower Company Seeks Accord With Agribusiness Development Corporation

The Kaua'i Island Utility Cooperative has lost its "priority position" to generate hydropower using irrigation systems and land in west Kaua'i managed by the state Agribusiness Development Corporation.

Last month, the Federal Energy Regulatory Commission issued an order dismissing the competing applications of KIUC and another company, Kekaha Ditch Hydro, LLC, for preliminary permits to study the feasibility of constructing a hydropower facility along the ADC's Kekaha Ditch.

In its October 20 order, FERC stated that it was establishing "a general policy of not issuing permits for projects" in those cases where there is no mandatory federal jurisdiction and where there is the "potential to interfere with Hawai'i's state hydropower authorization process."

William Tam, the deputy director of the Department of Land and Natural Resources for water issues, was pleased with the decision. "It's a good thing," he told *Environment Hawai'i*. "We don't like stream decisions being made in Washington, D.C., where there's no expertise and local knowledge."

Other applications are pending, he noted, but given FERC's latest order, the commissioners "will dismiss those as well."

FERC has already granted two applications for hydropower in East Kaua'i. "I don't think they're going to revisit those," Tam said. "The ones issued already will run their course, but they're not inclined to issue more."

"Now it's up to the landowners and the applicants to make the decision, based on the merits and state law," he added. The FERC decision "simplifies things. People can't use [FERC] anymore as a bludgeon against others."

With FERC now out of the picture, KIUC and its agent, Free Flow Power, LLC, more than ever needs to make nice with the ADC, which owns irrigation systems and lands that KIUC wants to use for hydropower facilities, including a 7.7 megawatt facility along the Koke'e Ditch, a 1.5 MW facility along the Kekaha Ditch, and a 2 MW facility using the Wailua reservoir. Although the DLNR owns the reservoir, the ADC owns some of the surrounding land that KIUC wants to use for a pipeline and power house.

Earlier this year, to ensure its tenants continue to have ample water for their crops, the ADC filed motions to intervene in the FERC dockets for preliminary permits for the projects.

In June, the FERC granted a preliminary permit for the Wailua facility.

Recognizing the need for coordination, representatives from KIUC and Free Flow met with the ADC board this past summer on Kaua'i, wrote a letter reaching out to the agency, and made a brief presentation at the ADC's September board meeting in Honolulu.

Jason Hines of Free Flow explained that the layout for the Wailua facility has not been finalized and that his company is trying to tailor that project to complement current agricultural uses. As a result, the facility would likely end up producing no more than 500 kilowatts, rather than 2 MW, he said.

Because the facility would use the same water resources and lands that ADC's tenants use, Hines said he wanted to "see if there were opportunities for shared infrastructure, something that was more integrated with these three potential areas... a combo hydro-irrigation project."

Specifically, the utility and Free Flow asked that the ADC, in addition to informally discussing the project, enter into a memorandum of agreement with them to cooperatively investigate the potential for hydropower on ADC lands.

They also asked for a right of entry onto the ADC's Kalepa lands, which surround the reservoir, to get a better understanding of the ditches involved.

When asked by ADC board member David Rietow how much water the Wailua reservoir facility was expected to use, Hines said that the 2 MW plant originally proposed would have taken all of the diverted water, more than 40 million gallons a day.

"Since then, just understanding what the irrigation needs are, it would be less than that. The amount is still to be determined," he said, adding that the plant may only take five to ten percent of the maximum flow.

Even then, Rietow noted that under the current design, the water diverted through the plant would bypass all of the agricultural tenants and be "useless for anyone else," since it would be dumped directly into the ocean.

But that could also change, Hines said. The hydro turbine could be located at a higher elevation to allow the used water to be used for irrigation at lower elevations.

"Really, at this point, it's trying to fully understand the pieces," he said. "What we're trying to do is get everyone around the table... as opposed to trying to guess how best to do it."

The board took no action on KIUC's requests.

At an ADC planning subcommittee meeting held a few weeks later, member William Tam, also the Department of Land and Natural Resources's deputy director for water, said the roles of all of the agencies potentially affected by the hydropower -- the ADC, the DLNR, state Department of Agriculture, and the Department of Hawaiian Home Lands (another potential water user) -- need to be sorted out at the administration level.

"There are implications for ADC lands, DHHL lands, stream flow. It can't be decided at random -- [according to] whoever files [for a permit] first. That's dumb. The ADC has got to be clear what its interest is. Hydros are a great idea, but it's not being coordinated so everyone is not at each other's throats," he said.



Obstacles Plague Biomass Company

Plans for Pacific West Energy, LLC's big biomass plant continue to change as the company encounters one obstacle after another.

In late September, Pac West updated the ADC on its progress toward securing feedstock lands, as well as a site for its proposed 20 megawatt power plant. Earlier this year, the ADC promised to consider leasing 750 acres of its Kekaha lands to Pac West. The company originally sought more than a thousand acres, but the ADC chose to lease most of its available land to Pacific Light and Power, LLC, a Kaua'i company that proposed to generate electricity for Kekaha tenants using hydropower, biomass, and a gasification plant.

At the ADC meeting, Pac West president William Maloney reported that the company, which had tried to construct its power plant at the former Kekaha sugar mill, has decided to relocate its power plant back to Gay & Robinson lands.

Community resistance and permitting issues had forced the relocation, Maloney said.

The size of the plant has also changed. Depending on the fuel supply, the plant might also produce as little as 12 MW, he said.

Securing an adequate fuel supply has been a problem for Pac West. For years, the company had been negotiating with the Department of Hawaiian Home Lands to lease thousands of acres in Kekaha. But that fell through, also as a result of community resistance.

However, Maloney said, the company is now looking at leasing DHHL lands in Anahola, on the opposite side of the island. Of the 4,000 acres available in Anahola, about 1,250

are usable, he said.

To power a 20 MW plant, he would need less than 5,000 acres, he told the board, adding that feedstock would likely come from lands owned by Dow, Gay & Robinson, other private landowners, and possibly the ADC.

Although having to truck crops across the island is not ideal, it “doesn’t blow the economics of the project,” Maloney said.

When ADC board chair Scott Enright noted that Pac West had reportedly planned to use eucalyptus from the Big Island as feedstock, Maloney admitted that was his company’s least-economic feedstock option. Even so, he said, “from an economic standpoint, the higher cost of bringing those over ... fits the model.”

Despite Maloney’s assurances, Brad Rockwell, production manager for the Kaua’i Island Utility Cooperative, said the utility was “not close to understanding” whether the Pac West would produce power at a cost it would be willing to pay.

“I can’t comment on that. We don’t have anything being proposed at this point,” he said.

Maloney said that because the company relocated its plant, it has had to restart negotiations with the utility.

“As they’re looking at their hydro and solar options, we’ve got to fit into that mix,” he said, adding that KIUC president Dave Bissel has suggested that the plant should be smaller.



Galbraith Lands Nearly Secure

After five years of negotiation, the purchase of some 1,200 acres of prime agricultural land in central O’ahu is nearing completion. Public funding for the project has been secured, according to Hawai’i Trust for Public Land director Leah Hong, who gave a status report at the ADC’s board meeting in September.

The lands, which will eventually be managed by the ADC, will cost \$18 million, \$13 million of which will come from a state general obligation bond. The U.S. Army is kicking in \$3 million, and the TPL has secured \$2 million from the City and County of Honolulu.

Hong said she is finalizing the payment with Bank of Hawai’i, which is the trustee for the Galbraith Estate, owner of the land.

ADC director Alfredo Lee said the state bond will likely be posted in April.

Once the ADC acquires the lands, it will need to prepare a master plan.

“We’d better. The state invested \$13 million,” said board member and Department of



PHOTO: OFFICE OF HAWAIIAN AFFAIRS

Kukaniloko birthing stones

Agriculture deputy director James Nakatani at a planning subcommittee meeting last month.

The TPL is also partnering with the Office of Hawaiian Affairs to purchase more than 500 acres of Galbraith land in the same area that contain an archaeological feature known as the Kukaniloko birthing stones.



ADC Attempts to Draft Administrative Rules

One of the advantages we have is, maybe we shoot from the hip, but we move,” ADC board member David Rietow said at its September meeting.

Since its inception more than a decade ago, the ADC, graced by the state Legislature with some enviable exceptions to state procurement and land disposition laws, has managed its lands and infrastructure with relative ease.

And Rietow and his fellow board members want things to stay that way.

After more than a decade in existence, the

agency is only now beginning to attempt to draft rules, in part because its goals have expanded beyond facilitating a transition from a sugar plantation-dominated ag industry to a more diversified one.

The ADC has been taking on more projects, including renewable energy generation, and new lands, such as those at Kalepa, Kaua’i. What’s more, the public is also becoming more aware of its activities, ADC staff told the board.

Although staff said that administrative rules might reduce the agency’s flexibility, board member James Nakatani didn’t buy it, since the board can craft the rules to allow the agency to take full advantage of its enabling statutes.



Contamination Prevents Generator Installation

The state Department of Health won’t allow the ADC to install backup generators, purchased years ago, until contamination at the site — a former pesticide mixing facility operated by the Kekaha Sugar Co. — is mitigated.

The generators are intended to provide emergency power in the event that one or both of the hydropower plants that power irrigation pumps in the area fail. The ADC plans to install them across the street from the privately owned Kekaha Sugar Mill, which is the subject of a separate DOH investigation.

Although soil tests on the ADC site found low to moderate dioxin and arsenic contamination, the DOH has required the ADC to draft a remedial action work plan before installing the generators. The plan, released in September, recommends signage and security monitoring, placing boulders and installing a cattle fence around the site, and placing three to four inches of gravel on access roads to cap contaminants, deter runoff, and suppress dust. — T.D.

Our Fall DIY Fundraiser

Owing to a production glitch, our annual fall fundraiser mailer sent out last month did not have the glue needed to make up the two sides of what should have been the return envelope.

We could, of course, produce a new one, but we think that would be an expensive waste. In the interests of the environment, and of keeping EH going, we ask that you kindly tear off the two bottom panels at the perforation to make an envelope; fill out the information on your gift and insert it (with check) into the envelope; and tape once more across the top to seal.

Alternatively, you may phone in your credit-card donation (toll free at 877 934-0130), or donate online: www.environment-hawaii.org.

Our profound apologies for the inconvenience.

Water from page 1

is some writing on which to rely.”

But with respect to the May 2010 decision, he continued, “[s]o far, we have had to rely on news reports and our own notes to determine what standards were supposedly set.”

Rather than issue a formal decision, commission staff simply informed Murakami on August 26 that the minutes of the May meeting — including a summary table of the IIFS — had just been approved and would be posted on the commission’s website that day.

On October 18, 2010, the commission approved its staff recommendation to deny Na Moku’s contested case hearing request because it found one was not required by statute.

NHLC attorney Camille Kalama argued at the time that although statutes did not require the commission to grant a contested case hearing, constitutional due process did, according to a Hawai’i Supreme Court decision (Waiahole I), since the amended IIFS affects the petitioners’ rights, duties and privileges.

Na Moku appealed to the ICA in November.

In its opening brief, the NHLC again pointed to the Waiahole I case. It also cited a Water Commission finding related to the Waiahole I case that “a petition to modify instream flows at ... specific locations is a fact-intensive, individualized determination at each site that may directly affect downstream and offstream interests ... [I]ndividual claims may need to be examined. The site-specific inquiry required in this case is not compatible with rule making, but with a method which provides the due process procedures necessary to assess individual interests.”

In the commission’s defense, deputy attorneys general Linda Chow and Donna

Kalama noted that not all of the agency’s decisions are appealable. For example, the courts have decided that the designation of water management areas is not judicially reviewable.

They argued that a similar standard applies to the setting of IIFS. Because the state Water Code lacks any mention of a right to an appeal of a decision to set IIFS, “[c]learly, the setting or amendment of IIFS is a matter over which the commission has exclusive jurisdiction and final authority,” they wrote.

Although the NHLC’s clients filed the petitions to amend the IIFS, the commission’s May 2010 decision did not determine how much water any particular parties were entitled to, they wrote.

“Instead, the commission’s decision was to set the IIFS at a particular location in each stream at a specific rate. ... The setting of IIFS is not part of the permitting process under the Water Code and it cannot be used to enforce substantive water rights, either of Appellants or non-instream users,” they wrote.

The commission asked that the ICA dismiss the appeal for lack of jurisdiction.

On August 31, the ICA did dismiss the appeal, but not for any of the reasons cited by the state. In its order, the court noted simply that no water commissioners had signed either the staff’s October 18, 2010, submittal recommending denial or the minutes of that meeting.

“[T]hus, neither of these two documents appears to be a final written order,” the court wrote.

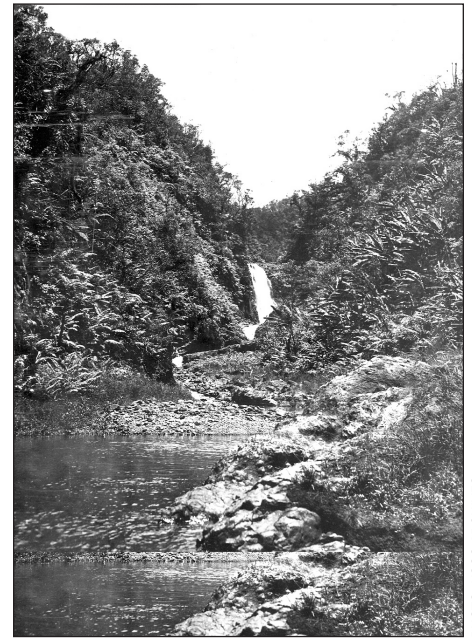
Dean Uyeno of the commission’s stream branch told *Environment Hawai’i* that meeting minutes aren’t normally signed by the commission or its chair; they’re just approved.

In this instance, however, the court seemed to feel that because a contested case hearing denial is more of a quasi-judicial than a quasi-legislative decision, “the aggrieved party must appeal from a written order that is approved by a majority of the members ... and issued by the [commission].”

To Murakami, the court’s ruling was not only unusual, it also “really puts egg on the face of the CWRM and the AG’s [attorney general’s] office, but unfortunately, at great costs to our cultural practitioner clients who must bear the burden of this lost time and energy.”

“Is this the level of diligence one can expect from such an important agency?” he asked.

The NHLC is seeking clarification from commission staff about whether it plans to issue a final order. Although he said he believes the ICA already has the authority to decide on the appeal, Murakami still wants the commission to issue formal decisions on both the IIFS



1909 photo of Wailuaiki Falls by W.C. Mendenhall.

PHOTO: USGS ARCHIVES

petitions and the contested case denial.

“It would seem to be such a royal waste of time to have this public agency hunker down and take the position it can avoid judicial challenge by simply refusing to put its decision in writing. That nefarious position would simply buy time for A&B [Alexander & Baldwin, owner of HC&S and EMI] to continue diversions for however long we take to resolve this particular dilemma,” he wrote.

Courts can review a preliminary decision if a party is prejudiced by being forced to wait for a final one, he continued, adding, “This is the first time I can think of where the agency simply refuses to put any decision in writing, and the court allows it to hide behind that obvious error.”

William Tam, deputy director for the Water Commission, said that the ICA had applied an odd standard to the commission’s decision, one that is usually imposed on Circuit Court decisions. Late last month, Tam said he and commission chair William Aila have not had a chance to sort out what, if anything, they should do. “It may be simple ... a piece of paper,” he said.



Water Supplies May Shrink Despite Impending ‘Wet Period’

Despite what you’ve read in the press, global warming is unequivocal. What we need to do is to look at some of the science that isn’t well settled,” University of Hawai’i climatologist Thomas Giambelluca told the Water Commission in September.



PHOTO: CWRM

The dry bed of West Wailuaiki Stream, one of the streams in East Maui where flow standards are disputed.

According to Giambelluca, temperatures around Hawai'i and the sea level will almost certainly rise as a result of climate change.

How rising temperatures and other climate changes will affect rainfall, however, is still under debate. For example, researchers seem to differ in their opinions on the frequency and intensity of heavy rainfall events here in the coming decades.

Even so, Giambelluca presented enough data on temperature, rainfall, stream flow, humidity, and cloud thickness trends to raise serious concerns over the state's ability to meet its future water needs.

Decision-making bodies like the commission would serve the people (not to mention the natural resources) of Hawai'i best if they took a precautionary approach to water and land management, Giambelluca suggested.

Not long ago, the conventional wisdom was that Hawai'i would be insulated from any strong impacts of climate change because of its location in the middle of the Pacific, he said.

But Hawai'i's weather appears to be breaking from its normal pattern, which is heavily influenced by the Pacific Decadal Oscillation (PDO). Similar to El Niño Southern Oscillation (ENSO), the PDO to a large extent controls the amount of rainfall Hawai'i receives and it alternates (although not always) between dry and wet periods. But unlike ENSO, where El Niño or La Niña phases last three to seven years, a single PDO period spans decades.

In the past few decades, temperatures in Hawai'i have been departing from the PDO index, possibly as a result of global warming, Giambelluca said.

Over the last 88 years, the rate of warming in Hawai'i has been about half the global rate. But in the last 30 years, the rate has equalled the global rate. And at high elevations over the same period, Hawai'i has been warming much faster than the average global rate.

An analysis of sea surface temperatures shows a similar pattern, although air temperatures are increasing faster than sea surface temperatures, he said, adding that relative humidity overall has decreased and clouds have gotten thinner.

The trade wind inversion (TWI), which effectively caps cloud formation, has been occurring more often in recent years.

"The more often the trade wind inversion is there, the drier our weather will be. And the lower it is, the drier our weather will be," he said.

From 1980 to 1990, the TWI occurred 77 percent of the time. In the 1990s, the frequency increased to 90 percent, Giambelluca said. He added that the TWI is getting lower, as well.

"I don't know if it's associated with global warming. I don't know if it's still like this, since the latest data is from 2004," he said.

Should higher temperatures force the condensation level (the bottom of clouds) to rise, that would be a "double whammy" when combined with the TWI, he said. "Less cloud, less rain."

Should evapotranspiration also increase as a result of greater solar radiation, that would be "another kind of double whammy, since it affects our supply and increases our demand [for water]," he said.

Already, long-term gage data has shown that Hawai'i has seen a downward trend in mean rainfall and, subsequently, stream flow.

Giambelluca noted that although Hawai'i appears to be going into a wetter PDO period, an overall drying trend persists "on top of that."

When asked what could be done to address the drying trend, Giambelluca said that boards making decisions regarding water use and land development should be made aware of potential climate change impacts and take a precautionary approach.

Also, he added, "We should be concerned about invasive species such as strawberry guava, which uses more water than 'ohi'a. [With] less water in the ground and streams ... we have to be good stewards of our water resources."

With regard to the effects reduced rainfall will have on the state's aquifers, Giambelluca pointed out that most of the methods used to establish groundwater recharge rates and sustainable yields of aquifers start with rainfall.

"If you reduce the rainfall, you absolutely will reduce the recharge. There's absolutely no way around that," he said.

Consultant and water expert Jonathan Scheuer asked how Giambelluca's findings might be used by the Water Commission to revise its sustainable yield numbers.

Giambelluca said he and his colleagues plan to develop recharge scenarios for the commission.

"We have a team working on this, for 40 years out and 90 years out," he said. "They will have some big error bars around them, [but] they could be utilized in a planning context."

He cautioned everyone that any predictions will "have a lot of uncertainty and it's not going to be the end of the story." As new information arises, estimates will be updated, he said.

Finally, he urged commissioners not to forget that as Hawai'i enters a wetter PDO period, it is still experiencing an overall drying trend.

"Let's not be too easily swayed by a fluctuating pattern. The next time we go into a drying phase [of the PDO] we could have severe water shortages," he said.



Water Commission To Document Kuleana Water Rights

For the first time since its creation, the Water Commission will identify and officially recognize holders of appurtenant water rights, without direction from the courts.

The commission plans to start with appurtenant water rights holders in Na Wai 'Eha (the four great waters) surface water management area in west Maui. Designated on March 13, 2008, Na Wai 'Eha surface water management area was the first in the state. And so far, it's the only one.

The commission designated the area in response to a petition filed by the Maui Tomorrow Foundation and a group of area residents and farmers known as Hui O Na Wai 'Eha, both of which sought to restore stream flows diverted for decades by Wailuku Water Company and Hawaiian Commercial & Sugar Company.

Appurtenant waters rights, often referred to as kuleana water rights, are those that accompanied properties created during the Mahele of 1848, when lands in Hawai'i became fee simple. Once the Water Commission designates a surface water management area, surface water use is allowed by permit only. Because kuleana landowners have superior water rights, their needs must be addressed first.

To date, the commission has accepted 177 complete applications for existing and new uses of water from Waihe'e River, and Waiehu, 'Iao and Waikapu streams, collectively known as Na Wai 'Eha. One-hundred twenty of those applicants — many of them members of Hui O Na Wai 'Eha — claim appurtenant rights.

Because the commission lacks administrative rules regarding determination and recognition of appurtenant rights, on September 27, the commission adopted a process to determine appurtenant rights in the area of Na Wai 'Eha.

The commission plans to notify potential claimants of its intent, determine whether or not a parcel has appurtenant rights, then decide how much water each eligible claimant will receive.

Commissioner Lawrence Miike noted that the amount of water associated with a kuleana parcel at the time of the Mahele may differ from what the commission eventually allocates.

Claimants must provide proof, which could include a deed containing terms or

conditions regarding water, tax records, or other documents, demonstrating that their parcels were used as a residence or for cultivation at the time of the Mahele.

Although the courts have recognized appurtenant rights in the past, the state Water Code requires the commission to do it, William Tam, the commission's director, said at its September 27 meeting.

Third parties may contest a claim, but they must have standing, he said, adding that the commission would likely rule on uncontested claims first.

Earthjustice attorney Isaac Moriwake thanked the commission for its efforts, which he called "historic" and "a long time coming." As an attorney representing Hui O Na Wai 'Eha and the Maui Tomorrow Foundation, he offered to help the commission verify any claims.

"We've spent an inordinate amount of time researching, documenting these rights. We're intimately familiar with the nature of these rights and have on-the-ground knowledge," he said.

Moriwake asked that oral kama'aina history be allowed as a form of evidence.

He and Pamela Bunn, an attorney representing the Office of Hawaiian Affairs, asked that the commission dispense with publishing a notice for potential claimants because the cost of publishing has to be paid by the applicants.

Moriwake noted that the 2008 notice for water use permit applications cost his clients a lot of money and, most likely, captured all potential applicants.

A new notice costing thousands of dollars would be a significant burden for private citizens who are "basically using their ... water

for subsistence purposes," he said. "All you need to do is provide notice to anyone who staked a claim, rather than have an entire new round."

Regarding the commission's criteria for allocating water, water quality expert David Campbell Penn urged it to consider water quality, as well as the quantity.

If the amount used on a parcel at the time of Mahele was "cool, clear water," and still is, that's fine, but if "it's hot and pilau," the commission may need to reconsider the volume issue, he said.

Penn also recommended that the commission address the water quality/quantity issue from a "hydrologically based approach, rather than an ad hoc case-by-case, parcel-by-parcel approach." — *Teresa Dawson*



For Further Reading on Maui Stream Disputes

Environment Hawai'i has given extensive coverage to East Maui water issues over the years. All articles are available on our website www.environment-hawaii.org.

- "Water Commission Denies Hearing on Flow Decisions for East Maui," November 2010;
- "Water Commission Amends Flows For Six of 19 East Maui Streams," July 2010;
- "Water Commission Amends Standards for Six Diverted East Maui Streams," and "Land Board Resumes Discussion of Diversion of East Maui Water," November 2008;
- "Land Board Orders EMI to Release Water to Meet Needs of East Maui Taro Farmers," May 2007;
- "Commission Gains Funds, New Tools to Pin Down Water Use, Stream Needs," September 2006;
- "Ex-Judge Says East Maui Farmers Don't Need More Water for Taro," August 2006;
- "Water Commission is Urged to Look at Lessons from Mono Lake Dispute," August 2005;
- "Board Talk: Land Board Favors EMI Water Diversion," March 2003;
- "Board Talk: East Maui Water Dispute Heats Up with Hearing Officer's Recommendation," January 2003;
- "Board Talk: Contested Case on Renewal of EMI Water Permits," July 2001;
- "Battle Looms Over Waters Diverted from East Maui Streams" and "Complex Legal Issues Surround A&B's Taking of East Maui Water," August 1997.

Environment Hawai'i has also published several articles that provide additional background to the dispute over West Maui surface water:

- "Commission's Order on Na Wai 'Eha Baffles Its Most Experienced Member," July 2010;
- "Parties Conclude Debate over Impacts of Stream Restoration in Central Maui," November 2009
- "Hearing Officer Issues Recommendations for Na Wai 'Eha Contested Case Hearing," June 2009;
- "Wailuku Companies Seek PUC Approval to Serve Existing, Future Water Users," November 2008;
- "Commission Tightens Grip on Waters of Central Maui," May 2008;
- "Hearings Begin in Contested Case over Diversion of West Maui Streams," "USGS Seeks Temporary Releases For Study of Instream Values," and "Wailuku Water Co. Sells Ditch Water Without Consent of Utilities Commission," December 2007;
- "Finally, a Schedule for Contested Case Over Charge of Wasting Maui Stream Water," January 2007;
- "Commission Orders Contested Case Mediation for Maui Water Disputes," March 2006;
- "Commission Struggles with Conflicting Claims Surrounding West Maui Stream Diversions," February 2006.

To view a given article, go to the Archives link (upper right corner of the home page), then click on the year of publication. That will take you to a page with all titles published, organized by month. Full articles are available at no cost to subscribers. (If you are a subscriber and have not yet established an online account, we welcome you to do so. Information is available online, or you may call our office: 877 934-0130.)

Kaloko-Honokohau Park Voices Concern Over Update to Hawai'i County Water Plan

The National Park Service is worried about water. More specifically, it fears that the underground flows that feed the fishponds and anchialine pools at Kaloko-Honokohau National Historical Park will be interrupted or polluted if areas mauka of the park are built out to the extent allowed by current zoning and planning maps.

At a public hearing on the Hawai'i County update to its Water Use and Development Plan (WUDP), representatives of the park voiced concerns that the sustainable yield in the Keauhou aquifer system would be tapped out.

"While water resources along the Kona Coast are susceptible to pumping from higher elevation and coastal wells," park Superintendent Kathy Billings said in prepared testimony, "cultural and ecological uses of groundwater are not recognized in the WUDP update, nor were they explicitly considered in the state's determination of the sustainable yield."

Billings went on to caution that continued permitting of municipal and private wells in the Keauhou aquifer could jeopardize "the exercise of traditional Native Hawaiian activities and culture and the diverse habitat of aquatic communities in the National Park."

In 1999, Billings continued, a comprehensive analysis of the impacts of groundwater use on the water resources at the park found that "if all wells permitted prior to 1998 were pumped at their maximum rate, groundwater discharge at the coastline in the National Park would be reduced to 47 percent of the 1978 rate" – when the park was established – "and water levels in the National Park would decline about 0.6 feet." Apart from the quantity of water available, Billings noted that the development of inland wells would also have an impact on the salinity of groundwater at the inland boundary of the park.

She then encouraged the chairperson of the state Commission on Water Resource Management (CWRM) to recommend that the commission designate the Keauhou aquifer system as a Water Management Area, an action that would give the commission tight control over all new uses of groundwater in the region. Stretching from Ka'upulehu in the north to Keauhou in the south, the aquifer system provides water to Kailua-Kona, the Four Seasons resort, the Keahole airport, luxury developments and hotels in Keauhou, major shopping centers, and too many subdivisions, both built and planned, to list. Sustainable



The 'Ai'opio fish trap at Kaloko-Honokohau National Historical Park.

PHOTO: NATIONAL PARK SERVICE

yield for the Keauhou aquifer system is set at 38 million gallons a day (mgd).

According to the WUDP update, which has yet to be adopted by the commission, the sustainable yield for the entire Hualalai aquifer sector (consisting of the Keauhou and the Kiholo aquifer system, to the north) is 56 million gallons a day, with present usage about half that. Zoning that is already in place will drive total demand to 43 mgd, if fully exploited. The county's Land Use Pattern Allocation Guide allows development that would use more than 200 mgd, or nearly four times the sustainable yield. Although the WUDP update states that "demands will not approach the sustainable yield for some time," it advises the county to begin now to consider measures to control future water demands. "It would also be prudent," the WUDP update adds, "for county planning officials to re-examine land use policies; controlling the development density should be considered."

In mid-October, Lenore Ohye, a hydrologic planner on CWRM's staff, said that her office was working on a response to Billings' letter and hoped to have it out to her by the end of the month.

"We have had internal discussions on the subject of designation," she told *Environment Hawai'i*. "The current position of the deputy and chair" – that would be William Tam, deputy director of the Department of Land and Natural Resources and CWRM administrator; and William Aila, CWRM chair and head of the DLNR – "is that designation is not warranted at this time. ... One of the findings in the update is that in the next 20 years, if you look at demand and assume all demand is met throughout groundwater, it still didn't come up to the 90 percent criterion for designation. ... Maybe in a year or two, when more information is available, we'll revisit the issue."

Still, Ohye acknowledged that water use in

the dry Kona area was an ongoing concern to the Water Commission. Although the entire data collection branch of the commission was "RIFFed" in 2009, she said, the remaining staff are still traveling to Kona regularly and trying to collect baseline data so that the impacts of cumulative pumpage can be evaluated. In Kona, "we have a monitoring network established since 1993, and we've been trying to collect data continuously" since then, she said.

Since the August hearing on the county WUDP update, "we've met with a National Park Service hydrologist, engineers from the county Department of Water Supply, the U.S. Geological Survey, and private hydrologists," Ohye said. "We're trying to come together and develop a more robust monitoring plan to address Park Service concerns. We've had a couple of meetings, and the last one was really fruitful."

Confounding Factors

Complicating matters, Ohye said, is the fact that a recent U.S. Geological Survey study of groundwater recharge on Hawai'i island came up with some surprising results. "It showed that the recharge in the Keauhou aquifer is much more than was previously estimated," she said, adding that if the new recharge figures were plugged into the county's WUDP update, it would dramatically increase the sustainable yield for the Keauhou aquifer system – from 38 mgd to 67 mgd. "It's not quite double, but it is considerably more," she said.

The report Ohye was referring to is "A Water-Budget Model and Assessment of Groundwater Recharge for the Island of Hawai'i," by John Engott, a hydrologist in the USGS Pacific Islands Water Science Center. Engott modeled rainfall and runoff across the island, looking at soil composition, vegetation, urban uses, and other factors, to come up with more refined estimates of recharge for each aquifer system. Of the island's 24 aquifer systems, Engott found that the recharge rates assumed in 1990 were too low in all but six. Of the six where recharge had been overestimated, Engott found three where the difference was 29 percent or higher (all in Kohala). But recharge rates for the remaining 18, he concluded, had been underestimated by as much as 264 percent (in the case of Hilina aquifer, within the boundaries of the Hawai'i Volcanoes National Park).

For the Keauhou aquifer system in particular, Engott came up with an estimated recharge of 86 mgd, some 77 percent higher than the recharge rate used in the CWRM documents. According to Roy Hardy of the commission staff, the reason the recharge rates are so much higher than previous estimates

has to do with the fact that fog drip has been included. "There are substantial regions of fog drip in Kona, especially at the higher elevations," Hardy told *Environment Hawai'i*.

In his modeling, however, Engott relied heavily on average rainfall measures in a time series that ran from 1916 to 1983. Since then, Ohye said, "there's been declining trends in stream flow and rainfall. Unfortunately, the recharge model didn't incorporate new rainfall data" found in University of Hawai'i professor Thomas Giambelluca's updated rainfall atlas, released just last month. "We're hoping USGS can update the recharge model" using the newer data, Ohye said.

In her comments on the WUDP update, park superintendent Billings referred to the Engott study, but also noted that recent drought conditions might have an impact. "A 2003 analysis of water level data from North and South Kona initiated by the commission suggested that a slow decline of water levels in some of the higher elevation wells may be related to climatic conditions," she wrote. "Long-term drought is of concern because a decline in precipitation levels contributes to lower groundwater recharge, lower aquifer storage, lower water levels, and less groundwater discharge to water resources in the National Park."

Another recent study, supported by very deep wells drilled on either side of Hawai'i island, suggests that fresh water reserves may lie below saltwater.

Hardy acknowledged that the Hawai'i County WUDP update, drafted in 2007, was already in need of revision. With many separate analyses ongoing at a given time, he said, there was the problem of "leapfrogging" – when one study is overtaken by another before the ink on the first one is barely dry.

Ohye said that after the August hearing on the county update, commission staff summarized the comments and forwarded them to the county Department of Water Supply. "Now we're waiting for their response to the comments," she said.

As for the long time lag between completion of the update and its eventual adoption, Ohye said that the commission staff was "trying to think of ways to make the plans more timely. It took the City and County of Honolulu six years to update two plans on O'ahu. We're brainstorming ways to make these plans more of a living document, so we don't have to wait so long between updates." The last time the commission approved the Hawai'i County WUDP was in 1990.

Meanwhile, Back at the Park

Apart from the issues of sustainable yield or recharge, the development of the Kona coast and associated impacts continue to weigh heav-

ily on the minds of managers of the Kaloko-Honokohau National Historical Park.

Last month, Billings commented critically on the draft environmental impact statement prepared for the proposed Kaloko Makai development, consisting of a mixed-use residential community with up to 5,000 residential units, 153 acres of light-industrial, commercial, or retail use, two elementary schools, a middle school, and a medical facility, among other things, spread out over 1,142 acres just upslope of the park.

As Billings wrote, "the same developer (TSA), in the same general location, submitted a similar inadequate analysis of impacts from a development adjacent to the Kaloko Makai project site, Kaloko Light Industrial Park-Phases III and IV, over 10 years ago." In that case, she continues, "the [state] Land Use Commission found that the conclusions and analysis were inadequate or unsupported... A similar lack of analysis and unsupported conclusions ... are presented in the Kaloko Makai DEIS." Concerns over the analysis of impacts of the development on the flows entering the park underlie many of the points Billings raises in the 24 pages of comment appended to her cover letter.

Billings and her staff have also had meetings with representatives of the state Department of Transportation, asking them to install oil-water separators in the dry wells along the improved Queen Ka'ahumanu Highway. So far, no luck: DOT has simply stated that "they've never done that before," Billings reports.

Last, but by no means least, the park has taken up with the Department of Health Safe Drinking Water Branch a change in the use of treated sewage effluent from the Kaloko Transitional Housing Project, less than a mile upslope of the park. The final environmental assessment for the project stated that the wastewater would be treated to reduce total nitrogen by 80 percent and total phosphorus by 90 percent and would then be applied to an absorption field. Earlier this year, the Hawai'i County Office of Housing and Community Development applied to the DOH to dispose of the treated effluent in injection wells, which, according to the DOH, are to be "the primary means of sewage effluent disposal" for the project.

In response to the park's concerns, branch chief Joanna Seto wrote that, "To a large extent, the conditions of the ... permit provide protection to subsurface formations and groundwater" and "will contain enforceable effluent standards for certain substances.... We appreciate your commitment and diligence in protecting the Kaloko-Honokohau National Historical Park."

— *Patricia Tummons*

Water Code Sets Forth Guidelines for WMA Designation

Whether and under what conditions the Commission on Water Resource Management can designate a water management area is set forth in the state Water Code, Chapter 174C of Hawai'i Revised Statutes.

Designation itself is to occur whenever "it can be reasonably determined ... that the water resources in an area may be threatened by existing or proposed withdrawals or diversions of water." The process can be initiated either by petition from affected users or on the recommendation of the chairperson of the commission (the Water Commission chair is also the director of the Department of Land and Natural Resources). "It shall be the duty of the chairperson to make recommendations when it is desirable or necessary to designate an area and there is factual data for a decision by the commission," according to Section 174C-41.

In Section 174C-44, the Water Code sets forth eight scenarios that the commission should consider in weighing whether to designate. They are:

1. Whether an increase in water use or "authorized planned use" may drive withdrawals to reach 90 percent of the sustainable yield of an aquifer;
2. When the Department of Health has identified an "actual or threatened" degradation to water quality;
3. Whether regulation is needed to preserve groundwater supplies for future needs, "as evidenced by excessively declining ground water levels;"
4. Whether the current withdrawals are being done in such a manner that they endanger the stability of the aquifer by drawing saltwater into it;
5. Whether chloride levels are increasing to the point they "materially reduce the value" of existing water uses;
6. Whether "excessive preventable waste of ground water is occurring;"
7. Whenever "serious disputes" over the use of groundwater exist;
8. Whenever projects that have received any "federal, state, or county approval" may result in one of the preceding conditions.

Flooding Forecasts, Climate Research Among Casualties of Stream Gage Losses

The cost to operate a stream gage is roughly \$22,500 a year. The potential cost, in lives and property, of not operating it is incalculable.

So, when the U.S. Geological Survey announced recently that it would be ceasing operations of 22 gages—10 of them on streams on O'ahu, Moloka'i, Maui, and Hawai'i island—Mike Cantin, the warning coordination meteorologist with the National Weather Service in Honolulu, was alarmed.

Shutting down the gages “will have an impact,” he told *Environment Hawai'i*. “These gages are part of a network we used in our warning process. The fewer data points we have, the less hard ground-truth data we have to aid in our forecast process.”

Rain gages, some operated by the Weather Service, some by other agencies (including the USGS), are no substitute, Cantin said. “They help you when the rain is falling directly over a stream or stream basin, but if the gage isn't there, you won't get the true measure.” Stream gages, he said, are the best way “to see how rain is translating down the stream basin.”

The loss is also felt by scientists and researchers as well. Since 1947, a U.S. Geological Survey gage on Waikoloa Stream, near the Big Island town of Waimea, recorded stream flows, giving scientists a 65-year-long record of hydrologic conditions. It's just the kind of data set that is coveted by scientists looking into long-term weather patterns and climate change.

No more. The Waikoloa gage was the longest-running of the discontinued sites, but not by much. Gages on Kipapa Stream and the south fork of Kaukonahua Stream, both near Wahiawa, had been in operation since 1957.

Two other gages, both on O'ahu's North Halawa Stream, were on the USGS hit list, but were rerieved by the state Department of Transportation. It is required to monitor those streams as a condition of building the H-3 highway.

Ron Rickman, the data section chief at the USGS Pacific Islands Water Science Center in Honolulu, says the cost of operating a stream gage such as that near Waimea is \$22,500 a year, while a co-located rain gage cost \$9,000 a year. (A stand-alone rain gage is \$10,800 a year to operate.)

The state Commission on Water Resource Management is the largest cost-sharing partner with USGS in the Hawai'i monitoring effort,



A USGS stream gage at Kepuni Gulch, Maui.

with a contribution this year of just under half a million dollars to help run 59 USGS gages and observation wells. Its contribution covers around 57 percent of the total cost of the program, which, in the current federal fiscal year, comes to almost \$900,000.

Other agencies help out. In addition to the DOT, state Civil Defense has assisted in

paying for several other gages, Rickman added, noting that the recently resigned deputy Civil Defense chief, Ed Teixeira, had been “a really big advocate” for gages.

When it became apparent earlier this year that the USGS gaging program would be taking a serious hit, “the National Weather Service really went to bat for us,” Rickman said. “They sent letters to the governor, to congressional staff.” Everyone has been made aware of the problem, he said, but with tight budgets all over, “their hands are tied.”

John Cummings, public information officer of the City and County of Honolulu's Department of Emergency Management, acknowledged that the agency was aware of the discontinuation of gages at Kaukonahua and Kipapa streams, as well as rainfall monitoring at Manoa Stream.

“We are understandably concerned that these systems were the unfortunate victims of federal budget cuts,” Cummings wrote in an email to *Environment Hawai'i*. “Elimination of these gages statewide could affect the timeliness and accuracy of weather forecasts.”

Still, he said, the losses “should not radically impact our ability to alert, warn or evacuate residents when severe weather produces a significant amount of rainfall.” Kaukonahua Stream still has one monitoring station functioning, while Kipapa and Manoa streams “will be supported by direct field observation reports” from city employees and citizen volunteers, he wrote.

Environment Hawai'i

Sign me up for a new renewal subscription at the
 individual rate (\$65) non-profits, libraries (\$100)
 corporations (\$130) economic downturn (\$40)

I wish to make a donation of \$ _____ a month through my credit card account for 12 months.
 (Fill out form below; minimum amount is \$10 a month)

To charge by phone, call toll free: 1-877-934-0130

For credit card payments: VISA or MC

Account No.: _____ Exp. Date: _____

Subscription Payment: \$ _____ One-time donation: \$ _____ Monthly authorization: \$ _____

Phone No.: _____ (expires after 12 months)

Signature of account holder _____

name _____

address _____

city, state, zip code _____

Email address (for free access to online archives): _____

Mail form to:
Environment Hawai'i
72 Kapi'olani Street
Hilo, HI 96720

We are a 501(c)(3) organization. All donations are tax-deductible to the extent allowed by law.

Address Service Requested

Non-Profit
Organization
U.S. Postage

PAID
Permit No. 208
Honolulu, HI

Printed on recycled paper 

A Long Decline

Cooperative monitoring of streams and groundwater in Hawai'i began more than a century ago, when, in 1909, the USGS and the Hawai'i territorial government placed the first gages on 12 streams, according to a report prepared earlier this year for the state Commission on Water Resource Management. From that point up to 1966, the number of gages rose steadily, reaching a peak of 197 gages measuring rainfall and streamflow.

In 1972, groundwater monitoring wells were added to the program, with 170 such wells eventually established. Now only 18 remain in use. According to CWRM's Report to the 2009 Legislature, "beginning in 1998, the Commission streamlined the cooperative agreement by transferring the crest-stage stream-gaging program to civil defense agencies where these data (e.g., flooding issues) are more relevant to disaster response rather than sustainability issues, and by eliminating duplication of groundwater data collection efforts in wells." Data on groundwater would henceforth be provided by water system purveyors and well owners, "who were required by law and rule to report their water-use and groundwater and chloride levels."

But well owners and operators have a poor record when it comes to self-reporting. According to CWRM's Roy Hardy, the commission receives regular reports on just a fraction of the known production wells. And even when reports are received, the commission has no staff to analyze it. "We lost our survey branch people, who were keeping track of this before," Hardy said.

In recent years, the Department of Land and Natural Resources' Land Division, Engineering Division, Division of Forestry and Wildlife, and Division of Aquatic Resources had helped out with the costs of gaging, motivated by a variety of reasons.

In the Land Division's case, said Rickman, stream monitoring in East Maui had been undertaken as part of the dispute over rights to stream flows.

The Division of Forestry and Wildlife used part of its Watershed Management Grant Program (WMGP) to gage streams on lands in watershed partnerships over several years in annual amounts ranging from a high of \$132,000 (fiscal 2007, when 16 gages were operated) to a low of \$49,000 (fiscal 2009, when it ran four gages). But, according to a staff report to CWRM for its July meeting, when the commission authorized renewal of the joint agreement, "the WMGP has withdrawn its support ... disengaging the watershed partnerships from Commission and USGS efforts in monitoring the water resources in watershed areas."

The Waiahole Trust Fund, established as part of the resolution of the long contested case over windward streams, helps defray the cost of monitoring Kahana, Waiahole, and Waikane streams. The amounts vary – from a high of \$50,500 in fiscal 2010, to a low of \$32,850 for the current fiscal year.

Vital Information

The most recent cuts are only the most drastic in the four-decade-long decline of the joint water resource monitoring program. Just seven years ago, there were 39 stream gages statewide, 71 monitoring wells measuring water levels and water quality, and 25 rain gages. Today, the numbers have dropped to 27, 18, and 14, respectively – declines of 30 percent, 75 percent, and 44 percent.

In its report to the 2011 Legislature, the Water Commission commented on the loss of this monitoring capacity. "Over 140 (37 percent) of the 376 perennial streams in Hawai'i have been gaged since the inception of the cooperative program," the report stated. "However, the steady decline of the number of monitored streams has diminished the abil-

ity of water resource managers to understand and appropriately manage the state's surface waters....

"Long-term stream data is vital for flood analysis in the construction of roads and housing developments, assessment of water quality criteria and dam safety, and the long-term monitoring of streamflow trends, erosion, and other environmental concerns."

Lenore Ohye, a planner with the Water Commission, stressed just how serious the loss of data is. "We're really concerned that we're losing baseline data, and with us now on the cusp of climate change, it is even more critical to know what's going on hydrologically. Along with the USGS, we're trying to spread the word about the importance of data collection, but our own budget keeps getting cut, too."

Ohye noted that in the past, data collection was not the job of the state and USGS alone. "When the plantations were in operation, they had their own rainfall stations," she said. "It informed a basic business decision – to irrigate or not. They had a lot of good records, of evaporation as well as rainfall. And all those stations are gone now, too."

"It's quite alarming when you think about it, and everybody's scrambling. To me, personally, basic data collection is critical. Every day that goes by when you don't have that data point, you can't get it back. I recently went to a conference of western state water planners. USGS people were there, other federal agencies. One common theme across all states was the USGS needs to be better funded. All of us need more data."

According to Hardy, the CWRM staff is discussing how to augment its support for the gaging program and rebuilding its capacity to analyze data.

— **Patricia Tummons**