



BOARD OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793-2155
TELEPHONE (808) 270-7816 • FAX (808) 270-7951 • www.mauiwater.org

January 22, 2019

Jeffrey T. Pearson, P. E.
Acting Director
County of Maui
Department of Water Supply
200 S. High Street, 5th Floor
Wailuku, HI 96793

SUBJECT: MAUI COUNTY BOARD OF WATER SUPPLY'S REVIEW AND COMMENT OF THE
DRAFT MAUI ISLAND WATER USE AND DEVELOPMENT PLAN (WUDP)

Dear Acting Director Pearson,

The Maui County Board of Water Supply (the Board) has reviewed the draft Maui Island Water Use and Development Plan (WUDP) and in early December 2018 solicited input from community members at five public meetings held throughout the island. Maui residents provided insights, historical and cultural information, and data, and raised general and detailed concerns relating to water use in Maui County. The members of the Board benefited a great deal from these meetings.

As a result of the plan review and community feedback, the Board has identified the issues outlined in the attached table. Department of Water Supply staff (the Department) have provided feedback, again via the attached table, to each of the issues. In some cases the Department has outlined where the issue was already addressed in the plan and in others the Department has negotiated with the Board the inclusion of improved responses. The Board is unanimous in its commendation of the Department and the effort to compile this draft WUDP.

By submission of this letter and attached table the Board now conveys its feedback and advice on the Maui Island draft WUDP. The Board further advises that, in its submission to the Maui County Council, the Department either include the attached table with issues and responses on the WUDP or convey its availability for review by the Council. The Board feels strongly that the Maui County Council's understanding of the issues reviewed to-date will enhance the Council's deliberations on the plan.

"By Water All Things Find Life"

Jeffrey T. Pearson, P.E., Acting Director
Review and comment on the draft Maui Island Water Use and Development Plan
Page 2

Not all the issues raised were directly related to the WUDP. Specifically, compliance, enforcement, potential changes to the County Code, and funding are not within the purview of the Water Use and Development Plan (which is intended to be a guide and has no legal authority), nor do they fall within the authority of the Board. However, the Board requests that the Department forward these concerns to the appropriate bodies so that they can be made aware of the views of our community. Additionally, community members emphasized the importance of the County taking proactive steps to support the practices of the Hawaiian culture which cannot be separated from decisions about water use and distribution. The Board requests that these concerns also be addressed appropriately.

Should the Department require any clarification please do not hesitate to discuss questions with the Board.

Please accept the Board's comments on the draft Maui Island Water Use and Development Plan and related community concerns. Again, the Board requests that the Department convey these identified issues and responses to the Maui County Council. And in conclusion, the Board once again expresses its deep appreciation for the work the Department has put in to developing this draft plan. Thank you.

Sincerely,

A handwritten signature in black ink, appearing to read 'Anders Lyons', written in a cursive style.

Anders Lyons
Maui County Board of Water Supply Chair

attachment

ISSUE	DEPARTMENT OF WATER SUPPLY RESPONSE/COMMENT	WUDP SOURCE
Capital Improvements		
<p>More funding for watershed restoration, watershed restoration from mauka to makai</p>	<p>Strategies include 1. Promote increased distribution of funding for watershed protection and active reforestation to reflect multiple values and ecosystem services; and 2. Expand watershed protection to incorporate the ahupua`a as a whole and utilize ahupua`a resource management practices. Initiate and promote collaboration between county and state agencies and the Native Hawaiian communities, organized in mokus</p>	<p>Chapter 12.1 Chapter 13.2 Strategies 2 and 3</p>
Serious distribution problem in terms of equitability		
<p>Residents (Affordable Housing or Water Meters or “real” farming or Cultural Practices) vs. Expensive Homes, Hotels, Speculative Development, Corporations</p>	<p>Strategies include: 1. Protect and prioritize public trust uses in allocating groundwater in regions of limited resources and conflicting needs and 2. Develop a water availability rule to provide certainty in land use planning and ensure that reliable source and infrastructure capacity is provided within reasonable time for planned growth. DWS Administrative Rules Title 16 Chapter 201, adopted 1/18/18, prioritize Affordable Housing projects in serving new demand on DWS Central or West Maui water systems.</p> <p>Cultural Practices is addressed below under “Ahupua`a/Cultural Practices”.</p> <p>Strategies for non-potable water for “Real farming” include: 1. Maintain the integrity of plantation irrigation systems including reservoirs; 2. Augment agricultural water supplies with alternative resources, 3. Diversify supply for agricultural use to increase reliability; and 4. Prioritize delivery and use of agricultural water within County agricultural parks to cultivation of food crops for local consumption</p> <p>In balancing competing water needs, agricultural irrigation is not a protected public trust use and should increasingly consider ambient</p>	<p>Chapter 13.2 Strategies 39 and 42</p> <p>Chapter 13.2 Strategies 32, 51, 55, 56 and 62</p>

	rainfall and climate appropriate crops. A diversified supply combines sufficient reservoir storage to take advantage of high stream flows in wet season and to capture stormwater and regional rainfall, with non-potable groundwater as contingency in long-term drought periods. It would be cost prohibitive to develop municipal potable groundwater and infrastructure capacity as contingency for agricultural zoned land.	
More than 60% of water used on Maui is from Wailuku. Why are we delivering to a desert? (Haiku to Wailuku/then Wailuku to Wailea?)	lao groundwater sources were developed by joint venture that included Wailea Resort in the 70s. Planned growth per MIP is directed to population centers, generally in dry coastal regions with existing infrastructure (roads, schools, fire protection etc) but not plentiful water resources. Per MIP growth is not desirable in many watersheds with extensive water resources (Waikamoi, Honokohau, Kahakuloa and other watersheds). WUDP strategies to mitigate water resource transfers include development of alternative water sources.	Chapter 14.8.5 Strategies 8, 9 and 10
Continuity		
Water Dept and Wastewater, Work together so more reclaimed water, non-potable, R1	Increased recycled water use and agency collaboration addressed in strategy to “Promote closer collaboration between MDWS and MDEM to master plan and utilize DWSRF funding to maximize recycled water use”	Chapter 13.2 Strategies 57 and 58
Transition Plan, one water management plan, two departments working together	Transition of DEM and DWS powers, duties and functions require a County Charter amendment	
Continuity of managing all water resources (county and private), currently dysfunctional system to have private/public	CWRM has jurisdiction of water resources use. Staff and funding limit enforcement of water use measurement and reporting. DOH regulates water quality of all privately owned “Public Water Systems”. WUDP strategies to improve regional water resource management include: 1. Increase monitoring of groundwater sources to assess water and chloride levels in potable and non-potable wells throughout developed aquifers; 2. Promote well siting and distribution strategies	Chapter 13.2 Strategies 40, 41 and 42

	for all public water systems to ensure optimal spacing and withdrawals for aquifer health and equitable use, 3. Formalize demand response plans for water purveyors that address water shortage and aquifer changes.	
Implementation/Compliance		
Coordinated approach between water purveyors, land use planners, and visitor industry – add RESIDENTS.	Residents are part of the public process. Context in WUDP is water purveyors’ strategies to address Climate Adaption in consistence with the Climate Change Adaption Priority Guidelines. To adapt resort water uses in resorts through targeted conservation and incentives for green infrastructure and use of alternatives water sources requires coordination between water purveyors, land use planners and the visitor industry.	Chapter 19.8.3 “Climate Adaption”
Implementation/teeth	The Water Use and Development Plan and the Maui Island Plan make up a framework to ensure that land use and infrastructure planning are integrated and provide guidance for resource use and infrastructure development. The WUDP does not legally bind agencies and organizations tasked to implement recommended policies and strategies. Implementation will be monitored over the planning period.	
Ahupua`a/Cultural Practices		
Return to Ahapua`a/managing ahapua`a	In order to identify and protect native Hawaiian cultural, historical and natural resources and help ensure native Hawaiian customary and traditional rights, a Ka Pa`akai analysis and consultation process was conducted. Preliminary research consulted sources listed in Appendix 9A, followed by consultation through outreach to individuals and organizations, including the Maui Aha Moku Advisory Committee, DHHL, OHA Native Hawaiian Legal Corporation, Hui o Na Wai Eha among others. Agencies responsible for protecting traditional and customary native Hawaiian rights must conduct detailed inquiries into the impacts on	Chapter 10.2 Appendix 9A
Kahoma Restoration, revitalization of streams, recharge 6 years, is it long enough?		
Place first, people second		
Thriving freshwater ecosystem		
Cannot practice our practices until we have resources: water, fish, make cultural practices a priority		

<p>Rebuild Hawaiian social structure should be a priority</p>	<p>those rights to ensure that proposed uses of land and water resources are pursued in a culturally appropriate way. Therefore, implementation of the policies, strategies and actions set forth in the WUDP through capital improvement plans, regulatory changes, development of water sources and water system infrastructure, watershed management and conservation activities, among others will continue consultation to identify and mitigate any impact on traditional and customary uses.</p> <p>The cultural ahupua'a system is perpetuated through the modern principle of sustainability and ecosystem-based stewardship. The cultural concept of malama `aina can be facilitated by integration of traditional ahupua'a district planning with modern watershed and ecological planning, as well as fostering community responsibility to participate in planning and management efforts. WUDP strategies include: 1. Stream restoration and increased use of kalo lands, 2. Expand watershed management utilizing ahupua'a resource management practices; and 3. Enable and assist in providing for Native Hawaiian water rights and cultural and traditional uses through active consultation and participation.</p>	<p>Chapter 13.2 Strategies 3, 4 and 5</p>
<p>Water for self-reliance</p>		
<p>What is the commitment? Is it just window dressing?</p>		
<p>Spoken of as if cultural practices are the past; they're the present and the future</p>	<p>Each Aquifer Sector Area report includes Contemporary Native Hawaiian Cultural Resources. Water use needs for kuleana lands are projected considering potential future increase, build-out of DHHL lands in accordance with the 2017 State Water Projects Plan. The potential for lo'i kalo cultivation as well as other plants for subsistence and cultural purposes are characterized using data from OHA, CWRM IIFS and contested case documents, Declarations of Water Use and the DOA Agricultural Baseline. Demand projections can be refined as additional data is provided.</p>	<p>Chapters 14.3.6, 15.3.4, 16.3, 17.3, 18.3.5, 19.3.5</p>
<p></p>	<p></p>	<p></p>

Environmental Issues/Biological controls		
Stop drilling injection wells	Expanded use of recycled water strategies should mitigate injection well use (or new drilling)	Chapter 12.4 Chapter 13.2 Strategies 57, 58
Flood control	Stormwater catchment and reuse strategies would convey stormwater for agricultural irrigation while providing flood control	Chapter 12.4 Chapter 13.2 Strategy 62
Create setbacks from streams	CWRM well construction standards require Constant Rate test to identify well construction interference with streams. CWRM may require longer tests for wells near streams. Staff to add strategy: to seek guidance from CWRM in adequate setbacks from streams	
Wailuku and lao aquifers need to be preserved/protected from saltwater intrusion	lao aquifer is designated a Groundwater Management Area, which requires water use permits for all groundwater extractions. WUDP strategies to protect lao aquifer include: 1. Support collaborative hydrogeological studies to inform impact from climate change and future well development on groundwater health; and 2. Promote well siting and distribution strategies for all public water systems to ensure optimal spacing and withdrawals for aquifer health and equitable use	Chapter 13.2 Strategies 36 and 41
Watershed Protection and Management		
More Funding for restoration	See Issue # 1	
Carbon credits	Strategies that address energy management and alternative energy use include 1. Pursue comprehensive energy management; 2. Increase energy efficiency and improve load management; and 3. Increase alternative energy generation and use. Carbon credits could be a funding mechanism in implementation.	Chapter 13.2 Strategies 33, 34 and 35
Recharge watershed	Watershed augmentation through reforestation and management is addressed in Strategy to promote increased distribution of funding for	Chapter 13.2 Strategy 2

	watershed protection and active reforestation. Strategy to maximize surface water use in wet season and shift non-instream needs to groundwater and alternative supply when available in dry season enhances aquifer recharge.	Chapter 19.8.3 Strategy 7
Lower parts of watershed (mountain to the sea/mauka to makai), wetland restoration areas	Ahupua`a resource management - See Issue # 1 Wetland and stream ecosystem restorations through establishing numerical IIFS for diverted streams. Restoration of Waikapu Stream recharges Kealia Pond.	Chapter 13.2 Strategy 48
Lo`i terraces along watershed	Strategy to support stream restoration and increased use of kalo lands	Chapter 13.2 Strategy 4
Private Systems (PUC regulated)		
Hana ranch system, how can County help?	Contingency agreements between potable water purveyors can increase system reliability IF systems are built to standards. Integrating small private systems that may not have the required hydraulic, contingency, financial and operational standards as the county would put the DWS system and customers at risk.	
Data		
Get clear on ag use	Water use for agriculture is inventoried based on water use reporting (groundwater pumpage and stream water diversions). Future agricultural water use is projected using water duty for identified crops based on County zoning; potential for lo`i kalo based on CWRM stream assessments for IIFS, and 1989 Declarations of Water Use; diversified agriculture based on DOA 2015 Baseline data and hypothetical increase, HC&S Diversified Agriculture Plan (partial and full build-out scenarios), and Kula Agricultural Park expansion plan.	Chapter 9.1, 9.3, 14.6.5, 15.6.5, 16.6.5, 17.6.5, 18.6.5, 19.6.5
Timetable for getting data	The Board of Water Supply advises the Department of Water Supply to update the plan more frequently than has been the case in the last 25 years.	

Board of Water Supply Selected Issues Related to WUDP, January 21, 2019

<p>Public versus private water purveyors</p>	<p>Privately owned public water systems are identified for each aquifer sector area under “Water Use by Type” (Municipal Use/Private Public Water Systems)</p>	<p>Chapter 14.5.1, 15.5.1, 16.5.1, 17.5.1, 18.5.1, 19.5.1</p>
<p>More monitoring and maintenance of streams</p>	<p>Reporting stream water diversion amounts is required by State Water Code. CWRM assesses stream flow under various conditions in establishing IIFS. WUDP strategy to prioritize IIFS for diverted streams and install stream gage on Kanaha Stream (diverted but no existing gage).</p>	<p>Chapter 5.6, Chapter 19.8.3 Strategy 6</p>
<p>Population projections to include tourists</p>	<p>Visitor population is included in population projections. The rates of increase in resident population, housing and total employment are higher than the rate of growth for visitors. Current water use is projected to increase at the rate of population growth for each community plan area (based on the 2014 Socio-Economic Forecast) which includes water use for visitors.</p>	<p>Chapter 9.2</p>
<p>Realistic overall estimate of lo`i kalo on kuleana lands (Hokuao is doing an assessment), given resurgence of interest in cultural practices, return of families to ancestral lands, potential for increases</p>	<p>The potential for lo`i kalo cultivation are characterized using data from OHA, CWRM IIFS and contested case documents, Declarations of Water Use and the DOA Agricultural Baseline. Demand projections can be refined as additional data is provided.</p>	<p>Chapters 14.3.6, 15.3.4, 16.3, 17.3, 18.3.5, 19.3.5</p>
<p>lao tunnels</p>	<p>Inversion tunnels are inventoried and characterized. lao tunnels are subject to the combined contested case for the designated surface water management area Na Wai EHA and establishment of IIFS. Water Use Permits for the lao tunnels discharging into Wailuku River were denied.</p>	<p>Chapter 14.5.1</p>
<p>Haiku has no proven capacity/no studies done. Show/discuss how aquifer estimated MGD numbers were derived. What studies, how old are the studies, etc.</p>	<p>CWRM ranks the values for sustainable yield (SY) according to the degree of confidence that CWRM places on the number, ranging from (1) most confident to (3) least confident, based on the type, quality and quantity of hydrologic data available and used in determining SY. Haiku was ranked as (2) moderately confident. The 2008 Water Resources</p>	<p>Chapter 16.2.2 WRPP Chapter 3.3.5.1</p>

Board of Water Supply Selected Issues Related to WUDP, January 21, 2019

	<p>Protection Plan (WRPP) defines method of establishing SY. Haiku SY was established based on Robust Analytical Model (RAM) 2008 and RAM + updated recharge values from 2007 USGS study (Engott, J.A.) and 1999 USGS study (Shade, P.J.)</p> <p>WUDP strategy to pursue hydrologic studies needed to explore the Haiku aquifer.</p>	<p>Chapter 15.8.3 Strategies 4 and 8</p>
<p>How do well developments impact ground water, in stream flow standards?</p>	<p>Well development is regulated by CWRM. Well Construction and Pump Installation Permits govern practices to ensure adequate protection, testing and optimization of aquifers and to minimize saltwater intrusion. Extraction of groundwater can cause upconing, declining water levels and saltwater intrusion if wells are too closely spaced and pump rates exceed aquifer recovery, wells are not properly constructed, or immediate adjacent to a stream. Well development does not directly impact IIFS.</p>	
<p>Need more time to study impacts if IIFS</p>	<p>IIFS are established applying adaptive management strategies, so that impacts can be studied, implementation assessed and IIFS adjusted as needed.</p>	
<p>Are numbers in plan accurate?</p>	<p>We find some errors and correct in review before Final Draft.</p>	
<p>Kuleana parcels show only 10%</p>	<p>Kuleana lands using OHA 2009 inventory. The Board of Water Supply agrees that data on Kuleana parcels could be stronger. If additional reliable datasets are identified, the Board of Water Supply advises the Department of Water Supply to use those data to create a more accurate picture in future plans.</p>	
<p>Data does not include water returning to the streams from taro patches</p>	<p>Data states “water utilized for taro is returned to the stream for downstream use with negligible loss. An exception to the downstream reuse of water principle rests in the extent to which other native Hawaiian traditional and customary crops are cultivated by way of irrigation water that is not returned to the stream. Therefore, consumptive use for lo'i taro in terms of unavailable downstream water lost is difficult to quantify but has been estimated at 15,000 to</p>	<p>Chapter 9.3</p>

Board of Water Supply Selected Issues Related to WUDP, January 21, 2019

	40,000 gad, although the necessary flow is estimated to be 100,000 to 300,000 gad.”	
Study the source and distribution of the water system for the entire Island of Maui	Plan includes all sources and water systems on Maui island	
Instead of projected growth of our population, our current water system should be comprehensive like Honolulu’s and focused on providing more opportunities for agriculture use and more truly affordable housing for the working people of Maui	WUDP is consistent with the MIP and the projected population growth per the Socio-Economic Forecast. Agricultural demand is not directly correlated to population growth, as stated in the plan, and represent additional demand projected for each aquifer sector . Water resource availability does not impede construction of affordable housing .	
Community engagement		
Work to improve advertising to the community about these meetings	Department staff held 12 open public meetings, advertised in Maui News, on line, and via email, prior to Board public hearings. Board hearings were advertised in Maui News, on line and via email.	
Easier to understand plan for regular people, simplify language: How much resource? Demand? Use? Recharge? What’s condition of aquifer?	The Department of Water Supply staff will revise portions of the Executive Summary to further simplify the language.	
More opportunities to participate; feel like not part of the early process	20 public meetings, targeted stakeholder meetings and workshops were held in 2016 – 2017, in addition to 16 presentations and briefings to CWRM, Board of Water Supply, and County Council before 5 Board hearings in 2018. There are additional opportunities to testify in 2019 to County Council and later to CWRM.	
What is follow-through?	Plan implementation will be tracked and monitored , lead agency is DWS.	

Board of Water Supply Selected Issues Related to WUDP, January 21, 2019

WRITTEN TESTIMONY SKIPPY HAU	DEPARTMENT OF WATER SUPPLY RESPONSE/COMMENT	WUDP SOURCE
P.13 Protect Traditional and Customary Rights		
Traditional and customary practices should not include golf courses or golfing. Although classified under land use as agriculture.	They do not	
More attention should be given to the different conditions in leeward versus windward parts of the islands.	Acknowledged	
We need to promote reducing water use and improving water recharge. Leeward sides should not plant too many coconut trees and should be less “flowery” in resort, apartment, and condominium and housing landscapes. Kahana, Wailea, and Kihei are leeward they should be using less water.	Acknowledged	
P.20 Need to stress conservation. We should prepare and do things for thinking drought before it happens. During droughts, messages and reminders should be constant. Weather reports should announce rainfall and water use in specific areas. These areas should be monitored and communicated with the public. We often get generalized weather reports with surf conditions too often and too repetitive – useless in my opinion.	Acknowledged	
Are there any plans to increase storage through water tank system expansion or reservoir storage areas? There does not appear to be any new storage areas or modifications to existing reservoir areas. It seems elevated storage should be taking advantage of gravity flow to developed areas. Will pumping of water with solar and wind energy being considered for the future? When and where?	Central ASEA strategies include raw water reservoir construction. Yes, solar and wind energy are considered and need feasibility studies	Chapter 15.8.3
In regards to bathrooms, I strongly support the use of no flush urinals everywhere possible.	Acknowledged	
P29. Climate.		
While that appears to be the normal climate scenario. In recent years, we appear to have kona storms with fronts passing the islands from the south, then raining a second time as tradewinds blow the same front back over the islands. The rains appear to be much more intense and can easily drop “five-inch” storms overnight.		

Board of Water Supply Selected Issues Related to WUDP, January 21, 2019

<p>PP.42-43. The groundwater will be impacted by rising groundwater and saltwater intrusion. However, the potable water being piped to Kihei, Makena and Wailea originates from the windward streams and Central aquifers. Will conservation measures and water recharge be a priority in South Maui? The plan does not clearly explain this.</p>	<p>Yes, landscaping and irrigation system incentives targeting dry areas, landscape ordinance that includes xeriscaping</p>	<p>Table 13-1, Strategies #12, 14, 16</p>
<p>P.64 “HC&S is expected to remain a major user.” Is there a current update on the status of A&B lands?</p>	<p>HC&S/A&B successor expected to represent major water use compared to other agricultural and non-agricultural uses.</p>	
<p>P.99 8.2.5 Stormwater Reuse</p>		
<p>Strongly recommended. Potable water should not be used on golf courses and landscape maintenance.</p>	<p>Acknowledged</p>	
<p>Please clarify DHHL needs. Although high priority, there should be a “plan” with a timetable for expansion on the implementation and awarding of homestead properties.</p>	<p>WUDP incorporates DHHL needs and timetable per their water plan in State Water Projects Plan May 2017 Update</p>	
<p>P.102 (future plans undetermined)</p>		
<p>P.104 Water demand forecast 2001-2021.</p>	<p>DHHL’s time table</p>	
<p>Pioneer Mill is closed. HC&S is closed. Please clarify forecast.</p>	<p>No update to the AWUDP is available. WUDP does not forecast ag use based on the 2003 AWUDP but instead projects water use based on 2015 DOA Ag Baseline data and project specific information</p>	
<p>P.123 East Maui Streams</p>		
<p>If kalo is restored, please remember that water will be used then allowed to flow to other lo’i or returned to the stream. Is there any clarification on the amount of water returned to the stream and allowed to flow to the ocean?</p>	<p>No stream assessments are conducted as part of the WUDP but data is incorporated where available. Flow through needs versus consumptive use for kalo is indicated. Established IIFS quantifies minimum instream flow but not always outflow to ocean.</p>	
<p>P.129 HC&S Lands</p>		
<p>Please clarify their diversified ag use. It should not be what was proposed but actual agricultural useage (including pasture, biofuel, monocrops, forestry, etc.) Does the 10 or 20 year phase-in mean nothing has been planted or harvested?</p>	<p>Scenario 1 represents HC&S’s proposed use, scenario 2 – 4 represent high to low projections of potential acreage and harvesting. Scenario 4 22.5 mgd is about 2017 water use. 2017 crops are described</p>	<p>Chapter 15.6.5</p>

Board of Water Supply Selected Issues Related to WUDP, January 21, 2019

There should be a clear drinking water plan for emergencies when there is no electricity.	Emergency Action Plans are available for DWS but not incorporated into the WUDP	
Need to inform the public of procedures including sewer use. Should water be used to flush toilets, etc. during blackouts?	N/A in WUDP	
P.152 The use of Q ₅₀ , Q ₇₀ , Q ₉₀ and Q ₉₅ in this section and Table 11-3 on surface water, is not clearly understood. It shows that “most of the water was diverted!”	Table 11-3 illustrates the range of stream flow and available surface water to divert, from drought flow (Q ₉₀) to reported diverted water prior to 1990 (per the 1990 WUDP)	Table 11-3
Introduced species impact ecosystems.	Acknowledged	
In regards to diversified agriculture, I understand the Water Commission has said the HC&S lands will be diversified agriculture and have reserved diverted water for this business. If they are not “farming,” no water should be diverted from streams at this time! Previous sugar cane lands should not be left fallow like Pioneer Mill lands after their company closed.	CWRM established IIFS for East Maui streams , providing water for some of HC&S plantation some of the time	Chapter 15.7.4
With restored interim instream flows, groundwater, seeps and springs appear to have come back for the Na Wai Eha streams. Over time, restored stream flows to the ocean and have improved ecosystems and productivity in fisheries and stream life.	Acknowledged	
Part II Water Resource Management, Strategies and Recommendations		
P.180 Grey water systems		
Laundry-only gray water may be approved.(Maui County Code, Chapter 16.20B). Is it being used?	Very limited to our knowledge	
Can regulations be changed to allow common areas for clothes lines to dry clothes in developments/condominiums, apartments, etc.? It could be designed in shared secured common areas to be hidden from public view. The prohibition of clothes lines is illogical because of our tradewinds.	Acknowledged. WUDP does not address homeowner and condo associations CC&Rs	
P.197 irrigation efficiency.		
Instead of lining, have irrigation ditch systems ever considered replacing portions of the ditches with piping? For example, some farmers now use pvc pipes to transport water between lo’i and return flow to the stream. Kahoma lo’I also reduces water loss by piping in water from the stream. Reducing evaporation and ditch seeps would	Acknowledged. Can be considered in assessment of plantation ditch system efficiencies . Also indicated for Na Wai Eha kuleana use efficiencies	

Board of Water Supply Selected Issues Related to WUDP, January 21, 2019

make the system more efficient and reduce water loss. Intakes and kuleana ditches made of rock would not need to be rebuilt after heavy storms.		
The establishment and restoration of “wetland areas” is needed. These areas would help with water storage, infiltration, and act as natural settling basins for sediment and aquatic ecosystems where wildlife will be attracted.	The Board of Water Supply supports wetland restoration.	
P.222		
III. Sector Area Reports Wailuku Aquifer SectorArea		
P.8 South Maui users should pay for construction and maintenance of the pipeline system which transports water from Wailuku. In a previous public meeting over 20 years ago, can you explain if developers paid for drilling source wells and were promised a portion of the water by the Water Department? Are they paying any maintenance or service fees to the water department (like the water companies, are they paying for the conveyance of the water)?	Development of wells in Iao aquifer and transmission to South Maui was paid for by joint venture in 1970s. All DWS users pay for transmission (conveyance) of water through the Water System Development Fee.	
What is the current budget for stream protection and instream flow standards? Is stream monitoring taking place?	CWRM’s budget to establish IIFS and monitors stream flow is not identified. DWS budget for USGS resource monitoring of select streams and wells is about \$80K annually	
It seems, the restoration of instream flow may, in the case of Waikapu Stream, increase natural stream flow after several years. Wailuku River appears to have several springs restored.	Acknowledged	
P.58 Table 14-19 Surface Water Diversions		
Waiehee River Wrong spelling. Waihe’e River	Corrected	
III Lahaina Aquifer Sector Area		
P.6 While recharge has been decreasing over time, it is important to acknowledge that water diverted for plantation agriculture has reduced water recharge for over 150 years. Recent return of instream flow should increase aquifer recharge. As discussed earlier, saturation in streams could increase overall stream flow to the ocean along with increased productivity in stream ecosystems. Hatched stream larvae reaching the ocean has significantly improved and should improve post	Acknowledged	

<p>larvae migration and estuary conditions for marine and stream organisms.</p>		
<p>P.12 The targeted goal for stream restoration is 64% median flow. The Water Commission decision to return 10MGD for Wailuku River would appear to divert 63 to 83% of the stream flow based on 1984-2016 USGS data (restoring only 17 to 37% stream flow).</p>	<p>CWRM defined viable habitat flow as 64% of median base flow ($0.64 \times \text{BFQ}_{50}$; $=H_{90}$ which would be 16 mgd for Wailuku River. CWRM hearing officer’s proposed IIFS below diversion of 10 mgd is based on weighing instream and offstream needs. IIFS have yet to be adopted for Wailuku River.</p>	<p>See November 1, 2017 CCHMA-1501 page 523 on</p>
<p>WRITTEN TESTIMONY MAUI TOMORROW/LUCIENNE DE NAIE on Ko`olau SECTION</p>		
<p>1) WUDP needs to discuss a transition to comprehensive water resource management: potable water, stormwater & reclaimed water managed as “One Water.” WUDP speaks of plans to “assess” use of R-! water and stormwaters as part of a future use scenario, but studies have been done to assess “opportunities” to use these waters. We need our 20-year water plan to set forward a timeline, a plan, and a funding estimate to merge management of these various water resources, as is done in many other places.</p>	<p>Strategies for R1 expansion and stormwater reclamation are specific. Funding estimates are provided</p>	<p>Chapters 14.8.5 and 15.8.5 Strategies #8, 9, 10</p>
<p>2)The WUDP lists the presumed Sustainable Yields of aquifers in the Ko`olau Region, but with confidence levels of “3” few are likely to have reliable values? USGS studies suggest that from Nahiku to Ke’anae at least, aquifers are “fully saturated” and groundwaters are intercepted by various East Maui streams. Development of ground water sources from these areas could impact stream flows</p>	<p>Groundwater development is not proposed for Nahiku to Keanae. Groundwater study addressing impact on surface water is proposed for Haiku and Makawao aquifers prior to groundwater development</p>	<p>Chapter 14.8.3 Strategy #5, Chapter 15.8.3 Strategy #4</p>
<p>3)Agricultural water use estimates were included in past WUDP plans. Current maui WUDP should use best data available to estimate agricultural water use in the Maui WUDP. Water use in the existing Kula Ag park is well documented. Water use in the new Kula Ag park extension has been estimated in the East Maui IIFS case. Water use for Central Maui lands has been discussed before various agencies. County DWS has figures on Upcountry ag water users. Water use for Maui agriculture needs to be looked at in the Ko’olau WUDP, as well as discussed in the future update of the State’s AG WUDP.</p>	<p>Water use for agriculture is inventoried based on water use reporting (groundwater pumpage and stream water diversions). Future agricultural water use is projected using water duty for identified crops based on County zoning; potential for lo`i kalo based on CWRM stream assessments for IIFS, and 1989 Declarations of Water Use; diversified agriculture based on DOA 2015 Baseline data and hypothetical increase,</p>	<p>Chapter 9.1, 9.3, 14.6.5, 15.6.5, 16.6.5, 17.6.5, 18.6.5, 19.6.5</p>

	<p>HC&S Diversified Agriculture Plan (partial and full build-out scenarios), and Kula Agricultural Park expansion plan.</p>	
<p>4) WUDP must specify a timetable and funding levels for increased data collection on rainfall and stream flows in East Maui, and should recommend restoring data gathering gauges to more streams to build a sufficient data base for future water planning. We have little idea about what is diverted from most Ko’olau region streams in relationship to their longterm flows. Good planning needs good data.</p>	<p>Acknowledged. Data collection and stream monitoring is part of CWRM’s mandate to “maintain an inventory of all water uses and water resources” (HRS 174C-5(14)). Stream and rainfall monitoring is needed to assess how climate variability and land use changes affect water resources. Sites prioritized by CWRM as state funding is limited. Stream assessment (and temporary or permanent monitoring) is needed to establish IIFS. The strategy to encourage CWRM to prioritize establishing IIFS for diverted streams with potential conflicting uses (Table 13-1 Strategy # 48) therefore addresses diverted East Maui streams.</p>	<p>Chapter 8.2.2, Chapter 12.3 and Table 13-1 Strategy # 48</p>
<p>5) Table 16-7 lists East Maui streams, and is not accurate. Stream data is based on outdated 1990 CWRM study. A number of streams are missing, such as Waipio Iki and Honokala. The map of streams in the WUDP is hard to understand. Hanehoi stream, specifically, is not well portrayed. (attached is Exh E-30A from 2015 East Maui Stream Flow Contested Case- an accurate map of Hanehoi stream and its various tributary streams.) Because the Draft WUDP does not accurately list all of the streams in East Maui affected by the East Maui diversions, the Plan does not adequately address the needs of the Huelo Lease area communities that live along these streams. The Huelo lease area communities have a total of around 1,000 or more residents with no access to a public water supply. Their needs should be part of the WUDP for Ko’olau. They are a major population center of the region, along with Ke’anae, Wailuanui and Nahiku</p>	<p>Stream assessment will be checked and corrected as needed Water use from diverted surface water and domestic wells are required to be reported to CWRM. If not reported, the data is estimated but not accurate. Ko’olau region has 59 domestic wells that are under reporting (0.008 mgd total). Domestic surface water use is not reported. The plan estimates household uses that are not reporting based on island-wide census population. Ko’olau report assumes a higher proportion of population on catchment and domestic sources but no inventory is available. The Board of Water Supply advises that if new verified sources of data become available that they be used in the plan development.</p>	<p>Chapter 16.5.1</p>

<p>6) The Draft WUDP discusses a potential strategy of East Maui well development (in Haiku aquifer) to help supply domestic water for the upcountry Makawao system. Records show that the County does not use Po’okela well much. Would future higher elevation wells be expensive to pump and would they be used only for “back up”?</p>	<p>Areas suited for potable groundwater development in Makawao aquifer would not likely support the full source needs to meet projected demand but a portion. Drilling, maintaining and pumping deep wells at 1800 ft plus elevation is more complex and costly than boosting water uphill from wells at lower elevation. Primary production and backup wells are both needed.</p>	
<p>7) The Draft WUDP does not make it clear how much of the Ko’olau region’s future water demand will be met by public sources and how much by private sources? Haiku alone has scores of private water systems. Hawaiian Homes is exploring having its own dedicated well. Most of the Huelo Lease area relies on catchment systems and stream water, when available. Over the next 20 years, the WUDP needs to examine not only projected population growth in the region, but also what portion of that population will rely on the County system, and what portion will rely on private systems</p>	<p>The WUDP addresses and recommends allocation of resources to meet projected demand but not necessarily which purveyor (public or private). For Upcountry and Ko’olau area, well development may be by DWS, DLNR, private purveyors and public/private partnerships.</p>	
<p>8) The WUDP needs to have clear goals to restore not just adequate “stream flows” but also viable connectivity for native stream species to migrate. It should recommend that an Engineering study be done to determine which diversion structures need to be removed or modified to allow native stream species to migrate.</p>	<p>WUDP recommends that CWRM establish IIFS for diverted streams. Hydrologic studies and individual stream assessments are the basis for IIFS, which is the mechanism that regulates instream flow needs to achieve connectivity while providing for off stream needs.</p>	<p>Table 13-1 Strategy # 48</p>
<p>9) A timetable and funding plan should be included in the WUDP for new reservoirs upcountry to lessen reliance on stream flows during drought periods. This was recommended strategy, and costs discussed in the 2009 draft of the WUDP.</p>	<p>The preferred strategy to meet Upcountry demand is to operate ground and surface water resources in the most economical manner with groundwater contingency source to supplement surface water in drought. An updated assessment of Wailoa Ditch flow is needed to determine optimal reservoir size considering IIFS established 6/20/18. A detailed reservoir analysis was done in 2009 based on anticipated reduction in available stream flows at the time. Life cycle</p>	<p>Chapter 15.8.3, Table 15-38</p>

	<p>cost is estimated but financing plan is defined in CIP budget, not WUDP.</p>	
<p>10) Maui County has a 2000 MOU with A&B (expires in 2025) that states: “As long-term agricultural water needs are reduced, a stream restoration program will be studied, developed, and initiated by BWS.” The Draft Koolau WUDP should describe efforts made to identify streams that could be restored and plans to petition the State CWRM for that restoration to move forward. The County has the authority to take that action. Streams like East and West Kuiaha, Awalau, and Manawaiaio, which serve as areas of traditional cultural practice, food gathering and recreational areas, should receive strong consideration for restoration planning</p>	<p>Acknowledged. September 2018 EMI Water Delivery Agreement supersedes MOU</p> <p>WUDP recommends that CWRM establish IIFS for diverted streams. Identifying impact on traditional and cultural practices from stream diversions (and restoration to streams not subject to the East Maui contested case) to continue as Ka Pa`akai analysis and consultation with moku. Follow up meeting with Hamakualoa Moku is desired</p>	
<p>11) The Draft WUDP discusses watershed monitoring and maintenance, but this is often seen as exclusively connected with the East Maui watershed partnership lands which are above 3000 ft elevation. Watershed monitoring and maintenance programs need to be expanded to include lower elevations. The same 2000 MOU referred to above also states that: “BWS will develop and implement a stream flow monitoring program to provide current baseline data.” The Draft WUDP should speak to long range plans to implement a stream flow monitoring plan. There should be a discussion of a timetable and funding plan to install gauges on the various Ko’olau District streams the County DWS depends upon. This will provide a more reliable record of flow patterns, diversion amounts etc. This information is missing, and it is essential to begin accumulating this data to guide sound decisions on future management of these public trust water resources.</p>	<p>Acknowledged. Strategy to use established moku process to consult on resource management, with monitoring as a component. DWS priority funding of stream flow gage installation is Kanaha Stream.</p>	<p>Chapter 16.7.1, Strategy #2</p>