

Upcountry Maui Water System Optimization Study January 13-24, 2008

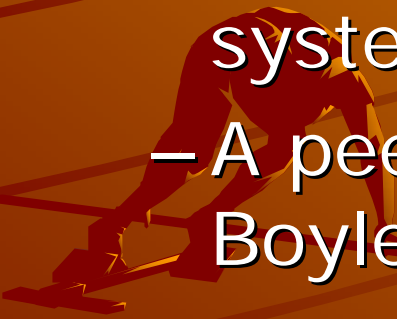
A silhouette of a sprinter in a starting crouch on a track, positioned to the left of the text.

Maui County Council
Water Resources Committee
Briefing

Draft Final Report

Study Purpose #1

- ✦ Respond to Maui County Council's and Mayor's requests to USEPA
 - A comprehensive performance evaluation of the upcountry Maui water systems
 - A peer review of a study report from Boyle Engineering



Study Purpose #2

- ✦ Provide options to Maui Department of Water Supply on water treatment, distribution infrastructure and operations to help optimize delivered water quality and simultaneous compliance with regulations



Study Purpose #3

- ✦ Practice and refine “source to tap” holistic approach to optimization
 - Integrate components that are usually examined individually
 - Identify and address elements that usually “fall through the cracks”
- ✦ Practice inter-agency team approach



Upcountry Water Systems

◆ Olinda plant

- Primarily serves Upper Kula
- Membrane filtration

◆ Piiholo plant

- Primarily serves Lower Kula
- Direct filtration plant

◆ Kamole plant


- Primarily serves Makawao
- Membrane filtration

Study Scope

- ✦ Primarily to examine surface water treatment plants and related distribution system for upcountry
- ✦ Some work on groundwater wells and distribution systems for Makawao, Haiku



General Approach

- ◆ Reviewed all available information on water system and water quality
 - ◆ Conducted interviews, site assessments and sampling to acquire additional information
 - ◆ Evaluated information
 - ◆ Identified options
 - ◆ Provided summary of findings and options for optimization as briefings and written report
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Background

- ◆ Upcountry Maui water systems had lead trigger exceedances requiring corrosion control
 - Zinc orthophosphate chosen for control
- ◆ Citizen complaints about health ailments after initiation of control led to Congressional appropriation of funds to MDWS to address upcountry lead issues
 - FY04 funding of \$497,000 as a grant

More Background

- ◆ Grant workplan had three main components
 - Engineering study to determine causes and possible solutions to lead contamination and other effects
 - ◆ Through contract to Boyle Engineering
 - Blood lead testing program
 - ◆ Through HI DOH
 - Public education and outreach
 - ◆ Through committee and facilitator



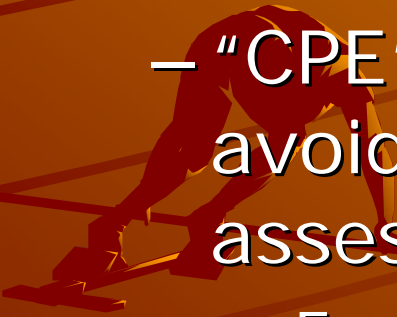
More Background

- ◆ Review and discussion of Boyle report led to County Council actions
 - Resolution requesting a peer review of the Boyle study
 - ◆ Group effort of Council, MDWS, HI DOH and USEPA
 - ◆ Authorized \$20,000 for this
 - Resolution requesting a comprehensive performance evaluation (CPE) of the upcountry systems by USEPA
 - ◆ Authorized \$20,000 for this



Even More Background

- ◆ In response to the resolutions, EPA began organizing the review and CPE
 - Combined these so that review of data would inform evaluation effort
 - “CPE” renamed “optimization study” to avoid confusion and to allow broader assessment of entire system
 - ◆ Formal CPE is only about turbidity control
 - ◆ Optimization is different from enforcement



Study Participants

- ◆ Maui Department of Water Supply
 - Administration
 - Field operations
 - Plant operations (including laboratory)
 - Treatment plant operations
- ◆ HI Department of Health
 - Drinking water program
- ◆ USEPA
 - Region 6 (Dallas)
 - Region 9 (San Francisco)

Study Results

- ✦ MDWS provides water that meets current regulatory standards and requirements
 - ✦ Several opportunities exist to optimize management and operations to provide superior water quality
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MDWS Strengths

- ✦ MDWS meeting drinking water standards and requirements
- ✦ A lot of information on water quality is available
- ✦ The upcountry systems are relatively forgiving
 - Robust components
 - Useable source waters

Performance Status



Performance Limiting Factors

- ✦ Performance Limiting Factors address areas that can be improved and not areas that currently do not merit attention
- ✦ They are presented in rank order of importance



Performance Limiting Factors

- ◆ #1 Communications problems
- ◆ #2 Lack of management and operational goals
- ◆ #3 Lack of written operational guidelines and procedures
- ◆ #4 Work environment issues
- ◆ #5 Operator knowledge and training

Performance Limiting Factors

- ◆ #6 Monitoring and process control testing
 - ◆ #7 Reliability
 - ◆ Plant Staffing
 - ◆ Process Instrumentation/ Automation
 - ◆ Maintenance Program
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Recommendations

