# SAFE DRINKING WATER BRANCH

# GROUNDWATER PROTECTION PROGRAM

2ND ANNUAL JOINT GOVERNMENT WATER CONFERENCE

AUGUST 5, 2014

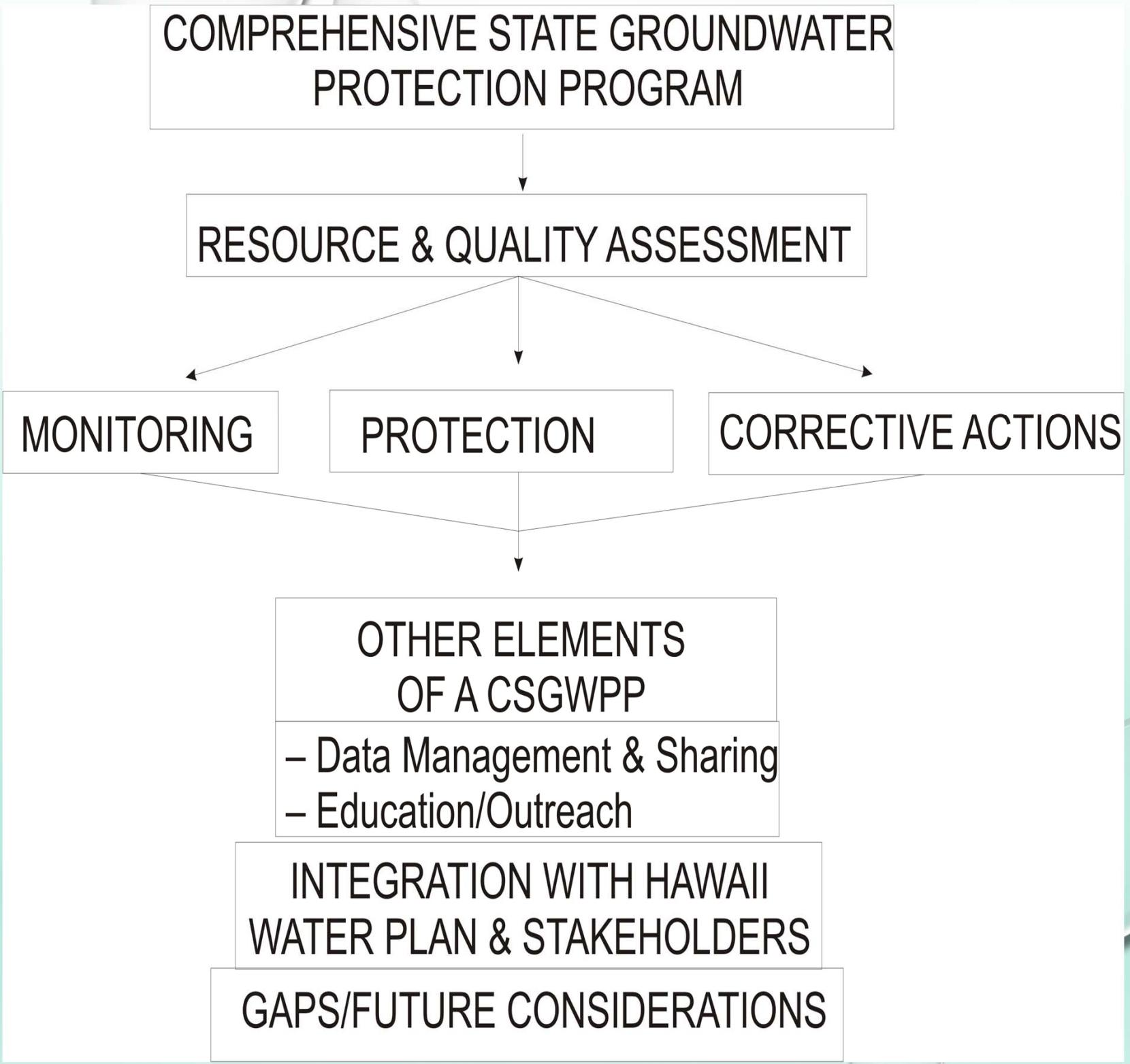
KAUAI COMMUNITY COLLEGE – PERFORMING ARTS THEATER

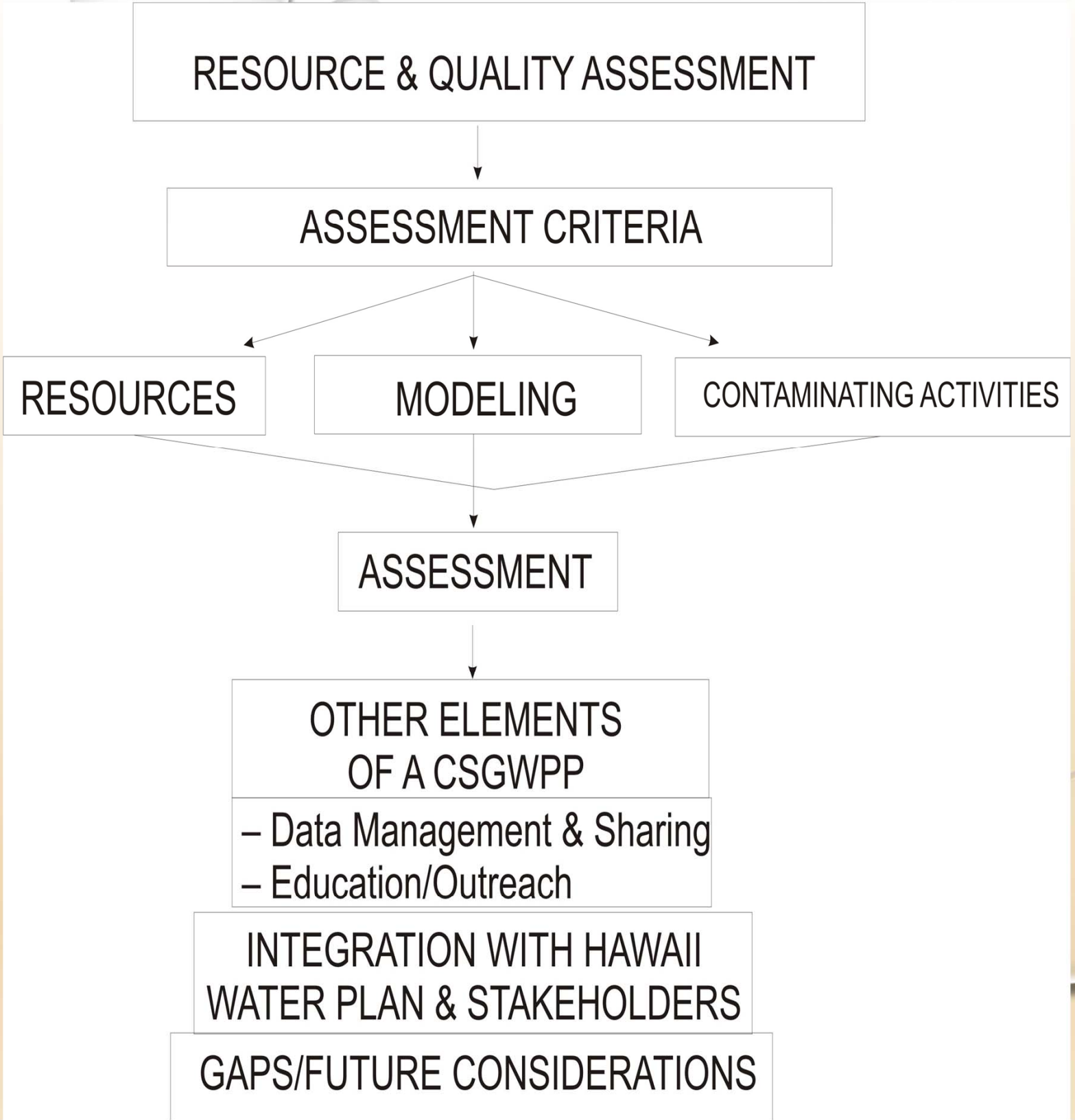
# COMPONENTS OF A COMPREHENSIVE STATE GROUNDWATER PROTECTION PROGRAM

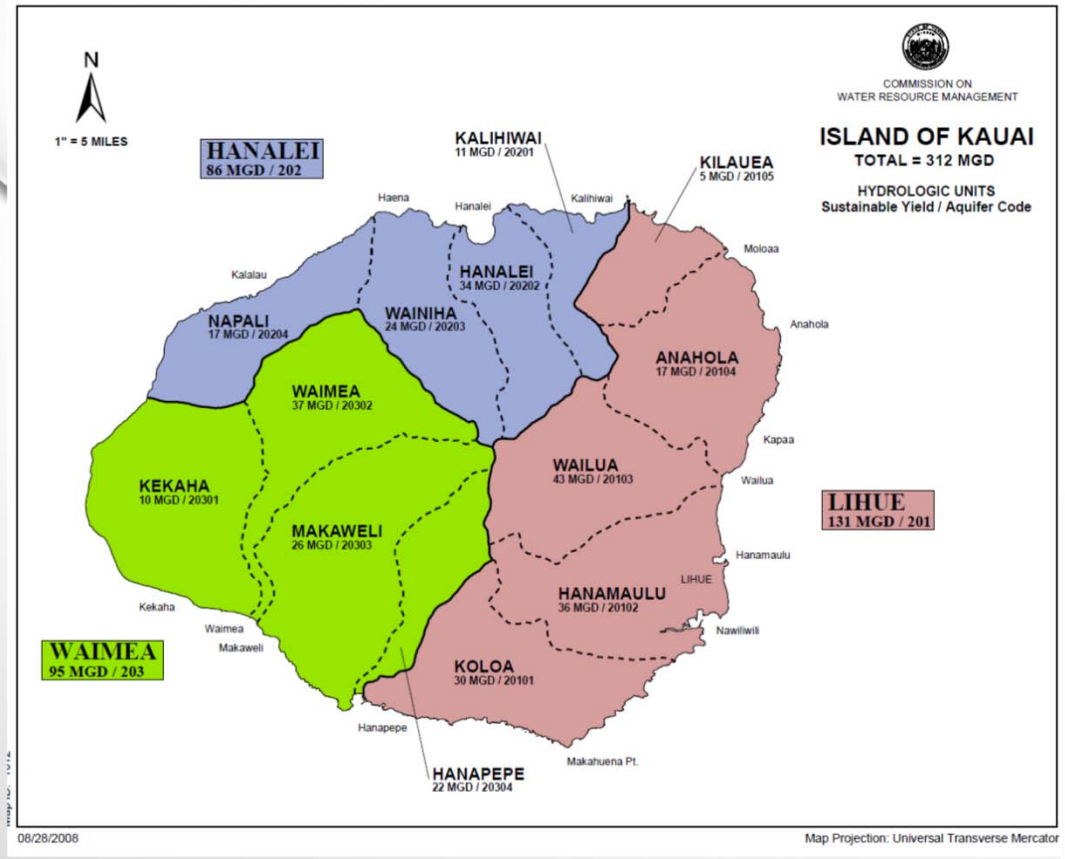
**SIX (6) STRATEGIC ACTIVITIES**

# CSGWPP STRATEGIC ACTIVITIES

- ESTABLISH SPECIFIC GWP GOALS TO GUIDE THE RELEVANT FEDERAL, STATE, AND LOCAL PROGRAMS OPERATING WITHIN THE STATE;
- ESTABLISH PRIORITIES, BASED ON A CHARACTERIZATION OF THE RESOURCE, IDENTIFICATION OF SOURCES OF CONTAMINATION, AND DELINEATE THE PROGRAM'S NEEDS, TO GUIDE RELEVANT FEDERAL, STATE, AND LOCAL PROGRAMS AND ACTIVITIES;
- DEFINE AUTHORITIES, ROLES, RESPONSIBILITIES, AND RESOURCES, AND COORDINATING MECHANISMS BETWEEN RELEVANT FEDERAL, STATE, AND LOCAL PROGRAMS TO ADDRESS IDENTIFIED GWP PRIORITIES;
- DEFINE THE NECESSARY EFFORTS CONSISTENT WITH THE ESTABLISHED PRIORITIES, DETAIL THE RESPONSIBILITIES OF EACH PROGRAM, AND THE COORDINATION MECHANISMS BETWEEN PROGRAMS NECESSARY TO IMPLEMENT THESE EFFORTS;
- EVALUATE THE EFFECTIVENESS OF THE GWP EFFORTS BY COORDINATING INFORMATION COLLECTION TO MEASURE PROGRESS MADE TOWARD THE SPECIFIC GWP GOALS, THEN RE-EVALUATE PRIORITIES AND METHODS, AND REVISE AS-NEEDED TO INCREASE THE EFFECTIVENESS OF ALL GROUND WATER RELATED PROGRAMS; AND
- IMPROVE PUBLIC EDUCATION AND PARTICIPATION IN ALL ASPECTS OF GWP.

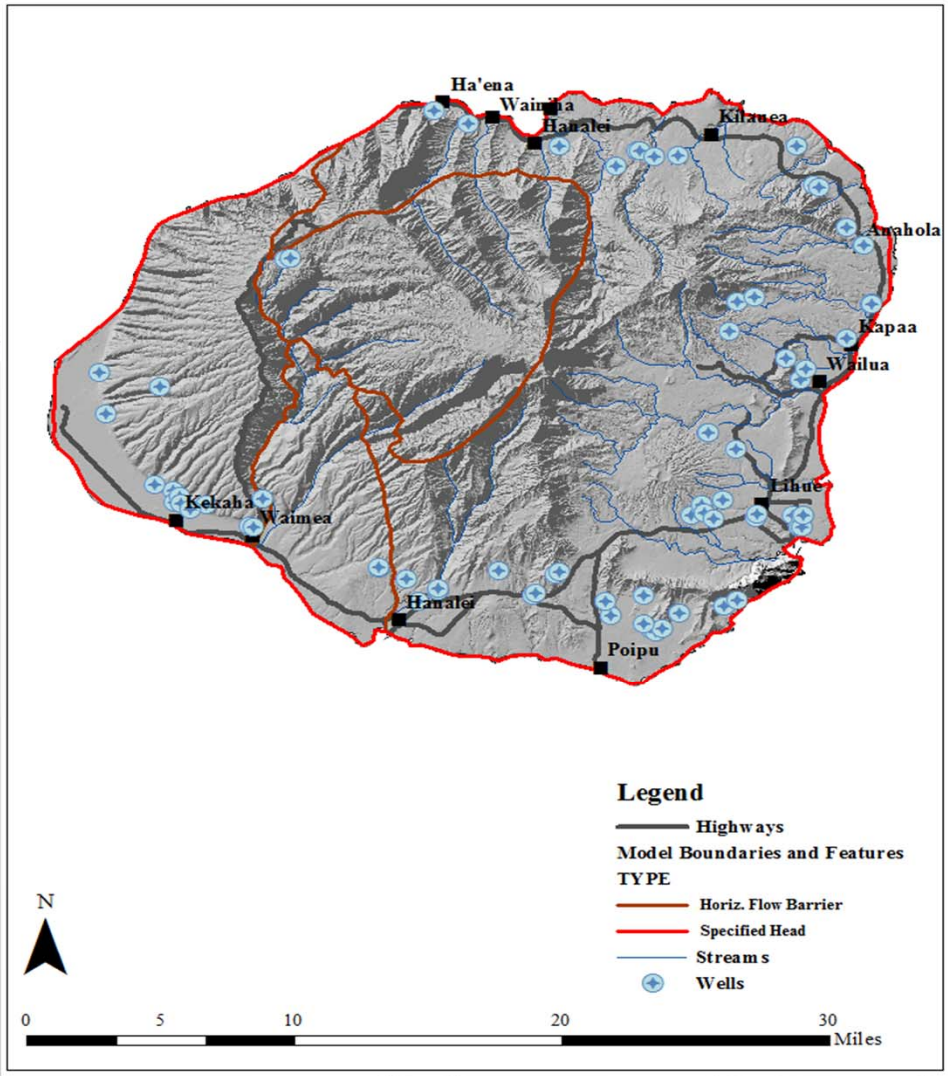

COMPREHENSIVE STATE GROUNDWATER PROTECTION PROGRAM
RESOURCE & QUALITY ASSESSMENT
MONITORING
PROTECTION
CORRECTIVE ACTIONS
OTHER ELEMENTS OF A CSGWPP
– Data Management & Sharing
– Education/Outreach
INTEGRATION WITH HAWAII WATER PLAN & STAKEHOLDERS
GAPS/FUTURE CONSIDERATIONS


RESOURCE & QUALITY ASSESSMENT
ASSESSMENT CRITERIA
RESOURCES
MODELING
CONTAMINATING ACTIVITIES
ASSESSMENT
OTHER ELEMENTS OF A CSGWPP
– Data Management & Sharing
– Education/Outreach
INTEGRATION WITH HAWAII WATER PLAN & STAKEHOLDERS
GAPS/FUTURE CONSIDERATIONS

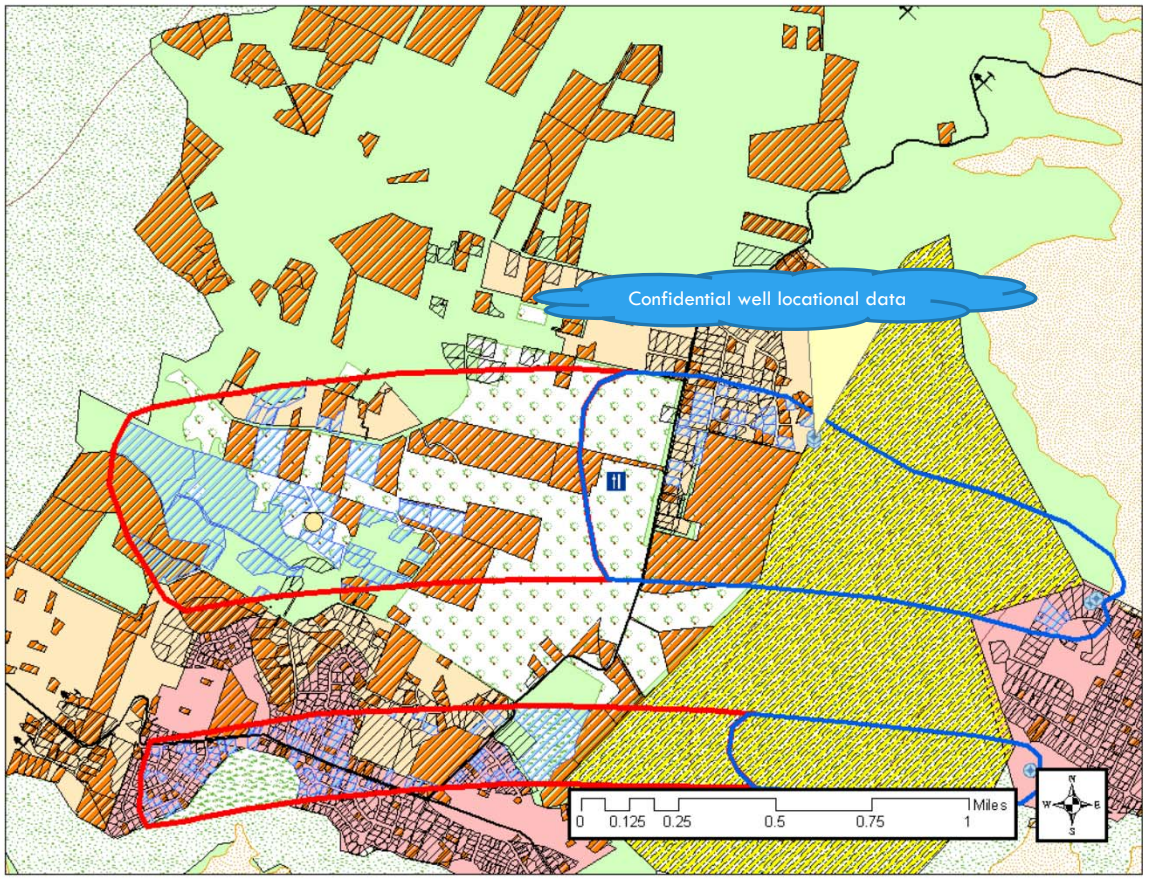



HYDROLOGIC UNITS

GROUNDWATER WELLS



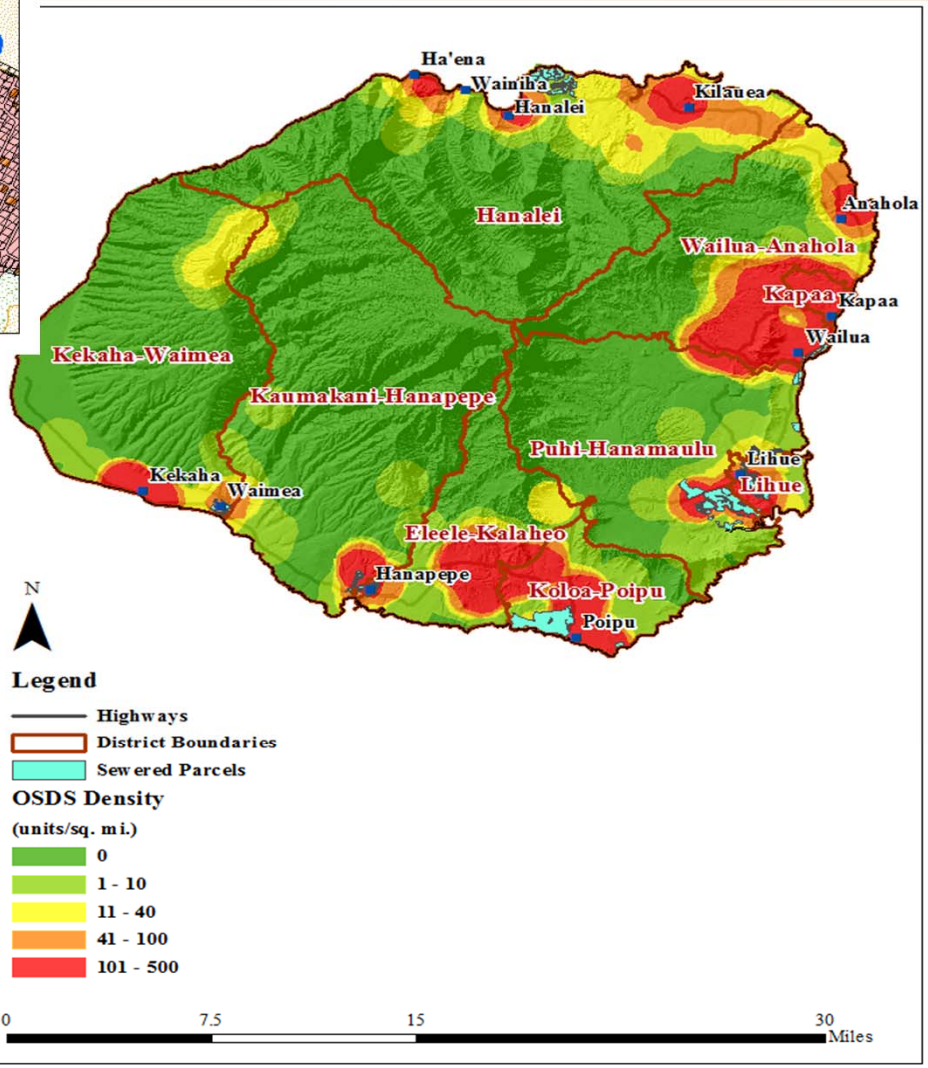

# WATER RESOURCES



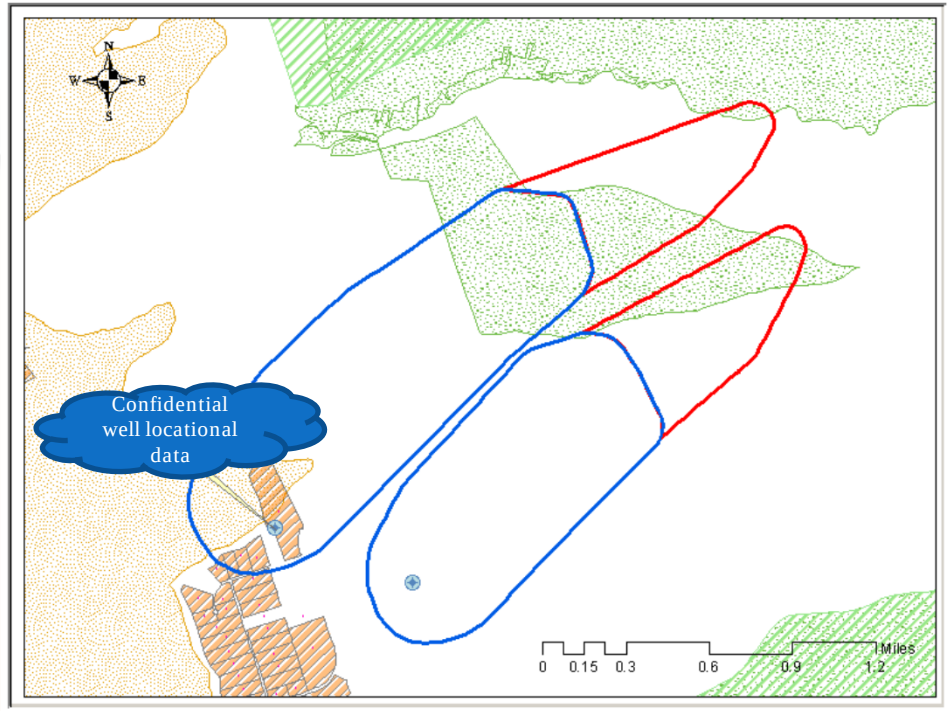

POTENTIAL CONTAMINATING ACTIVITIES INVENTORY FOR SOURCE WATER ASSESSMENT AREA.

# CONTAMINATING ACTIVITIES

ON-SITE WASTE DISPOSAL SYSTEM (OSDS) INVENTORY



# MODELING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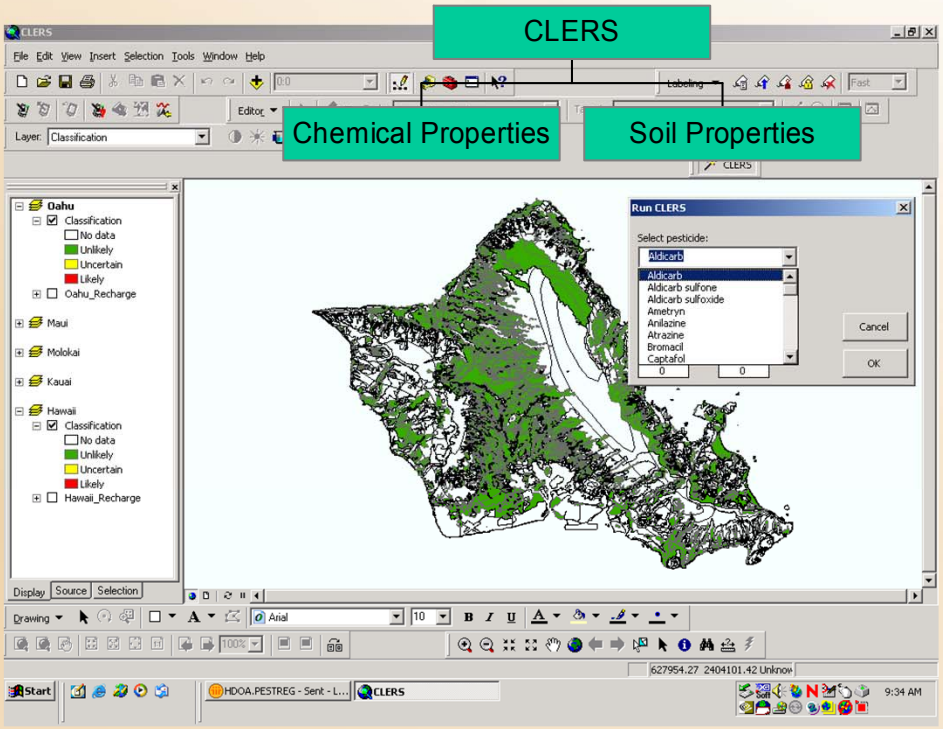
CLERS
Chemical Properties
Soil Properties
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Oahu
Classification
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Molokai
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Hawaii
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Hawaii_Recharge
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Run CLERS
Select pesticide:
Aldicarb
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Aldicarb sulfoxide
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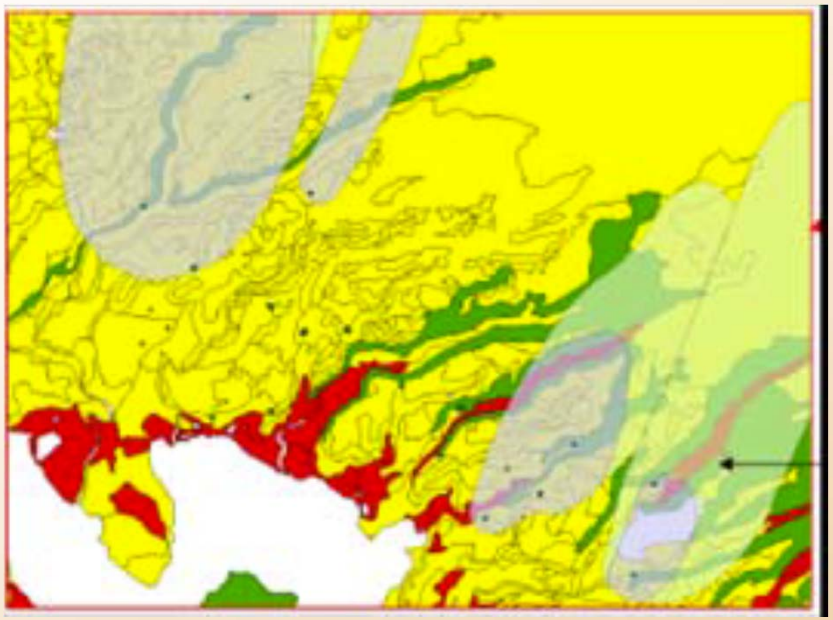
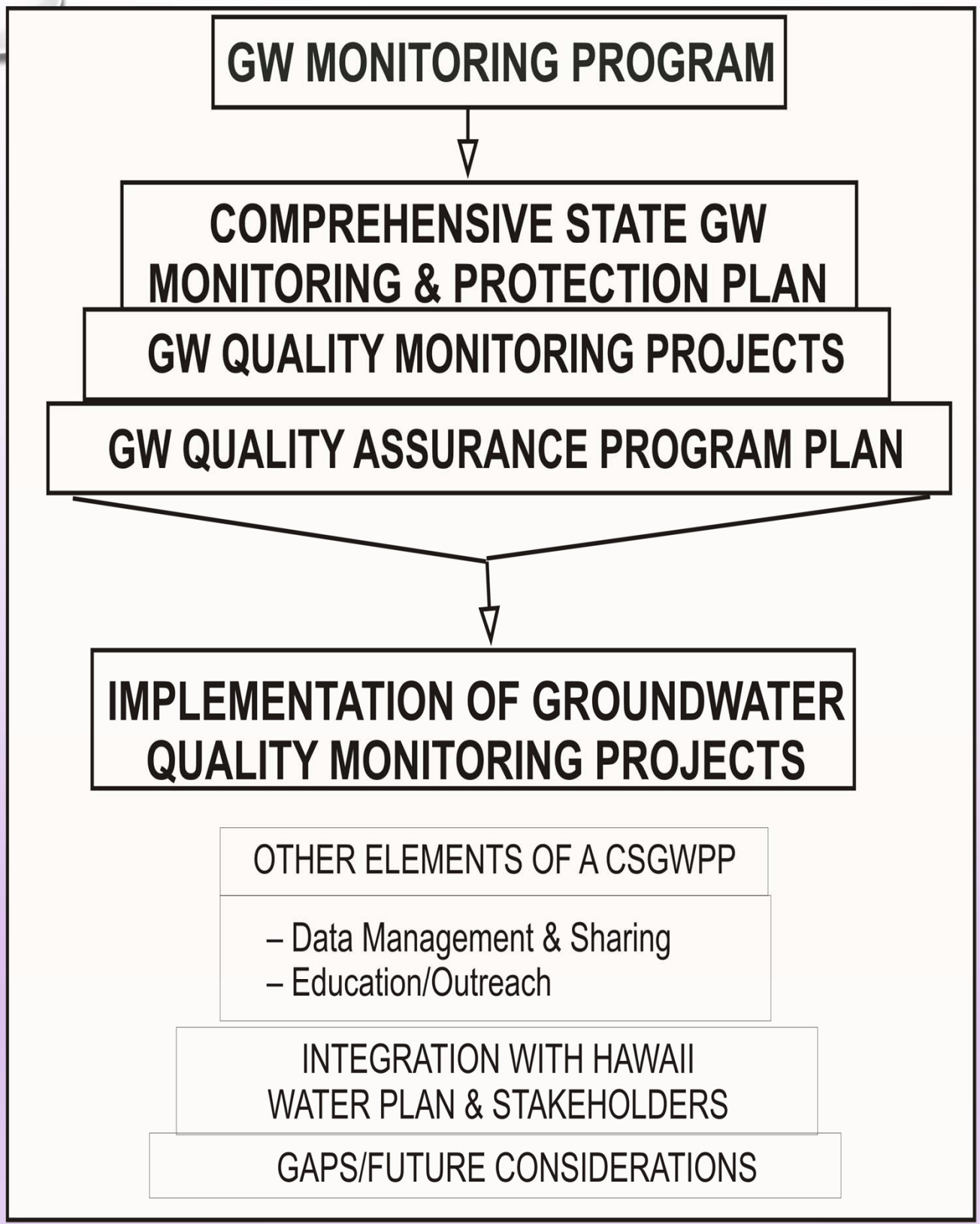



GW MONITORING PROGRAM
COMPREHENSIVE STATE GW MONITORING & PROTECTION PLAN
GW QUALITY MONITORING PROJECTS
GW QUALITY ASSURANCE PROGRAM PLAN
IMPLEMENTATION OF GROUNDWATER QUALITY MONITORING PROJECTS
OTHER ELEMENTS OF A CSGWPP
– Data Management & Sharing
– Education/Outreach
INTEGRATION WITH HAWAII WATER PLAN & STAKEHOLDERS
GAPS/FUTURE CONSIDERATIONS

# GROUNDWATER QUALITY MONITORING

**THE GROUNDWATER QUALITY WATER MONITORING PROGRAM CONSISTS OF A SYSTEMATIC APPROACH TO MONITORING GROUNDWATER RESOURCES BASED ON CRITERIA DEVELOPED AS PART OF HAWAII'S GROUNDWATER QUALITY MONITORING PROGRAM STRATEGY/PLAN. THE FOLLOWING IDENTIFIES THE MONITORING PROGRAM'S OBJECTIVES AND REQUIREMENTS. THERE ARE SEVERAL INSTANCES WHERE GROUNDWATER QUALITY MONITORING WILL BE PERFORMED:**

- COLLECTION OF BASIC GROUNDWATER QUALITY DATA FOR USE IN ASSESSING AMBIENT GROUNDWATER QUALITY;
- COLLECTION OF GROUNDWATER QUALITY DATA TO CONFIRM DRINKING WATER MONITORING DETECTIONS OF CONTAMINANTS AND HISTORICAL DATA;
- COLLECTION OF GROUNDWATER QUALITY DATA TO ASSIST SDWB DRINKING WATER MONITORING IN DEFINING AREAL EXTENT OF DETECTED GROUNDWATER CONTAMINANTS;
- COLLECT AMBIENT GROUNDWATER QUALITY DATA IN AREAS WHERE LIMITED OR NO MONITORING HAS BEEN CONDUCTED;
- COLLECT GROUNDWATER QUALITY DATA TO ASSESS WATER QUALITY IN AREAS OF CONCERNS DUE TO POSSIBLE CONTAMINATION SOURCES; AND
- ASSIST SPECIAL PROJECTS WITH GROUNDWATER QUALITY MONITORING ACTIVITIES.

# GROUNDWATER MONITORING PROJECTS

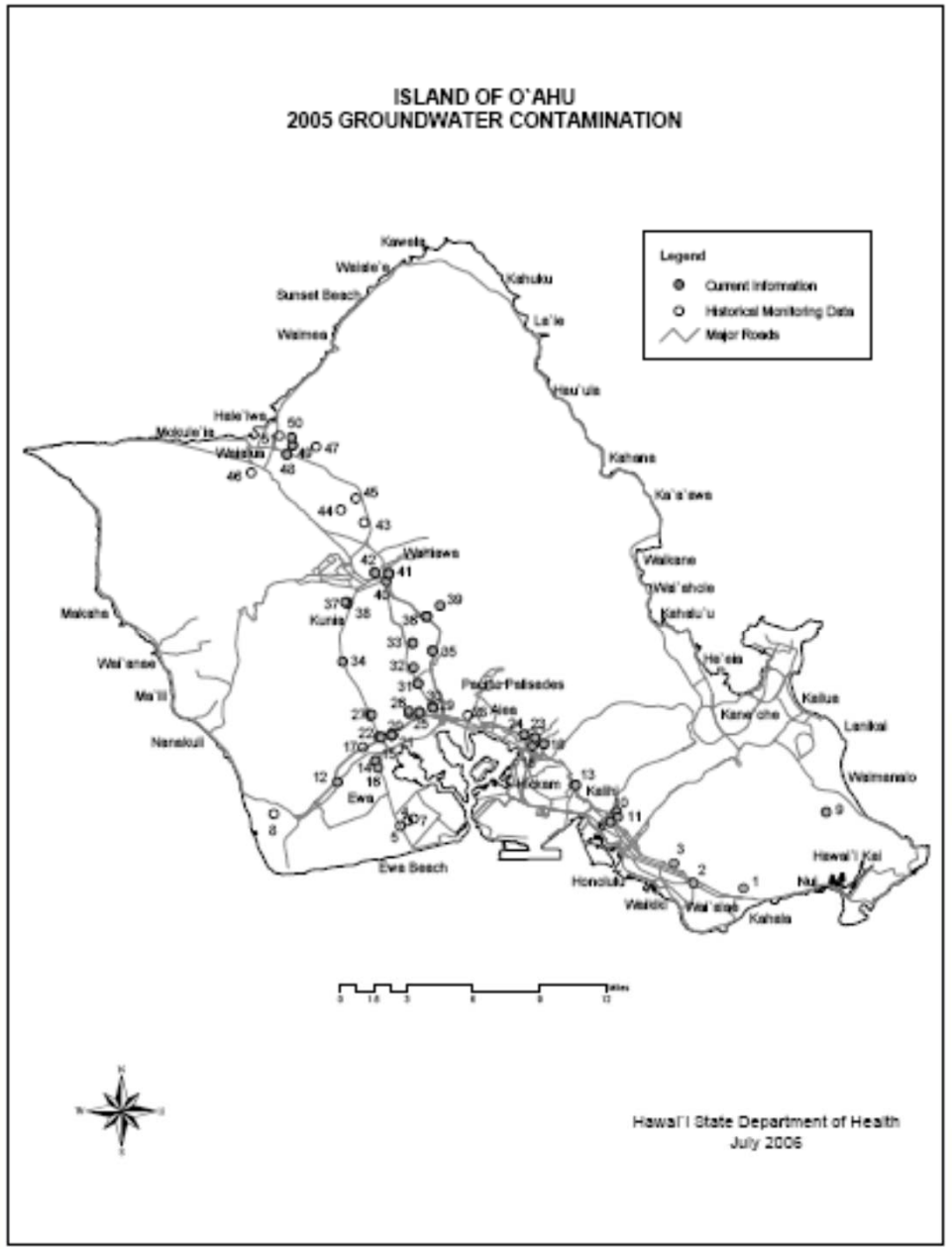
## GROUNDWATER MONITORING

- SDWB/CWRM JOINT MONITORING OF DEEP MONITORING WELLS (STATEWIDE)
- LAHAINA TRACER STUDY
- GROUNDWATER SURVEILLANCE MONITORING OF HISTORICAL CONTAMINATION DETECTED.
- RECLAIMED WASTEWATER MONITORING STUDY
- HAWAIIAN PARADISE PARK SHALLOW GW QUALITY AND IMPACTS OF OSDS STUDY.
- ARSENIC IN GROUNDWATER STUDY.

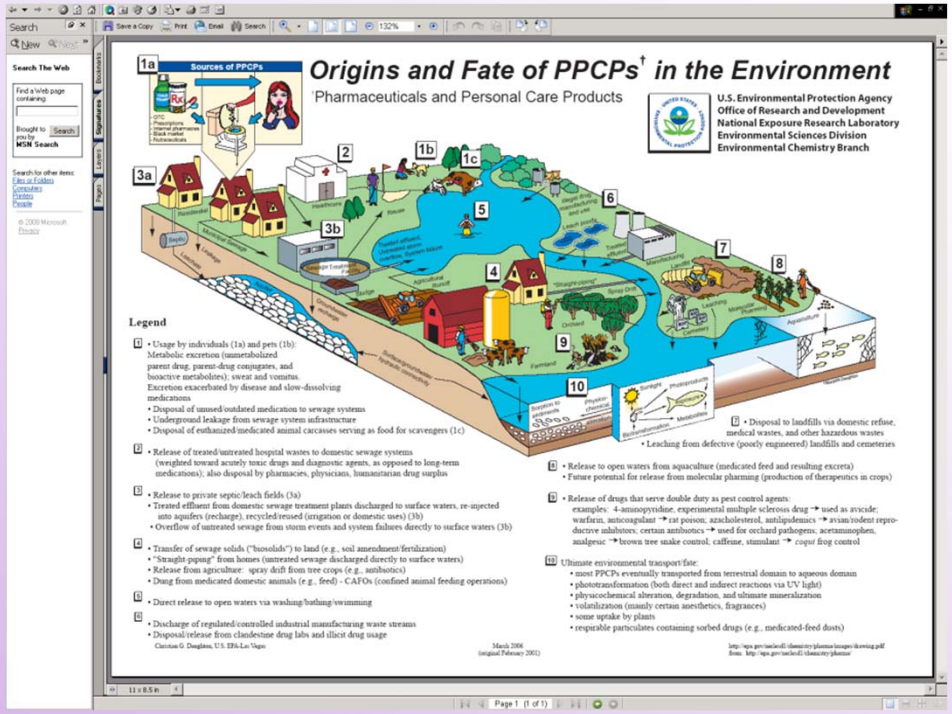
# SDWB/CWRM JOINT MONITORING OF DEEP MONITORING WELLS (STATEWIDE)

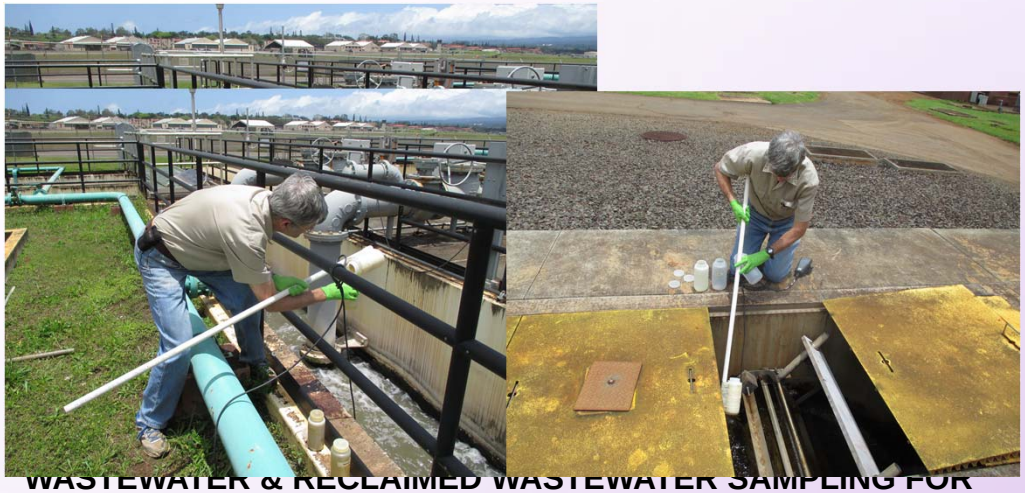
# LAHAINA TRACER STUDY

# GROUNDWATER SURVEILLANCE MONITORING OF HISTORICAL CONTAMINATION DETECTED



# RECLAIMED WASTEWATER MONITORING STUDY



WASTEWATER & RECLAIMED WASTEWATER SAMPLING FOR PHARMACEUTICAL & PERSONAL CARE PRODUCTS (PPCP).

IMPACTS ON GROUNDWATER.

# HAWAIIAN PARADISE PARK
# SHALLOW GROUNDWATER MONITORING

*Figure 1. Aerial photo of Hawaiian Paradise Park taken by Hawaiian Images and Photography and Video in June 2006 (Hawaii Island Plan website: http://www.bigislandplan.com)*

# ARSENIC IN GROUNDWATER STUDY

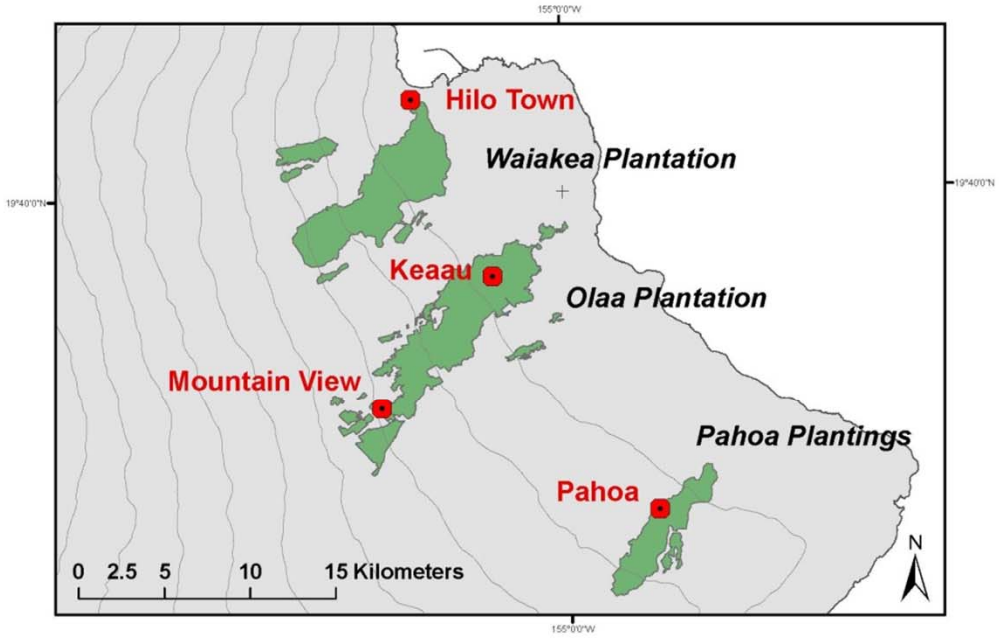
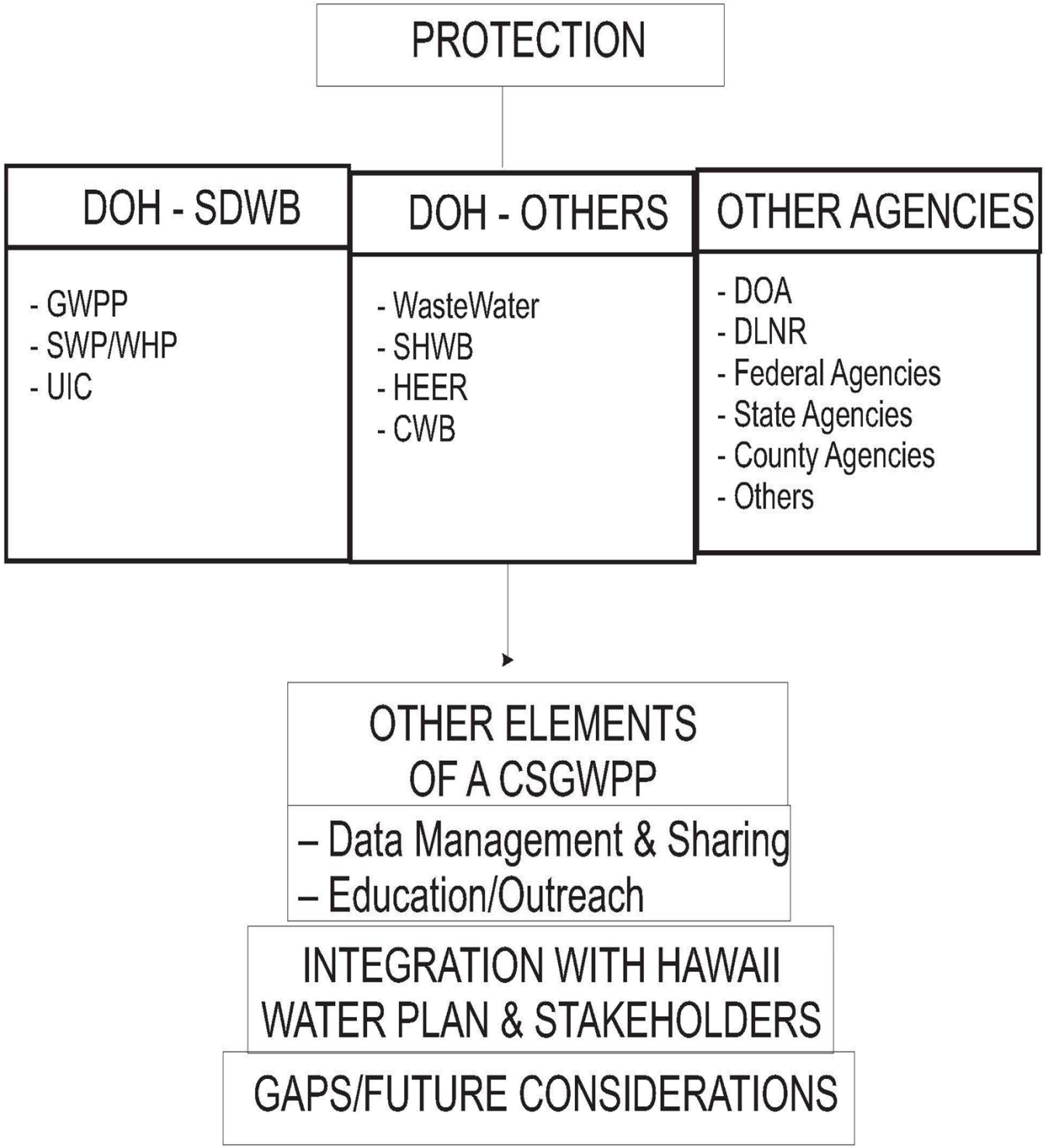



Figure 1.2 Current towns and former sugar cane plantations, eastern portion of the Island of Hawaii. Plantation extents derived from Cook (1920), Williams (1933) and Territory of Hawaii (1939).

# FUTURE MONITORING PROJECTS

- SDWB/CWRM STATEWIDE MONITORING OF CHLORIDES IN GROUNDWATER
- AMBIENT GROUNDWATER QUALITY MONITORING OF NON-DRINKING WATER SOURCES.
- MONITORING OF NON-DRINKING WATER CONTAMINANTS (INCLUDING NEW AND EMERGING CONTAMINANTS)
- GW QUALITY IMPACTS OF OSDS STUDY.
- PRIORITY WATERSHEDS – GROUNDWATER MONITORING.


PROTECTION
DOH - SDWB
- GWPP
- SWP/WHP
- UIC
DOH - OTHERS
- WasteWater
- SHWB
- HEER
- CWB
OTHER AGENCIES
- DOA
- DLNR
- Federal Agencies
- State Agencies
- County Agencies
- Others
OTHER ELEMENTS OF A CSGWPP
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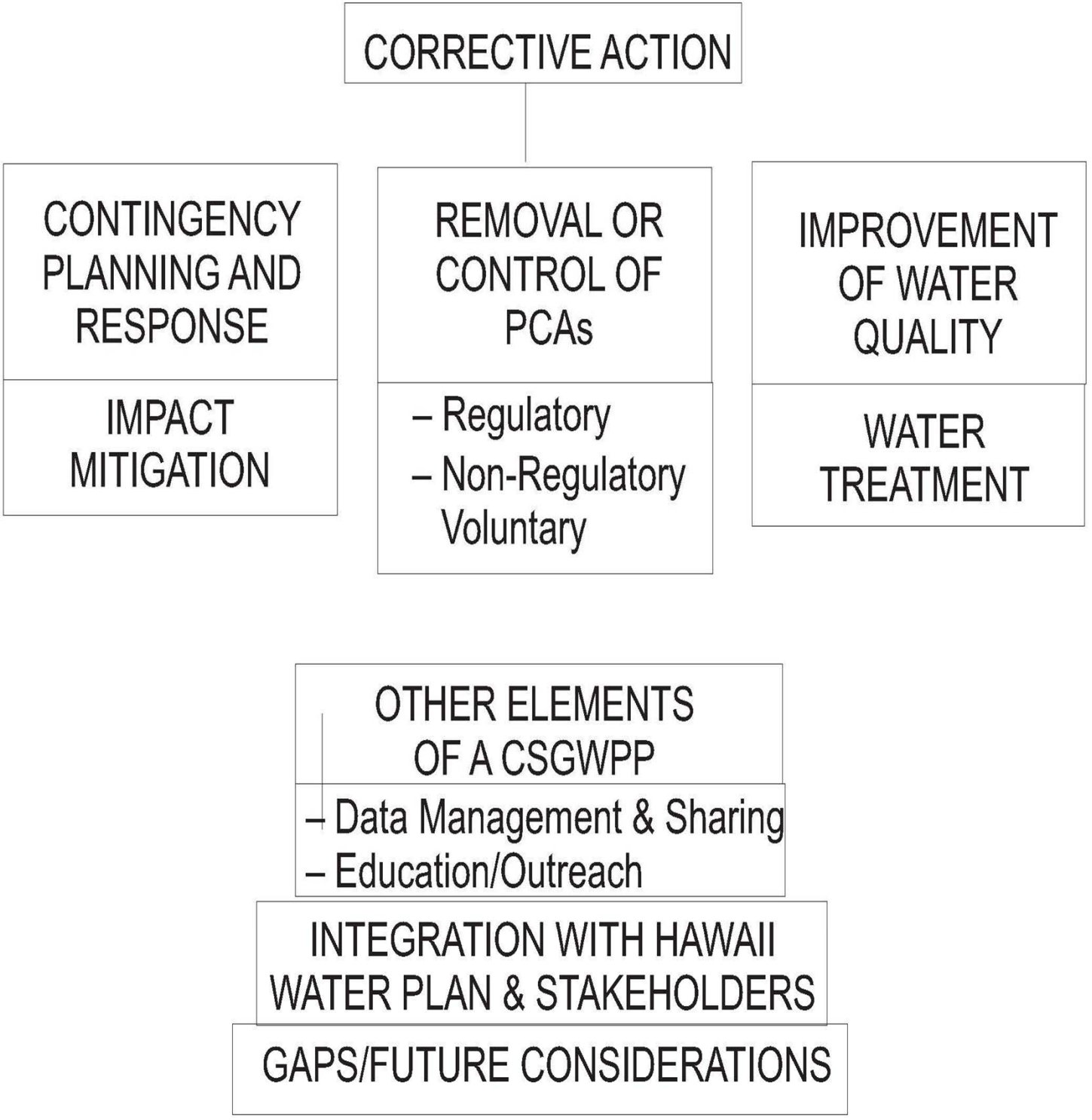
GAPS/FUTURE CONSIDERATIONS


CORRECTIVE ACTION
CONTINGENCY PLANNING AND RESPONSE
IMPACT MITIGATION
REMOVAL OR CONTROL OF PCAs
– Regulatory
– Non-Regulatory Voluntary
IMPROVEMENT OF WATER QUALITY
WATER TREATMENT
OTHER ELEMENTS OF A CSGWPP
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# OTHER ELEMENTS OF A CSGWPP

- DEVELOP A CENTRALIZED GROUNDWATER DATA MANAGEMENT SYSTEM.
- DEVELOP A EDUCATION/OUTREACH PROGRAM FOR WATER PROTECTION.
- INTEGRATION WITH STAKEHOLDERS
- GAPS AND FUTURE CONSIDERATIONS

# DEVELOPMENT OF AN EDUCATION/OUTREACH PROGRAM

- PREPARING AN EDUCATION/OUTREACH PLAN OUTLINING ACTIVITIES THAT CAN BE DONE TO EDUCATION AND PROMOTE WATER PROTECTION EDUCATION AND OUTREACH.

**<u>EDUCATION AND OUTREACH ACTIVITIES INCLUDE</u>:**

State Science Fair

Earth Day

WHP Public Meeting

Annual Water Conference

# GAPS AND FUTURE CONSIDERATIONS

- DEVELOPMENT OF AN APPLIED SCIENCE PROGRAM IN WATER AT THE UNIVERSITY OF HAWAII.

- OTHERS

# WHERE DO WE GO?

- COMPLETION OF THE WATER QUALITY PLAN
- COMPLETION OF THE COMPREHENSIVE STATE GROUNDWATER PROTECTION PROGRAM STRATEGY/PLAN
- DEVELOPMENT AND IMPLEMENTATION OF STRATEGIC ACTIVITIES
- ADDITIONAL STAFFING AND RESOURCE NEEDS