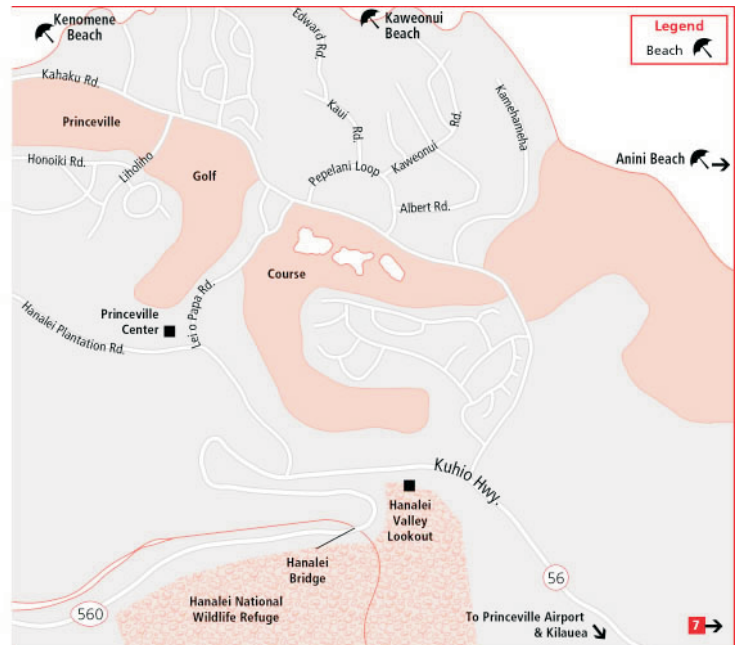
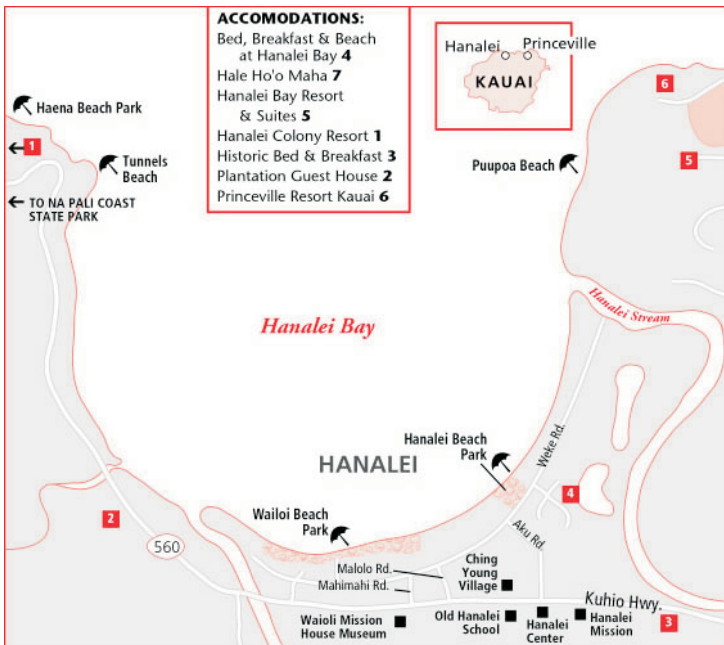
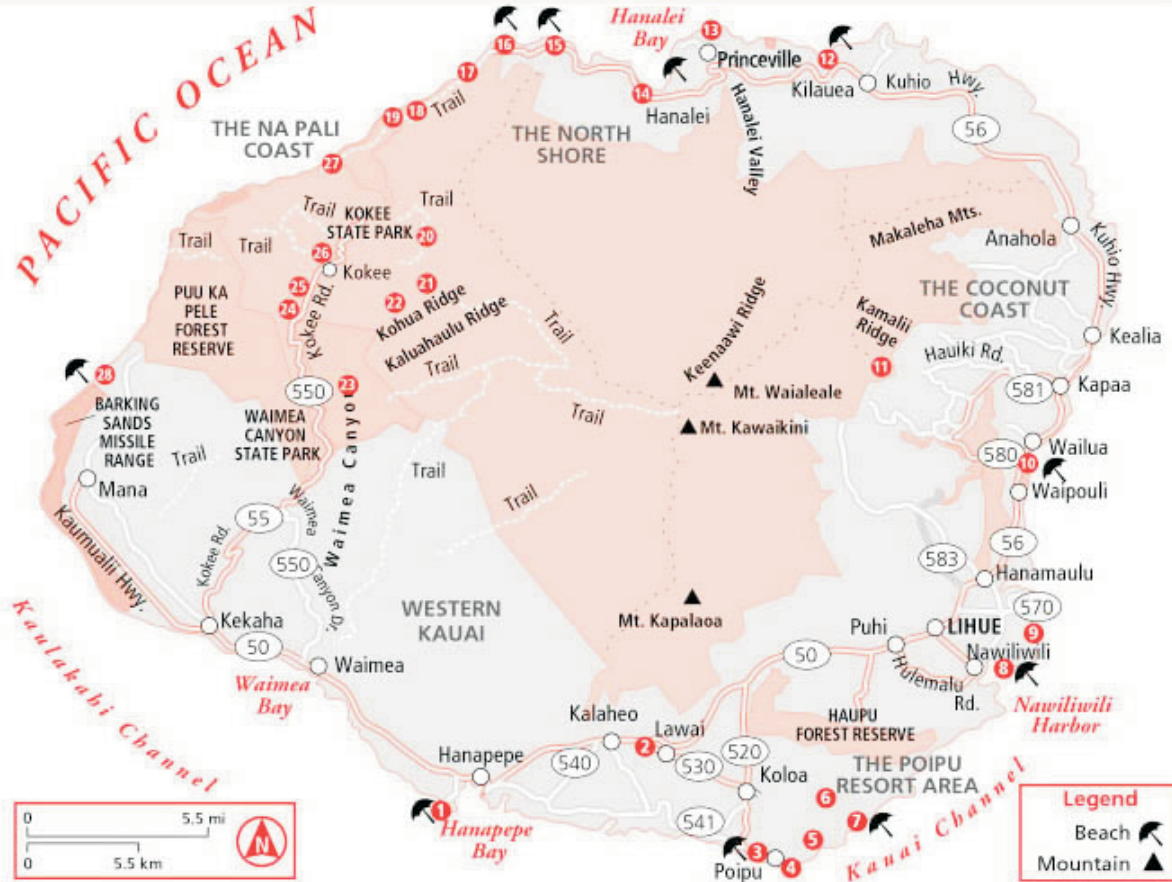


Appendix: County of Kauai – Frommer’s Web Site

http://www.frommers.com/images/destinations/maps/jpg/11_beachesandoutdoorpersuitsonkauai.jpg

The maps below are general maps depicting major communities and towns on Kauai.

- BEACHES:**
 Anini Beach County Park **12**
 Haena Beach Park **15**
 Hanalei Beach **14**
 Kalapaki Beach **8**
 Kee Beach State Park **16**
 Lydgate State Park **10**
 Mahaulepu Beach **7**
 Poipu Beach Park **3**
 Polihale State Park **28**
 Salt Pond Beach Park **1**
 Tunnels Beach **15**
- CABINS & CAMPGROUNDS:**
 Hanakapiai Beach Campground **17**
 Hanakoa Valley Campground **18**
 Kalalau Valley Campground **27**
 Kawaikoi Campground **21**
 Kokee Lodge & Campgrounds **24**
 Kokee State Park Cabins **25**
 Sugi Grove Campground **22**
- GOLF COURSES:**
 Kauai Lagoons Golf Courses **9**
 Kiahuna Golf Club **6**
 Kukuioiono Golf Course **2**
 Poipu Bay Resort Golf Course **5**
 Princeville Golf Club, Prince Course **13**
- HIKES:**
 Alakai Swamp Trail **20**
 Kalalau Trail, Na Pali Coast State Park **19**
 Kokee State Park Trails **26**
 Makawehi Point **4**
 Waimea Canyon Trail **23**



Appendix: County of Kauai Department of Water- Kauai Water Plan 2002

(http://www.kauaiwater.org/wp2020_discover.pdf)

The map and tables below and on the next seven pages outline the needs of the Kauai water system.

Water Service Areas



Storage Needs by Water System, Gallons

Water System	2000	2020
Waimea-Kekaha	600,000	500,000
Hanapepe-Element	0	40,000
Kalaheo	500,000	0
Lawai-Omao	250,000	0
Koloa-Poipu	500,000	1,000,000
Puhi-Lihue-Hanamaulu	0	0
Wailua-Kapaa	2,150,000	0
Anahola	0	40,000
Moloaa	15,000	0
Kilauea-Waipake-Kalihiwai	650,000	0
Anini	0	0
Hanalei	100,000	0
Wainiha-Haena	210,000	0

Source Needs by Water System, Gallons per Minute

Water System	2000	2020
Waimea-Kekaha	0	200
Hanapepe-Element	0	68
Kalaheo	0	0
Lawai-Omao	0	0
Koloa-Poipu	0	0
Puhi-Lihue-Hanamaulu	1,730	0
Wailua-Kapaa	700	0
Anahola	300	0
Moloaa	0	0
Kilauea-Waipake-Kalihiwai	400	0
Anini	0	0
Hanalei	200	0
Wainiha-Haena	100	0

Appendix: County of Kauai – Department of Water- Kauai –Water Plan 2002

http://www.kauaiwater.org/wp2020_overview.pdf

System Overview: Kekaha-Waimea

- Supply
 - 2000: Adequate once well comes on-line
 - 2020: Rehabilitate Waimea Shaft #9 to get 200 gpm or develop another well
- Storage
 - 2000: Install 0.6 MG tank at Kapilimao Well site
 - 2020: Install 0.5 MG in Waimea 196 Zone
- Distribution:
 - Fire flow deficient in commercial, residential areas that are served by undersized and older pipes
 - Many pipes installed in 1924
 - Remainder installed in 1950s and later

System Overview: Puhi-Lihue-Hanamaulu

- Supply
 - 2000: Adequate once Hanamaulu 1, 3, 4, Pukaki, & Puhi 5a & 5b on-line
 - 2020: Adequate
- Storage
 - Adequate
- Distribution:
 - Fire flow is deficient in commercial, school & older subdivisions.
 - Oldest pipe installed in 1926 - 1935, remainder after 1946

System Overview: Hanapepe-Eleele

- Supply
 - 2000: Adequate
 - 2020: Institute conservation measures
- Storage
 - 2000: Adequate. Rehab/replace tanks
 - 2020: Install PRV stations. Institute conservation measures
- Distribution:
 - Salt Pond area is deficient in fire flow
 - Hanapepe Town pipe installed in 1920s
 - Hanapepe Valley pipe, 1933
 - Hanapepe Heights pipe, 1946

System Overview: Wailua-Kapaa

- Supply
 - 2000: Adequate; however, surplus cannot be moved due to system limitations. Install piping & boosters or rehab Akulikuli Tunnel & acquire new 400 gpm source
 - 2020: Adequate
- Storage
 - 2000: Construct new 0.9 MG tank, new 0.35 MG tank, & new 0.9 MG tank
 - 2020: Adequate

System Overview: Kalaheo

- Supply
 - Adequate. Connected to Lawai
- Storage
 - 2000: Adequate once new 0.5 MG tank on-line. Install PRV station
 - 2020: Adequate
- Distribution:
 - Ag / Open areas are deficient in fire flow.
 - Oldest pipe installed 1942 to 1953.

System Overview: Wailua-Kapaa

- Distribution:
 - Vivian Heights & upper Wailua Homesteads has low pressure
 - Fire flow deficient in Waipouli makai area, ag/open & older subdivisions.
 - Some pipe installed before 1930.
 - Wailua Homesteads main - 1937
 - Kawaihau Road cast iron main - 1945

System Overview: Lawai-Omao

- **Supply**
 - Adequate. Connected to Kalaheo
- **Storage**
 - 2000: Needs 0.25 MG tank in 677 Zone
 - 2020: Adequate
- **Distribution:**
 - Hailima Road area has low pressure.
 - Fire flow is deficient in the commercial, ag/open areas and private roads.
 - Oldest pipe installed in Omao in 1953, others after 1960.

System Overview: Koloa-Poipu

- **Supply**
 - Adequate
- **Storage**
 - 2000: Rehab Omao Tank or construct new 0.5 MG tank
 - 2020: Construct new 1.0 MG tank. If Omao repaired, construct 0.25 MG in 366 Zone
- **Distribution:**
 - Fire flow deficient in Koloa Town and ag/open areas.
 - Koloa Town pipe installed in 1924- 1937
 - Older pipes are galvanized steel and cast iron .

System Overview: Anahola

- **Supply**
 - 2000: Need new 300 gpm source
 - 2020: Adequate
- **Storage**
 - 2000: Adequate
 - 2020: Need 0.4 MG tank
- **Distribution:**
 - Fire flow is deficient in Anahola village.
 - Anahola Road pipe installed in 1929.
 - Remainder after 1956

System Overview: Moloaa

- **Supply**
 - Currently purchases water
- **Storage**
 - 2000: Construct new 0.015 MG tank
 - 2020: Adequate
- **Distribution:**
 - PVC pipe was installed in 1985

System Overview: Anini

- **Supply**
 - Currently purchases water
- **Storage**
 - No DOW facilities
- **Distribution:**
 - Fire flow is deficient at the end of the system.
 - Oldest pipe (PVC) was installed in 1984

System Overview: Kilauea-Waipake-Kalihiwai

- **Supply**
 - 2000: Need new 400 gpm source
 - 2020: Adequate
- **Storage**
 - 2000: Construct new 0.65 MG tank. Install PRV stations
 - 2020: Adequate
- **Distribution:**
 - Sea Cliff Plantation has low pressure.
 - Fire flow is deficient for commercial, schools and Kalihiwai Valley.
 - Oldest pipe was installed in 1972

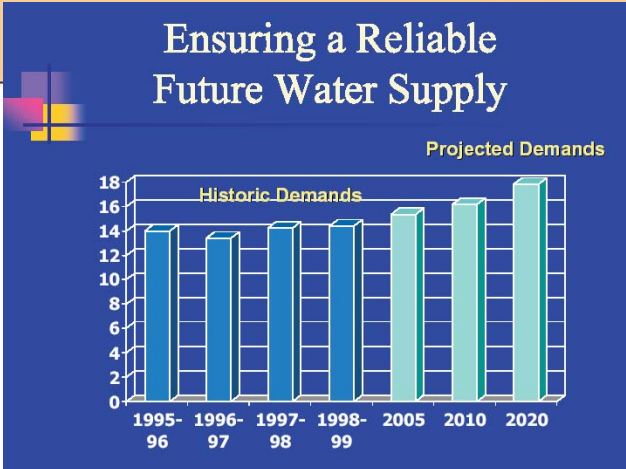
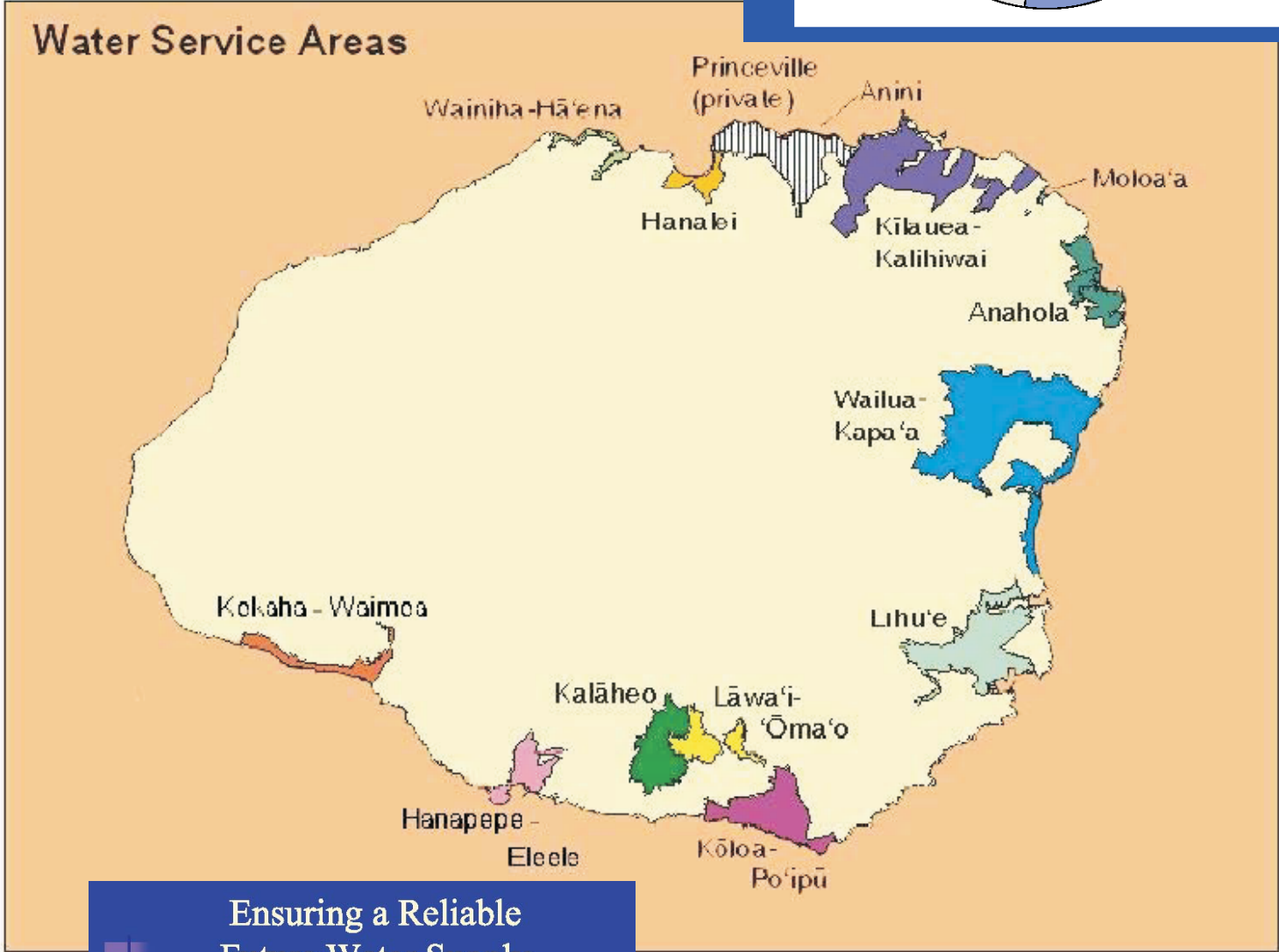
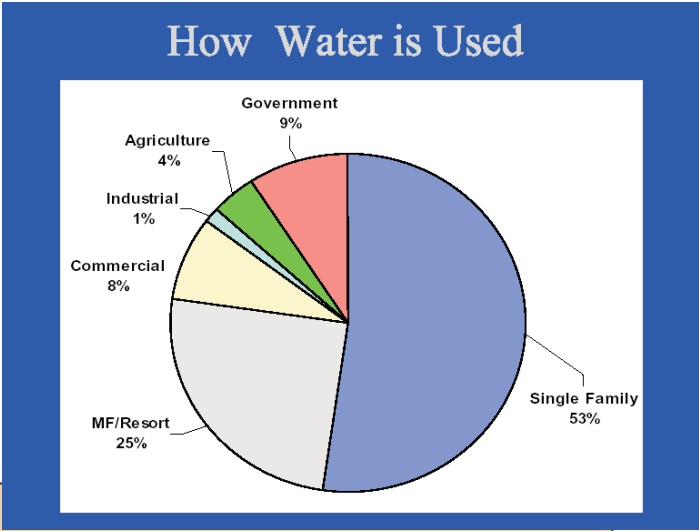
System Overview: Hanalei

- **Supply**
 - 2000: Need new 200 gpm source for redundancy
 - 2020: Adequate
- **Storage**
 - 2000: Need new 0.1 MG tank
 - 2020: Adequate
- **Distribution:**
 - Fire flow is deficient for commercial, school, Weke Road areas.
 - Oldest pipe installed in 1924
 - Remainder after 1962

System Overview: Wainiha-Haena

- **Supply**
 - 2000: Need new 100 gpm source
 - 2020: Adequate
- **Storage**
 - 2000: Construct new 0.2 MG tank & new 0.01 MG tank
 - 2020: Adequate
- **Distribution:**
 - Wainiha Valley is fire flow deficient.
 - Pipes installed in 1960 and later.

http://www.kauaiwater.org/wp2020_intro.pdf



How Improvements are Prioritized

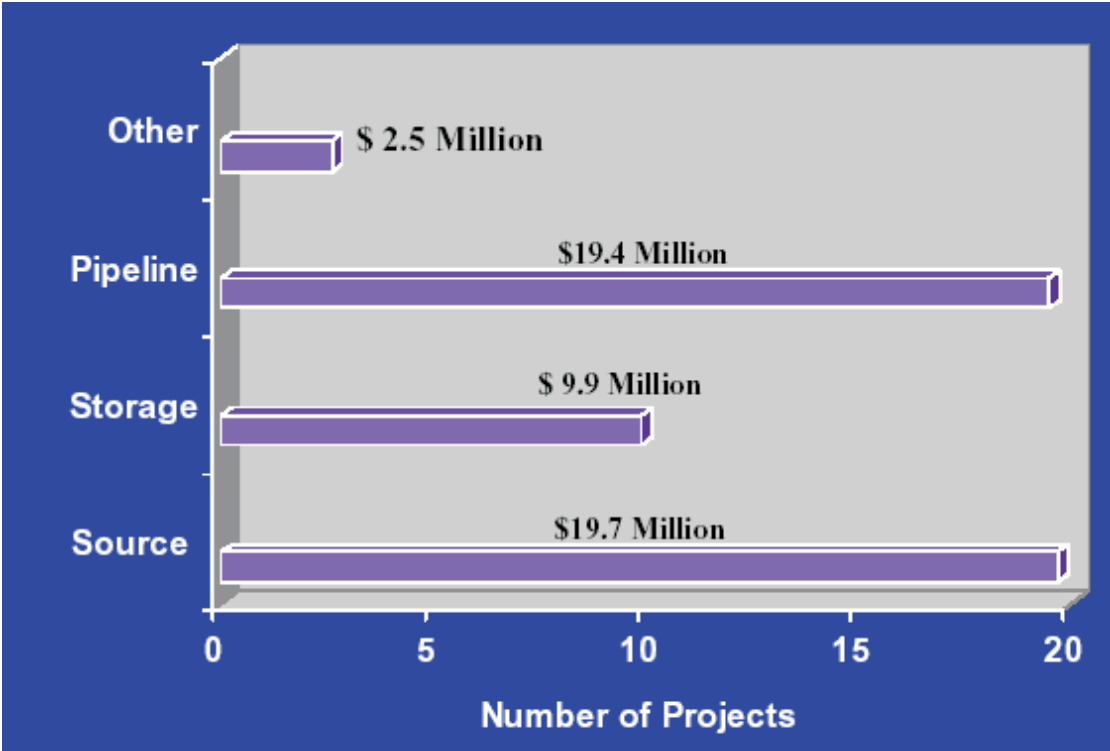
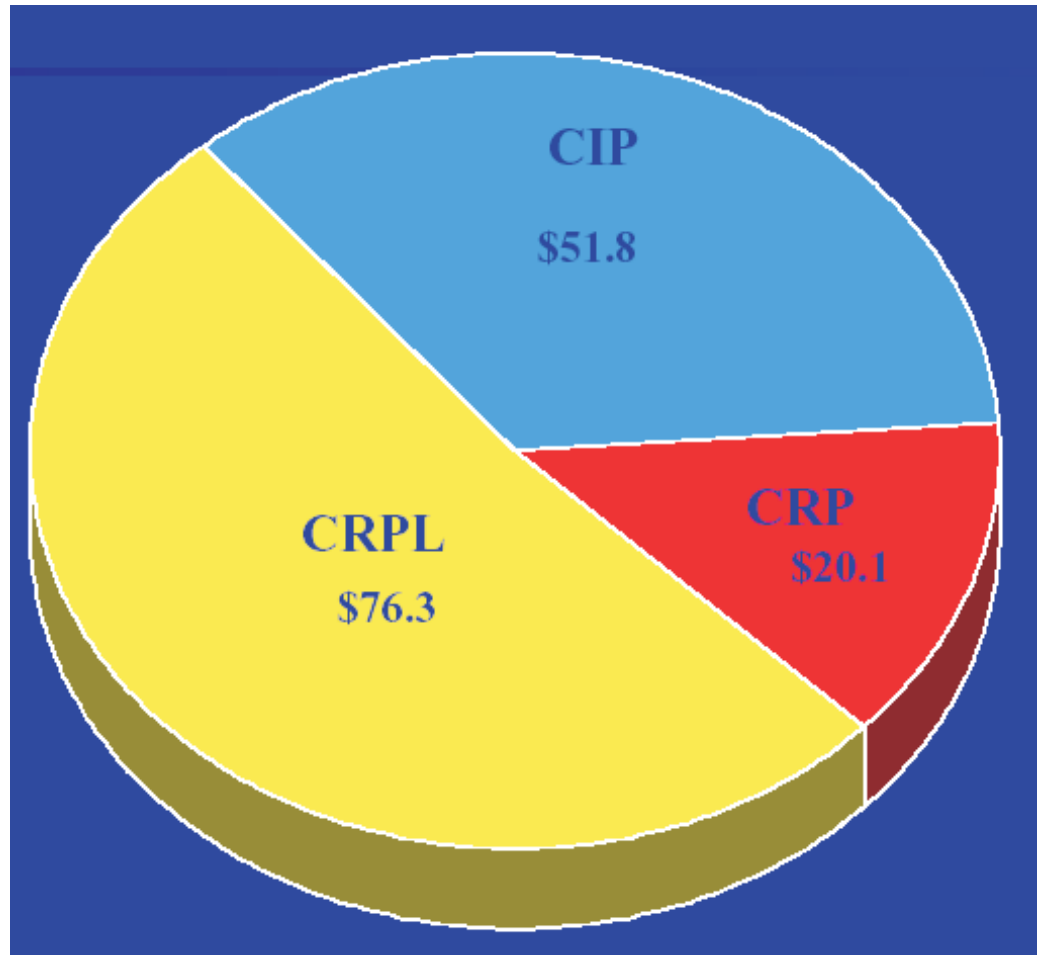
Project	System	Description	Project Evaluation			Addl. Score		
			Fund Type	Cond. Assess	Health /Service Safety Level	Total Strategic Score	Funding Initiative	
KW-21	Kekaha-Waimea	Waimea Shaft #9, Water Treatment Plant						
5 Years	Y	CRP	10	10	10	30	1	20
PLH-13	Puhi-Lihue-Hanamaulu	Develop Puhi Well #5A, #5B and Puhi #1 re-pipe to 393'						
5 Years	Y	CIP	10	10	10	30	1	20
PLH-16	Puhi-Lihue-Hanamaulu	Drill & Develop Hanamaulu Well #4, 150 gpm						
5 Years	Y	CIP	10	9	9	28	1	20

Develop Island-Wide Improvement Program

Water System	Number of Projects	Total Cost (in Million \$)
Anahola	9	\$5.2
Anini	2	\$1.6
Haena-Wainiha	14	\$5.9
Hanalei	9	\$4.8
Hanapepe-Eleele	14	\$11.4
Kalaheo	12	\$10.3
Kekaha-Waimea	29	\$15.2
Koloa-Poipu	18	\$12.5
Lawai-Omao	12	\$7.3
Molooa	2	\$3
Puhi-Lihue-Hanamaulu	33	\$24.0
Wailua-Kapaa	37	\$37.7
Waipake-Kilauea-Kalihiwai	18	\$11.9
Grand Total	209	\$150

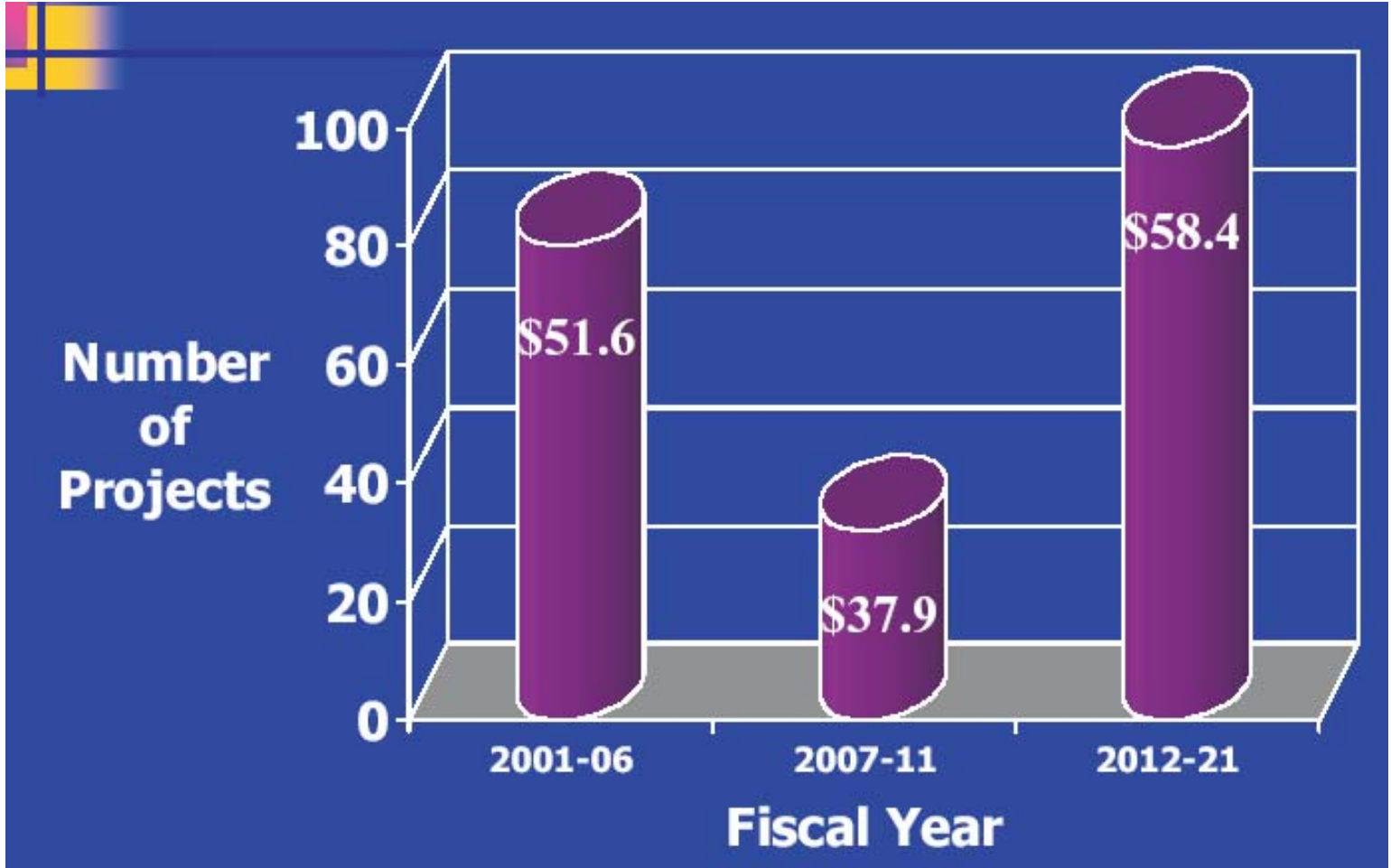
http://www.kauaiwater.org/wp2020_discover.pdf

ISLAND TOTALS BY FUNDS TYPE



PROJECT TYPE,
PHASE 1

200+ PROJECTS NEEDED AT A COST OF ~\$150 MIL



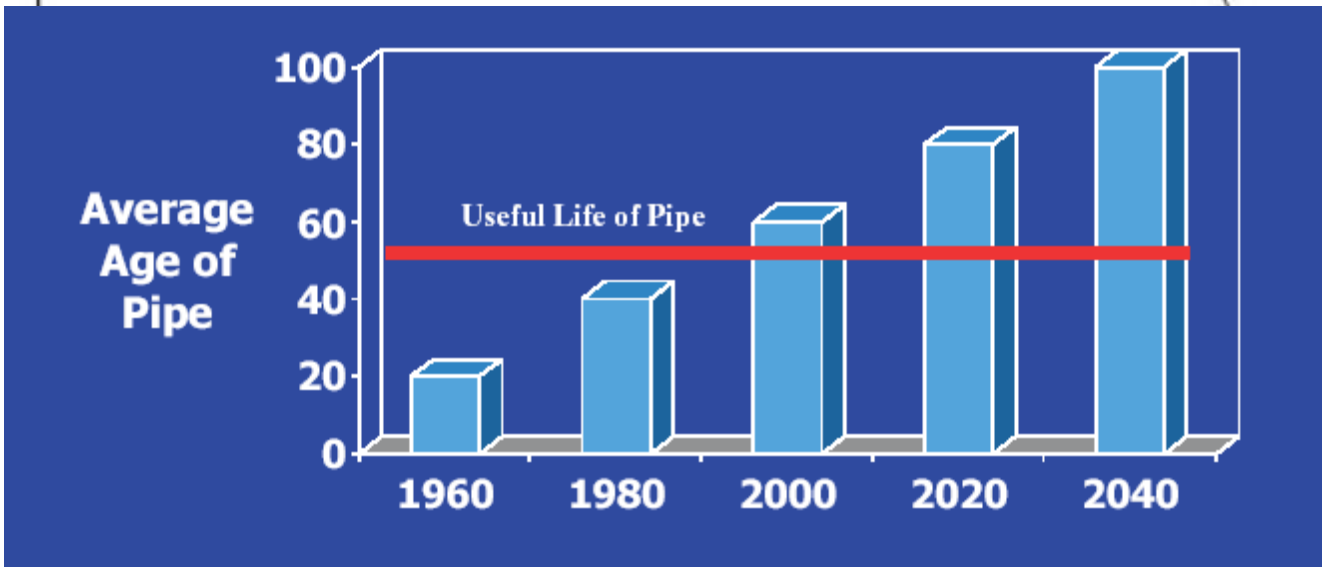
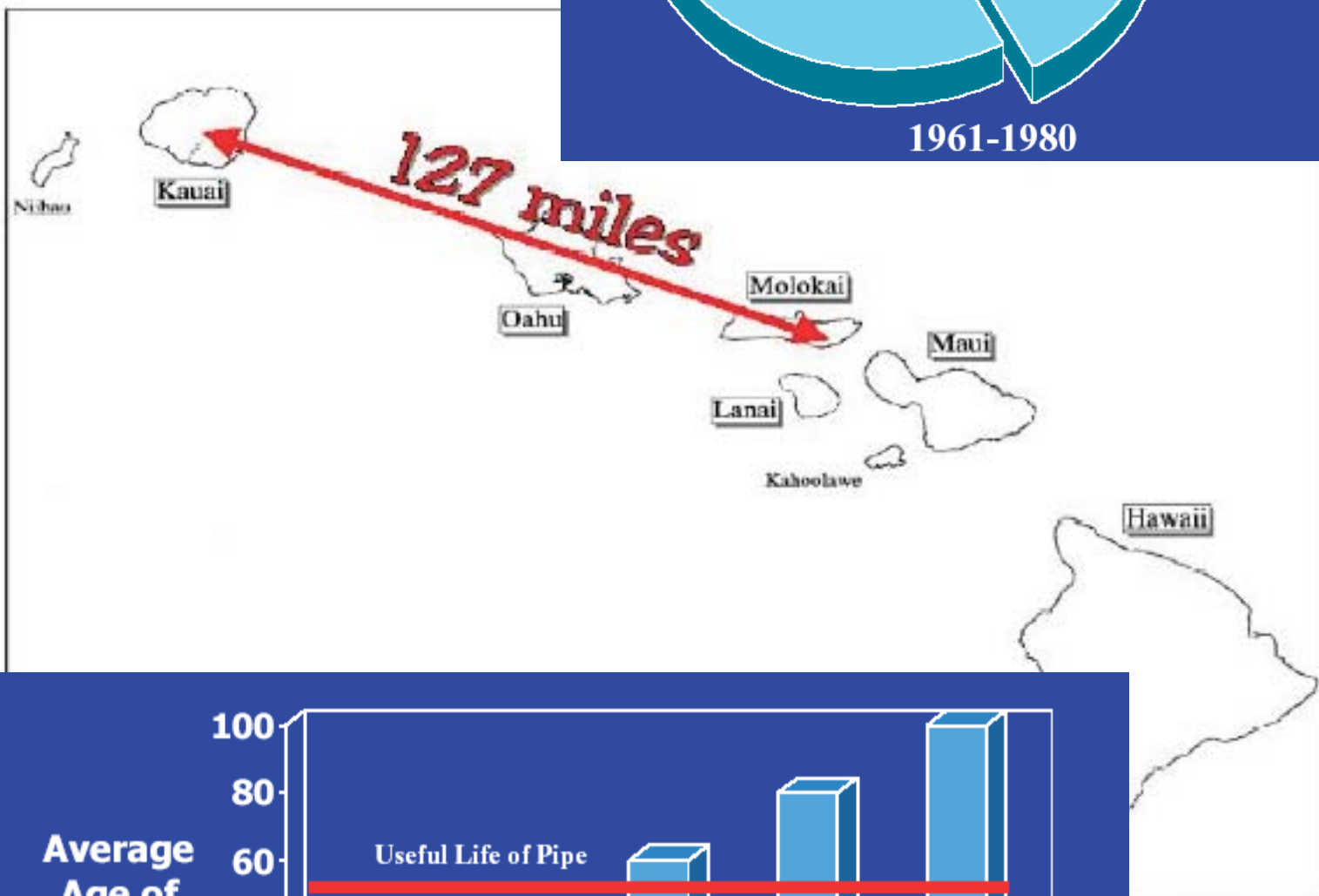
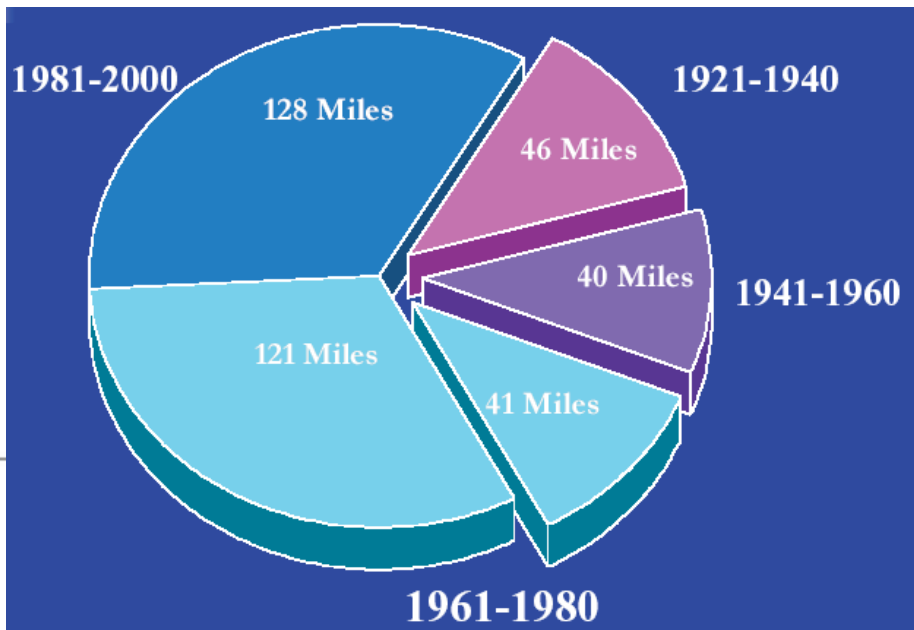
CIP/CRP Projects , Phase I By Fund Type



Appendix: County of Kauai – Department of Water-Kauai –Water Plan 2002

http://www.kauaiwater.org/wp2020_discover.pdf

127 mi. of pipes need replacement



Appendix: County of Kauai – State Department of Health – Ground Water Assessment

<http://www.hawaii.gov/health/eh/cwb/2000-305b/pdf-files/ch400001.pdf>

- a. Inorganic pesticides
- b. Organic pesticides
- c. Halogenated solvents
- d. Petroleum compounds
- e. Nitrate
- f. Fluoride
- g. Salinity
- h. Metals
- i. Radio nuclides
- j. Bacteria
- k. Protozoa
- l. Viruses
- m. Other

270

The table below shows the water quality issues for water supply on Kauai.

Table 5-2. Summary of State Ground Water Protection Programs

Programs or Activities	Check (✓) (1)	Implementation Status (2)	Responsible State Agency (3)
Active SARA Title III Program	✓	fully established	DOH-HEER
Ambient ground water monitoring system	✓	under development	DOH-SDWB
Aquifer vulnerability assessment	✓	fully established	DOH-SDWB-GWPP/ DLNR-CWRM
Aquifer mapping	✓	fully established	DOH-SDWB-GWPP/ DLNR-CWRM
Aquifer characterization	✓	fully established	DOH-SDWB-GWPP/ DLNR-CWRM
Comprehensive data management system	✓	under development	DOH-EPO

EPA-endorsed Core Comprehensive State Ground Water Protection Program		not applicable	DOH-SDWB-GWPP
Ground water discharge permits			
Ground water Best Management Practices	✓	under development	DOH-SDWB-GWPP -CWB-PRCP
Ground water legislation	✓	continuing efforts	DOH/DLNR
Ground water classification	✓	continuing efforts	DOH-SDWB-GWPP DLNR-CWRM
Ground water quality standards		not applicable	
Interagency coordination for ground water protection initiatives	✓	continuing efforts	DOH/DLNR/DOA
Nonpoint source controls	✓	fully established	DOH-CWB-PRCP
Pesticide State Management Plan	✓	under development	DOA-PB
Pollution Prevention Program	✓	pending	DOH-OSWM- CWB-EPO
Resource Conservation and Recovery Act (RCRA)	✓	fully established	
Source Water Assessment Program (4)	✓	under development	DOH-SDWB
State Superfund	✓	fully established	DOH-HEER
State RCRA Program incorporating more stringent requirements than RCRA Primacy	✓	fully established	DOH-SHWB
State septic system regulations	✓	fully established	DOH-WWB
Underground storage tank installation requirements	✓	fully established	DOH-SHWB
Underground Storage Tank Remediation Fund	✓	fully established	
Underground Storage Tank Permit Program	✓	under development	DOH-SHWB
Underground Injection Control Program	✓	fully established	DOH-SDWB-UICP
Vulnerability assessment for drinking water/wellhead protection	✓	under development	DOH-SDWB-GWPP
Well abandonment regulations	✓	fully established	DLNR-CWRM
Wellhead Protection Program (EPA-approved)	✓	continuing efforts	DOH-SDWB-GWPP
Well installation regulations	✓	fully established	DLNR-CWRM
Other programs or activities (release specific)			

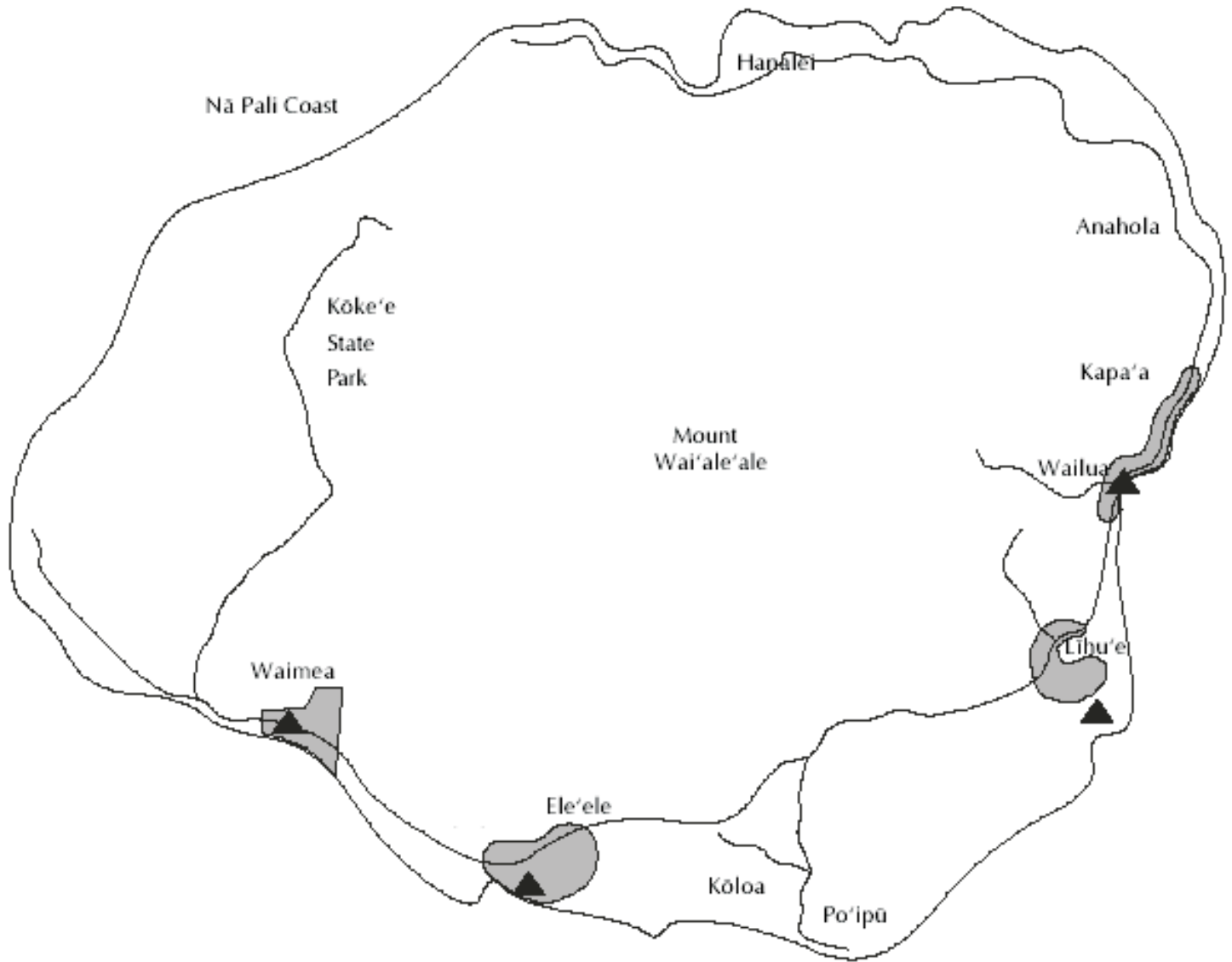
Island	Number of Aquifer Sectors	Number of Aquifer Systems	Number of Aquifer Types	Number of unconfined aquifers	Number and % of Aquifer Types Highly Vulnerable to Contamination
Kauai	3	13	120	98	77 64%

Table 5-1. Major Sources of Ground Water Contamination

Contamination Source	Ten Highest-Priority Sources (✓) (1)	Factors Considered in Selecting a Contaminant Source (2)	Contaminants (3)
<i>Agricultural chemical facilities</i>			
Animal feedlots			
Drainage wells			
Fertilizer applications	✓	D, G, H	e
Pesticide applications	✓	D, G, H	b
On-farm agricultural mixing and loading procedures	✓	D, G, H	d
<i>Storage and Treatment Activities</i>			
Land application (regulated or permitted)			
Material stockpiles			
Storage tanks (above ground)			
Storage tanks (underground)	✓	D, G, H	d
Surface impoundments			
Waste piles	✓	D, G, H	h
Waste tailings			
<i>Disposal Activities</i>			
Deep injection wells			
Landfills	✓	D, G, H	b, c, d
Septic systems			
Shallow injection wells			
<i>Other</i>			
Hazardous waste generators	✓	G, H	e
Hazardous waste sites			
Large industrial facilities			
Material transfer operations			
Mining and mine drainage			
Pipelines and sewer lines	✓	G	e, h
Salt storage and road icing			
Salt water intrusion			
Spills	✓	G	b, c, d, h
Transportation of materials			
Urban runoff			
Small-scale manufacturing and repair shops	✓	B, D, G, H	d, h
Other sources:			

<http://www.kauaigov.org/planning/GenPlans/Ch7.PDF>

The map below shows the wastewater treatment facilities on Kauai.



Legend

- Service Area
- County Wastewater Treatment Plant

Note: Does not include private wastewater treatment systems.

Appendix: County of Kauai – Kauai General Plan-2001

(<http://www.kauaigov.org/planning/GenPlans/Ch8.PDF>)

The table below shows which parks on Kauai are sustainable and to what Scenario.

Survey Results: Sustainable Patronage and Park/Site Needs, 1999 and Year 2020 Scenarios

Park/Site ¹	Annual Number of Patrons ²	Sustainability/ Need for Improvements			
		Existing (1999)	Scenario A	Scenario B	Scenario C
Federal					
Kilauea Point NWR	300,000	●	○	○	○
State					
Hā'ena State Park	663,000	●	○	○	○
Wailua River State Park	381,333	●	○	○	○
Waimea Canyon State Park	345,000 ²	●	●	○	○
Kōke'e State Park	304,000 ²	●	○	○	○
Polihale State Park	138,000 ²	●	○	○	○
Nā Pali Coast State Park	107,000	●	●	●	●
County					
Po'ipū Beach Park	278,217	●	●	○	○
Lydgate Park	189,858	●	●	○	○
Salt Pond Park	162,419	●	●	○	○
Other					
Kōke'e Natural History Museum	111,810	●	●	○	○

Matrix Key:

Patronage sustainable without major improvements = ●

Patronage sustainable **only with improvements** and/or increased operational support = ○

¹ Note that in most areas of Nā Pali Coast State Park, patronage is already limited through regulations.

² All are 1998 figures except for footnoted State parks, for which 1994 patronage is shown.

Appendix: County of Kauai – Kauai General Plan-2001

(<http://www.kauaigov.org/planning/GenPlans/Ch8.PDF>)

The tables below show some of the Kauai parks by district, type and acreage and parks with high usage.

County Parks, by District and Type

District/Park Type	Acres	District/Park Type	Acres
North Shore	38.7	Kōloa-Po'ipū-Kalāheo	61.3
Beach Parks	28.3	Beach Parks	6.4
Community Parks	10.4	Passive Park	4.4
		District Parks	32.3
Kawaihau	134.3	Community Parks	9.1
Regional Park	48.9	Neighborhood Park	9.0
Beach Parks	22.0		
District Park	18.1	West Side	80.0
Community Parks	45.4	Beach Parks	20.9
		District Parks	34.9
Līhu'e	86.8	Community Parks	24.2
District Park	34.0		
Beach Parks	16.1	ISLANDWIDE TOTAL	401.0
Community Parks	36.6		

Source: County of Kaua'i, Department of Public Works, Parks Division.

County Parks with High Levels of Use

Use Category/Park	Park Type	Acres	Use Category/Park	Park Type	Acres
EXTREMELY HIGH USE			HIGH USE:		
North Shore			North Shore		
'Anini Beach Park	Beach	12.5	Hanalei Black Pot	Beach	2.5
Kawaihau			Hanalei Pavilion	Beach	1.3
Lydgate Park	Regional	48.9	Hā'ena Park	Beach	5.5
Kapa'a New Park	District	18.1	Kīlauea Park	Community	4.9
Līhu'e			Kawaihau		
Vidinha Stadium	District	34.0	Anahola Beach Park	Beach	1.5
Isenberg Park	Community	9.2	Kapahi Park	Community	4.0
Kōloa Po'ipū-Kalāheo			Wailua Houselots Park	Community	10.1
Po'ipū Beach Park	Beach	5.4	Līhu'e		
Spouting Horn Park	Passive	4.4	Hanamā'ulu Beach	Beach	6.5
Kalawai Park	District	21.0	Nāwiliwili Park	Beach	6.3
Kōloa Park	District	11.3	Līhu'e County Park	Community	3.3
West Side			Kōloa-Po'ipū-Kalāheo		
Hanapēpē Pavilion	Beach	0.8	Kalāheo Little League	Community	1.4
Salt Pond Park	Beach	5.9			
Hanapēpē Stadium	District	14.7			
Kekaha Faye Park	District	8.5			
Waimea Athletic Field	District	11.7			

Source: County of Kaua'i, Department of Public Works, Parks Division.