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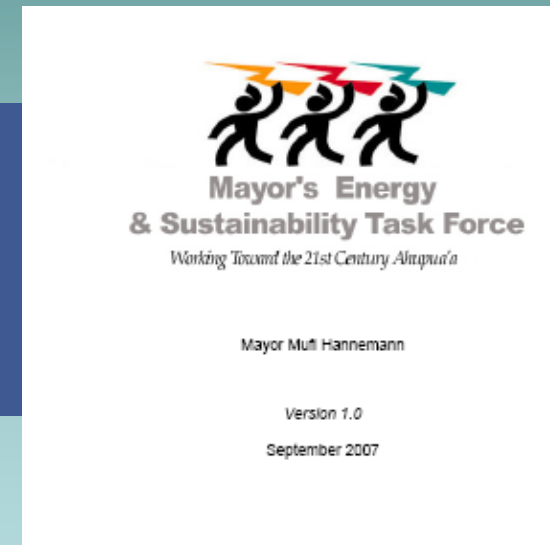
Drive by Leak Loggers

What's all the Noise About?

October 8, 2010



City and County of Honolulu Mayor's Sustainability Plan



Internal Programs



- **Leak Detection**
- Cathodic Protection
- Pipeline Failure Analysis



Leak Detection Program Vision 5-10 year plan

- Survey the island in 2.5 years
- Maintain water loss to 10% or less
- Maintain emergency break levels below 200 / year and slowly reduce annually by 10-20 breaks / year
- Program is self sufficient (manpower, equipment)
- Include Leakage management strategies



For Calendar year 2009

- 116 leaks recovered totaling = 963 gpm = 506 MG / year
- Electrical cost to BWS = \$21.7 Million
- 143.52 MGD = 52,384,000 kgallons / year
- Production Cost = \$0.41 / kgallon
- Estimated energy savings 2009 year = **\$207,500.**

Annual Assessment

- Metrics for the year
- Events during the year
- Resources
 - Staffing
 - Hardware
- Process
- Brainstorm



2007 / 2008 Process Change

- Process: Manual vs. Lift and Shift
 - Lift and shift with correlating loggers
- Slide areas – high frequency surveys
 - Drive by loggers
- Staffing
 - Add 2 people



The RPF

REQUEST FOR PROPOSALS
RFP # BWS 08-WC01

DRIVE-BY LEAK LOGGING
SYSTEM PRODUCTS AND SERVICES

for

THE WATER SUPPLY WATER SYSTEM,
City and County of Honolulu

BOARD OF WATER SUPPLY
630 S. Beretania Street
Honolulu, Hawaii 96843

Evaluation Process

- Review proposals to determine if Offeror “meets” requirements
- 4-day test on the BWS system
- Call clients of the Offeror
- “Leak and no leak” scenarios
- PVC, DI and AC pipelines
- Specified number of loggers that could be used for the test



The Criteria

1. Leak Sound Logger Integrity – 55 pts max

1. Ability to P/U leak sounds – 25 pts
2. Retrieval capability – 15 pts
3. System Reliability – 8 pts
4. Ease of Installation – 7 pts

2. Strength of Company – 25 points max

1. Customer Service – 10 pts
2. Referrals – 10 pts
3. Qualifications of Offeror and Staff – 5 pts

3. Cost of System – 20 pts max

1. Cost of logger system – 8 pts
2. Warranties – 8 pts
3. Cost of associated services – 4 pts

System Integrity (55 pts)

Ability to Pick Up Leak Sounds 25 pts

- Must find leaks on each of the 3 pipe types (meets or does not meet)
- Failure rate is 10% (scaled)

Retrieval Capability 15 pts (scaled on speed and distance)

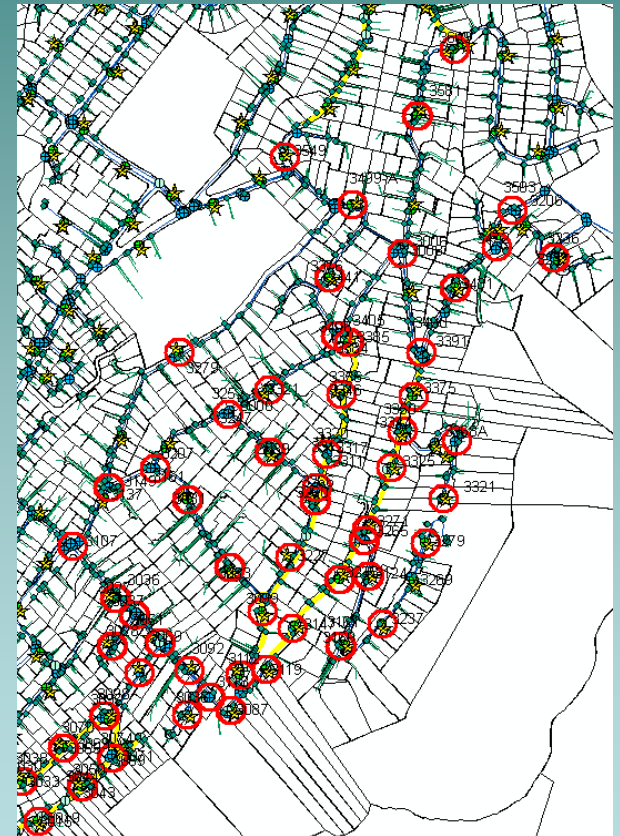
- Picks up at speed of X mph at distance of X feet
- Must pick up 90% of the loggers

System Reliability 8 pts (scaled on # of system crashes)

Ease of Installation 7 pts (meets or does not meet)

Leak Loggers Program Today

- 270 loggers deployed
- Weekly patrols
- # of leaks recovered to date
- 2 full days vs. 2 weeks
- Identification
- Coordination with agencies



Leak Loggers Fixed, Drive by Program



Mapping of Logger Locations



Logger Deployment

A	B	C	D	E	F	G
Kalama Valley (56)	Kalapaki Area (13)	Papahehi Area (6)	Palolo Area (24)	Manoa Area (61)	Aina Haina Area (54)	Moanalua Area (49)
1174 Honokahua St	976 Lunalilo Home Rd	551 Kuliouou	2203 Waiomao Rd	New logger on Kalawao	5428 Paniolo Pl	1412 Ala Aolani St
1189 Kaeleku St	1001 Lunalilo Home Rd	589 Papahehi	2269 Waiomao Rd	3003 Lanikaula St	731 Ailuna St	1454 Ala Aolani St
1233 Kaeleku St	1033 Lunalilo Home Rd	FH M06857	2319 Kuahea St	New logger on Kalawao	755 Ailuna St	1466 Ala Aolani St
1263 Kaeleku St	1061 Lunalilo Home Rd	FH M06858	2362 Kuahea St	3030 Lanikaula St	5413 Halapepe St	1524 Ala Aoloo Loop
1299 Kaeleku St	1077 Lunalilo Home Rd	647 Papahehi	2368 Kuahea St	3065 Lanikaula St	839 Leighton St	1552 Ala Aoloo Loop
1341 Kaeleku St	1099 Kalapaki St	661 Papahehi	2407 Kuahea St	3092 Lanikaula St	879 Leighton St	1582 Ala Aoloo Loop
1369 Kaeleku St	1092 Kalapaki St		2414 Kuahea St	3074 Woolsey Pl	921 Leighton St	1626 Ala Mahina
1392 Honokahua St	1058 Kalapaki St		2409 Waiomao Rd	3050 Woolsey Pl	902 Ailuna St	1620 Ala Aoloo Lp
1409 Honokahua St	1048 Kalapaki St		2393 Waiomao Rd	3019 Woolsey Pl	933 Ailuna St	1624 Ala Makani St
1429 Honokahua St	1033 Kalapaki St		2431 Yvonne Pl	3124 Lanikaula St - N/P FH2940	860 Ailuna St	1602 Ala Aolani St
1449 Honokahua St	1012 Kalapaki St		2437 Waiomao Rd	3069 Kahaloa St - 2" Svc Main	828 Ailuna St	1646 Ala Aolani St
1478 Honokahua St	999 Kalapaki St		2428 Puunoo Pl	3118 Kahaloa Dr - 2" Svc Main	810 Alamuku St	1677 Ala Aolani St
1370 Honokahua St	1006 Wainiha St		2472 Waiomao Rd	3036 Kahaloa Pl - N/P FH3276	856 Alamuku St	1736 Ala Aolani St
1342 Honokahua St			2481 Waiomao Rd	3092 Kahaloa Dr - N/P FH7441	874 Hind luka Dr	1744 Ala Aolani St
1300 Honokahua St			2521 Waiomao Rd	3051 Kahaloa Dr - Svc Main	860 Hind luka Dr	1802 Ala Aolani St
1257 Honokahua St			2521D Waiomao Rd	3028 Lono Pl - N/P FH2411	841 Hind luka St	1814 Ala Noe Pl
1218 Honokahua St			2524 Waiomao Rd	3027 Kahaloa Dr	807 Hind luka Dr	1764 Ala Noe Way
535 Kealahou St			2448 Halelaau St	3107 Woodlawn Dr	752 Hind luka Dr	1868 Ala Noe Pl
7529 Mokunoio Pl			2382 Waiomao Rd	3137 Woodlawn Dr	5263 Halapepe St	1842 Ala Aolani St
7524 Manulele Pl			2373 Waiomao Rd	3161 Woodlawn Dr	831 Lawelawe St	1853 Ala Uwila Pl
7535 Huialoha St			2427 Lamaku St	3247 Woodlawn Dr	858 Lawelawe St	1745 Ala Aolani Pl
577 Kealahou St			2453 Lamaku St	3321 Woodlawn Dr	960 Lawelawe St	1657 Ala Lani St
620 Inuwai Pl			2301-A Waiomao Rd	3385 Alani Dr	918 Hind luka Dr	1667 Ala Lani Pl
7525 Muolea Pl			2293 Waiomao Rd	3406 Alani Dr	985 Hind luka Dr	1649 Ala Lani St
599 Kealahou St				3441 Alani Dr	1016 Hind luka Dr	1635 Ala Lani St
614 Kealahou St				3006 Seaview Rise	855 Kainoa Pl	1613 Ala Lani St
1144 Olowalu Way				3391 Paty Dr	801 Kainoa Pl	1606 Ala Lani St
7515 Olowalu Pl				3431 Paty Dr	1141 Mona St	1596 Ala Lani St
623 Kealahou St				3472 Paty Dr	1163 Mona St	1579 Ala Lani St
628 Kealahou St				3503 Paty Dr	1199 Mona St	1569 Ala Lani St
1205 Kahului St				3236 Melemele Pl	1243 Mona St	1549 Ala Lani St
649 Kealahou St				3375 Paty Dr	1105 Hind luka Dr	1541 Ala Lani St
7525 Puumahoe Pl				3350 Paty Dr	1168 Hind luka Dr	1527 Ala Lani St
665 Kealahou St				3368-A Anoai Pl	1195 Hind luka Dr	1508 Ala Lani St
691 Kealahou St				3321 Anoai Pl	1225 Hind luka Dr	1443 Ala lolani St
705 Kealahou St				3325 Paty Dr	784 Hao St	1435 Ala lolani St

Benefits of Drive by Loggers

- Saves Time
- Level of Effort
- Data Storage
- Frequency is met

SLIDE AREA (Manual/Logger Survey) - 2009						
Date	Location	Date to FO	Repair Date	Repairs	WO#	Hrs
5/1/09	Kalama to Moanalua Area			SS, SO - Sewerin Logger Implementation - 16 hrs		16
5/5/09	Palolo to Moanalua Area			SS, SO - Sewerin Logger Implementation - 13 hrs		13
5/8/09	Kalama to Moanalua Area			SS, SO - Sewerin Logger Implementation - 16 hrs		16
5/26/09	Kalama to Moanalua Area			SS, SO - Sewerin Logger Implementation - 15 hrs		15
5/27/09	Kalama to Moanalua Area			SS, SO - Sewerin Logger Implementation - 16 hrs		16
6/2/09	Kalama to Moanalua Area			SS, SO - Sewerin Logger Implementation - 16 hrs		16
6/3/09	Kalama to Moanalua Area			SS, SO - Sewerin Logger Implementation - 16 hrs		16
6/9/09	Kalama to Moanalua Area			SS, SO - Sewerin Logger Implementation - 16 hrs		16
6/10/09	Kalama to Moanalua Area			SS, SO - Sewerin Logger Implementation - 16 hrs		16
6/16/09	Kalama to Moanalua Area			SS, SO - Sewerin Logger Implementation - 16 hrs		16
6/17/09	Kalama to Moanalua Area			SS, SO - Sewerin Logger Implementation - 16 hrs		16
6/23/09	Kalama to Moanalua Area			SS, SO - Sewerin Logger Implementation - 16 hrs		16
6/30/09	Kalama to Moanalua Area			SS, SO - Sewerin Logger Implementation - 16 hrs		16

Lessons Learned



KA WAI OLA

Water for Life



Board of Water Supply
City and County of Honolulu



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