#### APPENDIX C - PLUGGING AND ABANDONMENT PLANS

Upon completion of injection activities, a well will be plugged and abandoned according to the following plans and to State and Federal regulations to ensure protection of Underground Sources of Drinking Water (USDW).

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OMB No. 2040-0042

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OFDA	United S		nental Protection n, DC 20460	Agency					
<b>⊗EPA</b>	PLUGGING	•		ENT PL	AN				
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Lahaina Wastewater Reclamation 3300 Honoapiilani Hwy., Lahaina		**************************************	County of Ma 200 S. High S	aui - Depart	ment of Pul		and Envir. M	1gmt.	
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United States Environmental Protection Agency  Washington, DC 20460														
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Name ar	nd Address of F	acility				N	ame and Add	ress of Owne	r/Operator					
	na Wastewater Honoapiilani H				County of Maui - Department of Public Works and Envir. Mgmt 200 S. High Street, Wailuku, HI 96793							1gmt.		
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#### Preliminary

## Lahaina Injection Well Abandonment Plan Method of Abondoning Well

- 1 Measure Depth of Well
- 2 All casing shall remain with the exception of the stick up and to a depth of 4 feet below finish ground level.
- 3 Remove air surge line
- 4 Inflow pipe shall be exposed, cut and plugged
- 5 Fill all open hole with 3/4"gravel

Place two cubic yards of concrete at transition from open hole to solid casing

or

Fill preforated casing with 3/4"gravel

Place two cubic yards of concrete at transition from perforated casing to solid casing.

- 6 Fill soid casing with sand to a point about 16 feet below finish ground (approximately 4 feet below inflow pipe)
- 7 Remove Casing stickup and additional 4 feet below ground surface
- 8 Seal remaining casing with concrete (Approximately 1 C.Y.)

#### Note:

Monitor and record depth and volume of material placement

Verify that no sluffing of material occurs (48 hours) before placing one layer of material over another.

File required reports with EPA, State DOH and DNLR

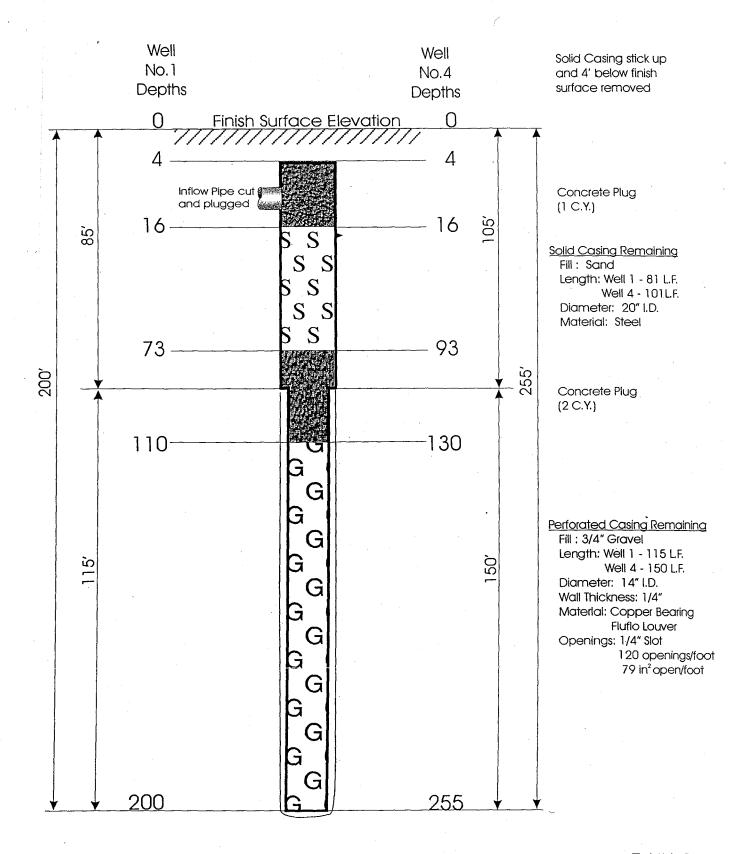
#### **Cost Estimate**

ltem	Unit Cost	Well 1	Well 2	Well 3	Well 4
Mobilization	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500
3/4" gravel (C.Y.)	\$75	\$266	\$391	\$514	\$370
Concrete (C.Y.)	\$150	\$450	\$450	\$450	\$450
Sand (C.Y.)	\$60	\$268	\$273	<b>′\$370</b>	\$370
Monitoring etc.	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
Well Head Removal etc.	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
Backfill/grading	\$500	\$500	\$500	\$500	\$500
Total		\$7,484	\$7,614	\$7,834	\$7,690

### Lahaina Injection Well Abandonment Plan

Well Characteristics Casing Stickup (ft.) Open Hole diameter (in.) Open Hole height (ft.) Perforated Casing diameter (in.) Perforated Casing height (ft.) Solid Casing diameter (in.) Solid Casing height (ft.) Well Depth	Well 1  4 0 0 14 115 20 88 200	Well 2  3 18 95 0 20 88 180	Well 3  3 18 120 0 20 108 225	Well 4  3 0 0 14 150 20 108 255
Plug Locations Depth to top of Plug 2 Depth to inflow pipe Depth to bottom of plug 2 Depth to top of Plug 1 Depth to bottom of solid casing Depth to bottom of Plug 1 Bottom depth	4	4	4	4
	11	11.5	12	12
	16	16	16	16
	73	73	93	93
	85	85	105	105
	110	100	120	130
	200	180	225	255
Fill Volume for one lineal foot Volume of Solid Casing (ft^3) Volume of Perforated Casing (ft^3) Volume of Open Hole (ft^3)	2.18	2.18	2.18	2.18
	1.07	0.00	0.00	1.07
	0.00	1.77	1.77	0.00
CEMENT PLUGS Solid Casing Plug length (2 C.Y.) Perforated Casing Plug length (1 C.Y.) Open Hole Plug Length (1 C.Y.)	24.75	24.75	24.75	24.75
	25.26	0.00	0.00	25.26
	0.00	15.28	15.28	0.00
OTHER MATERIALS Solid Casing Sand Length (ft.) Perforated Casing Gravel length (ft.) Open Hole Gravel Length (ft.)	55.25	56.25	76.25	76.25
	89.74	0.00	0.00	124.74
	0.00	79.72	104.72	0.00
Total Length Filled Stick up and casing removal Total Well Depth	195.00	176.00	221.00	251.00
	8.00	7.00	7.00	7.00
	203.00	183.00	228.00	258.00
1 C.Y. of material will fill: Solid Casing length (ft.) Perforated Casing length (ft.) Open Hole length (ft.)	12.38	12.38	12.38	12.38
	25.26	0.00	0.00	25.26
	0.00	15.28	15.28	0.00
Fill Material Required  Volume of Concrete Required (C.Y.)  Volume of Sand Required (C.Y.)  Volume of Gravel Required (C.Y.)	3.00	3.00	3.00	3.00
	4.46	4.54	6.16	6.16
	3.55	5.22	6.85	4.94

# Lahaina Wastewater Reclamation Facility Well Abandonment Plan Injection Well No.'s 1 and 4



## Lahaina Wastewater Reclamation Facility Well Abandonment Plan Injection Well No.'s 2 and 3

