

AC-08 MONITORING WELL ABANDONMENT WORK PLAN and BUDGET FORMAT

This Monitoring Well Abandonment Work Plan (WP) is for the routine abandonment of monitoring wells no longer needed for petroleum release investigation or cleanup, or needed by the owner/operator for their own purposes. Monitoring wells to which this WP applies include groundwater monitoring wells, soil vapor extraction wells, recovery wells, observation wells, sparge/injection wells, and piezometers.

Administrative Rules of Montana (ARM) 36.21.810 sets forth the legal requirements for properly abandoning monitoring wells. ARM 36.21.810 is attached and may be found at the following Internet address: http://www.mtrules.org/gateway/RuleNo.asp?RN=36.21.810.

Return this WP to: Petroleum Tank Cleanup Section, Montana Department of Environmental Quality, P.O. Box 200901, Helena, MT 59620-0901. **Please note that incomplete and/or unsigned WPs will be returned** and may delay processing of claims submitted to the Petroleum Tank Release Compensation Board.

Facility Name Former Caldwell's Service	Facility ID#_ <u>07-08561</u>	Release # 1963
Facility Address 115 East Main	Fort Shaw	59443
Owner/Operator Name (Street) Justin Caldwell	(City)	(Zip)
Owner/Operator mailing address, if different from	above: P.O.Box 211, Fort Shaw, Mo	ntana 59443
Consultant's name, address, and phone number: Ai	r Water Soil, LLC (AWS) / 1321 8th	Avenue North, Suite 104,
Great Falls, Montana 59401 / 406.315.2201		
List monitoring wells by name and number to be al	bandoned: MW-1; MW-2; MW-3; MV	V-4
List monitoring wells by name and number to be n	naintained: None	
Specify the method by which the monitoring wells	will be abandoned: Well casing/scre	een removed from ground
(as feasible). Borings backfilled with hydrated bent	onite. Surface finished to match surr	oundings.
Target date for abandonment of the monitoring we	ll(s): Fall 2025	
Unit cost per monitoring well for abandonment (in	clude mobilization, Portland cement,	grout or bentonite,
equipment, and consultant or contractor labor costs	s): \$ <u>1,126.99 /well</u> \$ <u>112</u>	<u>.70 /ft</u>
Total cost of abandoning the above-listed monitori	ng wells: \$ <u>4,507.94</u>	
************	**********	******
I elect to maintain the monitoring wells locate least every three years and in accordance with Natural Resources & Conservation Division.		
I elect to abandon the monitoring wells locate referenced monitoring wells are to be properl and other applicable requirements of the Mon Division.	y abandoned in accordance with the	provisions ARM 36.21.810
J. Scott Vosen (AWS), for Justin Caldwell	AU AU	aust 25, 2025

(Signature of Facility owner or operator or authorized representative)

Revised: July 26, 2018

(date)

36.21.810 ABANDONMENT

- (1) Wells which have not been monitored for more than three years shall be deemed abandoned unless written permission is obtained from the board to maintain the well.
- (2) Monitoring wells that have outlived their useful purpose shall be abandoned by one of the following methods:
- (a) if the casing and screen are left in place, the casing and screen shall be sealed from the bottom up by the following methods:
 - (i) using a pump and hose or tremie pipe to conduct the sealing material to the bottom of the well; or
- (ii) by filling the casing and screen with bentonite pellets or chips placed in a manner that will prevent bridging. Metal casings shall be cut off three feet below the ground surface and the last three feet backfilled with naturally occurring soils;
- (b) the department recommends that the casing be removed in all possible instances. If the casing and/or screen are removed, the hole shall be filled with sealing material, concrete, or bentonite pellets or chips from the bottom up, as the casing and/or screen is removed. From six to three feet from the surface, bentonite shall be added to the well. The last three feet shall be filled with naturally occurring soils;
- (c) the sealing material shall be bentonite pellets or chips, bentonite clay grout, neat cement grout, or concrete. The material may contain nonbiodegradeable fluidizing admixtures, provided they will not contaminate the groundwater. Sealing materials which settle shall be topped to provide a continuous column of grout to within three feet of the surface; or
 - (d) other methods for abandonment with prior board approval.
 - (3) For flowing wells, the abandonment procedures outlined in ARM 36.21.671 shall apply.
- (4) A properly abandoned well shall not produce water nor serve as a channel for movement of water.
- (5) A water well log report, fully describing all abandonment procedures, shall be submitted to the Ground Water Information Center (GWIC) of the MBMG within 60 days of abandoning the well. History: 37-43-202, MCA; IMP, 37-43-202, MCA; NEW, 1990 MAR p. 739, Eff. 4/13/90; AMD, 1991 MAR p. 913, Eff. 6/14/91; AMD, 1997 MAR p. 65, Eff. 1/17/97; AMD, 2010 MAR p. 1614, Eff. 7/16/10.

For additional information or requirements for abandoning or maintaining monitoring wells, please contact the Montana Department of Natural Resources & Conservation, Board of Water Well Contractors at (406) 444-6643.

Revised: July 26, 2018

Instructions

Contractor-Facility Information

Petroleum Tank Release Compensation Board STATE OF MONTANA

Well Abandonment Form (WAF) - Facility Information

Well Abandonment Estimator

Links of interest

This Well Abandonment Form (WAF) is used for routine abandonment of monitoring wells that no longer needed for petroleum release investigation or cleanup, and the owner/operator does not want to retain responsibility and use of wells for other purposes. Monitoring wells, to which this WAF applies, include groundwater monitoring wells, soil vapor extraction wells, recovery wells, observation wells, sparge/injection wells, and piezometers.

Administrative Rule s of Montana (ARM) 36.21.810 sets forth the legal requirements for properly abandoning monitoring wells. ARM 36.21.810 may be found at the Links of Interest page or may be found at the following internet address:

http://www.mtrules.org/gateway/ruleno.asp?RN=36%2E21%2E810

Submit the WAF with your corrective action plan. Please note that incomplete and/or unsigned WAFs will be returned and may delay processing of claims submitted to the Petroleum Tank Release Compensation Board.

Facility ID Number: 07-08561 Release Number: 1963 Work Plan ID Number: 35070 **Facility Name:** Former Caldwell's Service **Facility Address:** 115 East Main, Fort Shaw, Montana 59443 Owner/Operator Name: Justin Caldwell Owner/Operator Mailing Address: P.O. Box 211, Fort Shaw, Montana 59443 Consultant's Name, Address, and Phone Nubmer: Air Water Soil, LLC / 1321 8th Avenue North, Suite 104, Great Falls, Montana 59401 / 406.315.2201 List monitoring wells to be abandoned (well name and number, e.g. MW1, RSW1, etc.): MW-1, MW-2, MW-3, MW-4 List monitoring wells to be maintained (well name and number, e.g. MW1, RSWI, etc.): Specify the method by which the monitoring wells will be abanonded: Casings removed from the ground, if feasible. Borings backfilled with hydrated bentonite. Surface finished to match surroundings (e.g., soil, gravel, concrete, etc.). Target date for abandonment of the monitoring well(s): Will the well abandonment activity be subcontracted? Subcontractor's Name, Address, and Phone Number: Yes or No Boland Drilling / 4701 North Star Boulevard, Great Falls, Montana 59405 406.761.1063 See ARM 17.58.344(2) for bids greater than \$2,500.00 Unit cost per monitoring well for abandonment (include portland cement, grout or bentonite, equipment, and consultant or contractor \$508.25 /well labor costs): Cost per Well Cost per Foot \$50.83 /ft Total cost of abandoning the above-listed monitoring wells: \$4,507.94 I elect to maintain the monitoring wells located at the above-referenced Facility and will monitor the wells at least every three years and in accordance with applicable requirements of the Montana Department of Natural Resources & Conservation Division.

Signature of Facility owner, operator, or authorized representative:

Natural Resources & Conservation Division.

I elect to abandon the monitoring wells located at the above-referenced Facility and certify that the above-referenced monitoring wells are to

be properly abandoned in accordance with the provisions ARM 36.21.810 and other applicable requirements of the Montana Department of

J. Scott Vosen / Principal / Air Water Soil, LLC (on behalf of Justin Caldwell)

Date:

Yes or No

Quantity of Wells

8/25/2025

Instructions

Contractor-Facility Information

Petroleum Tank Release Compensation Board STATE OF MONTANA

Well Abandonment Estimator

Links of Interest

WAF - W	ell A	bandonment	Estimator
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Well Dimensions			Bentonite Dimensions	
Total Number of Wells to be Abandoned	4	wells	* Linear Feet of Backfill/Surface Material per Well	0 ft/well
Average Well Casing Diameter (inches)	2	in/well = 0.17 ft/well	* Linear Feet of Bentonite Sealing Material per Well	10 ft/well
Average Depth of Wells (feet)	10	ft/well	* Bentonite Pellets/Chips	1 bag
Average Depth to Groundwater (feet)	5	ft/well		
Average Water Depth (feet)	5	ft/well		

		* Well Aba	* Asterisks included with a task name will ge their cost rolled into the well abandonment cost colums>						
Standardized Task Name	Per Foot	Per Well	Remarks	Cost	rice	Unit	Quantity	Unit	Task
Work Plan			AC-08 unit cost	480.00	30.00	\$	1	each	Work Plan (preparation)
Project Management			Project Manager	659.00	54.75	\$	4	hour	Project Mangement
Mobilization			Staff Scientist. 1 hr prep, 1 hr travel, 54 mi	316.44	5.86	\$	54	mile	Mobilization
* Well Abandonment	\$ 47.50	\$ 475.00	See attached bid	1,900.00	00.00	\$ 1	1	each	* Well Abandonment Subcontractor
* Well Abandonment	\$ 3.33	\$ 33.25	7% of subcontractor cost	133.00	33.00	\$	1	each	* Well Abandonment Subcontractor Markup
Fieldwork			Staff Scientist; per subcontractor estimate	690.00	88.00	\$	5	hour	Fieldwork Oversight
Report			Project Scientist	329.50	64.75	\$	2	hour	Report
	\$ 50.83	\$ 508.25	Total	4,507.94	osts	ected	Total Proj		

Mo	onitoring Well Volume Calculations		
$\pi * r^2 * h$ 0.22 ft ³ /well Volume per Well	$\pi * r^2 * h * Total # of wells to be abandoned Volume per Total Wells$	0.87 ft³/ 4	wells
Bentonite Bag Calculations: Up	p to K5 Feet Below Ground Surface (Assume 50 lb bag = 0.7 ft ³)		
π * r² 0.02 ft²/well Area per Well	$\pi * r^2 * Total # of wells to be abandoned Area per Total Wells$	0.09 ft ³ / 4	wells
(Average Depth of Wells - K5 ft) * ft²/well **Volume per Well** 0.22 ft³/well**	(Average Depth of Wells - K5 ft) * ft²/total wells Volume per Total Wells	0.87 ft³/ 4	wells
ft³/well * 0.7 Bags per Well 0.15 bags/well	ft ³ /Total Wells * 0.7 <u>Bags per Total Wells</u>	0.61 bags/	4 wells
ROUND UP: Bags per Well 1 bag/well	ROUND UP: Bags per Total Wells	1 bag/ 4	1 wells
Bentonite Water Requirements:	Up to K5 Feet Below Ground Surface (Assume 4 gal per 50 lb bag)		
4 gal * bags/well 0.61 gal/well Water Required per Well	4 gal * bags/total wells Water Required per Total Wells	2.44 gal/ 4	wells
Average Water Depth * ft²/well * 7.48052 **Water Available per Well** 0.82 gal/well**	Average Water Depth * ft²/total wells * 7.48052 Water Available per Total Wells	3.26 gal/ 4	wells
Vater Required per Well - Water Available per Well	Water Required per Total Wells - Water Available per Total Wells		
Additional Water Required per Well	Additional Water Required per Total Wells		

Petroleum Tank Release Compensation Board

Soil Boring/Monitoring Well Installation Unit Cost Worksheet

Son Doring/Monitoring	wen instanation	Unit Cost	worksnee
Contractor Information			

Company Name: Boland Drilling						
Address: 4701 N Star Blvd						
City, State, Zip: Great Falls, MT 59405						
Cost Estimator: Chris Boland			Phone: 406-761-1	1063		
Signature:		Date:	mo/day/year	8/15/2025		
Project Information and Specifications			TID	18692		
Former Caldwell's Service			Facility ID #	07-08561		
115 East Main			Release #	1963		
fort Shaw, MT 59443			WP ID#	35070		
Type of Drilling Equipment			Monitoring Well	Specifications		
Hollow-Stem Augers			Number of Wells			4
Air Rotary			Surface: Concrete	e Asphalt	Barren	
Direct Push			Depth (per well)			
Other (please specify)			Estimated Depth t	o Groundwater (ft))	
Soil Boring			Boring Diameter (inches)		8
Number of Borings	4		Casing Diameter a	and type (inches)		2" pvc
Boring Diameter (inches)			Surface Completio	on: Flush Mount	Above	ground
Depth (per boring - ft)						
Surface: Concrete Asphalt Barren						
Soil Disposal: Onsite Stockpile Drums						
Abandonment: Bentonite Soil Cuttings						
Soil Sampling						
Continuous Soil Sampling						
Interval Soil Sampling (specify interval)						
No Sampling						

Cost Estimate Explanation:

- (1) <u>Mobilization/Demobilization</u>: Includes <u>all</u> costs and mileage to transport equipment, materials, and personnel to and from the site location. More than one mobilization event of either the drilling rig or support vehicle will require justification and pre-approval by the DEQ-PRS and Board staffs. This item should be estimated on a per mile unit rate
- (2) <u>Soil Boring Installation</u>: Includes <u>all costs</u> (labor, equipment, and materials) to drill, collect soil samples and abandon soil borings, as well as decontaminate equipment. Drilling costs should be estimated using a per foot unit rate. Unit cost should include handling of contaminated soil by stockpiling or placing in drums. Assume level "C" personal protective equipment.
- (3) Monitoring Well Installation: Includes <u>all</u> costs (labor, equipment, and materials) to drill, collect soil samples, and complete monitoring well to specifications and according to Montana Well Drillers Board rules, as well as decontaminate equipment. Drilling costs should be estimated using a per foot unit rate. Unit cost should include handling of contaminated soil by stockpiling or placing in drums. Assume level "C" personal protective equipment.
- (4) <u>Drilling Standy</u>: Drilling standby should be estimated on an hourly basis. Prior approval and justification for accumulating standby time is needed prior to billing.
- (5) Well Development: Includes <u>all</u> costs (labor, equipment, and materials) to develop monitoring wells. This task should be estimated using a per well unit rate.
- (6) Monitoring Well Abandonment: Includes <u>all</u> costs (labor, equipment, and materials) to properly abandon a well location according to the Montana Well Drillers Board rules. Abandonment costs should be estimated using a per well unit rate.

Soil Boring/Monitoring Well Installation Unit Cost Worksheet

TASK		UNIT CO	OST	NUMBER OF UNITS	ТОТ	AL COST
Mobilization/Demobilization (1)						
Mobilization/Demobilization: Drilling Rig	\$		/mile		#VALUE!	
Mobilization/Demobilization: Support Vehicle	\$	5.00	/mile	60	\$	300.00
Soil Boring Installation (2)						
Drilling (0'-50' range per boring)	\$		/foot	0	#VALUE!	
Drilling (50'-100' range per boring)			/foot		\$	-
Other (please specify)					\$	-
Monitoring Well Installation (3)						
Drilling (0'-50' range per well)	\$		/foot	0	#VALUE!	
Drilling (50'-100' range per well)			/foot		\$	_
Other (please specify)					\$	-
Drilling Standby (4)						
-prior approval needed	\$		/hour		#VALUE!	
Well Development (5)						
Well Development	\$150		/hour		\$	-
Monitoring Well Abandonment (6)						
Abandonment	\$	400.00	/well	4	\$	1,600.00
Lodging may only be paid at actual costs when doc	umented by rec	eipts.				
Per Diem						
Lodging: number of individuals =	2 \$	/p	erson per day		#\	ALUE!
Food: number of individuals =	2 \$	30.50 /p	erson per day		\$	-

TOTAL PROJECT EXPENSE \$1,900.00

D.O.T. Drums \$120

Additional Conditions/Comments/Costs:

Abandon 4 monitor wells at the Former Caldwell's Service in Fort Shaw, MT

If you require assistance, call 406-841-5090. Submit completed form to:

Petroleum Tank Release Compensation Board PO Box 200902, Helena MT 59620-0902