ATTACHMENT 1. COST ESTIMATE FOR PAVILLION AREA GROUNDWATER INVESTIGATION TO BE CONDUCTED BY CONSULTANT WITH WDEQ OVERSIGHT

	Estimated Timeline	Activity	Schedule of Charges	Hourly Rate or Charge	Hours or Unit Estimate	Subtotal
1.	Ongoing	**Project Management**	Principal	$140	50	$7,000
		- Coordinate scope and schedule of project activities with WDEQ and subcontractors	Project Manager	$105	100	$10,500
		- Provide regular project updates to WDEQ via e-mail and/or telephone conferences	Project Engineer/Geologist	$80	150	$12,000
			Project Support	$40	40	$1,600
		WDEQ COSTING ASSUMPTION:	**Labor**			**$31,100**
		- Project management cost will total ~10% of total project cost				
			No expenses expected with PM Task			$0
			Expenses			**$0**
			Other		0	$0
			Subcontractors			**$0**
			Activity 1. Subtotal			**$31,100**
2.	4 months	**Develop HASP, SAP, and QAPP**	Principal	$140	12	$1,680
		- Development of project specific Health and Safety Plan to incorporate groundwater sampling and drilling activities	Project Manager	$105	25	$2,625
		- Development of a Sampling and Analysis Plan	Project Engineer/Geologist	$80	80	$6,400
		- Development of a Quality Assurance Project Plan	Drafting	$60	10	$600
			HSE Department	$80	20	$1,600
			Project Support	$40	8	$320
			Labor			**$13,225**
		Assumptions:				
		- WDEQ will review documents and documents will be revised per WDEQ comments				
		- Assumes that there will be two rounds of review and comments by WDEQ before finalizing				
			Miscellaneous	Cost	0	$100
		WDEQ COSTING ASSUMPTION:	**Expenses**			**$100**
		- None				
			Other		0	$0
			Subcontractors			**$0**
			Activity 2. Subtotal			**$13,325**

	Estimated Timeline	Activity	Schedule of Charges	Hourly Rate or Charge	Hours or Unit Estimate	Subtotal
3.	2 months	**Property Owner Access Agreements**	Principal	$140	4	$560
		- Prepare access agreements with property owners to allow access to property for contractor, subcontractors, and WDEQ personnel:	Project Manager	$105	6	$630
		1) Sampling of domestic water wells and monitoring wells	Project Engineer/Geologist	$80	10	$800
		2) Downhole Camera work on drinking water wells	Project Support	$40	4	$160
		3) Installation of monitoring wells				
		Assumptions:	**Labor**			**$2,150**
		- Property owner access agreements can be requested at concurrently with development of HASP, SAP, and QAPP				
			Miscellaneous	Cost	0	$100
		WDEQ COSTING ASSUMPTION:				
		- Assumes that selected contractor will pursue property access agreements, WDEQ may want to do property access agreements prior to/during RFP process to identify any potential access issues	**Expenses**			**$100**
			Other		0	$0
			Subcontractors			**$0**
			Activity 3. Subtotal			**$2,250**
4.	1 week	**Downhole Camera of Drinking Water Wells**	Principal	$140	2	$280
		- Decontaminate the downhole camera prior to work at each well	Project Manager	$105	6	$630
		- Complete a methane gas survey of the well headspace prior to doing camera work	Field Technician	$80	80	$6,400
		- Record the results of the camera, and provide results to the WDEQ				
		- Collect field notes of procedures used and any issues noted				
		- Informal survey of property, and within 1000 ft of the property to determine potential onsite sources of 'impacts' to the drinking water wells.				
		Assumptions:				
		- Downhole camera will be able to fit within the drinking water well without removing the well owner's water supply pump				
		- Does not include potential for methane mitigation prior to doing the camera work				
		- Does not assume that an intrinsically safe camera will be able to be used	**Labor**			**$7,310**
		- Property access agreements will be in place				
		- Water well pumps will be turned off during the camera work	Equipment		1	$2,420
		- Assumes this will be completed prior to starting the drinking water well sampling program	Travel	Cost	1	$1,330
		- Assumes camera can be run based on battery power from field vehicle, no generator will be rented	Per Diem	$46	7	$322
		- Assumes one field technician	Miscellaneous	Cost	1	$250
			Expenses			**$4,322**
		WDEQ COSTING ASSUMPTION:	Other		$0	$0
		- None				
			Subcontractors			**$0**
			Activity 4. Subtotal			**$11,632**

	Estimated Timeline	Activity	Schedule of Charges	Hourly Rate or Charge	Hours or Unit Estimate	Subtotal
5a.	12 months	**Baseline Sampling of Drinking Water Wells (15) per Sampling Event**	Principal	$140	2	$280
		- Coordinate with property owners and WDEQ regarding sample schedule	Project Manager	$105	4	$420
		- Coordinate with lab and equipment supplier	Project Engineer/Geologist	$80	10	$800
		- Collect groundwater quality readings while purging water through the property owner lines (Temp, pH, ORP, SpC, TDS, Turbidity, Salinity)	Field Technician	$80	140	$11,200
		- Collect groundwater samples after 3 consecutive in-limit readings	QAQC Specialist	$90	20	$1,800
		- Collect groundwater samples into pre-preserved, laboratory provided bottles				
		- Collect groundwater samples from 15 domestic wells for VOCs extended list, TPH-DRO, TPH-GRO, Lead, Methane Headspace, TPH-DRO silica cleanup				
		- Collect QAQC parameters: 1 field duplicate, 1 MS/MSDS set (2 samples), 1 field blank, 2 equipment blanks)				
		- Collect 1 trip blank for analysis of VOCs per cooler containing VOC samples, estimated 5 coolers				
		- Perform QAQC review of analytical data				
			Labor			**$14,500**
			Equipment		0	$0
		Assumptions:	Travel	Cost	2	$2,030
		- Assumes that well owner pumps will be operational for collection of groundwater samples from a tap closest to the well	Per Diem	$46	14	$644
		- Samples will be collected prior to any water treatment systems the property owner has installed	Miscellaneous	Cost	1	$1,000
		- Samples will be shipped daily to the analytical laboratory				
		- Assumes two field technicians, once technician may be able to be sent due to type of sampling	**Expenses**			**$3,674**
		WDEQ COSTING ASSUMPTION:	Analytical Laboratory		1	$17,690
		- Assumption is per sampling event, suggested minimum of 2 events prior to monitoring well installation				
			Subcontractors			**$17,690**
			Activity 5a. Subtotal			**$35,864**
5b.	3 months	**Report Results for Baseline Sampling of Drinking Water Wells for 2 Sampling Events**	Principal	$105	8	$840
		- Draft letter report detailing procedures, deviations, and results of the DWW baseline sampling, monitoring well installation, and the DWW and MW sampling	Project Manager	$80	10	$800
		- Prepare figures and field photographs to document activities	Project Engineer/Geologist	$80	40	$3,200
		- Include lab reports and QAQC reports	Drafting	$60	24	$1,440
		- Tabulate data	Project Support	$40	8	$320
		- Include field logs, forms, and field notes in report				
			Labor			**$6,600**
			Equipment		0	$0
		Assumptions:	Travel	Cost	0	$0
		- Assumes that one review through WDEQ will be sufficient to finalize reports	Per Diem	$46	0	$0
			Miscellaneous	Cost	1	$100
			Expenses			**$100**
		WDEQ COSTING ASSUMPTION:	Analytical Laboratory		1	$0
		- Assumes that one (1) letter report will include data from two (2) sampling events				
			Subcontractors			**$0**
			Activity 5b. Subtotal			**$6,700**

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	Estimated Timeline	Activity	Schedule of Charges	Hourly Rate or Charge	Hours or Unit Estimate	Subtotal
6a.	2 months	**Drilling Area of Interest #1** (b)(6) privacy (La	Principal	$140	4	$560
		- Request utility locate prior to drilling activities	Project Manager	$105	8	$840
		- Oversee drilling activities, including lithologic logging of soils and screening soils with a PID	Project Engineer/Geologist	$80	20	$1,600
		- Include photo documentation from drilling activities	Field Technician	$80	200	$16,000
		- Oversee installation of 3 sets of 4 monitoring wells to the following depths: 50 ft bgs, 200 ft bgs, 500 ft bgs, and 750 ft bgs				
		- Oversee development of monitoring wells				
			Labor			**$19,000**
		Assumptions:				
		- Samples for soil or groundwater will not be collected for laboratory analysis				
		- Assumes the driller mobilization charge will be included with this AOI, only 1 mobilization charge is assumed	Equipment		1	$1,820
		- Cost does not include a blow out preventor during drilling activities	Travel	Cost	1	$3,230
		- Costs assume 1 field technician for drilling oversight due to lack of sampling	Per Diem	$46	17	$782
		- Assumes separate monitoring wells will be installed	Miscellaneous	Cost	1	$300
		- Assumes monitoring wells will be installed using minimum 2-inch stainless steel casing and screen (deeper wells will be larger diameter)				
			Expenses			**$6,132**
		WDEQ COSTING ASSUMPTION:				
		- IDW disposal costs have not been included in this task	Driller Costs		1	$1,029,500
			Subcontractors			**$1,029,500**
			Activity 6a. Subtotal			**$1,054,632**
6b.		**Drilling Area of Interest #2** (b)(6) p	Principal	$140	2	$280
		- Request utility locate prior to drilling activities	Project Manager	$105	2	$210
		- Oversee drilling activities, including lithologic logging of soils and screening soils with a PID	Project Engineer/Geologist	$80	6	$480
		- Include photo documentation from drilling activities	Field Technician	$80	58	$4,640
		- Oversee installation of 2 sets of 3 monitoring wells to the following depths: 50 ft bgs, 200 ft bgs, 300 ft bgs				
		- Oversee development of monitoring wells				
			Labor			**$5,610**
		Assumptions:				
		- Samples for soil or groundwater will not be collected for laboratory analysis				
		- Cost does not include a blow out preventor during drilling activities	Equipment		1	$935
		- Costs assume 1 field technician for drilling oversight due to lack of sampling	Travel	Cost	1	$1,140
		- Assumes separate monitoring wells will be installed	Per Diem	$46	6	$276
		- Assumes monitoring wells will be installed using minimum 2-inch stainless steel casing and screen (deeper wells will be larger diameter)	Miscellaneous	Cost	0	$0
			Expenses			**$2,351**
		WDEQ COSTING ASSUMPTION:				
		- IDW disposal costs have not been included				
		- Driller mobilization costs have not been included	Driller Costs		1	$253,500
		- Assumes that all drilling activities will be conducted during one mobilization				
			Subcontractors			**$253,500**
			Activity 6b. Subtotal			**$261,461**

Estimated Timeline	Activity	Schedule of Charges	Hourly Rate or Charge	Hours or Unit Estimate	Subtotal
6c.	**Drilling Area of Interest #3** (b)(6) privacy (Lar	Principal	$140	2	$280
	- Request utility locate prior to drilling activities	Project Manager	$105	2	$210
	- Oversee drilling activities, including lithologic logging of soils and screening soils with a PID	Project Engineer/Geologist	$80	4	$320
	- Include photo documentation from drilling activities	Field Technician	$80	46	$3,680
	- Oversee installation of 1 sets of 3 monitoring wells to the following depths: 50 ft bgs, 260 ft bgs, 500 ft bgs				
	- Oversee development of monitoring wells				
	Assumptions:	**Labor**			**$4,490**
	- Samples for soil or groundwater will not be collected for laboratory analysis				
	- Cost does not include a blow out preventor during drilling activities	Equipment		1	$935
	- Costs assume 1 field technician for drilling oversight due to lack of sampling	Travel	Cost	1	$570
	- Assumes separate monitoring wells will be installed	Per Diem	$46	3	$138
	- Assumes monitoring wells will be installed using minimum 2-inch stainless steel casing and screen (deeper wells will be larger diameter)	Miscellaneous	Cost	0	$0
	WDEQ COSTING ASSUMPTION:	**Expenses**			**$1,643**
	- IDW disposal costs have not been included				
	- Driller mobilization costs have not been included	Driller Costs		1	$185,250
	- Assumes that all drilling activities will be conducted during one mobilization				
		Subcontractors			**$185,250**
		Activity 6c. Subtotal			**$191,383**
6d.	**Drilling Area of Interest #4** (b)(6) p	Principal	$140	2	$280
	- Request utility locate prior to drilling activities	Project Manager	$105	2	$210
	- Oversee drilling activities, including lithologic logging of soils and screening soils with a PID	Project Engineer/Geologist	$80	4	$320
	- Include photo documentation from drilling activities	Field Technician	$80	46	$3,680
	- Oversee installation of 1 sets of 4 monitoring wells to the following depths: 50 ft bgs, 100 ft bgs, 200 ft bgs, 300 ft bgs				
	- Oversee development of monitoring wells				
	Assumptions:				
	- Samples for soil or groundwater will not be collected for laboratory analysis	**Labor**			**$4,490**
	- Cost does not include a blow out preventor during drilling activities				
	- Costs assume 1 field technician for drilling oversight due to lack of sampling	Equipment		1	$935
	- Assumes separate monitoring wells will be installed	Travel	Cost	1	$570
	- Assumes monitoring wells will be installed using minimum 2-inch stainless steel casing and screen (deeper wells will be larger diameter)	Per Diem	$46	3	$138
		Miscellaneous	Cost	0	$0
	WDEQ COSTING ASSUMPTION:	**Expenses**			**$1,643**
	- IDW disposal costs have not been included				
	- Driller mobilization costs have not been included				
	- Assumes that all drilling activities will be conducted during one mobilization	Driller Costs		1	$150,250
		Subcontractors			**$150,250**
		Activity 6d. Subtotal			**$156,383**

Estimated Timeline	Activity	Schedule of Charges	Hourly Rate or Charge	Hours or Unit Estimate	Subtotal
6e.	**Drilling Area of Interest #5** (b)(6) pri	Principal	$140	2	$280
	- Request utility locate prior to drilling activities	Project Manager	$105	2	$210
	- Oversee drilling activities, including lithologic logging of soils and screening soils with a PID	Project Engineer/Geologist	$80	4	$320
	- Include photo documentation from drilling activities	Field Technician	$80	118	$9,440
	- Oversee installation of 2 sets of 4 monitoring wells to the following depths: 50 ft bgs, 100 ft bgs, 450 ft bgs, 650 ft bgs				
	- Oversee development of monitoring wells				
	Assumptions:				
	- Samples for soil or groundwater will not be collected for laboratory analysis	**Labor**			**$10,250**
	- Cost does not include a blow out preventor during drilling activities				
	- Costs assume 1 field technician for drilling oversight due to lack of sampling	Equipment		1	$960
	- Assumes separate monitoring wells will be installed	Travel	Cost	1	$1,710
	- Assumes monitoring wells will be installed using minimum 2-inch stainless steel casing and screen (deeper wells will be larger diameter)	Per Diem	$46	9	$414
		Miscellaneous	Cost	0	$0
	WDEQ COSTING ASSUMPTION:				
	- IDW disposal costs have not been included	**Expenses**			**$3,084**
	- Driller mobilization costs have not been included				
	- Assumes that all drilling activities will be conducted during one mobilization	Driller Costs		1	$570,500
		Subcontractors			**$570,500**
		Activity 6e. Subtotal			**$583,834**
6f.	**Drilling Area of Interest** (b)(6) privac	Principal	$140	2	$280
	- Request utility locate prior to drilling activities	Project Manager	$105	2	$210
	- Oversee drilling activities, including lithologic logging of soils and screening soils with a PID	Project Engineer/Geologist	$80	4	$320
	- Include photo documentation from drilling activities	Field Technician	$80	46	$3,680
	- Oversee installation of 1 sets of 3 monitoring wells to the following depths: 30 ft bgs, 100 ft bgs, 675 ft bgs				
	- Oversee development of monitoring wells				
	Assumptions:	**Labor**			**$4,490**
	- Samples for soil or groundwater will not be collected for laboratory analysis				
	- Cost does not include a blow out preventor during drilling activities	Equipment		1	$935
	- Costs assume 1 field technician for drilling oversight due to lack of sampling	Travel	Cost	1	$570
	- Assumes separate monitoring wells will be installed	Per Diem	$46	3	$138
	- Assumes monitoring wells will be installed using minimum 2-inch stainless steel casing and screen (deeper wells will be larger diameter)	Miscellaneous	Cost	0	$0
	WDEQ COSTING ASSUMPTION:	**Expenses**			**$1,643**
	- IDW disposal costs have not been included				
	- Driller mobilization costs have not been included	Driller Costs		1	$184,125
	- Assumes that all drilling activities will be conducted during one mobilization				
		Subcontractors			**$184,125**
		Activity 6f. Subtotal			**$190,258**

	Estimated Timeline	Activity	Schedule of Charges	Hourly Rate or Charge	Hours or Unit Estimate	Subtotal
7.	None	**Investigation Derived Waste Disposal Costs**				
		- Containerize and dispose of IDW generated waste from monitoring well drilling, development and sampling activities				
		Assumptions:	Disposal Costs		1	$60,000
			Subcontractors			**$60,000**
		WDEQ COSTING ASSUMPTION:				
		- Cost estimate is a placeholder. Final value will be highly dependent on volumes of estimated waste generated.				
			Activity 7. Subtotal			**$60,000**
8.	12 months	**Sampling of Drinking Water Wells (15) and Monitoring Wells (36) and EPA MW01 per Sampling Event**	Principal	$140	2	$280
		- Coordinate with property owners and WDEQ regarding sample schedule	Project Manager	$105	4	$420
		- Coordinate with lab and equipment supplier	Project Engineer/Geologist	$80	10	$800
		- Collect groundwater quality readings while purging water through the property owner lines (Temp, ph, ORP, SpC, TDS, Turbidity, Salinity)	Field Technician	$80	428	$34,240
		- Collect groundwater samples after 3 consecutive in-limit readings	QAQC Specialist	$90	40	$3,600
		- Collect groundwater samples into pre-preserved, laboratory provided bottles				
		- Decontaminate pump between each monitoring well location, dedicate tubing to each monitoring well				
		- Collect groundwater samples 52 wells for VOCs extended list, SVOCs, TPH-DRO, TPH-GRO, Lead, Methane Headspace, TPH-DRO silica cleanup				
		- Collect QAQC parameters: 2 field duplicate, 2 MS/MSDS set (4 samples), 2 field blank, 4 equipment blanks)				
		- Collect 1 trip blank for analysis of VOCs per cooler containing VOC samples, estimated 17 coolers				
		- Perform QAQC review of analytical data	**Labor**			**$39,340**
		Assumptions:	Equipment		1	$2,665
		- Assumes that well owner pumps will be operational for collection of groundwater samples from a tap closest to the well	Travel	Cost	2	$5,330
		- Samples will be collected prior to any water treatment systems the property owner has installed	Per Diem	$46	38	$1,748
		- Samples will be shipped daily to the analytical laboratory	Miscellaneous	Cost	1	$2,000
		- Assumes two field technicians	**Expenses**			**$11,743**
		WDEQ COSTING ASSUMPTION:				
		- Assumption is per sampling event, suggested minimum of 2 events prior to reporting on results	Analytical Laboratory		1	$55,400
		- Assumes that all parameters will have to be sampled	**Subcontractors**			**$55,400**
			Activity 8. Subtotal			**$106,483**

	Estimated Timeline	Activity	Schedule of Charges	Hourly Rate or Charge	Hours or Unit Estimate	Subtotal
9.	6 months	**Report on Investigation**	Principal	$140	24	$3,360
		- Draft report detailing procedures, deviations, and results of the DWW baseline sampling, monitoring well installation, and the DWW and MW sampling	Project Manager	$105	50	$5,250
		- Prepare figures and field photographs to document activities	Project Engineer/Geologist	$80	200	$16,000
		- Include lab reports and QAQC reports	Field Technician	$80	100	$8,000
		- Tabulate data	Drafting	$60	60	$3,600
		- Prepare well logs and lithologic diagrams	Project Support	$40	20	$800
		- Include field logs, forms, and field notes in report				
			Labor			**$37,010**
		Assumptions:	Equipment		0	$0
		- Assumes that one review through WDEQ will be sufficient to finalize reports	Travel	Cost	0	$0
			Per Diem	$46	0	$0
			Miscellaneous	Cost	1	$100
			Expenses			**$100**
		WDEQ COSTING ASSUMPTION:				
		- Assumes that no interim reports will be prepared	Other		1	$0
			Subcontractors			**$0**
			Activity 9. Subtotal			**$37,110**
10.	4 months	**Conduct Hydrogeophysical Testing on Deep Monitoring wells and geophysical (Optional)**				
		Hydrogeophysical testing company to be hired to conduct survey of the deepest monitoring well boring installed at each well set				
		A total of 10 wells will be tested				
			Hydogeophysical Testing		10	$130,000
			Subcontractors			**$130,000**
			Activity Subtotal			**$130,000**
11.	Concurrent	**Gas Mudlogging**				
		Gas mudlogging during drilling activities to determine gas 'shows'				
		WDEQ COSING ASSUMPTION:	Gas Mudlogging		1	$100,000
		- May be able to limit mudlogging to deeper wells as a cost control measure				
			Subcontractors			**$100,000**
			Activity Subtotal			**$100,000**

Estimated Timeline	Activity	Schedule of Charges	Hourly Rate or Charge	Hours or Unit Estimate	Subtotal

PAVILLION AREA GROUNDWATER INVESTIGATION ESTIMATE

	Estimated Time		Task Total	Total sets of Task	Cost Estimate Total
Task 1	Ongoing	Project Management	$31,100	1	$31,100
Task 2	4 months	Develop HASP, SAP, and QAPP	$13,325	1	$13,325
Task 3	2 months	Property Owner Access Agreements	$2,250	1	$2,250
Task 4	1 week	Downhole Camera of Drinking Water Wells	$11,632	1	$11,632
Task 5a	12 months	Baseline Sampling of Drinking Water Wells (15) per Sampling Event	$35,864	2	$71,728
Task 5b	3 months	Report Results for Baseline Sampling of Drinking Water Wells for 2 Sampling Events	$6,700	1	$6,700
Task 6a	2 months	Drilling Area of Interest #1 (b)(6) privacy [Landowner name]	$1,054,632	1	$1,054,632
Task 6b	0	Drilling Area of Interest #2 (b)(6) p	$261,461	1	$261,461
Task 6c	0	Drilling Area of Interest #3 (b)(6) privacy [Landowner name]	$191,383	1	$191,383
Task 6d	0	Drilling Area of Interest #4 (b)(6) privacy [Landowner name]	$156,383	1	$156,383
Task 6e	0	Drilling Area of Interest (b)(6) priva	$583,834	1	$583,834
Task 6f	0	Drilling Area of Interest (b)(6) priva	$190,258	1	$190,258
Task 7	None	Investigation Derived Waste Disposal Costs	$60,000	1	$60,000
Task 8	12 months	Sampling of Drinking Water Wells (15) and Monitoring Wells (36) and EPA MW01 per Sampling Event	$106,483	2	$212,966
Task 9	6 months	Report on Investigation	$37,110	1	$37,110
Task 10	4 months	Conduct Hydrogeophysical Testing on Deep Monitoring wells and geophysical (Optional)	$130,000	1	$130,000
Task 11	Concurrent	Gas Mudlogging	$100,000	1	$100,000
	45 months				**$3,114,762**