Cost Guidelines Update

January 1, 2014

The Underground Storage Tank Cleanup Fund (Cleanup Fund) has completed the first phase of the Cost Guidelines update. This first phase of the update effort focused on updating labor rates and unit costs, which will have the most immediate impact to reimbursements. The methodology for updating the labor rates and unit costs is explained below.

The Cleanup Fund Cost Guidelines now consist of three parts. It is anticipated that in future update phases the Cleanup Fund will combine these back into a unified document. In the meantime, stakeholders should use the following documents to determine generally appropriate necessary and reasonable costs for reimbursement:

- *Cost Guidelines,* Underground Storage Tank Cleanup Fund, Version 2.0, dated October 1, 2001.
- *Designation of Reasonable and Necessary Reimbursable Costs and Upcoming Additional Changes,* Underground Storage Tank Cleanup Fund, dated August 11, 2011.
- *Updated Cost Guidelines Tables,* Underground Storage Tank Cleanup Fund, dated January 1, 2014. The "2014" column in each of the tables is the updated rate. The 2001 rates are also included in the table to indicate the amount of the allowable increase that is generally considered reasonable and necessary.

In general, information in the August 11, 2011 and the January 1, 2014 documents updates and supersedes information in the October 1, 2001 document.

Methodology Used in the Update: The Cleanup Fund reviewed various pieces of information to inform our update of the unit costs and rates to more accurately reflect current market conditions. These included: 1) adjustments for inflation using the Consumer Price Index (CPI); 2) current market rates charged by consultants, vendors and contractors; 3) rates and unit costs allowed by other state agencies who contract for outside environmental services, and 4) rates charged by the State Water Board for reimbursement of staff costs in other programs, such as the Site Cleanup Program.

Ultimately, it was determined that updating the 2001 unit costs and 2006 labor rate costs by adjusting for general inflation using the CPI Inflation Calculator on the United States Department of Labor, Bureau of Labor Statistics website (http://www.bls.gov/data/inflation_calculator.htm) was acceptable. The CPI Inflation calculator uses the average CPI for a given calendar year. This data represents changes in prices of all goods and services purchased for consumption by urban households. This index value has been calculated every year since 1913. While the Cleanup Fund thinks that this approach is generally valid, we also realize that some

costs are influenced by factors other than simple inflation. Claimants can still justify all reasonable and necessary costs incurred on a site-specific basis.

During the update process the Cleanup Fund solicited input from stakeholders on the proposed update. The Cleanup Fund received comments from less than ten stakeholders. Where appropriate, the comments and suggestions were incorporated into the update. Several stakeholders commented that the costs to complete various tasks were still too low, as insufficient hours were allotted to perform those tasks. A review and potential revision of the hours to perform various tasks is planned for the second, upcoming phase of the Cost Guidelines update.

Other future phases will focus on updating the text of the Cost Guidelines, including planned topics such as narrative guidelines on rental versus ownership of equipment, mobile versus fixed remedial systems, and remedial process optimization.

Background on the Cost Guidelines: The Cost Guidelines were developed pursuant to Section 25299.57 (h) of the California Health and Safety Code, which states, in part, that the State Water Resources Control Board “shall develop a summary of expected costs for common remedial actions. This summary of expected costs may be used by claimants as a guide in the selection and supervision of consultants and contractors."

The primary purpose of the Cost Guidelines document is to provide guidance to claimants for evaluating proposed and incurred corrective action costs at sites eligible for participation in the Fund. Specifically, these guidelines are intended to help claimants identify reimbursable goods and services and understand how the Fund evaluates activities and costs. Claimants will also be able to judge whether additional justification will likely be required to support a given cost, or whether a call for assistance from the Fund is in order.

The Cost Guidelines is a guideline only, it does not establish reimbursement limits for the listed items and activities. It is not intended to remove the element of competition or freedom of choice from the industry. The intention of these guidelines is not to replace the three-bid requirement. The latest complete version of the Cost Guidelines was produced in October 2001, with updates to labor rates last produced in 2006.

Underground Storage Tank Cleanup Fund
2014 Cost Guidelines

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Date: Jan 1, 2014

Typical Personnel Labor Rates			
Professional Staff Title/Classification	**Billable Rate ($/hr) 2001**	**2006 ($/hr)**	**2014 ($/hr)**
Principal Engineer/Geologist	125	145	165
Project Manager	105	120	139
Senior Engineer/Geologist	105	120	139
Project/Associate Engineer/Geologist	90	105	119
Staff Engineer/Geologist	75	90	99
Senior Technician	70	80	92
Technician	60	70	79
Drafts Person	55	65	73
Clerical	45	55	59

Lab Analysis (Soil & Water)			
EPA Method1	**Component**	**Cost 2001**	**Cost 2014**
8015	Total Petroleum Hydrocarbons (TPH)-gasoline	55	73
8015	Total Petroleum Hydrocarbons (TPH)-diesel/motor oil	65	86
8020	BTEX/MTBE	55	73
8015/8020	TPH/BTEX/MTBE (gasoline only)	65	86
8260 (incl. Oxygenates)	Volatile Organic Compounds	150	198
8270	Semi-Volatile Organic Compounds	275	363
6010/7421	Total Lead2	40	53
	Waste Characterization (Reactivity/Corrosivity/Ignitability)	180	238
	5 LUFT Metals3	80	106
	CAM 17 Metals3	175	231

On-Site Laboratories			
Flat Fee		**Cost 2001**	**Cost 2014**
Daily Rental Fee	EPA Method 8015/8020	1,500/day	1980
	EPA Method 8015/8260	2,000/day	2640
Variable Fee			
Mobilization/Daily Fee	Includes daily mobilization, chemist, and all equipment, supplies and disposal	400/day	528
Analysis Charges	EPA Method 8015/8020	50/ea	66
	EPA Method 8015/8260	115/ea	152

Lab Analysis (Air)		
Component	**Cost 2001**	**Cost 2014**
TPH	60.00	79
BTEX/MTBE	115.00	152
EPA Method 8260	200.00	264

Supplies (Field, Wells, Miscellaneous)		Size/Unit	Cost 2001	Cost 2014
Field Supplies				
	Soil Sampling Liners (Brass)	2" x 6"	6	8
	Soil Sampling Liners (Stainless Steel)	2" x 6"	10	13
	Bailers (disposable) polypropylene	1.5" O.D.	8	11
	Tedlar Bags (1 liter)	Each	10	13
	Film/Development	Roll	At Cost	At Cost
Well Supplies				
2" PVC, Schedule 40				
	PVC Well Casing (10' lengths)	Per Foot	4	5
	PVC Well Screen 0.010" & 0.020" (Up to 5' Lengths)	Per Foot	5	6
	PVC Well Screen 0.010" & 0.020" (Up to 10' Lengths)	Per Foot	4	5
	Threaded Cap (Top or Bottom)	Each	8	10
	Slip Cap	Each	4	5
	Locking Cap	Each	20	26
4" PVC, Schedule 40				
	PVC Well Casing (10' lengths)	Per Foot	6	8
	PVC Well Screen 0.010" & 0.020" (Up to 5' Lengths)	Per Foot	9	12
	PVC Well Screen 0.010" & 0.020" (Up to 10' Lengths)	Per Foot	8	10
	Threaded Cap (Top or Bottom)	Each	14	18
	Slip Cap	Each	8	11
	Locking Cap	Each	22	29
Concrete				
	Ready Mix	90 lb. Bag	5	7
	Portland Cement Concrete	90 lb. Bag	8	11
	Sand Cement slurry Backfill w/ Delivery	Cubic Yard	60	79
Grout				
	Bentonite Grout	50 lb. Bag	10	13
	Bentonite Chips	50 lb. Bag	10	13
	Bentonite Granular	50 lb. Bag	10	13
	Bentonite Tablets	50 lb. Bag	40	53
Supplies (Field, Wells, Miscellaneous)		**Size/Unit**	**Cost 2001**	**Cost 2014**
Sand				
	Monterey Sand	100 lb. Bag	9	11
	Silica Sand	100 lb. Bag	8	11
Well Covers				
	Manholes(locking/tight/Traffic Rated)	8 inch	50	66
	Manholes(locking/tight/Traffic Rated)	12 inch	75	99
	Standpipe, steel, locking	8"dia.x 3'	100	132
	Christy Box	8 inch	75	99
	Christy Box	12 inch	100	132
Miscellaneous				
	Padlocks	Each	10	13
	Asphalt Patch (Cold-Mix)	50 lb. Bag	10	13
	55 gallon drum	Each	40	53
	Visqueen 6 mil, 20'x100'	Roll	75	99
	Tyvek Suits	Each	6	8

Small Items	2001 $/day	2014 $/day
For example: gloves, water, ropes, tape, soap, twine, pens, bottles, paint, warning tape, distilled water etc.	25	33

2001					2014		
Equipment (Small)		**Daily**	**Weekly**	**Monthly**	**Daily**	**Weekly**	**Monthly**
Air Compressor		85	315		112	416	
Concrete Coring/Cutting Equipment							
	Coring Machine - 8" diameter (including bit)	75	250		99	330	
	Concrete Saw	75	250		99	330	
Fence					**Fence**		
	Chain link $/100 ft		100	400	0	132	528
Field Instruments					**Field Instruments**		
	Datalogger (2 channel)	65	325		86	429	
	Photo-ionization Detector (PID)	100	350		132	462	
	Flame Ionization Detector (FID)	150	500		198	660	
	Water Level Indicator	25	85		33	112	
	Oil/Water Interface Probe	40	125		53	165	
	pH/Conductivity/Temperature Meter	40	125		53	165	
	Dissolved Oxygen Meter	40	125		53	165	
	Combustible Gas Meter (LEL/O_2)	50	175		66	231	
	Turbidity Meter	20	70		26	92	
Field Sampling Equipment					**Field Sampling Equipment**		
	Bailer (reusable teflon)	20			26		
	Hand Auger	25	85		33	112	
	Core Sampler & Hammer	5	20		7	26	
Equipment (Small)		**Daily**	**Weekly**	**Monthly**	**Daily**	**Weekly**	**Monthly**
Generators, gasoline/diesel powered							
	Generator, 1-3 kW	40	150		53	198	
	Generator, 5-6 kW	55	200		73	264	
Steam Cleaner		75	250		99	330	
Pumps					**Pumps**		
	Gasoline Powered Pump 2" dia., 150 gpm	55	200		73	264	
	Pump, Submersible, 10 gpm	45	150		59	198	
	D.C. Purging Pump 3 gpm	15	50		20	66	
Skimmers/Separators/Hydrocarbon Recovery					**Skimmers/Separators/Hydrocarbon/Recovery**		
	Passive Skimmer (1 liter)			15			20
	Electric Skimmer			125			165
	Filter Separator			100			132
Storage Tanks					**Storage Tanks**		
	Storage Tanks, 1,000 gallon	13	85	325	17	112	429
	Storage Tanks, 5,000 gallon	19	125	500	24	165	660
	Storage Tanks, 21,000 gallon	30	210	840	40	277	1109
	Rolloff Bin	19	95	350	25	125	462
Survey Equipment					**Survey Equipment**		
	Level/transit, tripod, rod/prism, tape/chain	35	140		46	185	
Traffic Control Components					**Traffic Control Components**		
	Barricades		5	20	0	7	26
	Cones/Delineators (25 each)	8	35		11	46	

2001					2014		
Equipment (Heavy)		**Hourly**	**Daily**	**Weekly**	**Hourly**	**Daily**	**Weekly**
	Backhoe (operated)	90	720	3600	119	950	4752
	Compactor (compaction wheel or vibraplate)		125	650	0	165	858
	Excavator (operated)	140	1100	5500	185	1452	7260
Loaders (operated)					**Loaders (operated)**		
	Bob cat	75	600	3000	99	792	3960
	Loader	120	960	4800	158	1267	6336
Trucks					**Trucks**		
	Truck /Automobile	Lesser of $60.00/day or $0.50/mile				$0.565/mile	
	Specialized Equipment Truck (4WD)	Lesser of $75.00/day or $0.60/mile				$0.565/mile	
	Truck - 10 cubic yard (operated)	65	520	2600	86	686	3432
	Truck - 20 cubic yard (operated)	75	600	3000	99	792	3960
	Vacuum Truck (operated)	75	600	3000	99	792	3960

2001			2014	
Equipment (Drilling)	**Hourly**	**Daily**	**Hourly**	**Daily**
Mobilization/Demobilization (4 hour maximum)	100		132	
Hollow Stem Auger Drill Rig	130		172	
Rotary Drill Rig	160		211	
Direct Push Technology Rig	130		172	
Steam Cleaner		75		99
Cement Pump		60		79
Support Truck/Van		85		112
Compressor with Paving Breaker		85		112
Concrete Coring Machine		75		99
Generator (3500 watt)		55		73

Drilling (Soil Borings, Monitoring Wells)			
Description	**Depth**	**2001 $/ft**	**2014 $/ft**
Borings: backfill with cement/bentonite slurry mixture	0 to 50 feet	18	24
Borings: backfill with cement/bentonite slurry mixture	50 to100 feet	18	24
Borings: backfill with cement/bentonite slurry mixture	>100 feet	18	24
Wells: includes borehole drilling, PVC screen and blank schedule 40, end plug, locking cap, sand, bucket of bentonite pellets for seal, concrete grout, and well box; also includes 15 minutes surging time to set sand pack. This rate would be less if no sampling is needed during drilling.			
2" PVC	0 to 50 feet	34	45
2" PVC	50 to100 feet	33	44
2" PVC	>100 feet	32	42
4" PVC	0 to 50 feet	40	53
4" PVC	50 to100 feet	39	51
4" PVC	>100 feet	38	50
Well Demolition: drilling rig costs, includes backfill			
2" PVC		16	21
4" PVC		20	26

Miscellaneous Drilling Costs			
2001			2014
Description	**Unit**	**$/Unit**	**$/Unit**
Additional Well Development	Hourly	110	145
Continuous Core Sampling	Additional $/ft	5	7
Angle Drilling	Additional $/ft	5	7

Cone Penetrometer/Geoprobe/Hydropunch		
Description	**2001 $/ft**	**2014 $/ft**
Includes: CPT Equipment, vehicle, labor, professional oversight, all necessary supplies, replacement tips, grout, sample rings and all other necessities to perform field work.	25	33

Preliminary Site Assessment Phase Workplan							
2001					2014		
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Units**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	1	125	125	1	165	165
Project/Associate Engineer/Geologist	Regulatory liaison, project management and plan preparation	8	90	720	8	119	950
Staff Engineer/Geologist	Initial Site Concept. Model/plan prep.	8	75	600	8	99	792
Drafts Person	Prepare site & sampling location maps	3	55	165	3	73	218
Clerical	Typing/reproduction/ mailing	3	45	135	3	59	178
Total Cost				**1,745.00**	**Total Cost**		**2,303**

Soil and Water Investigation Phase Workplan							
2001						2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**		**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	1	125	125		165	165
Project/Associate	Regulatory liaison, project management and plan preparation	10	90	900		119	1188
Engineer/Geologist							
Staff Engineer/Geologist	Revise Site Concept. Model/Plan prep.	12	75	900		99	1188
Drafts Person	Prepare site & sampling location maps	4	55	220		73	290
Clerical	Typing/reproduction/mailing	4	45	180		59	238
Total Cost				**2325**		**Total Costs**	**3069**

Interim Remedial Action Workplan						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	1	125	125	165	165
Project/Associate	Regulatory liaison, project management and plan preparation	6	90	540	119	713
Engineer/Geologist						
Staff Engineer/Geologist	Workplan preparation	4	75	300	99	396
Drafts Person	Prepare site & sampling location maps	4	55	220	73	290
Clerical	Typing/reproduction/mailing	3	45	135	59	178
Total Cost				**1320**	**Total**	**1742**

Community Health and Safety Plan							
2001						2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**		**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	0.5	125	63		165	83
Project/Associate	Regulatory liaison and plan preparation	6	90	540		119	713
Engineer/Geologist							
Drafts Person	Site, vicinity, hospital location maps	4	55	220		72.6	290
Clerical	Typing/reproduction/ mailing	3	45	135		59.4	178
Total Cost				**958**		**Total Costs**	**1264**

Cone Penetrometer Test: Installation of eight (8) CPT probes to thirty (30) feet						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/Coordination	6	105	630	139	832
Staff Engineer/Geologist	Field Prep./Permit/Fieldwork	12	75	900	99	1188
Total Labor				**1530**	**Total Labor**	**2020**
Equipment Rental/Supplies	**Units**					
Gas Monitor (PID)	day	1	100	100	132	132
Truck	day	1	60	60	**0**	**0**
Misc. Field Items	day	1	25	25	33	33
Total Equipment				**185**	**Total Equipment**	**165**
Subcontractor	**Units**					
Driller	feet	240	25	6000	33	7920
Analytical (EPA 8015)	each	8	65	520	86	686
Analytical (EPA 8260 w/oxygenates)	each	8	150	1200	198	1584
Markup		7720	0.15	1158	1019.00	10190.00
Total Subcontractor				**8,878.00**	**Total Subcontractor**	**11,209**
Total Cost				**10,593.00**	**Total Cost**	**13,394**

Hand Augering: Installation of five (5) hand augers borings to ten (10) feet						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/Coordination	2	105	210	139	277
Staff Engineer/Geologist	Field work/QA	10	75	750	99	990
Technician	Field work	10	60	600	79	792
Total Labor				**1560.00**	**Total Labor**	**2059.20**
Equipment Rental/Supplies	**Units**					
Gas Monitor (PID)	day	1	100	100	132	132
Truck	day	1	60	60	0	0
Hand Auger	each	1	30	30	40	40
Coring Machine	day	1	75	75	99	99
Misc. Field Items	day	1	25	25	33	33
Total Equipment				**290.00**	**Total Equipment**	**303.60**
Subcontractor	**Units**					
Analytical (EPA 8015)	each	6	65	390	86	515
Analytical (EPA 8260 w/oxygenates)	each	6	150	900	198	1188
Markup		1290	0.15	194	**Subcontractor Total**	**1703**
					10% Markup	170
Total Subcontractor				**1483.50**	**Total Subcontractor**	**1873**
Total Cost				**3333.50**	**Total Cost**	**4236**

Soil Boring Installation: Installation of three (3) borings to thirty (30) feet						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/Coordination	6	105	630	139	832
Staff Engineer/Geologist	Field prep./Permit/Fieldwork	12	75	900	99	1188
Total Labor				**1530.00**	**Total Labor**	**2,020**
Equipment Rental/Supplies	**Units**					
Gas Monitor (PID)	day	1	100	100	132	132
Truck	day	1	60	60	0	0
Drums	each	6	40	240	53	317
Soil Sampling Liners	each	15	6	90	8	119
Misc. Field Items	day	1	25	25	33	33
Total Equipment				**515.00**	**Total Equipment**	**600.60**
Subcontractor	**Units**					
Driller Mobilization	hour	4	100	400	132	528
Driller	feet	90	18	1620	24	2138
Analytical (EPA 8015)	each	15	65	975	86	1287
Analytical (EPA 8260 w/oxygenates)	each	15	150	2250	198	2970
Markup		5245	0.15	786.75	**Subcontractor Total**	6923
Total Subcontractor				**6031.75**	10% Markup	692
Total Cost				**8076.75**	**Total Subcontractor**	**7616**
					Total Cost	**10236**

Soil Boring Installation: Installation of six (6) borings to fifty (50) feet						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/Coordination	10	105	1050	139	1386
Staff Engineer/Geologist	Field prep./Permit/Fieldwork	30	75	2250	99	2970
Total Labor				**3300.00**	**Total Labor**	**4356.00**
Equipment Rental/Supplies	**Units**					
Gas Monitor (PID)	day	3	100	300	132	396
Truck	day	3	60	180	0	0
Visqueen	roll	1	75	75	99	99
Soil Sampling Liners	each	48	6	288	8	380
Misc. Field Items	day	3	25	75	33	99
Total Equipment				**918.00**	**Total Equipment**	**974**
Subcontractor	**Units**					
Driller Mobilization	hour	4	100	400	132	528
Driller	feet	300	18	5400	24	7128
Analytical (EPA 8015)	each	48	65	3120	86	4118
Analytical (EPA 8260 w/oxygenates)	each	48	150	7200	198	9504
Markup		16120	0.15	2418	**Subcontractor Total**	21278
Total Subcontractor				**18538.00**	10% Markup	**2128**
Total Cost				**22756.00**	**Subcontractor Cost**	**23406**
					Total Cost	**28736**

Trench/Test Pit Excavation: Excavation of thirty (30) feet of trench to 15 feet						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/Coordination	6	105	630	139	832
Staff Engineer/Geologist	Field preparation/Fieldwork	10	75	750	99	990
Total Labor				**1380.00**	**Total Labor**	**1822**
Equipment Rental/Supplies	**Units**					
Gas Monitor (PID)	day	1	100	100	132	132
Truck	day	1	60	60	0	0
Visqueen	roll	1	75	75	99	99
Misc. Field Items	day	1	25	25	33	33
Total Equipment				**260.00**	**Total Equipment**	**264.00**
Subcontractor	**Units**					
Backhoe (w/operator)	hour	8	90	720	119	950
Backfill	Yd3	35	15	525	20	693
Analytical (EPA 8015)	each	6	65	390	86	515
Analytical (EPA 8260 w/oxygenates)	each	6	150	900	198	1188
Markup		2535	0.15	380.25	**Subcontractor Total**	**3346**
Total Subcontractor				**2915.25**	10% Markup	335
Total Cost				**4555.25**	**Total Subcontractor**	**3680.82**
					Total Cost	**5766.42**

Hydropunch®1:Installation of six (6) sample probes to thirty (30) feet to sample groundwater						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/Coordination	6	105	630	139	832
Staff Engineer/Geologist	Field preparation/Fieldwork	12	75	900	99	1188
Total Labor				**1530.00**	**Total Labor**	**2020**
Equipment Rental/Supplies	**Units**					
Gas Monitor (PID)	day	1	100	100	132	132
Truck	day	1	60	60	0	0
Misc. Field Items	day	1	25	25	33	33
Total Equipment				**185**	**Total Equipment**	**165**
Subcontractor	**Units**					
Driller Mobilization	hour	4	100	400	132	528
Driller	feet	180	25	4500	33	5940
Analytical (EPA 8015)	each	9	65	585	86	772
Analytical (EPA 8260 w/oxygenates	each	9	150	1350	198	1782
Markup		6835	0.15	1025.25	**Subcontractor Total**	**9022**
Total Subcontractor				**7860.25**	10% Markup	**902**
Total Cost				**9575.25**	**Total Subcontractor**	**9924**
					Total Cost	**12109**

1Any mention of brand names or specific technologies is not an endorsement of that brand or technology by the State, the Fund, or any of the staff. The mention of brands and names are purely for illustrative purposes.

Groundwater Well Installation: Installation of three (3) borings to thirty (30) feet, converted to two inch monitoring wells						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/Coordination	6	105	630	139	832
Staff Engineer/Geologist	Field prep./Permit/Fieldwork	16	75	1200	99	1584
Total Labor				**1830.00**	**Total Labor**	**2415.60**
Equipment Rental/Supplies	**Units**					
Gas Monitor (PID)	day	1	100	100	132	132
Truck	day	1	60	60	0	0
Drums	each	6	40	240	53	317
Misc. Field Items	day	1	25	25	33	33
Total Equipment				**425.00**	**Total Equipment**	**482**
Subcontractor	**Units**					
Driller Mobilization	hour	4	100	400	132	528
Driller	feet	90	34	3060	45	4039
Analytical (EPA 8015)	each	15	65	975	86	1287
Analytical (EPA 8260 w/oxygenates)	each	15	150	2250	198	2970
Markup		6685	0.15	1002.75	**Subcontractor Total**	**8824**
Total Subcontractor				**7687.75**	10% Markup	882
Total Cost				**9942.75**	**Total Subcontractor**	**9707**
					Total Cost	**12604**

Groundwater Well Installation: Installation of six (6) borings to fifty (50) feet, converted to two inch monitoring wells						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/Coordination	12	105	1260	139	1663
Staff Engineer/Geologist	Field prep./Permit/ Fieldwork	40	75	3000	99	3960
Total Labor				**4,260 .00**	**Total Labor**	**5623.20**
Equipment Rental/Supplies	**Units**					
Gas Monitor (PID)	day	4	100	400	132	528
Truck	day	4	60	240	0	0
Visqueen	roll	1	75	75	99	99
Misc. Field Items	day	4	25	100	33	132
Total Equipment				**815**	**Total Equipment**	**759**
Subcontractor	**Units**					
Driller Mobilization	hour	4	100	400	132	528
Driller	feet	300	34	10200	45	13464
Analytical (EPA 8015)	each	36	65	2340	86	3089
Analytical (EPA 8260 w/oxygenates)	each	36	150	5400	198	7128
Markup		18340	0.15	2751.00	**Subcontractor Total**	**24209**
Total Subcontractor				**21091.00**	10% Markup	**2421**
Total Cost				**26166.00**	**Total Subcontractor**	**26630**
					Total Cost	**33012**

Well Development						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/Coordination	1	105	105	139	139
Technician	Develop 3 wells at 30 feet	3	60	180	79	238
Technician	Develop 6 wells at 50 feet	6	60	360		
Total Labor				**645**	**Total Labor**	**376**
Equipment Rental/Supplies	**Units**					
Water Level Indicator	day	1	25	25	33	33
Truck	day	1	60	60	0	0
drums	each	3	40	120	53	158
drums	each	6	40	240		
Misc. Field Items	day	1	25	25	33	33
Total Equipment				**230/350**	**Total Equipment**	**224**
Subcontractor	**Units**					
Driller	hour	3	110	330	145	436
Driller	hour	6	110	660		0.00
Markup		330	0.15	49.50	**Subcontractor Total**	**436**
Markup		660	0.15	99	10% Markup	44
Total Subcontractor				**379.50/759**	**Total Subcontractor**	**479**
Total Cost/3 wells at 30 feet				**894.50**	**Total Cost**	**1080**
Total Cost/6 wells at 50 feet				**1574.00**		

*** Only providing data for 3 wells**

Vapor Test (8 hour)						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/Coordination	2	105	210	139	277
Staff Engineer/Geologist	Perform test/data analysis	12	75	900	99	1188
Technician	Set-up & operation/vapor sampling	16	60	960	79	1267
Total Labor				**2070.00**	**Total Labor**	**2732**
Equipment Rental/Supplies	**Units**					
Gas Monitor (PID)	day	1	100	100	132	132
Truck	day	2	60	120	0	0
VES Trailer (fully equipped)	each	1	500	500	660	660
Misc. Field Items	day	2	25	50	33	66
Total Equipment				**770**	**Total Equipment**	**858**
Subcontractor	**Units**					
Analytical (BTEX/MTBE)	each	4	115	460	152	607
Markup		460	0.15	69.00	10% Markup	60.72
Total Subcontractor				**529.00**	**Total Subcontractor**	**668**
Total Cost				**3369.00**	**Total Cost**	**4258**

Pump Test (48 hour)						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/Coordination	8	105	840	139	1109
Project/Associate Engineer/Geologist	Test coordination/Data Analysis	24	90	2160	119	2851
Technician	Set-up and run test/wastewater mgmt.	60	60	3600	79	4752
Total Labor				**6600.00**	**Total Labor**	**8712**
Equipment Rental/Supplies	**Units**					
Pump (submersible)	week	1	175	175	231	231
Generator	week	1	150	150	198	198
Truck	day	4	60	240	0	0
Storage Tank (21,000 gal)	month	1	840	840	1109	1109
Datalogger /transducers (8)	each	1	1975	1975	2607	2607
Misc. Field Items	day	4	25	100	33	132
Total Equipment				**3480.00**	**Total Equipment**	**4277**
Total Cost				**10080.00**	**Total Equipment**	**12989**

Free Product Removal: up to six (6) wells						
2001					2014	
Activity	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Empty and record level in skimmer	Technician (hour)	4	60	240	79	317
	Oil/Water Interface Probe (day)	1	40	40	53	53
	Truck (day)	1	60	60	0	0
	Misc. Field Supplies	1	25	25	33	33
	Total (event)			**365**	**Total (event)**	**403**
Manual removal of free product	Technician (hour)	6	60	360	79	475
	Oil/Water Interface Probe (day)	1	40	40	53	53
	Bailer	1	20	20	26	26
	Misc. Field Supplies	1	25	25	33	33
	Truck (day)	1	60	60	0	0
	Total (event)			**505**	**Total (event)**	**587**

Groundwater Monitoring Event: three (3) wells at thirty (30) feet.						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/Coordination	1	105	105	139	139
Technician	Field prep./Fieldwork	8	60	480	79	634
Total Labor				**585**	**Total Labor**	**772**
Equipment Rental/Supplies	**Units**					
Pump	day	1	15	15	20	20
Truck	day	1	60	60	0	0
Drums	each	3	40	120	53	158
PH/Conductivity/ Temperature Meter	day	1	40	40	53	53
Water Level Indicator	day	1	25	25	33	33
Bailers	each	3	8	24	11	32
Misc. Field Items	day	1	25	25	33	33
Total Equipment				**309.00**	**Total Equipment**	**329**
Subcontractor	**Units**					
Analytical (EPA 8015)	each	4	65	260	86	343
Analytical (EPA 8260 w/oxygenates)	each	4	150	600	198	792
Markup		860	0.15	129.00	**Subcontractor Total**	**1135.20**
Total Subcontractor				**989.00**	10% Markup	**114**
Total Cost				**1883.00**	**Subcontractor Total**	**1248.72**
					Total Cost	**2349.60**

Groundwater Monitoring Event: six (6) wells at fifty (50) feet.						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Project Manager	Scheduling/Coordination	2	105	210	139	277
Staff Engineer/Geologist	Field prep./Fieldwork	10	75	750	99	990
Technician	Field prep./Fieldwork	10	60	600	79	792
Total Labor				**1560**	**Total Labor**	**2059**
Equipment Rental/Supplies	**Units**					
Pump	day	1	15	15	20	20
Truck	day	1	60	60	0	0
Drums	each	6	40	240	53	317
PH/Conductivity/Temperature Meter	day	1	40	40	53	53
Water Level Indicator	day	1	25	25	33	33
Bailers	each	6	8	48	11	63
Misc. Field Items	day	1	25	25	33	33
Total Equipment				**453.00**	**Total Equipment**	**518.76**
Subcontractor	**Units**					
Analytical *(EPA* 8015)	each	7	65	455	86	601
Analytical *(EPA* 8260 w/oxygenates)	each	7	150	1050	198	1386
Markup		1505	0.15	225.75	**Subcontractor Total**	**1986.60**
Total Subcontractor				**1730.75**	10% Markup	199
Total Cost				**3743.75**	**Subcontractor Total**	**2185**
					Total Cost	**4763**

Periodic Groundwater Monitoring Report: Three (3) wells, no other activity conducted.						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	2	125	250	165	330
Project/Associate	Project management, report preparation and review	6	90	540	119	713
Engineer/Geologist					0	0
Staff Engineer/Geologist	Report preparation	8	75	600	99	792
Drafts Person	Prepare report figures	4	55	220	73	290
Clerical	Typing/reproduction/mailing	4	45	180	59	238
Total Cost				**1790.00**	**Total Cost**	**2363**
Once an initial report is prepared for a site, the subsequent reports should take less effort to prepare.						

Periodic Groundwater Monitoring Report: Six (6) wells, no other activity conducted						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	2	125	250	165	330
Project/Associate Engineer/Geologist	Project management, report preparation and review	8	90	720	119	950
Staff Engineer/Geologist	Report preparation	12	75	900	99	1188
Drafts Person	Prepare report figures	4	55	220	73	290
Clerical	Typing/reproduction/mailing	4	45	180	59	238
Total Cost				**2270.00**	**Total Cost**	**2996**
Once an initial report is prepared for a site, the subsequent reports should take less effort to prepare.						

A

Periodic Update Report: Significant activities conducted.						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	1	125	125	165	165
Project/Associate	Project management, report preparation and review	4	90	360	119	475
Engineer/Geologist					0	0
Drafts Person	Prepare report figures	1	55	55	73	73
Clerical	Typing/reproduction/mailing	1	45	45	59	59
Total Cost				**585**	**Total Cost**	**772**

B

Periodic Update Report: No activities conducted during reporting period.						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Project/Associate	Project management, report preparation and review	1	90	90	119	119
Engineer/Geologist						
Clerical	Typing/reproduction/mailing	1	45	45	59	59
Total Cost				**135**	**Total Cost**	**178**

Site Assessment Report: six(6) borings to thirty (30) feet, three (3) converted to monitoring wells						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	4	125	500	165	660
Senior Engineer/Geologist	Data evaluation/conclusions & recommendations/review	8	105	840	139	1109
					0	0
Project/Associate	Regulatory liaison and report preparation	16	90	1440	119	1901
Engineer/Geologist					0	0
Staff Engineer/Geologist	Revise Site Conceptual Model/report preparation	16	75	1200	99	1584
Drafts Person	Prepare site & sampling location maps	8	55	440	73	581
Clerical	Typing/reproduction/mailing	8	45	360	59	475
Total Cost				**4780.00**	**Total Cost**	**6310**

A

Corrective Action Plan Preparation: Basic site with moderate groundwater and soil contamination.						
2001					**2014**	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	4	125	500	165	660
Senior Engineer/Geologist	Review and signature	12	105	1260	139	1663
Project/Associate	Regulatory liaison, project management and plan preparation	20	90	1800	119	2376
Engineer/Geologist						
Staff Engineer/Geologist	Revise Site Concept. Model/Plan prep.	20	75	1500	99	1980
Drafts Person	Prepare site & sampling location maps	12	55	660	73	871
Clerical	Typing/reproduction/mailing	8	45	360	59	475
Total Cost				**6080.00**	**Total Cost**	**8026**

B

Corrective Action Plan Preparation: Complicated site with extensive groundwater and soil contamination, difficult hydrogeology and multiple contaminants.						
2001					**2014**	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	6	125	750	165	990
Senior Engineer/Geologist	Review and signature	12	105	1260	139	1663
Project/Associate	Regulatory liaison, project management and plan preparation	32	90	2880	119	3802
Engineer/Geologist					0	0
Staff Engineer/Geologist	Revise Site Concept. Model/Plan prep.	32	75	2400	99	3168
Drafts Person	Prepare site & sampling location maps	16	55	880	73	1162
Clerical	Typing/reproduction/mailing	12	45	540	59	713
Total Cost				**8710.00**	**Total Cost**	**11497**

A

Remedial Action Plan Preparation: Basic site with moderate groundwater and soil contamination.						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	4	125	500	165	660
Senior Engineer/Geologist	Remedial design, review and signature	8	105	840	139	1109
Project/Associate	Regulatory liaison, project management and plan preparation	12	90	1080	119	1426
Engineer/Geologist						
Staff Engineer/Geologist	Plan preparation	12	75	900	99	1188
Drafts Person	Prepare figures and design drawings	8	55	440	73	581
Clerical	Typing/reproduction/mailing	8	45	360	59	475
Total Cost				**4120.00**	**Total Cost**	**5438**

B

Remedial Action Plan Preparation: Complicated site with extensive groundwater and soil contamination, difficult hydrogeology and multiple contaminants.						
2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	4	125	500	165	660
Senior Engineer/Geologist	Remedial design, review and signature	16	105	1680	139	2218
Project/Associate	Regulatory liaison, project management and plan preparation	24	90	2160	119	2851
Engineer/Geologist					0	0
Staff Engineer/Geologist	Plan preparation	16	75	1200	99	1584
Drafts Person	Prepare figures and design drawings	12	55	660	73	871
Clerical	Typing/reproduction/mailing	8	45	360	59	475
Total Cost				**6560.00**	**Total Cost**	**8659**

A

Excavate and segregate overburden and contaminated soil 2001		2014
Activity	**Cost/unit**	**Cost/Unit**
Excavate	8.00/ton (12.00 yd3)	11
Replacement Material (including compaction)	12.00/ton (18.00 yd3)	16

B

Consulting Excavation Cost 2001				2014	
Labor	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Staff Engineer/Geologist	20	75	1500	99	1980
Total Labor Cost			**1500.00**	**Total Labor Cost**	**1926.45**
Equipment Rental/Supplies					
Gas Monitor (PID)	2	100	200	132	264
Truck	120	1	60		0
Misc. Field Items	2	25	50	33	66
Total Equipment Cost			**310.00**	**Total Equipment Cost**	**330.00**
Analytical					
EPA 8015/8020	20	65	1300	85.80	1716.00
Markup	1300	0.15	195	10% Markup	172
Total Analytical			**1495.00**	**Total Analytical**	**1887.60**
Total Consultant Cost			**3305.00**	**Total Consultant Cost**	**4144.05**

C

Excavation Contractor Cost 2001				2014	
Activity	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Excavation	500	12	6000	16	7920
Backfill and Compaction	500	18	9000	24	11880
Total Contractor Cost			**15000.00**	**Total Contractor Cost**	**19800.00**

A

System Operation and Maintenance						
Consulting Costs 2001					Consulting Costs 2014	
Labor	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Technician (1/04/01)	Regular field maintenance/log	4	60	240	79	317
Technician (1/11/01)	Regular field maintenance/log	4	60	240	79	317
Technician (1/18/01)	Regular field maintenance/log	4	60	240	79	317
Technician 1/25/01)	Replace vacuum gauge/oil change/ Regular field maintenance/log	4	60	240	79	317
Equipment	Description				-	-
Truck (1/04/01)	Office to site/back	60	1	30	-	-
Truck (1/11/01)	Office to site/back	60	1	30	-	-
Truck (1/18/01)	Office to site/back	60	1	30	-	-
Truck 1/25/01)	Office to site/back	60	1	30	-	-
Total Consulting Costs				**1080.00**	**Total Consulting**	**1267**
Supplies						
Vacuum gauge, replace		1.00	21.55	21.55	28	28
Markup		21.55	0.15	3.23	0.20	4
Oil & filter (4 qt. 10-40)		1	25	25	33	33
Total Supplies Cost				**49.78**	**Total Supplies Cost**	**65.71**
Analytical						
EPA 8015/8020 (air)		3	115	345	152	455
EPA 8260 w/oxygenates (water)		3	150	450	198	594
Markup		795	0.15	119.25	**Subcontractor Total**	**1049**
Total Analytical Cost				**914.25**	10% Markup	105
Total Cost/Month				**2044.03**	**Total Subcontractor**	**1154**
					Total Cost/Month	**2487**

B

Operations and Maintenance Supplies 2001		2014
Replacement Granular Activated Carbon (GAC) (Liquid Phase) per pound	1.50	2
Replacement Granular Activated Carbon (GAC) (Vapor Phase) per pound	1.50	2
Miscellaneous Repair Parts	At Cost	At Cost

	2001			2014
A	**Contaminated Soil:**	**Units**	**Rate**	**Rate**
	Load		5.00/ton (7.50 yd3)	7
	Load	hourly	see equipment (heavy), page 17	
	Transportation	hourly	see equipment (heavy), page 17	
	Disposal	Ton	see soil remediation, page 57	
B	**Contaminated Liquid:**	**Units**	**Rate**	**Rate**
	Load and Transport	gallon	0.75	0.99
	Load and Transport	hourly	see equipment (heavy), page 17	
	Disposal	gallon	1	1.3
C	**Containerized Waste:**	**Units**	**Rate**	**Rate**
	Load/Transport/Dispose - Soil	55 gallon drum	100	132
	Load/Transport/Dispose - Water	55 gallon drum	100	132

A

Off-site Remediation 2001			2014
Method	**Description**	**Cost/Unit**	**Cost/Unit**
Asphalt	Contaminated soil used as a substitute for sand aggregate in asphalt production	$55.00/ton	**$73**
Recycling			
Thermal	Contamination is thermally desorbed from soil in a fixed facility rotary kiln and the vapors are burned in a flame burner	$55.00/ton	**$73**
Desorption			
Bioremediation	Soil is bioremediated at a dedicated facility. Costs will vary depending upon the level of contamination found in the soil.	$45.00/ton	**$59**

B

Off-site Disposal 2001			2014
Facility	**Description**	**Cost/Unit**	**Cost/Unit**
Class I Landfill	Accepts 'hazardous' wastes, uncommon for Petroleum UST	$150.00/ton	**$198**
(Hazardous)	contamination		
Class II Landfill	Accepts designated wastes	$40 to $65/ton	**$52.8 to $85.8**
(Designated)			
Class III Landfill	Municipal facilities can sometimes accept varying levels depending upon their specific design and permits. May use remediated soil as "cover" material at no cost.	$10 to $30/ton	**$13.2 to $39.6**
(Non-hazardous)			

Cleanup Progress Report 2001					2014	
Personnel	**Description of work**	**Units**	**Rate**	**Cost**	**Rate**	**Cost**
Principal Engineer/Geologist	Review and signature	1	125	125	165	165
Project/Associate	Regulatory liaison, project management and report preparation	8	90	720	119	950
Engineer/Geologist					0	0
Staff Engineer/Geologist	Report preparation.	8	75	600	99	792
Drafts Person	Prepare report figures	4	55	220	73	290
Clerical	Typing/reproduction/mailing	4	45	180	59	238
Total Cost				**1845**	**Total Cost**	**2435**

	2001		2014
A	**Site Survey:**	**Cost/Event**	**Cost/Event**
	Site Survey (3 wells)	450	594
	Site Survey (6 wells)	700	924

B	**Underground Utility Check:**	**Cost/Event**	**Cost/Event**
	USA Notification for three drilling points	75	99
	Electromagnetic scan for underground structures	600	792
C	**Traffic Control:**	**Cost/Day**	**Cost/Event**
	Basic Traffic Control for closing one lane	350	462
	Extensive traffic control requiring multiple flagpersons and closure of lanes	950	1254

2001		2014
Total Subcontract or Equipment Amount	**Maximum Markup**	**Maximum Markup**
Less than $50,000	15%	10%
Greater than 50,000	10%	10%

After Tank Removal, Overexcavate and Dispose of 150 Yd3 of Petroleum Contaminated Soil												
Consulting Costs			**Task 1**		**Task 2**		**Task 3**		**Task 4**	
	unit	**rate**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**
Project Manager	hr	105	4	420	2	210			1	105
Staff	hr	75	12	900	8	600				
Technician	hr	60	10	600			10	600	12	720
				1920		**810**		**600**		**825**
Equipment Rental/Supplies										
PID	day	100	1	100						
Fence w/Gate	Mo.	400	1	400						
Visqueen	roll	75	2	150						
Truck	mi.	0.5	100	50	100	50	100	50	200	100
Misc. Supplies	day	25	1	25	1	25	1	25	2	50
				725		**75**		**75**		**150**
Subcontractor										
Backhoe	day	720	1	720					2	1,400
Loader	day	960					1	960		
18 yd_3 Truck.	hr	75					40	3,000		
Class 2 LF Fees	ton	65					225	14,625		
Soil Backfill	ton	12					200	2,400		
Gravel Backfill	ton	12					5	60		
Asphalt Saw.	hr	50					4	200	4	200
Asphalt Disp.	ft_2	1.5							150	225
Asphalt Repave	ft_2	2.5							150	375
TPH- gas	Ea.	65	6	390	6	390				
TPH - Diesel	Ea.	65	6	390	6	390				
Total Lead	Ea.	40			1	40				
CAM 17	Ea.	200			1	200				
RCI	Ea.	180			1	180				
Markup	Ea.			225		180		3,187		330
Task Subtotals				**1,725**		**1,380**		**24,432**		**2,530**
Total Cost										**35,727**

After Tank Removal, Overexcavate and Dispose of 150 Yd3 of Petroleum Contaminated Soil												
Consulting Costs			**Task 1**		**Task 2**		**Task 3**		**Task 4**	
	unit	**2014 Rate**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**	**#units**	**Cost**
Project Manager	hr	139	4	554	2	277			1	139
Staff	hr	99	12	1,188	8	792				
Technician	hr	79	10	792			10	792	12	950
				2,534		**1,069**		**792**		**1,089**
Equipment Rental/Supplies										
PID	day	132	1	132						
Fence w/Gate	Mo.	528	1	528						
Visqueen	roll	99	2	198						
Truck	mi.	0.7	100	66	100	66	100	66	200	132
Misc. Supplies	day	33	1	33	1	33	1	33	2	66
			Total	**957**		**99**		**99**		**198**
Subcontractor										
Backhoe	day	950	1	950					2	1,901
Loader	day	1267					1	1267		
18 yd_3 Truck.	hr	99					40	3,960		
Class 2 LF Fees	ton	86					225	19,305		
Soil Backfill	ton	16					200	3,168		
Gravel Backfill	ton	16					5	79		
Asphalt Saw.	hr	66					4	264	4	264
Asphalt Disp.	ft_2	2.0							150	297
Asphalt Repave	ft_2	3.3							150	495
TPH- gas	Ea.	86	6	515	6	515				
TPH - Diesel	Ea.	86	6	515	6	515				
Total Lead	Ea.	53			1	53				
CAM 17	Ea.	264			1	264				
RCI	Ea.	238			1	238				
Markup	Ea.			289		231		4,093		424
			Total	2269	Total	1815	Total	32,136	Total	3381
Task Subtotals				**5,760**		**2,983**		**33,027**		**4,668**
Total Cost										**44,481**