

# APPENDIX C

Alternative Cost Estimates for Disproportionate Cost Analysis



<b>Summary of Alternative Costs</b>		
<b>Alternative 1 (Air Sparge/SVE, MNA, and Institutional Controls)</b>		
<b>Cost Components</b>		<b>Cost</b>
Task 1	Air Sparge/SVE System Design and Permitting	\$53,950
Task 2	Air Sparge/SVE System Equipment Procurement/Construction	\$299,964
Task 3	Air Sparge/SVE Well Installation	\$138,860
Task 4	Site Construction	\$235,210
Task 5	System Startup	\$38,740
Task 6	Air Sparge/SVE Operation, Maintenance, and Monitoring (2 Years)	\$177,560
Task 7	System Installation Documentation and OMM Manual Preparation	\$23,760
Task 8	Monitoring of Natural Attenuation (10 Years)	\$196,000
Task 9	Coordination/Management/Maintenance of Institutional Controls (15 Years)	\$66,570
Task 10	Post-Remedy Confirmation Sampling and Closure Management	\$55,240
<b>Total + 25% for taxes and contingency</b>		<b>\$1,607,318</b>

Notes: See task-specific cost estimates for additional details regarding each of the cost components for this alternative.

**Alternative 1 (Air Sparge/SVE, MNA, and Institutional Controls)****Task 1 Air Sparge/SVE System Design and Permitting**

Includes:

- Air discharge permit application and coordination
- Construction permit and utility connection coordination
- Preparation of preliminary, pre-final, and final design drawings and specifications packages
- Preparation of equipment construction and site-work contractor bid packages
- Evaluation of bids and award of equipment construction and site-work subcontracts

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					
Principal Level Eng/Geo/Sci		Hour	40	\$130.00	\$5,200
Senior Level Eng/Geo/Sci		Hour	200	\$110.00	\$22,000
Project Level Eng/Geo/Sci		Hour	200	\$85.00	\$17,000
Drafter		Hour	100	\$70.00	\$7,000
<b>Consultant Equipment</b>					
Field Vehicle		Day	2	\$125.00	\$250
<b>Other Costs</b>					
Air Discharge Permit Fee	Assumed project considered "Basic" by Ecology	Lump Sum	1	\$1,500.00	\$1,500
Misc. Permit Fees		Lump Sum	1	\$1,000.00	\$1,000
<b>Total</b>					<b>\$53,950</b>

**Alternative 1 (Air Sparge/SVE, MNA, and Institutional Controls)****Task 2 Air Sparge/SVE System Equipment Procurement/Construction**

Includes:

- Consultant subcontractor expenses for construction and shipping of container mounted air sparge/SVE system for 26 air sparge injection wells and 8 SVE wells
- Consultant labor associated with system build coordination and shop drawing review
- Consultant labor, travel, and expenses to attend final system testing and inspection at manufacturer's facility prior to shipment

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$13,480.00</b>
Principal Level Eng/Geo/Sci		Hour	16	\$130.00	\$2,080.00
Senior Level Eng/Geo/Sci		Hour	80	\$110.00	\$8,800.00
Associate Level Eng/Geo/Sci		Hour	40	\$65.00	\$2,600.00
<b>Consultant Travel</b>					<b>\$1,484.00</b>
Air Fare		Trip	1	\$800.00	\$800.00
Lodging		Night	2	\$125.00	\$250.00
Per Diem		Day	3	\$40.00	\$120.00
Car Rental		Day	2	\$55.00	\$110.00
Fuel for Rental Car		Gallon	30	\$4.00	\$120.00
Airport Parking		Day	3	\$28.00	\$84.00
<b>Consultant Subcontractor Costs</b>					<b>\$285,000.00</b>
System Construction		Lump Sum	1	\$275,000.00	\$275,000.00
System Shipping		Lump Sum	1	\$10,000.00	\$10,000.00
<b>Total</b>					<b>\$299,964.00</b>

**Alternative 1 (Air Sparge/SVE, MNA, and Institutional Controls)**

**Task 3 Air Sparge/SVE Well Installation**

Includes:

- HASP and work plan preparation, pre-project planning, and subcontractor coordination
- Consultant labor, equipment, travel, and subcontractor costs to install approximately 26 air sparge injection wells and 8 SVE wells
- Boring log preparation, and data management and evaluation
- Laboratory analysis for soil samples
- Waste coordination, transport and disposal

Assumptions:

- Costs assume a 10-day field effort to install all wells, with continuous oversight by two consultant staff
- All boring locations cleared to 8 feet bgs using air-knife/vac-truck rig

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$42,720.00</b>
Principal Level Eng/Geo/Sci		Hour	24	\$130.00	\$3,120.00
Senior Level Eng/Geo/Sci		Hour	80	\$110.00	\$8,800.00
Project Level Eng/Geo/Sci		Hour	240	\$85.00	\$20,400.00
Associate Level Eng/Geo/Sci		Hour	160	\$65.00	\$10,400.00
<b>Consultant Travel</b>					<b>\$3,540.00</b>
Lodging	2x8 nights oversight crew + 4 nights supervisor	Night	20	\$125.00	\$2,500.00
Per Diem	2x10 days oversight crew + 6 days supervisor	Day	26	\$40.00	\$1,040.00
<b>Consultant Equipment</b>					<b>\$3,800.00</b>
Field Vehicle		Day	6	\$125.00	\$750.00
Sampling Truck		Day	10	\$230.00	\$2,300.00
PID		Day	10	\$75.00	\$750.00
<b>Consultant Subcontractor Costs</b>					<b>\$69,800.00</b>
Driller - Vac Truck Mobilization		Mile	300	\$3.50	\$1,050.00
Driller - Vac Truck Daily Rate	Includes per diem for 2 man crew	Day	10	\$1,750.00	\$17,500.00
Driller - HSA Drill Rig Mobilization		Mile	300	\$5.50	\$1,650.00
Driller - HSA Drill Rig Daily Rate	Includes per diem for 2 man crew	Day	10	\$3,250.00	\$32,500.00
Driller - Start Cards		Each	32	\$65.00	\$2,080.00
Driller- 4" Well Materials	(8) 4"-diameter wells to 10 feet bgs	Foot	80	\$18.00	\$1,440.00
Driller- 2" Well Materials	(24) 2"-diameter wells to 15 feet bgs	Foot	360	\$12.00	\$4,320.00
Driller - Surface Hole Patch		Each	32	\$50.00	\$1,600.00
Construction Trailer Rental		Week	2	\$500.00	\$1,000.00
Surveyor		Lump Sum	1	\$2,500.00	\$2,500.00
<b>Chevron Direct-Bill Subcontractor Costs</b>					<b>\$19,000.00</b>
Waste Disposal Coordination		Lump Sum	1	\$3,000.00	\$3,000.00
Waste Transport and Disposal		Drum	64	\$100.00	\$6,400.00
Laboratory Analytical Services		Sample	64	\$150.00	\$9,600.00
<b>Total</b>					<b>\$138,860.00</b>

**Alternative 1 (Air Sparge/SVE, MNA, and Institutional Controls)**

**Task 4 Site Construction**

Includes:

- Pre-project planning and subcontractor coordination
- Consultant labor, equipment, travel, and materials associated with field oversight of system construction
- Consultant subcontractor costs associated with site construction tasks, including;
  - Site clearing and grading
  - Trenching and piping installation
  - System pad and security fence installation
  - Unloading, placement and assembly of remediation system equipment containers
  - Electrical system installation

Assumptions:

- System installation assumed to occur over four 60-hour weeks

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$48,200.00</b>
Senior Level Eng/Geo/Sci		Hour	120	\$110.00	\$13,200.00
Project Level Eng/Geo/Sci	80 hours planning + four 60-hour weeks in field	Hour	320	\$85.00	\$27,200.00
Associate Level Eng/Geo/Sci	Two 60-hour weeks in field	Hour	120	\$65.00	\$7,800.00
<b>Consultant Travel</b>					<b>\$5,020.00</b>
Lodging		Night	28	\$125.00	\$3,500.00
Per Diem		Day	38	\$40.00	\$1,520.00
<b>Consultant Equipment</b>					<b>\$6,250.00</b>
Field Vehicle		Day	38	\$125.00	\$4,750.00
PID		Day	20	\$75.00	\$1,500.00
<b>Consultant Subcontractor Costs</b>					<b>\$166,740.00</b>
Project Manager		Hour	24	\$105.00	\$2,520.00
Health and Safety Manager		Hour	24	\$85.00	\$2,040.00
Foreman	4 weeks @ 60 hours per week	Hour	240	\$90.00	\$21,600.00
Operator	4 weeks @ 60 hours per week	Hour	240	\$85.00	\$20,400.00
Laborer	4 weeks @ 60 hours per week	Hour	240	\$70.00	\$16,800.00
Administrative Assistant		Hour	12	\$65.00	\$780.00
Per Diem - Meals		Day	60	\$40.00	\$2,400.00
Per Diem - Lodging		Night	48	\$125.00	\$6,000.00
Light Truck		Day	20	\$200.00	\$4,000.00
Service Truck		Day	20	\$300.00	\$6,000.00
Excavator - Mini		Day	15	\$500.00	\$7,500.00
Subcontractor - Crane		Lump Sum	1	\$4,000.00	\$4,000.00
Subcontractor - Electrical		Lump Sum	1	\$15,000.00	\$15,000.00
Temporary Fence		Linear Ft.	600	\$3.00	\$1,800.00
Portable Toilet and Hand Wash		Week	4	\$100.00	\$400.00
Materials - Piping		Lump Sum	1	\$20,000.00	\$20,000.00
Materials - Backfill		Lump Sum	1	\$5,000.00	\$5,000.00
Materials - Crushed Rock		Lump Sum	1	\$5,000.00	\$5,000.00
Materials - Concrete		Lump Sum	1	\$7,500.00	\$7,500.00
Materials - Well vaults		Each	32	\$500.00	\$16,000.00
Construction Trailer Rental		Week	4	\$500.00	\$2,000.00
<b>Chevron Direct-Bill Subcontractor Costs</b>					<b>\$9,000.00</b>
Waste Disposal Coordination		Lump Sum	1	\$3,000.00	\$3,000.00
Waste Transport and Disposal	Transport and dispose of non-hazardous soil waste	Cubic Yard	40	\$100.00	\$4,000.00
Laboratory Analytical Services	Waste characterization samples	Sample	8	\$250.00	\$2,000.00
<b>Total</b>					<b>\$235,210.00</b>

**Alternative 1 (Air Sparge/SVE, MNA, and Institutional Controls)****Task 5 System Startup**

## Includes:

- Consultant labor, equipment, travel, and materials associated with remediation system startup
- Laboratory costs for vapor sample analysis

## Assumptions:

- System startup is assumed to be a two week field effort

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$29,640.00</b>
Senior Level Eng/Geo/Sci	24 hours planning + two 60-hour weeks in field	Hour	144	\$110.00	\$15,840.00
Project Level Eng/Geo/Sci	24 hours planning + two 60-hour weeks in field	Hour	144	\$85.00	\$12,240.00
Associate Level Eng/Geo/Sci	Office support of field activities	Hour	24	\$65.00	\$1,560.00
Drafter		Hour		\$70.00	\$0.00
<b>Consultant Travel</b>					<b>\$2,800.00</b>
Lodging	8 nights lodging for 2 staff	Night	16	\$125.00	\$2,000.00
Per Diem	10 days per diem for 2 staff	Day	20	\$40.00	\$800.00
<b>Consultant Equipment</b>					<b>\$3,800.00</b>
Sampling Truck		Day	10	\$230.00	\$2,300.00
PID		Day		\$75.00	\$0.00
FID		Day		\$85.00	\$0.00
4-Gas Meter		Day	10	\$150.00	\$1,500.00
<b>Consultant Subcontractor Costs</b>					<b>\$1,000.00</b>
Equipment Supplier Field Support	Operator training and troubleshooting	Lump Sum	1	\$5,500.00	\$5,500.00
Construction Trailer Rental		Week	2	\$500.00	\$1,000.00
<b>Chevron Direct-Bill Subcontractor Costs</b>					<b>\$1,500.00</b>
Laboratory Analytical Services	Air samples	Sample	10	\$150.00	\$1,500.00
<b>Total</b>					<b>\$38,740.00</b>

**Alternative 1 (Air Sparge/SVE, MNA, and Institutional Controls)**

**Task 6 Air Sparge/SVE Operation, Maintenance, and Monitoring (2 Years)**

Includes:

- Consultant labor, equipment, and materials associated with operation, maintenance, and monitoring of the Air Sparge/SVE remediation system, including quarterly reporting for permit compliance

Item	Notes	Unit	Annual Quantity	# of Years	Unit Cost	Annual Total	Project Total
<b>Consultant Labor</b>						<b>\$49,600.00</b>	<b>\$99,200.00</b>
Principal Level Eng/Geo/Sci	Annual site visit	Hour	8	2	\$130.00	\$1,040.00	\$2,080.00
Senior Level Eng/Geo/Sci	4 site visits (12 hrs. ea.) + 4 hrs/mo reporting	Hour	96	2	\$110.00	\$10,560.00	\$21,120.00
Project Level Eng/Geo/Sci	6 site visits (12 hrs ea)	Hour	72	2	\$85.00	\$6,120.00	\$12,240.00
Associate Level Eng/Geo/Sci	26 site visits (12 hrs ea) + 12 hrs/mo reporting	Hour	456	2	\$65.00	\$29,640.00	\$59,280.00
Drafter	8 hours per quarter - reporting	Hour	32	2	\$70.00	\$2,240.00	\$4,480.00
<b>Consultant Equipment</b>						<b>\$9,880.00</b>	<b>\$19,760.00</b>
Sampling Truck		Day	26	2	\$230.00	\$5,980.00	\$11,960.00
4-Gas Meter		Day	26	2	\$150.00	\$3,900.00	\$7,800.00
<b>Consultant Material Costs</b>						<b>\$1,000.00</b>	<b>\$2,000.00</b>
Misc. Materials		Lump Sum	1	2	\$1,000.00	\$1,000.00	\$2,000.00
<b>Consultant Subcontractor Costs</b>						<b>\$5,000.00</b>	<b>\$10,000.00</b>
Specialty OMM visits		Event	1	2	\$5,000.00	\$5,000.00	\$10,000.00
<b>Other Costs</b>						<b>\$6,700.00</b>	<b>\$13,400.00</b>
Utilities - Electric		KWH	100,000	2	\$0.07	\$6,700.00	\$13,400.00
<b>Chevron Direct-Bill Subcontractor Costs</b>						<b>\$16,600.00</b>	<b>\$33,200.00</b>
Waste Disposal Coordination	Coordinate condensate disposal	Lump Sum	1	2	\$3,000.00	\$3,000.00	\$6,000.00
Waste Transport and Disposal	Condensate disposal (once per quarter)	Event	4	2	\$1,000.00	\$4,000.00	\$8,000.00
Lab - Groundwater Samples	10 quarterly samples	Sample	40	2	\$150.00	\$6,000.00	\$12,000.00
Lab - Air Samples	Monthly air discharge samples	Sample	24	2	\$150.00	\$3,600.00	\$7,200.00
<b>Total</b>						<b>\$88,780.00</b>	<b>\$177,560.00</b>



**Alternative 1 (Air Sparge/SVE, MNA, and Institutional Controls)**

**Task 7 System Installation Documentation and OMM Manual Preparation**

Includes:

- Preparation of system installation summary report
- Preparation of OMM manual with system specific maintenance procedures
- Preparation of system as-built documentation

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$23,760.00</b>
Principal Level Eng/Geo/Sci		Hour	24	\$130.00	\$3,120.00
Senior Level Eng/Geo/Sci		Hour	48	\$110.00	\$5,280.00
Project Level Eng/Geo/Sci		Hour	80	\$85.00	\$6,800.00
Associate Level Eng/Geo/Sci		Hour	80	\$65.00	\$5,200.00
Drafter		Hour	48	\$70.00	\$3,360.00
<b>Total</b>					<b>\$23,760.00</b>

**Alternative 1 (Air Sparge/SVE, MNA, and Institutional Controls)**

**Task 8 Monitoring of Natural Attenuation (10 Years)**

Includes:

- Consultant labor, equipment, and materials associated with groundwater sampling to monitor natural attenuation processes
- Consultant labor for groundwater monitoring coordination, data evaluation, report preparation, and project management

Assumptions:

Monitoring will be required for a period of 10 years

Item	Notes	Unit	Annual Quantity	# of Years	Unit Cost	Annual Total	Project Total
<b>Consultant Labor</b>						<b>\$9,600.00</b>	<b>\$96,000.00</b>
Principal Level Eng/Geo/Sci		Hour	8	10	\$130.00	\$1,040.00	\$10,400.00
Senior Level Eng/Geo/Sci		Hour	24	10	\$110.00	\$2,640.00	\$26,400.00
Project Level Eng/Geo/Sci		Hour	32	10	\$85.00	\$2,720.00	\$27,200.00
Associate Level Eng/Geo/Sci		Hour	32	10	\$65.00	\$2,080.00	\$20,800.00
Drafter		Hour	16	10	\$70.00	\$1,120.00	\$11,200.00
<b>Chevron Direct-Bill Subcontractor Costs</b>						<b>\$10,000.00</b>	<b>\$100,000.00</b>
Groundwater Sampling Subcontractor		Event	2	10	\$2,500.00	\$5,000.00	\$50,000.00
Lab - Groundwater Samples	10 semiannual samples	Sample	20	10	\$250.00	\$5,000.00	\$50,000.00
<b>Total</b>						<b>\$19,600.00</b>	<b>\$196,000.00</b>

**Alternative 1 (Air Sparge/SVE, MNA, and Institutional Controls)****Task 9 Coordination/Management/Maintenance of Institutional Controls (15 Years)**

Includes:

- Coordination of a restrictive covenant to prohibit groundwater use and place controls on subsurface activities on the active station property
- Coordination of soil management plans to establish soil handling measures for utility or other subsurface work in the adjacent right-of-ways

Assumptions:

- Costs assume one event to repair/replace damaged asphalt or concrete surface cover on the active station property
- Semiannual inspections and maintenance of asphalt and/or concrete surface cover on the active station property for a period of 15 years

Item	Notes	Unit	Quantity	Unit Cost	Annual Total
<b>Consultant Labor</b>					<b>\$37,820.00</b>
Principal Level Eng/Geo/Sci		Hour	24	\$130.00	\$3,120.00
Senior Level Eng/Geo/Sci		Hour	64	\$110.00	\$7,040.00
Project Level Eng/Geo/Sci		Hour	96	\$85.00	\$8,160.00
Associate Level Eng/Geo/Sci		Hour	300	\$65.00	\$19,500.00
<b>Consultant Equipment</b>					<b>\$3,750.00</b>
Field Vehicle		Day	30	\$125.00	\$3,750.00
<b>Consultant Subcontractor Costs</b>					<b>\$25,000.00</b>
Paving Subcontractor		Lump Sum	1	\$25,000.00	\$25,000.00
<b>Total</b>					<b>\$66,570.00</b>

**Alternative 1 (Air Sparge/SVE, MNA, and Institutional Controls)**

**Task 10 Post-Remedy Confirmation Sampling and Closure Management**

Includes:

- Consultant labor, equipment, travel, and subcontractor costs to collect post remedy soil and soil-vapor confirmation samples
- HASP and work plan preparation, pre-project planning, and subcontractor coordination
- Data evaluation and summary report preparation
- Laboratory analysis for soil and soil-vapor samples
- Waste coordination, transport and disposal

Assumptions:

- Costs assume soil samples are collected during a 3-day field effort with continuous oversight by two consultant staff
- All soil boring locations cleared to 8 feet bgs using air-knife/vac-truck rig
- Soil-vapor samples to be collected at existing soil-vapor sampling probe locations (one-time event)

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$31,040.00</b>
Principal Level Eng/Geo/Sci		Hour	24	\$130.00	\$3,120.00
Senior Level Eng/Geo/Sci		Hour	80	\$110.00	\$8,800.00
Project Level Eng/Geo/Sci		Hour	120	\$85.00	\$10,200.00
Associate Level Eng/Geo/Sci		Hour	120	\$65.00	\$7,800.00
Drafter		Hour	16	\$70.00	\$1,120.00
<b>Consultant Travel</b>					<b>\$740.00</b>
Lodging	2x8 nights oversight crew + 4 nights supervisor	Night	4	\$125.00	\$500.00
Per Diem	2x10 days oversight crew + 6 days supervisor	Day	6	\$40.00	\$240.00
<b>Consultant Equipment</b>					<b>\$1,670.00</b>
Field Vehicle		Day	3	\$125.00	\$375.00
Sampling Truck		Day	4	\$230.00	\$920.00
PID		Day	3	\$75.00	\$225.00
Helium Meter		Day	1	\$150.00	\$150.00
<b>Consultant Subcontractor Costs</b>					<b>\$12,390.00</b>
Driller - Vac Truck Mobilization		Mile	300	\$3.50	\$1,050.00
Driller - Vac Truck Daily Rate	Includes per diem for 2 man crew	Day	1	\$1,750.00	\$1,750.00
Driller - HSA Drill Rig Mobilization		Mile	300	\$5.50	\$1,650.00
Driller - HSA Drill Rig Daily Rate	Includes per diem for 2 man crew	Day	2	\$3,250.00	\$6,500.00
Driller - Start Cards		Each	8	\$65.00	\$520.00
Driller - Surface Hole Patch		Each	8	\$50.00	\$400.00
Driller - Soil/Water Drums		Each	8	\$65.00	\$520.00
<b>Chevron Direct-Bill Subcontractor Costs</b>					<b>\$9,400.00</b>
Waste Disposal Coordination		Lump Sum	1	\$3,000.00	\$3,000.00
Waste Transport and Disposal		Drum	8	\$100.00	\$800.00
Laboratory Analytical Services	Soil samples	Sample	24	\$150.00	\$3,600.00
Laboratory Analytical Services	4 Soil-vapor samples + 1 equipment blank	Sample	5	\$400.00	\$2,000.00
<b>Total</b>					<b>\$55,240.00</b>

<b>Summary of Alternative Costs</b>		
<b>Alternative 2 (Partial Excavation, MNA, and Institutional Controls)</b>		
<b>Cost Components</b>		<b>Cost</b>
Task 1	Excavation Planning and Permitting	\$47,090
Task 2	Excavation Implementation	\$511,885
Task 3	Reporting	\$12,480
Task 4	Monitoring of Natural Attenuation (10 Years)	\$196,000
Task 5	Coordination/Management/Maintenance of Institutional Controls (15 Years)	\$63,820
Task 6	Post Remedy Confirmation Sampling and Closure Management	\$55,240
<b>Total + 25% for taxes and contingency</b>		<b>\$1,108,144</b>

Notes: See task-specific cost estimates for additional details regarding each of the cost components for this alternative.

**Alternative 2 (Partial Excavation, MNA, and Institutional Controls)****Task 1 Excavation Planning and Permitting**

Includes:

- Preparation of work plan, contractor specifications, and HASP
- Preparation of SEPA and soil/erosion control permits
- Subcontractor coordination and pre-project safety planning

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$45,840</b>
Principal Level Eng/Geo/Sci		Hour	32	\$130.00	\$4,160
Senior Level Eng/Geo/Sci		Hour	120	\$110.00	\$13,200
Project Level Eng/Geo/Sci		Hour	160	\$85.00	\$13,600
Associate Level Eng/Geo/Sci		Hour	160	\$65.00	\$10,400
Drafter		Hour	64	\$70.00	\$4,480
<b>Consultant Equipment</b>					<b>\$250</b>
Field Vehicle		Day	2	\$125.00	\$250
<b>Other Costs</b>					<b>\$1,000</b>
Permit Fees		Lump Sum	1	\$1,000.00	\$1,000
<b>Total</b>					<b>\$47,090</b>

**Alternative 2 (Partial Excavation, MNA, and Institutional Controls)**

**Task 2 Excavation Implementation**

Includes:

- Consultant labor, equipment, travel, and materials associated with field oversight of excavation activities
- Subcontractor costs associated with excavation tasks, including;
  - Mobilization and site setup costs
  - Excavation and loading of overburden and impacted soil to the extent practicable
  - Labor, equipment, materials and subcontractors to backfill, compact and restore site to pre-existing condition
  - Application of 2,000 pounds of ORC or equivalent product to be placed in excavation bottom
- Waste disposal coordination, transportation, and disposal by Chevron direct-bill subcontractors

Assumptions:

- Area to be excavated is approximately 7,500 square feet
- Clean overburden soils from ground surface to 5 feet bgs
- Petroleum contaminated soil from 5 feet bgs to maximum excavation depth (12 feet bgs)
- Assume 1.6 tons per cubic yard of soil (in place)
- Estimated excavation and disposal of 2,000 cy or 3,200 tons of petroleum contaminated soil
- Estimated excavation and disposal of 1,400 cy or 2,200 tons of clean overburden soil
- Excavation to be performed during (3) 5-day weeks in the field

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$49,580.00</b>
Principal Level Eng/Geo/Sci		Hour	16	\$130.00	\$2,080.00
Senior Level Eng/Geo/Sci		Hour	80	\$110.00	\$8,800.00
Project Level Eng/Geo/Sci	Three 60-hour weeks in field	Hour	180	\$85.00	\$15,300.00
Associate Level Eng/Geo/Sci	Three 60-hour weeks in field for 2 staff	Hour	360	\$65.00	\$23,400.00
Drafter		Hour		\$70.00	\$0.00
<b>Consultant Travel</b>					<b>\$6,915.00</b>
Lodging		Night	39	\$125.00	\$4,875.00
Per Diem		Day	51	\$40.00	\$2,040.00
<b>Consultant Equipment</b>					<b>\$7,200.00</b>
Field Vehicle		Day	21	\$125.00	\$2,625.00
Sampling Truck		Day	15	\$230.00	\$3,450.00
PID		Day	15	\$75.00	\$1,125.00
<b>Consultant Subcontractor Costs</b>					<b>\$251,190.00</b>
Project Manager		Hour	64	\$105.00	\$6,720.00
Health and Safety Manager		Hour	64	\$85.00	\$5,440.00
Foreman	3 weeks @ 60 hours per week + 20 hours planning	Hour	200	\$90.00	\$18,000.00
Operator	3 weeks @ 60 hours per week	Hour	180	\$85.00	\$15,300.00
Laborer	3 weeks @ 60 hours per week	Hour	180	\$70.00	\$12,600.00
Administrative Assistant		Hour	12	\$65.00	\$780.00
Per Diem - Meals		Day	45	\$40.00	\$1,800.00
Per Diem - Lodging		Night	36	\$125.00	\$4,500.00
Light Truck		Day	15	\$200.00	\$3,000.00
Service Truck		Day	15	\$300.00	\$4,500.00
Water Truck		Day	10	\$375.00	\$3,750.00
Excavator - 50,000 lb		Day	15	\$1,250.00	\$18,750.00
Excavator - 28,000 lb		Day	15	\$850.00	\$12,750.00
Compaction Plate Excavator		Day	5	\$250.00	\$1,250.00
Subcontractor - Compaction Testing		Lump Sum	1	\$5,000.00	\$5,000.00
Subcontractor - Paving		Sq. Foot	7,500	\$1.50	\$11,250.00
Temporary Fence		Linear Ft.	600	\$3.00	\$1,800.00
Portable Toilet and Hand Wash		Week	3	\$100.00	\$300.00
Materials - Structural Fill (Delivered)		Ton	3,400	\$12.00	\$40,800.00
Materials - Crushed Rock (Delivered)		Ton	2,000	\$14.00	\$28,000.00
Materials - ORC		Pound	2,000	\$9.00	\$18,000.00
Overburden Transport & Disposal		Ton	2,200	\$7.00	\$15,400.00
Construction Trailer Rental		Week	3	\$500.00	\$1,500.00
Mobile Laboratory		Day	10	\$2,000.00	\$20,000.00
<b>Chevron Direct-Bill Subcontractor Costs</b>					<b>\$197,000.00</b>
Waste Disposal Coordination		Lump Sum	1	\$5,000.00	\$5,000.00
Waste Transport and Disposal	Transport and dispose of non-hazardous soil waste	Ton	3,200	\$60.00	\$192,000.00
<b>Total</b>					<b>\$511,885.00</b>

**Alternative 2 (Partial Excavation, MNA, and Institutional Controls)****Task 3 Reporting**

Includes:

- Preparation of excavation summary report

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$12,480.00</b>
Principal Level Eng/Geo/Sci		Hour	8	\$130.00	\$1,040.00
Senior Level Eng/Geo/Sci		Hour	24	\$110.00	\$2,640.00
Project Level Eng/Geo/Sci		Hour	40	\$85.00	\$3,400.00
Associate Level Eng/Geo/Sci		Hour	40	\$65.00	\$2,600.00
Drafter		Hour	40	\$70.00	\$2,800.00
<b>Total</b>					<b>\$12,480.00</b>



**Alternative 2 (Partial Excavation, MNA, and Institutional Controls)**

**Task 4 Monitoring of Natural Attenuation (10 Years)**

Includes:

- Consultant labor, equipment, and materials associated with groundwater sampling to monitor natural attenuation processes
- Consultant labor for groundwater monitoring coordination, data evaluation, report preparation, and project management

Assumptions:

Monitoring will be required for a period of 10 years

Item	Notes	Unit	Annual Quantity	# of Years	Unit Cost	Annual Total	Project Total
<b>Consultant Labor</b>						<b>\$9,600.00</b>	<b>\$96,000.00</b>
Principal Level Eng/Geo/Sci		Hour	8	10	\$130.00	\$1,040.00	\$10,400.00
Senior Level Eng/Geo/Sci		Hour	24	10	\$110.00	\$2,640.00	\$26,400.00
Project Level Eng/Geo/Sci		Hour	32	10	\$85.00	\$2,720.00	\$27,200.00
Associate Level Eng/Geo/Sci		Hour	32	10	\$65.00	\$2,080.00	\$20,800.00
Drafter		Hour	16	10	\$70.00	\$1,120.00	\$11,200.00
<b>Chevron Direct-Bill Subcontractor Costs</b>						<b>\$10,000.00</b>	<b>\$100,000.00</b>
Groundwater Sampling Subcontractor		Event	2	10	\$2,500.00	\$5,000.00	\$50,000.00
Lab - Groundwater Samples	10 semiannual samples	Sample	20	10	\$250.00	\$5,000.00	\$50,000.00
<b>Total</b>						<b>\$19,600.00</b>	<b>\$196,000.00</b>

<b>Alternative 2 (Partial Excavation, MNA, and Institutional Controls)</b>						
<b>Task 5 Coordination/Management/Maintenance of Institutional Controls (15 Years)</b>						
Includes:						
- Coordination of a restrictive covenant to prohibit groundwater use and place controls on subsurface activities on the active station property						
- Coordination of soil management plans to establish soil handling measures for utility or other subsurface work in the adjacent right-of-ways						
Assumptions:						
- Costs assume one event to repair/replace damaged asphalt or concrete surface cover on the active station property						
- Semiannual inspections and maintenance of asphalt and/or concrete surface cover on the active station property for a period of 15 years						
Item	Notes	Unit	Quantity	Unit Cost	Annual Total	
<b>Consultant Labor</b>						<b>\$37,820.00</b>
Principal Level Eng/Geo/Sci		Hour	24	\$130.00	\$3,120.00	
Senior Level Eng/Geo/Sci		Hour	64	\$110.00	\$7,040.00	
Project Level Eng/Geo/Sci		Hour	96	\$85.00	\$8,160.00	
Associate Level Eng/Geo/Sci		Hour	300	\$65.00	\$19,500.00	
<b>Consultant Equipment</b>						<b>\$1,000.00</b>
Field Vehicle		Day	8	\$125.00	\$1,000.00	
<b>Consultant Subcontractor Costs</b>						<b>\$25,000.00</b>
Paving Subcontractor		Lump Sum	1	\$25,000.00	\$25,000.00	
						\$0.00
<b>Total</b>						<b>\$63,820.00</b>

**Alternative 2 (Partial Excavation, MNA, and Institutional Controls)**

**Task 6 Post Remedy Confirmation Sampling and Closure Management**

Includes:

- Consultant labor, equipment, travel, and subcontractor costs to collect post remedy soil and soil-vapor confirmation samples
- HASP and work plan preparation, pre-project planning, and subcontractor coordination
- Data evaluation and summary report preparation
- Laboratory analysis for soil and soil-vapor samples
- Waste coordination, transport and disposal

Assumptions:

- Costs assume soil samples are collected during a 3-day field effort with continuous oversight by two consultant staff
- All boring locations cleared to 8 feet bgs using air-knife/vac-truck rig
- Soil-vapor samples to be collected at existing soil-vapor sampling probe locations (one-time event)

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$31,040.00</b>
Principal Level Eng/Geo/Sci		Hour	24	\$130.00	\$3,120.00
Senior Level Eng/Geo/Sci		Hour	80	\$110.00	\$8,800.00
Project Level Eng/Geo/Sci		Hour	120	\$85.00	\$10,200.00
Associate Level Eng/Geo/Sci		Hour	120	\$65.00	\$7,800.00
Drafter		Hour	16	\$70.00	\$1,120.00
<b>Consultant Travel</b>					<b>\$740.00</b>
Lodging	2x8 nights oversight crew + 4 nights supervisor	Night	4	\$125.00	\$500.00
Per Diem	2x10 days oversight crew + 6 days supervisor	Day	6	\$40.00	\$240.00
<b>Consultant Equipment</b>					<b>\$1,670.00</b>
Field Vehicle		Day	3	\$125.00	\$375.00
Sampling Truck		Day	4	\$230.00	\$920.00
PID		Day	3	\$75.00	\$225.00
Helium Meter		Day	1	\$150.00	\$150.00
<b>Consultant Subcontractor Costs</b>					<b>\$12,390.00</b>
Driller - Vac Truck Mobilization		Mile	300	\$3.50	\$1,050.00
Driller - Vac Truck Daily Rate	Includes per diem for 2 man crew	Day	1	\$1,750.00	\$1,750.00
Driller - HSA Drill Rig Mobilization		Mile	300	\$5.50	\$1,650.00
Driller - HSA Drill Rig Daily Rate	Includes per diem for 2 man crew	Day	2	\$3,250.00	\$6,500.00
Driller - Start Cards		Each	8	\$65.00	\$520.00
Driller - Surface Hole Patch		Each	8	\$50.00	\$400.00
Driller - Soil/Water Drums		Each	8	\$65.00	\$520.00
<b>Chevron Direct-Bill Subcontractor Costs</b>					<b>\$9,400.00</b>
Waste Disposal Coordination		Lump Sum	1	\$3,000.00	\$3,000.00
Waste Transport and Disposal		Drum	8	\$100.00	\$800.00
Laboratory Analytical Services	Soil samples	Sample	24	\$150.00	\$3,600.00
Laboratory Analytical Services	4 Soil-vapor samples + 1 equipment blank	Sample	5	\$400.00	\$2,000.00
<b>Total</b>					<b>\$55,240.00</b>

<b>Summary of Alternative Costs</b>	
<b>Alternative 3 (Partial Ecavation, Air Sparge/SVE, MNA, and Institutional Controls)</b>	
Cost Components	Cost
Task 1 Excavation Planning and Permitting	\$41,770
Task 2 Excavation Implementation	\$511,885
Task 3 Reporting	\$12,480
Task 4 Air Sparge/SVE System Design and Permitting	\$53,950
Task 5 Air Sparge/SVE System Equipment Procurement/Construction	\$250,464
Task 6 Air Sparge/SVE Well Installation	\$80,140
Task 7 Site Construction	\$174,605
Task 8 System Startup	\$38,740
Task 9 Air Sparge/SVE Operation, Maintenance, and Monitoring (2 Years)	\$177,560
Task 10 System Installation Documentation and OMM Manual Preparation	\$23,760
Task 11 Monitoring of Natural Attenuation (5 Years)	\$98,000
Task 12 Coordination/Management/Maintenance of Institutional Controls (10 Years)	\$55,560
Task 13 Post Remedy Confirmation Sampling and Closure Management	\$55,240
<b>Total + 25% for taxes and contingency</b>	<b>\$1,967,693</b>

Notes: See task-specific cost estimates for additional details regarding each of the cost components for this alternative.

**Alternative 3 (Partial Excavation, Air Sparge/SVE, MNA, and Institutional Controls)****Task 1 Excavation Planning and Permitting**

Includes:

- Preparation of work plan, contractor specifications, and HASP
- Preparation of SEPA and soil/erosion control permits
- Subcontractor coordination and pre-project safety planning

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$40,520</b>
Principal Level Eng/Geo/Sci		Hour	24	\$130.00	\$3,120
Senior Level Eng/Geo/Sci		Hour	120	\$110.00	\$13,200
Project Level Eng/Geo/Sci		Hour	160	\$85.00	\$13,600
Associate Level Eng/Geo/Sci		Hour	120	\$65.00	\$7,800
Drafter		Hour	40	\$70.00	\$2,800
<b>Consultant Equipment</b>					<b>\$250</b>
Field Vehicle		Day	2	\$125.00	\$250
<b>Other Costs</b>					<b>\$1,000</b>
Permit Fees		Lump Sum	1	\$1,000.00	\$1,000
<b>Total</b>					<b>\$41,770</b>

**Alternative 3 (Partial Excavation, Air Sparge/SVE, MNA, and Institutional Controls)**

**Task 2 Excavation Implementation**

Includes:

- Consultant labor, equipment, travel, and materials associated with field oversight of excavation activities
- Subcontractor costs associated with excavation tasks, including;
  - Mobilization and site setup costs
  - Excavation and loading of overburden and impacted soil to the extent practicable
  - Labor, equipment, materials and subcontractors to backfill, compact and restore site to pre-existing condition
  - Application of 2,000 pounds of ORC or equivalent product to be placed in excavation bottom
- Waste disposal coordination, transportation, and disposal by Chevron direct-bill subcontractors

Assumptions:

- Area to be excavated is approximately 7,500 square feet
- Clean overburden soils from ground surface to 5 feet bgs
- Petroleum contaminated soil from 5 feet bgs to maximum excavation depth (12 feet bgs)
- Assume 1.6 tons per cubic yard of soil (in place)
- Estimated excavation and disposal of 2,000 cy or 3,200 tons of petroleum contaminated soil
- Estimated excavation and disposal of 1,400 cy or 2,200 tons of clean overburden soil
- Excavation to be performed during (3) 5-day weeks in the field

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$49,580.00</b>
Principal Level Eng/Geo/Sci		Hour	16	\$130.00	\$2,080.00
Senior Level Eng/Geo/Sci		Hour	80	\$110.00	\$8,800.00
Project Level Eng/Geo/Sci	Three 60-hour weeks in field	Hour	180	\$85.00	\$15,300.00
Associate Level Eng/Geo/Sci	Three 60-hour weeks in field for 2 staff	Hour	360	\$65.00	\$23,400.00
Drafter		Hour		\$70.00	\$0.00
<b>Consultant Travel</b>					<b>\$6,915.00</b>
Lodging		Night	39	\$125.00	\$4,875.00
Per Diem		Day	51	\$40.00	\$2,040.00
<b>Consultant Equipment</b>					<b>\$7,200.00</b>
Field Vehicle		Day	21	\$125.00	\$2,625.00
Sampling Truck		Day	15	\$230.00	\$3,450.00
PID		Day	15	\$75.00	\$1,125.00
<b>Consultant Subcontractor Costs</b>					<b>\$251,190.00</b>
Project Manager		Hour	64	\$105.00	\$6,720.00
Health and Safety Manager		Hour	64	\$85.00	\$5,440.00
Foreman	3 weeks @ 60 hours per week + 20 hours planning	Hour	200	\$90.00	\$18,000.00
Operator	3 weeks @ 60 hours per week	Hour	180	\$85.00	\$15,300.00
Laborer	3 weeks @ 60 hours per week	Hour	180	\$70.00	\$12,600.00
Administrative Assistant		Hour	12	\$65.00	\$780.00
Per Diem - Meals		Day	45	\$40.00	\$1,800.00
Per Diem - Lodging		Night	36	\$125.00	\$4,500.00
Light Truck		Day	15	\$200.00	\$3,000.00
Service Truck		Day	15	\$300.00	\$4,500.00
Water Truck		Day	10	\$375.00	\$3,750.00
Excavator - 50,000 lb		Day	15	\$1,250.00	\$18,750.00
Excavator - 28,000 lb		Day	15	\$850.00	\$12,750.00
Compaction Plate Excavator		Day	5	\$250.00	\$1,250.00
Subcontractor - Compaction Testing		Lump Sum	1	\$5,000.00	\$5,000.00
Subcontractor - Paving		Sq. Foot	7,500	\$1.50	\$11,250.00
Temporary Fence		Linear Ft.	600	\$3.00	\$1,800.00
Portable Toilet and Hand Wash		Week	3	\$100.00	\$300.00
Materials - Structural Fill (Delivered)		Ton	3,400	\$12.00	\$40,800.00
Materials - Crushed Rock (Delivered)		Ton	2,000	\$14.00	\$28,000.00
Materials - ORC		Pound	2,000	\$9.00	\$18,000.00
Overburden Transport & Disposal		Ton	2,200	\$7.00	\$15,400.00
Construction Trailer Rental		Week	3	\$500.00	\$1,500.00
Mobile Laboratory		Day	10	\$2,000.00	\$20,000.00
<b>Chevron Direct-Bill Subcontractor Costs</b>					<b>\$197,000.00</b>
Waste Disposal Coordination		Lump Sum	1	\$5,000.00	\$5,000.00
Waste Transport and Disposal	Transport and dispose of non-hazardous soil waste	Ton	3,200	\$60.00	\$192,000.00
<b>Total</b>					<b>\$511,885.00</b>

**Alternative 3 (Partial Ecavation, Air Sparge/SVE, MNA, and Institutional Controls)**

**Task 3 Reporting**

Includes:

- Preparation of excavation summary report

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$12,480.00</b>
Principal Level Eng/Geo/Sci		Hour	8	\$130.00	\$1,040.00
Senior Level Eng/Geo/Sci		Hour	24	\$110.00	\$2,640.00
Project Level Eng/Geo/Sci		Hour	40	\$85.00	\$3,400.00
Associate Level Eng/Geo/Sci		Hour	40	\$65.00	\$2,600.00
Drafter		Hour	40	\$70.00	\$2,800.00
<b>Total</b>					<b>\$12,480.00</b>

**Alternative 3 (Partial Excavation, Air Sparge/SVE, MNA, and Institutional Controls)**

**Task 4 Air Sparge/SVE System Design and Permitting**

Includes:

- Air discharge permit application and coordination
- Construction permit and utility connection coordination
- Preparation of preliminary, pre-final, and final design drawings and specifications packages
- Preparation of equipment construction and site-work contractor bid packages
- Evaluation of bids and award of equipment construction and site-work subcontracts

Assumptions:

System design and permitting costs are assumed to be essentially the same as for Alternative 1

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$51,200</b>
Principal Level Eng/Geo/Sci		Hour	40	\$130.00	\$5,200
Senior Level Eng/Geo/Sci		Hour	200	\$110.00	\$22,000
Project Level Eng/Geo/Sci		Hour	200	\$85.00	\$17,000
Drafter		Hour	100	\$70.00	\$7,000
<b>Consultant Equipment</b>					<b>\$250</b>
Field Vehicle		Day	2	\$125.00	\$250
<b>Other Costs</b>					<b>\$2,500</b>
Air Discharge Permit Fee	Assumed project considered "Basic" by Ecology	Lump Sum	1	\$1,500.00	\$1,500
Misc. Permit Fees		Lump Sum	1	\$1,000.00	\$1,000
<b>Total</b>					<b>\$53,950</b>



**Alternative 3 (Partial Excavation, Air Sparge/SVE, MNA, and Institutional Controls)****Task 5 Air Sparge/SVE System Equipment Procurement/Construction**

Includes:

- Consultant subcontractor expenses for construction and shipping of container mounted air sparge/SVE system for 12 air sparge injection wells and 4 SVE wells
- Consultant labor associated with system build coordination and shop drawing review
- Consultant labor, travel, and expenses to attend final system testing and inspection at manufacturer's facility prior to shipment

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$13,480.00</b>
Principal Level Eng/Geo/Sci		Hour	16	\$130.00	\$2,080.00
Senior Level Eng/Geo/Sci		Hour	80	\$110.00	\$8,800.00
Associate Level Eng/Geo/Sci		Hour	40	\$65.00	\$2,600.00
<b>Consultant Travel</b>					<b>\$1,484.00</b>
Air Fare		Trip	1	\$800.00	\$800.00
Lodging		Night	2	\$125.00	\$250.00
Per Diem		Day	3	\$40.00	\$120.00
Car Rental		Day	2	\$55.00	\$110.00
Fuel for Rental Car		Gallon	30	\$4.00	\$120.00
Airport Parking		Day	3	\$28.00	\$84.00
<b>Consultant Subcontractor Costs</b>					<b>\$235,500.00</b>
System Construction		Lump Sum	1	\$225,000.00	\$225,000.00
System Shipping		Lump Sum	1	\$10,000.00	\$10,500.00
<b>Total</b>					<b>\$250,464.00</b>

**Alternative 3 (Partial Excavation, Air Sparge/SVE, MNA, and Institutional Controls)**

**Task 6 Air Sparge/SVE Well Installation**

Includes:

- HASP and work plan preparation, pre-project planning, and subcontractor coordination
- Consultant labor, equipment, travel, and subcontractor costs to install approximately 12 air sparge injection wells and 4 SVE wells
- Boring log preparation, and data management and evaluation
- Laboratory analysis for soil samples
- Waste coordination, transport and disposal

Assumptions:

- Costs assume a 5-day field effort to install all wells, with continuous oversight by two consultant staff
- All boring locations cleared to 8 feet bgs using air-knife/vac-truck rig

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$28,760.00</b>
Principal Level Eng/Geo/Sci		Hour	16	\$130.00	\$2,080.00
Senior Level Eng/Geo/Sci		Hour	48	\$110.00	\$5,280.00
Project Level Eng/Geo/Sci		Hour	160	\$85.00	\$13,600.00
Associate Level Eng/Geo/Sci		Hour	120	\$65.00	\$7,800.00
<b>Consultant Travel</b>					<b>\$1,605.00</b>
Lodging	2x4 nights oversight crew + 1 night supervisor	Night	9	\$125.00	\$1,125.00
Per Diem	2x5 days oversight crew + 2 days supervisor	Day	12	\$40.00	\$480.00
<b>Consultant Equipment</b>					<b>\$1,775.00</b>
Field Vehicle		Day	2	\$125.00	\$250.00
Sampling Truck		Day	5	\$230.00	\$1,150.00
PID		Day	5	\$75.00	\$375.00
<b>Consultant Subcontractor Costs</b>					<b>\$37,000.00</b>
Driller - Vac Truck Mobilization		Mile	300	\$3.50	\$1,050.00
Driller - Vac Truck Daily Rate	Includes per diem for 2 man crew	Day	5	\$1,750.00	\$8,750.00
Driller - HSA Drill Rig Mobilization		Mile	300	\$5.50	\$1,650.00
Driller - HSA Drill Rig Daily Rate	Includes per diem for 2 man crew	Day	5	\$3,250.00	\$16,250.00
Driller - Start Cards		Each	16	\$65.00	\$1,040.00
Driller- 4" Well Materials	(4) 4"-diameter wells to 10 feet bgs	Foot	40	\$18.00	\$720.00
Driller- 2" Well Materials	(12) 2"-diameter wells to 15 feet bgs	Foot	180	\$12.00	\$2,160.00
Driller - Surface Hole Patch		Each	16	\$50.00	\$800.00
Driller - Soil/Water Drums	2 soil drums per well	Each	32	\$65.00	\$2,080.00
Surveyor		Lump Sum	1	\$2,500.00	\$2,500.00
<b>Chevron Direct-Bill Subcontractor Costs</b>					<b>\$11,000.00</b>
Waste Disposal Coordination		Lump Sum	1	\$3,000.00	\$3,000.00
Waste Transport and Disposal		Drum	32	\$100.00	\$3,200.00
Laboratory Analytical Services		Sample	32	\$150.00	\$4,800.00
<b>Total</b>					<b>\$80,140.00</b>

**Alternative 3 (Partial Excavation, Air Sparge/SVE, MNA, and Institutional Controls)**

**Task 7 Site Construction**

Includes:

- Pre-project planning and subcontractor coordination
- Consultant labor, equipment, travel, and materials associated with field oversight of system construction
- Consultant subcontractor costs associated with site construction tasks, including;
  - Site clearing and grading
  - Trenching and piping installation
  - System pad and security fence installation
  - Unloading, placement and assembly of remediation system equipment containers
  - Electrical system installation

Assumptions:

- System installation assumed to occur over three 60-hour weeks

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$40,900.00</b>
Senior Level Eng/Geo/Sci		Hour	100	\$110.00	\$11,000.00
Project Level Eng/Geo/Sci	80 hours planning + three 60-hour weeks in field	Hour	260	\$85.00	\$22,100.00
Associate Level Eng/Geo/Sci	Two 60-hour weeks in field	Hour	120	\$65.00	\$7,800.00
<b>Consultant Travel</b>					<b>\$4,115.00</b>
Lodging		Night	23	\$125.00	\$2,875.00
Per Diem		Day	31	\$40.00	\$1,240.00
<b>Consultant Equipment</b>					<b>\$5,000.00</b>
Field Vehicle		Day	31	\$125.00	\$3,875.00
PID		Day	15	\$75.00	\$1,125.00
<b>Consultant Subcontractor Costs</b>					<b>\$117,590.00</b>
Project Manager		Hour	24	\$105.00	\$2,520.00
Health and Safety Manager		Hour	24	\$85.00	\$2,040.00
Foreman	3 weeks @ 60 hours per week	Hour	180	\$90.00	\$16,200.00
Operator	3 weeks @ 60 hours per week	Hour	180	\$85.00	\$15,300.00
Laborer	3 weeks @ 60 hours per week	Hour	180	\$70.00	\$12,600.00
Administrative Assistant		Hour	12	\$65.00	\$780.00
Per Diem - Meals		Day	45	\$40.00	\$1,800.00
Per Diem - Lodging		Night	36	\$125.00	\$4,500.00
Light Truck		Day	15	\$200.00	\$3,000.00
Service Truck		Day	15	\$300.00	\$4,500.00
Excavator - Mini		Day	10	\$500.00	\$5,000.00
Subcontractor - Crane		Lump Sum	1	\$4,000.00	\$4,000.00
Subcontractor - Electrical		Lump Sum	1	\$15,000.00	\$15,000.00
Temporary Fence		Linear Ft.	600	\$3.00	\$1,800.00
Portable Toilet and Hand Wash		Week	3	\$100.00	\$300.00
Materials - Piping		Lump Sum	1	\$10,000.00	\$10,000.00
Materials - Backfill		Lump Sum	1	\$2,500.00	\$2,500.00
Materials - Crushed Rock		Lump Sum	1	\$2,500.00	\$2,500.00
Materials - Concrete		Lump Sum	1	\$3,750.00	\$3,750.00
Materials - Well vaults		Each	16	\$500.00	\$8,000.00
Construction Trailer Rental		Week	3	\$500.00	\$1,500.00
<b>Chevron Direct-Bill Subcontractor Costs</b>					<b>\$7,000.00</b>
Waste Disposal Coordination		Lump Sum	1	\$3,000.00	\$3,000.00
Waste Transport and Disposal	Transport and dispose of non-hazardous soil waste	Cubic Yard	20	\$100.00	\$2,000.00
Laboratory Analytical Services	Waste characterization samples	Sample	8	\$250.00	\$2,000.00
<b>Total</b>					<b>\$174,605.00</b>

**Alternative 3 (Partial Excavation, Air Sparge/SVE, MNA, and Institutional Controls)****Task 8 System Startup**

## Includes:

- Consultant labor, equipment, travel, and materials associated with remediation system startup
- Laboratory costs for vapor sample analysis

## Assumptions:

- System startup is assumed to be a two week field effort

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$29,640.00</b>
Senior Level Eng/Geo/Sci	24 hours planning + two 60-hour weeks in field	Hour	144	\$110.00	\$15,840.00
Project Level Eng/Geo/Sci	24 hours planning + two 60-hour weeks in field	Hour	144	\$85.00	\$12,240.00
Associate Level Eng/Geo/Sci	Office support of field activities	Hour	24	\$65.00	\$1,560.00
<b>Consultant Travel</b>					<b>\$2,800.00</b>
Lodging	8 nights lodging for 2 staff	Night	16	\$125.00	\$2,000.00
Per Diem	10 days per diem for 2 staff	Day	20	\$40.00	\$800.00
<b>Consultant Equipment</b>					<b>\$3,800.00</b>
Sampling Truck		Day	10	\$230.00	\$2,300.00
4-Gas Meter		Day	10	\$150.00	\$1,500.00
<b>Consultant Subcontractor Costs</b>					<b>\$1,000.00</b>
Equipment Supplier Field Support	Operating training and troubleshooting	Lump Sum	1	\$5,500.00	\$5,500.00
Construction Trailer Rental		Week	2	\$500.00	\$1,000.00
<b>Chevron Direct-Bill Subcontractor Costs</b>					<b>\$1,500.00</b>
Laboratory Analytical Services	Air samples	Sample	10	\$150.00	\$1,500.00
<b>Total</b>					<b>\$38,740.00</b>

**Alternative 3 (Partial Excavation, Air Sparge/SVE, MNA, and Institutional Controls)**

**Task 9 Air Sparge/SVE Operation, Maintenance, and Monitoring (2 Years)**

Includes:

- Consultant labor, equipment, and materials associated with operation, maintenance, and monitoring of the Air Sparge/SVE remediation system, including quarterly reporting for permit compliance

Item	Notes	Unit	Annual Quantity	# of Years	Unit Cost	Annual Total	Project Total
<b>Consultant Labor</b>						<b>\$49,600.00</b>	<b>\$99,200.00</b>
Principal Level Eng/Geo/Sci	Annual site visit	Hour	8	2	\$130.00	\$1,040.00	\$2,080.00
Senior Level Eng/Geo/Sci	4 site visits (12 hrs ea) + 4 hrs/mo reporting	Hour	96	2	\$110.00	\$10,560.00	\$21,120.00
Project Level Eng/Geo/Sci	6 site visits (12 hrs ea)	Hour	72	2	\$85.00	\$6,120.00	\$12,240.00
Associate Level Eng/Geo/Sci	26 site visits (12 hrs ea) + 12 hrs/mo reporting	Hour	456	2	\$65.00	\$29,640.00	\$59,280.00
Drafter	8 hours per quarter - reporting	Hour	32	2	\$70.00	\$2,240.00	\$4,480.00
<b>Consultant Equipment</b>						<b>\$9,880.00</b>	<b>\$19,760.00</b>
Sampling Truck		Day	26	2	\$230.00	\$5,980.00	\$11,960.00
4-Gas Meter		Day	26	2	\$150.00	\$3,900.00	\$7,800.00
<b>Consultant Material Costs</b>						<b>\$1,000.00</b>	<b>\$2,000.00</b>
Misc. Materials		Lump Sum	1	2	\$1,000.00	\$1,000.00	\$2,000.00
<b>Consultant Subcontractor Costs</b>						<b>\$5,000.00</b>	<b>\$10,000.00</b>
Specialty OMM visits		Event	1	2	\$5,000.00	\$5,000.00	\$10,000.00
<b>Other Costs</b>						<b>\$6,700.00</b>	<b>\$13,400.00</b>
Utilities - Electric		KWH	100,000	2	\$0.07	\$6,700.00	\$13,400.00
<b>Chevron Direct-Bill Subcontractor Costs</b>						<b>\$16,600.00</b>	<b>\$33,200.00</b>
Waste Disposal Coordination	Coordinate condensate disposal	Lump Sum	1	2	\$3,000.00	\$3,000.00	\$6,000.00
Waste Transport and Disposal	Condensate disposal (once per quarter)	Event	4	2	\$1,000.00	\$4,000.00	\$8,000.00
Lab - Groundwater Samples	10 quarterly samples	Sample	40	2	\$150.00	\$6,000.00	\$12,000.00
Lab - Air Samples	Monthly air discharge samples	Sample	24	2	\$150.00	\$3,600.00	\$7,200.00
<b>Total</b>						<b>\$88,780.00</b>	<b>\$177,560.00</b>

**Alternative 3 (Partial Excavation, Air Sparge/SVE, MNA, and Institutional Controls)**

**Task 10 System Installation Documentation and OMM Manual Preparation**

Includes:

- Preparation of system installation summary report
- Preparation of OMM manual with system specific maintenance procedures
- Preparation of system as-built documentation

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$23,760.00</b>
Principal Level Eng/Geo/Sci		Hour	24	\$130.00	\$3,120.00
Senior Level Eng/Geo/Sci		Hour	48	\$110.00	\$5,280.00
Project Level Eng/Geo/Sci		Hour	80	\$85.00	\$6,800.00
Associate Level Eng/Geo/Sci		Hour	80	\$65.00	\$5,200.00
Drafter		Hour	48	\$70.00	\$3,360.00
<b>Total</b>					<b>\$23,760.00</b>

**Alternative 3 (Partial Excavation, Air Sparge/SVE, MNA, and Institutional Controls)**

**Task 11 Monitoring of Natural Attenuation (5 Years)**

Includes:

- Consultant labor, equipment, and materials associated with groundwater sampling to monitor natural attenuation processes
- Consultant labor for groundwater monitoring coordination, data evaluation, report preparation, and project management

Assumptions:

Monitoring will be required for a period of 5 years

Item	Notes	Unit	Annual Quantity	# of Years	Unit Cost	Annual Total	Project Total
<b>Consultant Labor</b>						<b>\$9,600.00</b>	<b>\$48,000.00</b>
Principal Level Eng/Geo/Sci		Hour	8	5	\$130.00	\$1,040.00	\$5,200.00
Senior Level Eng/Geo/Sci		Hour	24	5	\$110.00	\$2,640.00	\$13,200.00
Project Level Eng/Geo/Sci		Hour	32	5	\$85.00	\$2,720.00	\$13,600.00
Associate Level Eng/Geo/Sci		Hour	32	5	\$65.00	\$2,080.00	\$10,400.00
Drafter		Hour	16	5	\$70.00	\$1,120.00	\$5,600.00
<b>Chevron Direct-Bill Subcontractor Costs</b>						<b>\$10,000.00</b>	<b>\$50,000.00</b>
Groundwater Sampling Subcontractor		Event	2	5	\$2,500.00	\$5,000.00	\$25,000.00
Lab - Groundwater Samples	10 semiannual samples	Sample	20	5	\$250.00	\$5,000.00	\$25,000.00
<b>Total</b>						<b>\$19,600.00</b>	<b>\$98,000.00</b>

**Alternative 3 (Partial Excavation, Air Sparge/SVE, MNA, and Institutional Controls)****Task 12 Coordination/Management/Maintenance of Institutional Controls (10 Years)**

## Includes:

- Coordination of a restrictive covenant to prohibit groundwater use and place controls on subsurface activities on the active station property
- Coordination of soil management plans to establish soil handling measures for utility or other subsurface work in the adjacent right-of-ways

## Assumptions:

- Costs assume one event to repair/replace damaged asphalt or concrete surface cover on the active station property
- Semiannual inspections and maintenance of asphalt and/or concrete surface cover on the active station property for a period of 10 years

Item	Notes	Unit	Quantity	Unit Cost	Annual Total
<b>Consultant Labor</b>					<b>\$29,560.00</b>
Principal Level Eng/Geo/Sci		Hour	24	\$130.00	\$3,120.00
Senior Level Eng/Geo/Sci		Hour	48	\$110.00	\$5,280.00
Project Level Eng/Geo/Sci		Hour	96	\$85.00	\$8,160.00
Associate Level Eng/Geo/Sci		Hour	200	\$65.00	\$13,000.00
<b>Consultant Equipment</b>					<b>\$1,000.00</b>
Field Vehicle		Day	8	\$125.00	\$1,000.00
<b>Consultant Subcontractor Costs</b>					<b>\$25,000.00</b>
Paving Subcontractor		Lump Sum	1	\$25,000.00	\$25,000.00
<b>Total</b>					<b>\$55,560.00</b>



**Alternative 3 (Partial Excavation, Air Sparge/SVE, MNA, and Institutional Controls)**

**Task 13 Post Remedy Confirmation Sampling and Closure Management**

Includes:

- Consultant labor, equipment, travel, and subcontractor costs to collect post remedy soil and soil-vapor confirmation samples
- HASP and work plan preparation, pre-project planning, and subcontractor coordination
- Consultant labor, equipment, travel, and subcontractor costs to collect post remedy soil confirmation samples
- Data evaluation and summary report preparation
- Laboratory analysis for soil and soil-vapor samples
- Waste coordination, transport and disposal

Assumptions:

- Costs assume soil samples are collected during a 3-day field effort with continuous oversight by two consultant staff
- All soil boring locations cleared to 8 feet bgs using air-knife/vac-truck rig
- Soil-vapor samples to be collected at existing soil-vapor sampling probe locations (one-time event)

Item	Notes	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$31,040.00</b>
Principal Level Eng/Geo/Sci		Hour	24	\$130.00	\$3,120.00
Senior Level Eng/Geo/Sci		Hour	80	\$110.00	\$8,800.00
Project Level Eng/Geo/Sci		Hour	120	\$85.00	\$10,200.00
Associate Level Eng/Geo/Sci		Hour	120	\$65.00	\$7,800.00
Drafter		Hour	16	\$70.00	\$1,120.00
<b>Consultant Travel</b>					<b>\$740.00</b>
Lodging	2x8 nights oversight crew + 4 nights supervisor	Night	4	\$125.00	\$500.00
Per Diem	2x10 days oversight crew + 6 days supervisor	Day	6	\$40.00	\$240.00
<b>Consultant Equipment</b>					<b>\$1,670.00</b>
Field Vehicle		Day	3	\$125.00	\$375.00
Sampling Truck		Day	4	\$230.00	\$920.00
PID		Day	3	\$75.00	\$225.00
Helium Meter		Day	1	\$150.00	\$150.00
<b>Consultant Subcontractor Costs</b>					<b>\$12,390.00</b>
Driller - Vac Truck Mobilization		Mile	300	\$3.50	\$1,050.00
Driller - Vac Truck Daily Rate	Includes per diem for 2 man crew	Day	1	\$1,750.00	\$1,750.00
Driller - HSA Drill Rig Mobilization		Mile	300	\$5.50	\$1,650.00
Driller - HSA Drill Rig Daily Rate	Includes per diem for 2 man crew	Day	2	\$3,250.00	\$6,500.00
Driller - Start Cards		Each	8	\$65.00	\$520.00
Driller - Surface Hole Patch		Each	8	\$50.00	\$400.00
Driller - Soil/Water Drums		Each	8	\$65.00	\$520.00
<b>Chevron Direct-Bill Subcontractor Costs</b>					<b>\$9,400.00</b>
Waste Disposal Coordination		Lump Sum	1	\$3,000.00	\$3,000.00
Waste Transport and Disposal		Drum	8	\$100.00	\$800.00
Laboratory Analytical Services	Soil samples	Sample	24	\$150.00	\$3,600.00
Laboratory Analytical Services	4 Soil-vapor samples + 1 equipment blank	Sample	5	\$400.00	\$2,000.00
<b>Total</b>					<b>\$55,240.00</b>

<b>Summary of Alternative Costs</b>		
<b>Alternative 4 (MNA, Institutional Controls, and Future Property-Wide Excavation in Conjunction with Service Station Upgrades or Redevelopment)</b>		
	<b>Cost Components</b>	<b>Cost</b>
Task 1	Coordination/Management/Maintenance of Institutional Controls (20 Years)	\$72,080
Task 2	Monitoring of Natural Attenuation (20 Years)	\$392,000
Task 3	Excavation Planning and Permitting	\$55,650
Task 4	Excavation Implementation	\$817,435
Task 5	Reporting	\$12,480
Task 6	Post Remedy Groundwater Confirmation Sampling and Closure Management	\$69,080
<b>Total + 25% for taxes and contingency</b>		<b>\$1,773,406</b>

Notes: See task-specific cost estimates for additional details regarding each of the cost components for this alternative.

**Alternative 4 (MNA, Institutional Controls, and Future Property-Wide Excavation in Conjunction with Service Station Upgrades or Redevelopment)**

**Task 1 Coordination/Management/Maintenance of Institutional Controls (20 Years)**

Includes:

- Coordination of a restrictive covenant to prohibit groundwater use and place controls on subsurface activities on the active station property
- Coordination of soil management plans to establish soil handling measures for utility or other subsurface work in the adjacent right-of-ways
- Coordination financial assurance for future excavation

Assumptions:

- Costs assume one event to repair/replace damaged asphalt or concrete surface cover on the active station property
- Semiannual inspections and maintenance of asphalt and/or concrete surface cover on the active station property for a period of 20 years

Item	Description / Assumptions	Unit	Quantity	Unit Cost	Annual Total
<b>Consultant Labor</b>					<b>\$46,080.00</b>
	Principal Level Eng/Geo/Sci	Hour	24	\$130.00	\$3,120.00
	Senior Level Eng/Geo/Sci	Hour	80	\$110.00	\$8,800.00
	Project Level Eng/Geo/Sci	Hour	96	\$85.00	\$8,160.00
	Associate Level Eng/Geo/Sci	Hour	400	\$65.00	\$26,000.00
<b>Consultant Equipment</b>					<b>\$1,000.00</b>
	Field Vehicle	Day	8	\$125.00	\$1,000.00
<b>Consultant Subcontractor Costs</b>					<b>\$25,000.00</b>
	Paving Subcontractor	Lump Sum	1	\$25,000.00	\$25,000.00
<b>Total</b>					<b>\$72,080.00</b>

**Alternative 4 (MNA, Institutional Controls, and Future Property-Wide Excavation in Conjunction with Service Station Upgrades or Redevelopment)**

**Task 2 Monitoring of Natural Attenuation (20 Years)**

Includes:

- Consultant labor, equipment, and materials associated with groundwater sampling to monitor natural attenuation processes
- Consultant labor for groundwater monitoring coordination, data evaluation, report preparation, and project management

Assumptions:

Monitoring will be required for a period of 20 years prior to site redevelopment

Item	Description / Assumptions	Unit	Annual Quantity	# of Years	Unit Cost	Annual Total	Project Total
<b>Consultant Labor</b>						<b>\$9,600.00</b>	<b>\$192,000.00</b>
Principal Level Eng/Geo/Sci		Hour	8	20	\$130.00	\$1,040.00	\$20,800.00
Senior Level Eng/Geo/Sci		Hour	24	20	\$110.00	\$2,640.00	\$52,800.00
Project Level Eng/Geo/Sci		Hour	32	20	\$85.00	\$2,720.00	\$54,400.00
Associate Level Eng/Geo/Sci		Hour	32	20	\$65.00	\$2,080.00	\$41,600.00
Drafter		Hour	16	20	\$70.00	\$1,120.00	\$22,400.00
<b>Chevron Direct-Bill Subcontractor Costs</b>						<b>\$10,000.00</b>	<b>\$200,000.00</b>
Groundwater Sampling Subcontractor		Event	2	20	\$2,500.00	\$5,000.00	\$100,000.00
Lab - Groundwater Samples	10 semiannual samples	Sample	20	20	\$250.00	\$5,000.00	\$100,000.00
<b>Total</b>						<b>\$19,600.00</b>	<b>\$392,000.00</b>

**Alternative 4 (MNA, Institutional Controls, and Future Property-Wide Excavation in Conjunction with Service Station Upgrades or Redevelopment)**  
**Task 3 Excavation Planning and Permitting**

Includes:

- Preparation of work plan, contractor specifications, and HASP
- Preparation of SEPA and soil/erosion control permits
- Subcontractor coordination and pre-project safety planning

Assumptions:

- Level of effort for excavation planning and permitting is assumed to be greater than for alternatives 2 and 3 because it will require additional coordination with the redeveloper

Item	Description / Assumptions	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					
	Principal Level Eng/Geo/Sci	Hour	64	\$130.00	\$8,320
	Senior Level Eng/Geo/Sci	Hour	160	\$110.00	\$17,600
	Project Level Eng/Geo/Sci	Hour	160	\$85.00	\$13,600
	Associate Level Eng/Geo/Sci	Hour	160	\$65.00	\$10,400
	Drafter	Hour	64	\$70.00	\$4,480
<b>Consultant Equipment</b>					
	Field Vehicle	Day	2	\$125.00	\$250
<b>Other Costs</b>					
	Permit Fees	Lump Sum	1	\$1,000.00	\$1,000
<b>Total</b>					<b>\$55,650</b>

**Alternative 4 (MNA, Institutional Controls, and Future Property-Wide Excavation in Conjunction with Service Station Upgrades or Redevelopment)**

**Task 4 Excavation Implementation**

Includes:

- Consultant labor, equipment, travel, and materials associated with field oversight of excavation activities
- Subcontractor costs associated with excavation tasks, including;
  - Mobilization and site setup costs
  - Excavation and loading of overburden and impacted soil
  - Application of 4,000 pounds of ORC or equivalent product to be placed in excavation bottom
  - Labor, equipment, materials and subcontractors to backfill and compact excavation area
- Waste disposal coordination, transportation, and disposal by Chevron direct-bill subcontractors

Assumptions:

- Area to be excavated is approximately 13, 500 square feet
- Clean overburden soils from ground surface to 5 feet bgs
- Petroleum contaminated soil from 5 feet bgs to maximum excavation depth (12 feet bgs)
- Assume 1.6 tons per cubic yard of soil (in place)
- Estimated excavation and disposal of 3,500 cy or 5,600 tons of petroleum contaminated soil
- Estimated excavation and disposal of 2,500 cy or 4,000 tons of clean overburden soil
- Excavation to be performed during (5) 5-day weeks in the field

Item	Description / Assumptions	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$77,580.00</b>
Principal Level Eng/Geo/Sci		Hour	16	\$130.00	\$2,080.00
Senior Level Eng/Geo/Sci		Hour	100	\$110.00	\$11,000.00
Project Level Eng/Geo/Sci	Five 60-hour weeks in field	Hour	300	\$85.00	\$25,500.00
Associate Level Eng/Geo/Sci	Five 60-hour weeks in field for two staff	Hour	600	\$65.00	\$39,000.00
<b>Consultant Travel</b>					<b>\$11,525.00</b>
Lodging		Night	65	\$125.00	\$8,125.00
Per Diem		Day	85	\$40.00	\$3,400.00
<b>Consultant Equipment</b>					<b>\$12,000.00</b>
Field Vehicle		Day	35	\$125.00	\$4,375.00
Sampling Truck		Day	25	\$230.00	\$5,750.00
PID		Day	25	\$75.00	\$1,875.00
<b>Consultant Subcontractor Costs</b>					<b>\$375,330.00</b>
Project Manager		Hour	80	\$105.00	\$8,400.00
Health and Safety Manager		Hour	80	\$85.00	\$6,800.00
Foreman	5 weeks @ 60 hours per week + 20 hours planning	Hour	320	\$90.00	\$28,800.00
Operator	5 weeks @ 60 hours per week	Hour	300	\$85.00	\$25,500.00
Laborer	5 weeks @ 60 hours per week	Hour	300	\$70.00	\$21,000.00
Administrative Assistant		Hour	12	\$65.00	\$780.00
Per Diem - Meals		Day	75	\$40.00	\$3,000.00
Per Diem - Lodging		Night	60	\$125.00	\$7,500.00
Light Truck		Day	25	\$200.00	\$5,000.00
Service Truck		Day	25	\$300.00	\$7,500.00
Water Truck		Day	20	\$375.00	\$7,500.00
Excavator - 50,000 lb		Day	25	\$1,250.00	\$31,250.00
Excavator - 28,000 lb		Day	25	\$850.00	\$21,250.00
Compaction Plate Excavator		Day	15	\$250.00	\$3,750.00
Subcontractor - Compaction Testing		Lump Sum	1	\$7,500.00	\$7,500.00
Temporary Fence		Linear Ft.	600	\$3.00	\$1,800.00
Portable Toilet and Hand Wash		Week	5	\$100.00	\$500.00
Materials - Structural Fill (Delivered)		Ton	3,500	\$12.00	\$42,000.00
Materials - Crushed Rock (Delivered)		Ton	3,500	\$14.00	\$49,000.00
Materials - ORC		Pound	4,000	\$9.00	\$36,000.00
Construction Trailer Rental		Week	5	\$500.00	\$2,500.00
Overburden Transport & Disposal		Ton	4,000	\$7.00	\$28,000.00
Mobile Laboratory		Day	15	\$2,000.00	\$30,000.00
<b>Chevron Direct-Bill Subcontractor Costs</b>					<b>\$341,000.00</b>
Waste Disposal Coordination		Lump Sum	1	\$5,000.00	\$5,000.00
Waste Transport and Disposal	Transport and dispose of non-hazardous soil waste	Ton	5,600	\$60.00	\$336,000.00
<b>Total</b>					<b>\$817,435.00</b>

**Alternative 4 (MNA, Institutional Controls, and Future Property-Wide Excavation in Conjunction with Service Station Upgrades or Redevelopment)**  
**Task 5 Reporting**

Includes:  
 - Preparation of excavation summary report

Item	Description / Assumptions	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$12,480.00</b>
Principal Level Eng/Geo/Sci		Hour	8	\$130.00	\$1,040.00
Senior Level Eng/Geo/Sci		Hour	24	\$110.00	\$2,640.00
Project Level Eng/Geo/Sci		Hour	40	\$85.00	\$3,400.00
Associate Level Eng/Geo/Sci		Hour	40	\$65.00	\$2,600.00
Drafter		Hour	40	\$70.00	\$2,800.00
<b>Total</b>					<b>\$12,480.00</b>

**Alternative 4 (MNA, Institutional Controls, and Future Property-Wide Excavation in Conjunction with Service Station Upgrades or Redevelopment)**  
**Task 6 Post Remedy Groundwater Confirmation Sampling and Closure Management**

Includes:

- Installation of four new monitoring wells on the active station property, and performance of four quarters of post excavation groundwater monitoring to demonstrate compliance with groundwater cleanup levels
- HASP and work plan preparation, pre-project planning, and subcontractor coordination
  
- Consultant labor, equipment, travel, and subcontractor costs to install monitoring wells and collect post remedy soil confirmation samples
- Laboratory analysis of soil and groundwater samples
- Waste coordination, transport and disposal
- Data evaluation, summary report preparation, and site closure management

Assumptions:

- Costs assume a 3-day field effort for new well installation, with continuous oversight by two consultant staff
- All boring locations cleared to 8 feet bgs using air-knife/vac-truck rig

Item	Description / Assumptions	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					<b>\$26,240.00</b>
Principal Level Eng/Geo/Sci		Hour	24	\$130.00	\$3,120.00
Senior Level Eng/Geo/Sci		Hour	60	\$110.00	\$6,600.00
Project Level Eng/Geo/Sci		Hour	120	\$85.00	\$10,200.00
Associate Level Eng/Geo/Sci		Hour	80	\$65.00	\$5,200.00
Drafter		Hour	16	\$70.00	\$1,120.00
<b>Consultant Travel</b>					<b>\$740.00</b>
Lodging		Night	4	\$125.00	\$500.00
Per Diem		Day	6	\$40.00	\$240.00
<b>Consultant Equipment</b>					<b>\$1,290.00</b>
Field Vehicle		Day	3	\$125.00	\$375.00
Sampling Truck		Day	3	\$230.00	\$690.00
PID		Day	3	\$75.00	\$225.00
<b>Consultant Subcontractor Costs</b>					<b>\$15,810.00</b>
Driller - Vac Truck Mobilization		Mile	300	\$3.50	\$1,050.00
Driller - Vac Truck Daily Rate	Includes per diem for 2 man crew	Day	1	\$1,750.00	\$1,750.00
Driller - HSA Drill Rig Mobilization		Mile	300	\$5.50	\$1,650.00
Driller - HSA Drill Rig Daily Rate	Includes per diem for 2 man crew	Day	2	\$3,250.00	\$6,500.00
Driller - Start Cards		Each	4	\$65.00	\$260.00
Driller- 2" Well Materials	(4) 2"-diameter wells to 20 feet bgs	Foot	80	\$12.00	\$960.00
Driller - Flush Mount Well Box		Each	4	\$155.00	\$620.00
Driller - Soil/Water Drums		Each	8	\$65.00	\$520.00
Surveyor		Lump Sum	1	\$2,500.00	\$2,500.00
<b>Chevron Direct-Bill Subcontractor Costs</b>					<b>\$25,000.00</b>
Groundwater Sampling Subcontractor		Event	4	\$2,500.00	\$10,000.00
Waste Disposal Coordination		Lump Sum	1	\$3,000.00	\$3,000.00
Waste Transport and Disposal		Drum	8	\$100.00	\$800.00
Laboratory Analytical Services	Groundwater samples (4 quarters)	Sample	40	\$250.00	\$10,000.00
Laboratory Analytical Services	Soil samples	Sample	8	\$150.00	\$1,200.00
<b>Total</b>					<b>\$69,080.00</b>



<b>Summary of Alternative Costs</b>		
<b>Alternative 5 (Property-Wide Excavation, MNA, and Institutional Controls)</b>		
<b>Cost Components</b>		<b>Cost</b>
Task 1	Excavation Planning and Permitting	\$41,770
Task 2	Service Station Demolition and Excavation Implementation	\$892,000
Task 3	Service Station Reconstruction	\$1,000,000
Task 4	Reporting	\$12,480
Task 5	Monitoring of Natural Attenuation (5 Years)	\$98,000
Task 6	Coordination/Management/Maintenance of Institutional Controls (10 Years)	\$55,560
Task 7	Post Remedy Groundwater Confirmation Sampling and Closure Management	\$69,080
<b>Total + 25% for taxes and contingency</b>		<b>\$2,711,113</b>

Notes: See task-specific cost estimates for additional details regarding each of the cost components for this alternative.

**Alternative 5 (Property-Wide Excavation, MNA, and Institutional Controls)**

**Task 1 Excavation Planning and Permitting**

Includes:

- Preparation of work plan, contractor specifications, and HASP
- Preparation of SEPA and soil/erosion control permits
- Subcontractor coordination and pre-project safety planning

Item	Description / Assumptions	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					
Principal Level Eng/Geo/Sci		Hour	24	\$130.00	\$40,520
Senior Level Eng/Geo/Sci		Hour	120	\$110.00	\$3,120
Project Level Eng/Geo/Sci		Hour	160	\$85.00	\$13,200
Associate Level Eng/Geo/Sci		Hour	120	\$65.00	\$13,600
Drafter		Hour	40	\$70.00	\$7,800
<b>Consultant Equipment</b>					
Field Vehicle		Day	2	\$125.00	\$250
<b>Other Costs</b>					
Permit Fees		Lump Sum	1	\$1,000.00	\$1,000
<b>Total</b>					<b>\$41,770</b>

**Alternative 5 (Property-Wide Excavation, MNA, and Institutional Controls)  
Task 2 Service Station Demolition and Excavation Implementation**

Includes:

- Consultant labor, equipment, travel, and materials associated with field oversight of excavation activities
- Subcontractor costs associated with excavation tasks, including:
  - Mobilization and site setup costs
  - Demolition and disposal of service station infrastructure
  - Excavation and loading of overburden and impacted soil
  - Application of 4,000 pounds of ORC or equivalent product to be placed in excavation bottom
  - Labor, equipment, materials and subcontractors to backfill and compact excavation area
  - Waste disposal coordination, transportation, and disposal by Chevron direct-bill subcontractors

Assumptions:

- Area to be excavated is approximately 13, 500 square feet
- Clean overburden soils from ground surface to 5 feet bgs
- Petroleum contaminated soil from 5 feet bgs to maximum excavation depth (12 feet bgs)
- Assume 1.6 tons per cubic yard of soil (in place)
- Estimated excavation and disposal of 3,500 cy or 5,600 tons of petroleum contaminated soil
- Estimated excavation and disposal of 2,500 cy or 4,000 tons of clean overburden soil
- Demolition and excavation to be performed during (6) 5-day weeks in the field

Item	Description / Assumptions	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					
Principal Level Eng/Geo/Sci		Hour	24	\$130.00	\$3,120.00
Senior Level Eng/Geo/Sci		Hour	120	\$110.00	\$13,200.00
Project Level Eng/Geo/Sci	Six 60-hour weeks in field	Hour	360	\$85.00	\$30,600.00
Associate Level Eng/Geo/Sci	Six 60-hour weeks in field for 2 staff	Hour	720	\$65.00	\$46,800.00
Drafter		Hour		\$70.00	\$0.00
<b>Consultant Travel</b>					
Lodging		Night	78	\$125.00	\$9,750.00
Per Diem		Day	102	\$40.00	\$4,080.00
<b>Consultant Equipment</b>					
Field Vehicle		Day	42	\$125.00	\$5,250.00
Sampling Truck		Day	30	\$230.00	\$6,900.00
PID		Day	30	\$75.00	\$2,250.00
<b>Consultant Subcontractor Costs</b>					
Project Manager		Hour	88	\$105.00	\$9,240.00
Health and Safety Manager		Hour	88	\$85.00	\$7,480.00
Foreman	6 weeks @ 60 hours per week + 40 hours planning	Hour	400	\$90.00	\$36,000.00
Operator	6 weeks @ 60 hours per week	Hour	360	\$85.00	\$30,600.00
Laborer	6 weeks @ 60 hours per week	Hour	360	\$70.00	\$25,200.00
Administrative Assistant		Hour	12	\$65.00	\$780.00
Per Diem - Meals		Day	90	\$40.00	\$3,600.00
Per Diem - Lodging		Night	72	\$125.00	\$9,000.00
Light Truck		Day	30	\$200.00	\$6,000.00
Service Truck		Day	30	\$300.00	\$9,000.00
Water Truck		Day	20	\$375.00	\$7,500.00
Excavator - 50,000 lb		Day	30	\$1,250.00	\$37,500.00
Excavator - 28,000 lb		Day	30	\$850.00	\$25,500.00
Compaction Plate Excavator		Day	15	\$250.00	\$3,750.00
Subcontractor - Compaction Testing		Lump Sum	1	\$7,500.00	\$7,500.00
Temporary Fence		Linear Ft.	600	\$3.00	\$1,800.00
Portable Toilet and Hand Wash		Week	6	\$100.00	\$600.00
Materials - Structural Fill (Delivered)		Ton	3,500	\$12.00	\$42,000.00
Materials - Crushed Rock (Delivered)		Ton	3,500	\$14.00	\$49,000.00
Materials - ORC		Pound	4,000	\$9.00	\$36,000.00
Construction Trailer Rental		Week	6	\$500.00	\$3,000.00
Overburden Transport & Disposal		Ton	4,000	\$7.00	\$28,000.00
Demolition Debris Transport & Disposal		Lump Sum	1	\$20,000.00	\$20,000.00
Mobile Laboratory		Day	15	\$2,000.00	\$30,000.00
<b>Chevron Direct-Bill Subcontractor Costs</b>					
Waste Disposal Coordination		Lump Sum	1	\$5,000.00	\$5,000.00
Waste Transport and Disposal	Transport and dispose of non-hazardous soil waste	Ton	5,600	\$60.00	\$336,000.00
<b>Total</b>					
					<b>\$892,000.00</b>

**Alternative 5 (Property-Wide Excavation, MNA, and Institutional Controls)**

**Task 3 Service Station Reconstruction**

Includes:

- Chevron reimbursement to Tri-Tex for station reconstruction costs
- Installation of new USTs, dispensers, and construction of new station building

Assumptions:

Reimbursement valued based on service and gas station construction cost estimates for Washington State from Reed Construction Data ([www.reedconstructiondata.com](http://www.reedconstructiondata.com))

Item	Description / Assumptions	Unit	Quantity	Unit Cost	Total
Other Costs					\$1,000,000
Station Reconstruction Cost		Lump Sum	1	\$1,000,000.00	\$1,000,000
<b>Total</b>					<b>\$1,000,000</b>

**Alternative 5 (Property-Wide Excavation, MNA, and Institutional Controls)**

**Task 4 Reporting**

Includes:

- Preparation of excavation summary report

Item	Description / Assumptions	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					
Principal Level Eng/Geo/Sci		Hour	8	\$130.00	\$1,040.00
Senior Level Eng/Geo/Sci		Hour	24	\$110.00	\$2,640.00
Project Level Eng/Geo/Sci		Hour	40	\$85.00	\$3,400.00
Associate Level Eng/Geo/Sci		Hour	40	\$65.00	\$2,600.00
Drafter		Hour	40	\$70.00	\$2,800.00
<b>Total</b>					<b>\$12,480.00</b>

**Alternative 5 (Property-Wide Excavation, MNA, and Institutional Controls)**

**Task 5 Monitoring of Natural Attenuation (5 Years)**

**Includes:**

- Consultant labor, equipment, and materials associated with groundwater sampling to monitor natural attenuation processes
- Consultant labor for groundwater monitoring coordination, data evaluation, report preparation, and project management

**Assumptions:**

Monitoring will be required for a period of 5 years

Item	Notes	Unit	Annual Quantity	# of Years	Unit Cost	Annual Total	Project Total
<b>Consultant Labor</b>							
Principal Level Eng/Geo/Sci		Hour	8	5	\$130.00	\$9,600.00	\$48,000.00
Senior Level Eng/Geo/Sci		Hour	24	5	\$110.00	\$1,040.00	\$5,200.00
Project Level Eng/Geo/Sci		Hour	32	5	\$85.00	\$2,640.00	\$13,200.00
Associate Level Eng/Geo/Sci		Hour	32	5	\$65.00	\$2,720.00	\$13,600.00
Drafter		Hour	16	5	\$70.00	\$2,080.00	\$10,400.00
<b>Chevron Direct-Bill Subcontractor Costs</b>							
Groundwater Sampling Subcontractor		Event	2	5	\$2,500.00	\$10,000.00	\$50,000.00
Lab - Groundwater Samples	10 semiannual samples	Sample	20	5	\$250.00	\$5,000.00	\$25,000.00
<b>Total</b>						<b>\$19,600.00</b>	<b>\$98,000.00</b>

**Alternative 5 (Property-Wide Excavation, MNA, and Institutional Controls)**

**Task 6 Coordination/Management/Maintenance of Institutional Controls (10 Years)**

**Includes:**

- Coordination of a restrictive covenant to prohibit groundwater use and place controls on subsurface activities on the active station property
- Coordination of soil management plans to establish soil handling measures for utility or other subsurface work in the adjacent right-of-ways

**Assumptions:**

- Costs assume one event to repair/replace damaged asphalt or concrete surface cover on the active station property
- Semiannual inspections and maintenance of asphalt and/or concrete surface cover on the active station property for a period of 10 years

Item	Notes	Unit	Quantity	Unit Cost	Annual Total
Consultant Labor					\$29,560.00
Principal Level Eng/Geo/Sci		Hour	24	\$130.00	\$3,120.00
Senior Level Eng/Geo/Sci		Hour	48	\$110.00	\$5,280.00
Project Level Eng/Geo/Sci		Hour	96	\$85.00	\$8,160.00
Associate Level Eng/Geo/Sci		Hour	200	\$65.00	\$13,000.00
Consultant Equipment					\$1,000.00
Field Vehicle		Day	8	\$125.00	\$1,000.00
Consultant Subcontractor Costs					\$25,000.00
Paving Subcontractor		Lump Sum	1	\$25,000.00	\$25,000.00
<b>Total</b>					<b>\$55,560.00</b>

**Alternative 5 (Property-Wide Excavation, MNA, and Institutional Controls)  
Task 7 Post Remediation Groundwater Confirmation Sampling and Closure Management**

**Includes:**

- Installation of four new monitoring wells on the active station property, and performance of four quarters of post excavation groundwater monitoring to demonstrate compliance with groundwater cleanup levels
  - HASP and work plan preparation, pre-project planning, and subcontractor coordination
  - Consultant labor, equipment, travel, and subcontractor costs to install monitoring wells and collect post remediation soil confirmation samples
  - Laboratory analysis of soil and groundwater samples
  - Waste coordination, transport and disposal
  - Data evaluation, summary report preparation, and site closure management
- Assumptions:**
- Costs assume a 3-day field effort for new well installation, with continuous oversight by two consultant staff
  - All boring locations cleared to 8 feet bgs using air-knife/vac-truck rig

Item	Description / Assumptions	Unit	Quantity	Unit Cost	Total
<b>Consultant Labor</b>					
Principal Level Eng/Geo/Sci		Hour	24	\$130.00	\$3,120.00
Senior Level Eng/Geo/Sci		Hour	60	\$110.00	\$6,600.00
Project Level Eng/Geo/Sci		Hour	120	\$85.00	\$10,200.00
Associate Level Eng/Geo/Sci		Hour	80	\$65.00	\$5,200.00
Drafter		Hour	16	\$70.00	\$1,120.00
<b>Consultant Travel</b>					
Lodging		Night	4	\$125.00	\$500.00
Per Diem		Day	6	\$40.00	\$240.00
<b>Consultant Equipment</b>					
Field Vehicle		Day	3	\$125.00	\$375.00
Sampling Truck		Day	3	\$230.00	\$690.00
PID		Day	3	\$75.00	\$225.00
<b>Consultant Subcontractor Costs</b>					
Driller - Vac Truck Mobilization		Mile	300	\$3.50	\$1,050.00
Driller - Vac Truck Daily Rate	Includes per diem for 2 man crew	Day	1	\$1,750.00	\$1,750.00
Driller - HSA Drill Rig Mobilization		Mile	300	\$5.50	\$1,650.00
Driller - HSA Drill Rig Daily Rate		Day	2	\$3,250.00	\$6,500.00
Driller - Start Cards		Each	4	\$65.00	\$260.00
Driller- 2" Well Materials	(4) 2"-diameter wells to 20 feet bgs	Foot	80	\$12.00	\$960.00
Driller - Flush Mount Well Box		Each	4	\$155.00	\$620.00
Driller - Soil/Water Drums		Each	8	\$65.00	\$520.00
Surveyor		Lump Sum	1	\$2,500.00	\$2,500.00
<b>Chevron Direct-Bill Subcontractor Costs</b>					
Groundwater Sampling Subcontractor		Event	4	\$2,500.00	\$10,000.00
Waste Disposal Coordination		Lump Sum	1	\$3,000.00	\$3,000.00
Waste Transport and Disposal		Drum	8	\$100.00	\$800.00
Laboratory Analytical Services	Groundwater samples (4 quarters)	Sample	40	\$250.00	\$10,000.00
Laboratory Analytical Services	Soil samples	Sample	8	\$150.00	\$1,200.00
<b>Total</b>					
					<b>\$69,080.00</b>



**Arcadis U.S., Inc.**

1100 Olive Way

Suite 800

Seattle, Washington 98101

Tel 206 325 5254

Fax 206 325 8218

**[www.arcadis.com](http://www.arcadis.com)**