



Groundwater & Environmental Services, Inc.

1050 Corporate Boulevard, Suite C
Aurora, IL 60505

T. 866.455.2419

February 27, 2018

Mr. Binyoti Amungwafor
Wisconsin Department of Natural Resources
Bureau of Remediation & Redevelopment
2300 North Martin Luther King Jr Drive
Milwaukee, Wisconsin 53212

**Re: Work Plan / Cost Estimate
CITGO Milwaukee Terminal
9235 North 107th Street
Milwaukee, Wisconsin
BRRTS No. 03-41-001622
PECFA No. 53224-1101-35**

Dear Mr. Amungwafor:

Groundwater & Environmental Services, Inc. (GES) on behalf of CITGO Petroleum Corporation (CITGO) has prepared this *Work Plan/Cost Estimate* for the above-referenced site. The scope of work consists of conducting an annual groundwater monitoring event for 2017. The total cost estimate is \$3,004.32.

Groundwater Monitoring

During the groundwater monitoring event, GES will collect samples from six monitoring wells (MW-101, MW-103 through MW-105, MW-112, and MW-113) and three piezometers (PZ-101, PZ-113 and PZ-114). A duplicate sample will be taken from monitoring wells MW-101 and MW-103 for quality control. Groundwater samples will be submitted to Pace Analytical Services, LLC (Pace) of Green Bay, Wisconsin for analysis of petroleum volatile organic compounds (PVOCs) utilizing United States Environmental Protection Agency (USEPA) Method 8260B. In addition, GES will gauge six monitoring wells (MW-101, MW-103 through MW-105, MW-112, and MW-113) and three piezometers (PZ-101, PZ-113 and PZ-114) for the presence of liquid-phase hydrocarbons (LPH).

Reporting

A *Work Plan/Cost Estimate* and Agency correspondence has been completed in the generation of this submittal. Groundwater analytical laboratory results from the groundwater monitoring event will be provided in a *Groundwater Monitoring Report*. Additionally, a subsequent *Work Plan/Cost Estimate* and *Reimbursement Claim* will be completed.



Total Cost Estimate: \$3,004.32

Enclosed, please find a Usual and Customary (U&C) Standardized Invoice for the groundwater monitoring costs. Should you have any questions or concerns regarding this submittal, please contact the undersigned at averbick@gesonline.com or at (866) 455-2419 extension 4042.

Sincerely,

A handwritten signature in cursive script that reads "Amber L. Verbick". The signature is written in black ink and is positioned above the typed name.

Amber L. Verbick
Senior Project Manager

Encl: U&C Standardized Invoice

Cc: CITGO Petroleum Company, Mr. Scott Buckner, 2316 Terminal Drive, Arlington Heights, Illinois 60005

Usual and Customary Standardized Invoice #22

July 2017 - December 2017



PECFA #: 53224-1101-35
 BRRT's #: 03-41-001622
 Site Name: Citgo Milwaukee Terminal
 Site Address: 9235 North 107th Street

Vendor Name: Groundwater & Environmental Services, Inc.
 Invoice #: _____
 Invoice Date: _____
 Check #: _____

U&C Total \$ 3,004.32
 Variance to U&C Total \$ -
 Grand Total \$ 3,004.32

TASK	TASK DESCRIPTION	SERVICES	ACTIVITY CODE	ACTIVITY REFERENCE CODE DESCRIPTION	UNIT	MAX UNIT COST	UNITS	TOTAL MAX
1	GW Sampling		GS05	Sample Collection	Well	\$ 72.45	9	\$ 652.05
1	GW Sampling		GS10	Incremental Sample Collection (natural attenuation)	Well	\$ 47.67		\$ -
1	GW Sampling		GS15	Incremental Sample Collection (cadmium & lead)	Well	\$ 26.25		\$ -
1	GW Sampling		GS20	Measure Water Levels (for wells not being sampled)	Well	\$ 14.70		\$ -
1	GW Sampling		GS25	Primary Mob/Demob	Site	\$ 628.11	1	\$ 628.11
1	GW Sampling		GS30	Temporary Well Abandonment	Well	\$ 26.99		\$ -
2	O & M Reporting		OMR05	Annual GW Monitoring (Form 4400-194)	Report	\$ 823.73	1	\$ 823.73
2	O & M Reporting		OMR10	Annual GW Monitoring (Form 4400-194) with LNAPL Removal per RR-628	Report	\$ 1,040.45		\$ -
3	LNAPL Assessment & Removal		LAR05	Removal Activity (Limited to 12 per site)	Well	\$ 47.67		\$ -
3	LNAPL Assessment & Removal		LAR06	LNAPL Sample Collection (1 per site)	Site	\$ 20.58		\$ -
3	LNAPL Assessment & Removal		LAR10	Primary Mob/Demob	Site	\$ 518.07		\$ -
4	Waste Disposal	Consultant	WD05	Consultant Coordination	Site	\$ 137.13		\$ -
4	Waste Disposal	Commodity	WD10	GW Sample and/or Purge	Drum	\$ 42.11		\$ -
4	Waste Disposal	Commodity	WD15	Drill Cuttings	Drum	\$ 108.15		\$ -
4	Waste Disposal	Commodity	WD17	Landfill Environmental Fee (provide documentation)	ACTUAL COST			
4	Waste Disposal	Commodity	WD20	Free Product	Drum	\$ 118.76		\$ -
4	Waste Disposal	Commodity	WD25	Primary Mob/Demob	Site	\$ 287.70		\$ -
5	Closure Request		CR05	Primary Closure Request	Submittal	\$ 2,700.00		\$ -
5	Closure Request		CR10	Closure Request with LNAPL Reporting (incremental to CR05)	Submittal	\$ 1,151.75		\$ -
5	Closure Request		CR15	GIS Packet Submittal (For Source Property only)	Packet	\$ 507.36		\$ -
5	Closure Request		CR20	GIS Packet Submittal (For off-site Properties only)	Per Additional Property	\$ 222.71		\$ -
6	Letter Report/Addendum		LRA05	Letter Report/Addendum	Letter	\$ 1,039.29		\$ -

TASK	TASK DESCRIPTION	SERVICES	ACTIVITY CODE	ACTIVITY REFERENCE CODE DESCRIPTION	UNIT	MAX UNIT COST	UNITS	TOTAL MAX
7	Regulatory Correspondence		RC05	Regulatory Correspondence	Letter/Status Update	\$ 128.94		\$ -
8	Well Abandonment	Consultant	WAB05	Coordination	Site	\$ 162.86		\$ -
8	Well Abandonment	Consultant	WAB10	Water column < 30 ft	Ft	\$ 2.52		\$ -
8	Well Abandonment	Consultant	WAB15	Water column > 30 ft (requires pumping [s. NR 141.25 (2) (d)])	Ft	\$ 8.82		\$ -
8	Well Abandonment	Consultant	WAB20	Bentonite Pellets (50lb bag - 1/4" pellet)	Bag	\$ 10.82		\$ -
8	Well Abandonment	Consultant	WAB25	Portland Cement (94lb bag)	Bag	\$ 8.19		\$ -
8	Well Abandonment	Consultant	WAB30	Primary Mob/Demob	Site	\$ 362.25		\$ -
8	Well Abandonment	Commodity	WAB35	Well Abandonment Mob/Demob	Site	\$ 412.55		\$ -
8	Well Abandonment	Commodity	WAB40	Well Abandonment (2 inch)	Ft	\$ 5.57		\$ -
8	Well Abandonment	Commodity	WAB45	Well Abandonment (4 inch)	Ft	\$ 6.51		\$ -
8	Well Abandonment	Commodity	WAB50	Well Abandonment (6 inch)	Ft	\$ 7.98		\$ -
9	Investigation Workplan Preparation		IWP05	Investigation Workplan Preparation	Report	\$ 1,451.63		\$ -
10	Initial Site Survey	Consultant	IS05	Coordination of Initial Site Survey (teatures + well elevations)	Survey	\$ 117.18		\$ -
10	Initial Site Survey	Consultant	IS10	Subsequent Surveys	Well	\$ 110.15		\$ -
10	Initial Site Survey	Commodity	IS15	Initial Survey	Survey	\$ 1,171.70		\$ -
11	Potable Well Field Reconnaissance		PWFR05	Potable Well Field Reconnaissance	Site	\$ 583.50		\$ -
12	Direct Push	Consultant	DP05	0 - 24 ft bgs W/ Continuous Soil Sampling	Ft	\$ 5.36		\$ -
12	Direct Push	Consultant	DP10	> 24 ft bgs W/ Continuous Soil Sampling	Ft	\$ 5.99		\$ -
12	Direct Push	Consultant	DP15	GW Profiling (No Soil Sampling)	Ft	\$ 2.31		\$ -
12	Direct Push	Consultant	DP20	GW Sample Collection	Each	\$ 36.10		\$ -
12	Direct Push	Consultant	DP25	Temporary Well Installation	Each	\$ 49.90		\$ -
12	Direct Push	Consultant	DP30	Primary Mob/Demob	Site	\$ 512.10		\$ -
12	Direct Push	Commodity	DP35	0 - 24 ft bgs W/ Continuous Soil Sampling	Ft	\$ 6.93		\$ -
12	Direct Push	Commodity	DP40	> 24 ft bgs W/ Continuous Soil Sampling	Ft	\$ 9.03		\$ -
12	Direct Push	Commodity	DP45	GW Profiling (no soil sampling)	Ft	\$ 6.51		\$ -
12	Direct Push	Commodity	DP50	GW Sample Collection (cost for tubing)	Ft	\$ 0.42		\$ -
12	Direct Push	Commodity	DP55	Expendable Drive Point	Each	\$ 14.49		\$ -
12	Direct Push	Commodity	DP60	Borehole Abandonment	Ft	\$ 1.26		\$ -
12	Direct Push	Commodity	DP65	Concrete Penetration	Each	\$ 20.10		\$ -
12	Direct Push	Commodity	DP70	GW Sample Collection	Each	\$ 39.27		\$ -
12	Direct Push	Commodity	DP75	Temporary Well Installation	Ft	\$ 5.25		\$ -
12	Direct Push	Commodity	DP80	Mob/Demob (Includes decon)	Site	\$ 526.05		\$ -

TASK	TASK DESCRIPTION	SERVICES	ACTIVITY CODE	ACTIVITY REFERENCE CODE DESCRIPTION	UNIT	MAX UNIT COST	UNITS	TOTAL MAX
13.a	Drilling In Unconsolidated Soils - With Soil Sampling	Consultant	DR05	0 - 25 ft bgs	Ft	\$ 5.40	\$ -	-
13.a	Drilling In Unconsolidated Soils - With Soil Sampling	Consultant	DR10	26 - 50 ft bgs	Ft	\$ 5.67	\$ -	-
13.a	Drilling In Unconsolidated Soils - With Soil Sampling	Consultant	DR15	51 - 75 ft bgs	Ft	\$ 7.30	\$ -	-
13.a	Drilling In Unconsolidated Soils - With Soil Sampling	Consultant	DR20	Primary Mob/Demob	Site	\$ 593.04	\$ -	-
13.b	Drilling In Unconsolidated Soils - Without Soil And/Or GW Sampling	Consultant	DR25	Consultant Oversight	Ft	\$ 1.58	\$ -	-
13.b	Drilling In Unconsolidated Soils - Without Soil And/Or GW Sampling	Consultant	DR30	Primary Mob/Demob	Site	\$ 505.16	\$ -	-
13.c	Drilling In Bedrock	Consultant	DR35	Consultant Oversight	Ft	\$ 6.20	\$ -	-
13.c	Drilling In Bedrock	Consultant	DR40	Primary Mob/Demob	Site	\$ 593.04	\$ -	-
13.d	Drilling In Unconsolidated Soils - With Soil Sampling	Commodity	DR45	0 - 25 ft bgs	Ft	\$ 16.70	\$ -	-
13.d	Drilling In Unconsolidated Soils - With Soil Sampling	Commodity	DR50	26 - 50 ft bgs	Ft	\$ 18.38	\$ -	-
13.d	Drilling In Unconsolidated Soils - With Soil Sampling	Commodity	DR55	51 - 75 ft bgs	Ft	\$ 21.53	\$ -	-
13.e	Drilling In Unconsolidated Soils - Without Soil And/Or GW Sampling	Commodity	DR60	Drilling in Unconsolidated Soils	Ft	\$ 11.97	\$ -	-
13.f	Drilling In Bedrock	Commodity	DR65	Drilling in Bedrock	Ft	\$ 33.18	\$ -	-
13.f	Drilling In Bedrock	Commodity	DR70	Bedrock Drilling Setup Charge	Each	\$ 162.02	\$ -	-
13.f	Drilling In Bedrock	Commodity	DR75	Air Compressor	Day	\$ 426.41	\$ -	-
14	Monitoring Well Installation	Consultant	MWI05	0 - 25 ft bgs	Ft	\$ 3.89	\$ -	-
14	Monitoring Well Installation	Consultant	MWI10	26 - 75 ft bgs	Ft	\$ 2.73	\$ -	-
14	Monitoring Well Installation	Commodity	MWI15	2 inch PVC Casing	Ft	\$ 16.70	\$ -	-
14	Monitoring Well Installation	Commodity	MWI20	Well Development	Well	\$ 147.63	\$ -	-
14	Monitoring Well Installation	Commodity	MWI25	Mob/Demob (For development of grout or slurry sealed wells	Site	\$ 548.63	\$ -	-
15	Misc. Drilling Activities & Supplies		MDT05	Drill Rig Mob/Demob	Mob/Demob	\$ 963.38	\$ -	-
15	Misc. Drilling Activities & Supplies		MDT10	Well Cover/flushmount	Each	\$ 202.65	\$ -	-
15	Misc. Drilling Activities & Supplies		MDT15	Stickup Well Cover	Each	\$ 163.91	\$ -	-
15	Misc. Drilling Activities & Supplies		MDT20	Bumper Guard Posts	Each	\$ 69.30	\$ -	-
15	Misc. Drilling Activities & Supplies		MDT21	Drum, 55 gal. DOT steel	Each	\$ 55.13	\$ -	-
15	Misc. Drilling Activities & Supplies		MDT25	Commodity Service Provider Per Diem (drilling and direct push)	Person	\$ 203.28	\$ -	-
15	Misc. Drilling Activities & Supplies		MDT30	Well Repair	Well	\$ 84.42	\$ -	-

TASK	TASK DESCRIPTION	SERVICES	ACTIVITY CODE	ACTIVITY REFERENCE CODE DESCRIPTION	UNIT	MAX UNIT COST	UNITS	TOTAL MAX
15	Misc. Drilling Activities & Supplies		MDT35	Borehole Abandonment	Foot	\$ 5.46		\$ -
15	Misc. Drilling Activities & Supplies		MDT40	Concrete Penetration	Each	\$ 72.87		\$ -
15	Misc. Drilling Activities & Supplies		MDT41	Private Utility Locate	Each	\$ 117.18		\$ -
15	Misc. Drilling Activities & Supplies		MDT45	Padlocks	Each	\$ 7.98		\$ -
16	Hand Auger Boring		HA05	Hand Augering	Boring	\$ 89.99		\$ -
16	Hand Auger Boring		HA10	Primary Mob/Demob	Site	\$ 555.56		\$ -
17	Surface Soil/Sediment/Water Sampling		SSWS05	Sampling	Sample Location	\$ 21.53		\$ -
17	Surface Soil/Sediment/Water Sampling		SSWS10	Primary Mob/Demob	Site	\$ 452.45		\$ -
18	Vapor Screening		VS05	Vapor Screening	Site	\$ 212.42		\$ -
19	Hydraulic Conductivity Testing		HCT05	Hydraulic Conductivity Testing	Well	\$ 58.59		\$ -
19	Hydraulic Conductivity Testing		HCT10	Primary Mob/Demob	Site	\$ 652.79		\$ -
20	Soil Boring/Monitoring Well Permits		SBMWP05	Soil Boring/Monitoring Well Permit	Permit	\$ 246.12		\$ -
20	Soil Boring/Monitoring Well Permits		SBMWP10	Permit Fee (copy of permit & fee receipt required)	Permit Fee			
21	Access Agreements		AA05	Access Agreements	Property	\$ 401.94		\$ -
22	Soil Investigation Report		SIR05	Soil Investigation Report	Report	\$ 3,330.92		\$ -
23	Soil And GW Investigation Report		SGIR05	Soil and GW Investigation Report	Report	\$ 4,965.35		\$ -
24	Limited Soil Excavation	Consultant	LSE05	Consultant Oversight for Limited Soil Excavation	Ton	\$ 4.94		\$ -
24	Limited Soil Excavation	Consultant	LSE10	Primary Mob/Demob	Site	\$ 831.92		\$ -
24	Limited Soil Excavation	Commodity	LSE13	Laboratory (see task 24 total on Lab Schedule)	Lab Schedule		0	\$ -
24	Limited Soil Excavation	Commodity	LSE15	Limited Soil Excavation	Ton	\$ 60.00		\$ -
24	Limited Soil Excavation	Commodity	LSE16	Landfill Environmental Fee (provide documentation)	ACTUAL COST			
25	Remediation System Shut Down		SSD05	Permanent	Site	\$ 1,095.47		\$ -
25	Remediation System Shut Down		SSD10	Temporary	Site	\$ 329.28		\$ -
25	Remediation System Shut Down		SSD15	Primary Mob/Demob	Site	\$ 473.55		\$ -
26	Site Specific RCL Calculations For Direct Contact Risk		SSRCL05	SSRCL Calculations	Site	\$ 386.72		\$ -
27	Claim Submittal		CS05	Claim Submittal	Claim	\$ 585.90	1	\$ 585.90
28	Standardized Invoice		BS05	Standardized Invoice	Invoice	\$ 17.64	1	\$ 17.64
29	Occurrence Classification		OC05	Occurrence Classification	Letter/Status Update	\$ 125.37		\$ -
30	Meeting With Regulators		MR05	Meeting with Regulators	Meeting	\$ 349.23		\$ -
31	Consultant Overnight Per Diem		COPD05	Overnight	Night	\$ 113.72		\$ -
32	Deed Restriction Preparation		DRP05	Deed Restriction Preparation	Deed	\$ 178.19		\$ -
33	Schedule Of Laboratory Maximums	Commodity		Laboratory (see task 33 total on Lab Schedule)	Lab Schedule		11	\$ 296.89

Usual and Customary Standardized Invoice #22

July 2017 - December 2017



RR-083A

TOTAL LAB CHARGES ##### TASK 33 11 ##### TASK 24 0 \$ -

MATRIX	REF CODE	REIMBURSABLE ANALYTE	UNITS	MAX COST	SAMPLES	TOTAL	MAX COST	SAMPLES	TOTAL	
AIR	A1	Benzene	SAMPLE	\$ 44.94		\$ -				
AIR	A2	BETX	SAMPLE	\$ 49.46		\$ -				
AIR	A3	GRO	SAMPLE	\$ 46.10		\$ -				
AIR	A4	VOC's	SAMPLE	\$ 71.93		\$ -				
WATER	W1	GRO/PVOC	SAMPLE	\$ 29.19		\$ -				
WATER	W2	PVOC	SAMPLE	\$ 26.99	11	\$ 296.89				
WATER	W3	PVOC + 1,2 DCA	SAMPLE	\$ 43.79		\$ -				
WATER	W4	PVOC + Naphthalene	SAMPLE	\$ 30.35		\$ -				
WATER	W5	VOC	SAMPLE	\$ 71.93		\$ -				
WATER	W6	PAH	SAMPLE	\$ 72.98		\$ -				
WATER	W7	Lead	SAMPLE	\$ 12.39		\$ -				
WATER	W8	Cadmium	SAMPLE	\$ 13.55		\$ -				
WATER	W9	Hardness	SAMPLE	\$ 12.39		\$ -				
WATER	W10	BOD, Total	SAMPLE	\$ 23.63		\$ -				
WATER	W11	Nitrate	SAMPLE	\$ 11.24		\$ -				
WATER	W12	Total Kjeldahl	SAMPLE	\$ 20.27		\$ -				
WATER	W13	Ammonia	SAMPLE	\$ 16.91		\$ -				
WATER	W14	Sulfate	SAMPLE	\$ 10.19		\$ -				
WATER	W15	Iron	SAMPLE	\$ 10.19		\$ -				
WATER	W16	Manganese	SAMPLE	\$ 10.19		\$ -				
WATER	W17	Alkalinity	SAMPLE	\$ 10.19		\$ -				
WATER	W18	methane	SAMPLE	\$ 46.10		\$ -				
WATER	W19	Phosphorous	SAMPLE	\$ 18.06		\$ -				
WATER	W20	VOC Method 524.2	SAMPLE	\$ 176.30		\$ -				
WATER	W21	EDB Method 504	SAMPLE	\$ 95.45		\$ -				
SOILS	S1	GRO	SAMPLE	\$ 24.78		\$ -	\$ 24.78		\$ -	
SOILS	S2	DRO	SAMPLE	\$ 30.35		\$ -	\$ 30.35		\$ -	
SOILS	S3	GRO/PVOC	SAMPLE	\$ 28.14		\$ -	\$ 28.14		\$ -	
SOILS	S4	PVOC	SAMPLE	\$ 25.83		\$ -	\$ 25.83		\$ -	
SOILS	S5	PVOC + 1,2 DCA + Naphthalene	SAMPLE	\$ 49.46		\$ -	\$ 49.46		\$ -	
SOILS	S6	PVOC + Naphthalene	SAMPLE	\$ 36.02		\$ -	\$ 36.02		\$ -	
SOILS	S7	VOC	SAMPLE	\$ 71.93		\$ -	\$ 71.93		\$ -	
SOILS	S8	SPLP Extraction VOC only	SAMPLE	\$ 50.61		\$ -	\$ 50.61		\$ -	
SOILS	S9	PAH	SAMPLE	\$ 72.98		\$ -	\$ 72.98		\$ -	
SOILS	S10	Lead	SAMPLE	\$ 12.39		\$ -	\$ 12.39		\$ -	
SOILS	S11	Cadmium	SAMPLE	\$ 14.60		\$ -				
SOILS	S12	Free Liquid	SAMPLE	\$ 11.24		\$ -				
SOILS	S13	Flash Point	SAMPLE	\$ 25.83		\$ -				
SOILS	S14	Grain Size - dry	SAMPLE	\$ 42.74		\$ -				
							TASK 24 TOTAL	\$	-	

MATRIX	REF CODE	REIMBURSABLE ANALYTE	UNITS	MAX COST	SAMPLES	TOTAL	MAX COST	SAMPLES	TOTAL
SOILS	S15	Grain Size - wet	SAMPLE	\$ 57.33		\$ -			
SOILS	S16	Bulk Density	SAMPLE	\$ 13.55		\$ -			
SOILS	S17	Permeability	SAMPLE	\$ 41.58		\$ -			
SOILS	S18	Nitrogen as Total Kjeldahl	SAMPLE	\$ 20.27		\$ -			
SOILS	S19	Nitrogen as Ammonia	SAMPLE	\$ 16.91		\$ -			
SOILS	S20	% Organic Matter	SAMPLE	\$ 29.19		\$ -			
SOILS	S21	TOC as NPOC	SAMPLE	\$ 57.33		\$ -			
SOILS	S22	Soil Moisture Content	SAMPLE	\$ 6.83		\$ -			
SOILS	S23	Air Filled Porosity	SAMPLE	\$ 25.83		\$ -			
SOILS	S24	% Total Solids	SAMPLE	\$ 6.83		\$ -			
SOILS	S25	Field Capacity	SAMPLE	\$ 28.14		\$ -			
SOILS	S26	TCLP Lead	SAMPLE	\$ 83.16		\$ -			
SOILS	S27	Cation Exchange (Ca, MG, & K)	SAMPLE	\$ 26.99		\$ -			
SOILS	S28	TCLP Cadmium	SAMPLE	\$ 83.16		\$ -			
SOILS	S29	TCLP Benzene	SAMPLE	\$ 83.16		\$ -			
		Viscosity + Density							
LNAPL	LFPS01	Interfacial tension I (LNAPL/water [dyne/cm])	SAMPLE	\$ 561.33		\$ -			
		Interfacial tension II (LNAPL/air [dyne/cm])							
		Interfacial tension III (water/air [dyne/cm])							
TASK 33 TOTAL						\$ 296.89			