Missouri Department of
Natural Resources

Development of Exposure Model and Exposure Domains

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Land Use And Complete Pathways

- On-site land use current and future
- Off-site land use current and future
- Human and ecological receptors
- Exposure pathways and route of exposure
- An Activity Use and Limitation (AUL) can be utilized to eliminate potential future complete pathways.

Calculation of Representative Concentrations

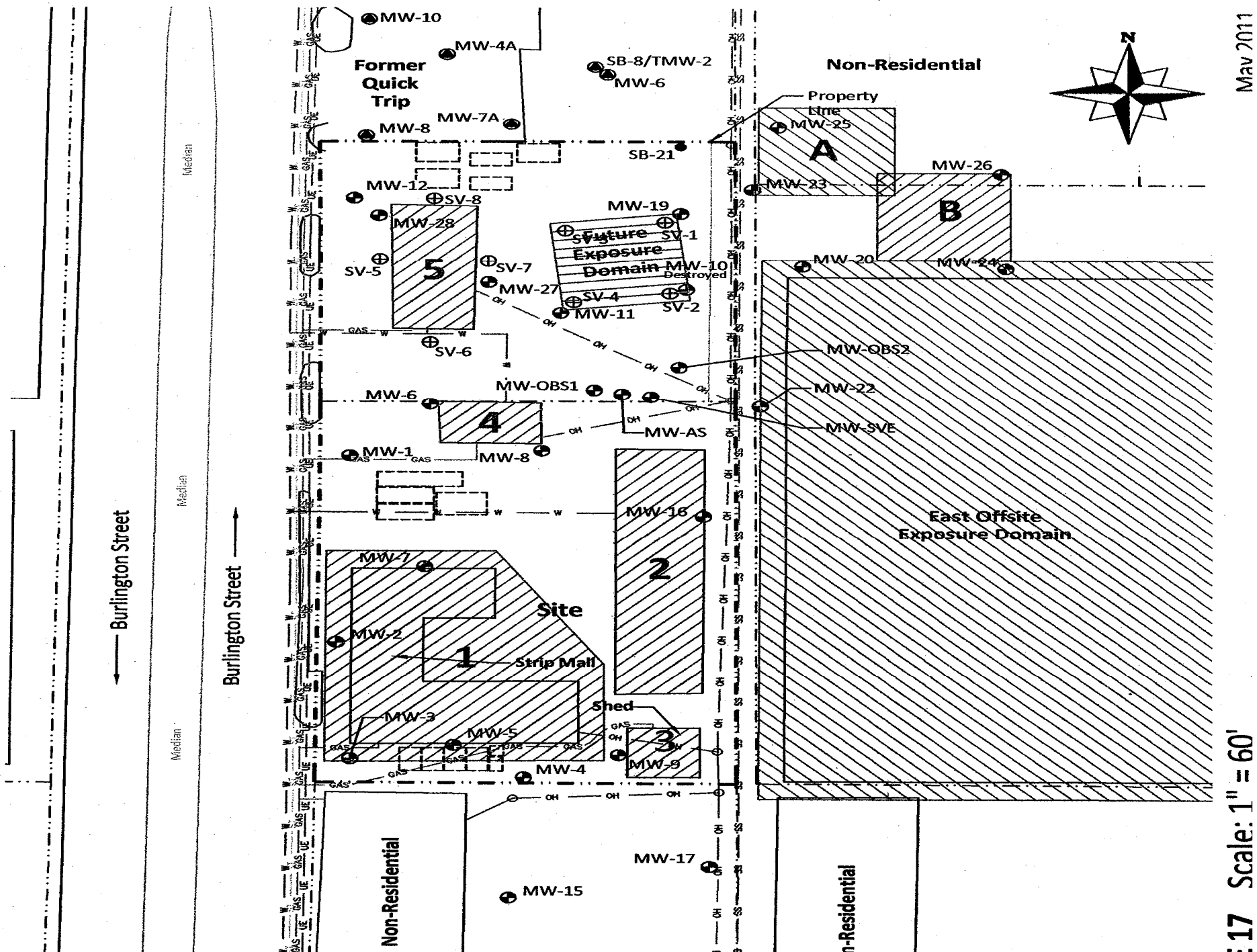
- Calculate the representative concentrations of each complete pathway: one for soil and one for groundwater.
- The representative concentrations of subsurface soil is determined by averaging all soil samples collected from the vadose zone.
- The representative concentrations of groundwater is determined by averaging the data collected over time.

Comparison of Representative Concentrations

- Compare the representative concentrations of each complete pathway with the applicable Tier 1 risk-based target levels to determine any exceedences.
- Compare the representative concentrations of each pathway that exceeds the Tier 1 RBTLs with the applicable Tier 2 site specific target levels only if needed.

Development of Risk Management Plan

- Develop a risk management plan to address exceedences to the Tier 2 SSTLs or submit a proposal for the next course of action.
- Plume stability determination begins when corrective action activities are completed.


Former Quick Trip
Non-Residential
Property Line
Burlington Street
Median
Site
Strip Mall
Shed
Future Exposure Domain
East Offsite Exposure Domain
Destroyed
MW-10
MW-4A
SB-8/TMW-2
MW-6
MW-7A
MW-8
SB-21
MW-25
MW-26
MW-23
MW-12
SV-8
MW-19
SV-1
MW-28
SV-5
SV-7
MW-27
SV-4
MW-11
SV-2
MW-20
MW-24
SV-6
MW-OBS2
MW-OBS1
MW-22
MW-AS
MW-SVE
MW-1
MW-16
MW-7
MW-2
MW-3
MW-5
MW-4
MW-9
MW-17
MW-15
A
B
1
2
3
4
5
N
May 2011
Scale: 1" = 60'

EXPOSURE MODEL - ON-SITE RESIDENT (CHILD, ADULT AND AGE-ADJUSTED INDIVIDUAL)

Tier 1-11 (1)

SITE NO.: SUBMITTAL DATE: 11/17/2008, updated April 2011 PREPARED BY:

ROUTES OF EXPOSURE	CURRENT CONDITIONS			FUTURE CONDITIONS		
	C/NC*	JUSTIFICATION FOR C/NC (MANDATORY)	REPRESENTATIVE CONCENTRATION BASED ON (List borings/ wells)	C/NC*	JUSTIFICATION FOR C/NC (MANDATORY)	REPRESENTATIVE CONCENTRATION BASED ON (List borings/ wells)
SURFICIAL SOIL						
Outdoor inhalation of vapors and particulate matter, ingestion, and dermal contact with surficial soil	NC	*Site is currently non-residential, no surficial soil contamination was observed.*		NC	*RAFU will remain non-residential. Future zoning/redevelopment plans for the property are for non-residential use.*	
SUBSURFACE SOIL						
Indoor inhalation of vapors	NC	*Non-residential property in industrial area*		NC	*RAFU will remain non-residential. Future zoning/redevelopment plans for the property are for non-residential use.*	
GROUNDWATER						
Indoor inhalation of vapors	NC	*Non-residential property in industrial area*		NC	*RAFU will remain non-residential. Future zoning/redevelopment plans for the property are for non-residential use.*	
Dermal Contact with water	NC	*Groundwater elevations at depths greater than 10 feet bgs.*		NC	*Groundwater elevations at depths greater than 10 feet bgs.*	
Current Drinking Water Well	NC	*Site and surrounding properties are currently supplied public drinking water*		NC	*Non-residential property in industrial area. Availability of public water supply at reasonable cost makes it unlikely that future wells will be installed.*	

NOTE:

* C : Complete Pathway; NC : Not Complete

EXPOSURE MODEL - OFF-SITE RESIDENT (CHILD, ADULT AND AGE-ADJUSTED INDIVIDUAL)

Tier 1-11 (2)

SITE NO.: | SUBMITTAL DATE: 11/17/2008, updated April 2011 | PREPARED BY: !

ROUTES OF EXPOSURE	CURRENT CONDITIONS			FUTURE CONDITIONS		
	C/NC*	JUSTIFICATION FOR C/NC (MANDATORY)	REPRESENTATIVE CONCENTRATION BASED ON (List borings/ wells)	C/NC*	JUSTIFICATION FOR C/NC (MANDATORY)	REPRESENTATIVE CONCENTRATION BASED ON (List borings/ wells)
SURFICIAL SOIL						
Outdoor inhalation of vapors and particulate matter, ingestion, and dermal contact with surficial soil	NC	*No surficial soil impacts observed*		NC	*No surficial soil impacts observed*	
SUBSURFACE SOIL						
Indoor inhalation of vapors	NC	*Industrial, non-residential area*		C	*RAFU for east adjoining properties will likely remain non-residential. However, zoning/redevelopment plans will allow east adjoining property to be used for mixed use. RAFU for the North and south properties will remain non-residential with future zoning/redevelopment for non-residential use.*	*MW-23, MW-24, MW-25, MW-26*
GROUNDWATER						
Indoor inhalation of vapors	NC	*Industrial, non-residential area*		c	*RAFU for east adjoining properties will likely remain non-residential. However, zoning/redevelopment plans will allow east adjoining property to be used for mixed use. RAFU for the North and south properties will remain non-residential with future zoning/redevelopment for non-residential use.*	*MW-23, MW-24, MW-25, MW-26*
Dermal Contact with water	NC	*Groundwater elevations at depths greater than 10 feet bgs.*		NC	*Groundwater elevations at depths greater than 10 feet bgs.*	
Current Drinking Water Well	NC	*Site and surrounding properties currently supplied public drinking water*		NC	*Availability of public water supply at reasonable cost makes it unlikely that future wells will be installed.*	

NOTE:
* C : Complete Pathway; NC : Not Complete

EXPOSURE MODEL - OFF-SITE NON-RESIDENT

Tier 1-11 (4)

SITE NO.:

SUBMITTAL DATE: 11/17/2008, updated April 2011

PREPARED BY:

ROUTES OF EXPOSURE	CURRENT CONDITIONS			FUTURE CONDITIONS		
	C/NC*	JUSTIFICATION FOR C/NC (MANDATORY)	REPRESENTATIVE CONCENTRATION BASED ON (List borings/ wells)	C/NC*	JUSTIFICATION FOR C/NC (MANDATORY)	REPRESENTATIVE CONCENTRATION BASED ON (List borings/ wells)
SURFICIAL SOIL						
Outdoor inhalation of vapors and particulate matter, ingestion, and dermal contact with surficial soil	NC	*Depth of impacts make pathway incomplete*		NC	*Depth of impacts make pathway incomplete*	
SUBSURFACE SOIL						
Indoor inhalation of vapors	C	*Potential for soil impacts over much of site makes pathway complete for existing building*	*MW-16, MW-20, MW-22, MW-24*	C	*Extent of soil impacts makes pathway potentially complete for potential future buildings*	*MW-23, MW-24, MW-25, MW-26*
GROUNDWATER						
Indoor inhalation of vapors	C	*Potential for groundwater impacts over much of site makes pathway complete for existing building*	*MW-16, MW-20, MW-22, MW-24*	C	*Potential for groundwater impacts over much of site makes pathway complete for potential future building*	*MW-23, MW-24, MW-25, MW-26*
Dermal Contact with water	NC	*Depth to groundwater makes pathway incomplete*		NC	*Depth to groundwater makes pathway incomplete*	
Ingestion at POE	NC	*No water wells near site*		NC	*Available public water at reasonabel cost makes future wells highly unlikely*	

NOTE:
* C : Complete Pathway; NC : Not Complete

EXPOSURE MODEL - ON-SITE NON-RESIDENT							Tier 1-11 (3)
SITE NO.:	SUBMITTAL DATE: 11/17/2008, updated April 2011			PREPARED BY:			
ROUTES OF EXPOSURE	CURRENT CONDITIONS			FUTURE CONDITIONS			
	C/NC*	JUSTIFICATION FOR C/NC (MANDATORY)	REPRESENTATIVE CONCENTRATION BASED ON (List borings/ wells)	C/NC*	JUSTIFICATION FOR C/NC (MANDATORY)	REPRESENTATIVE CONCENTRATION BASED ON (List borings/ wells)
SURFICIAL SOIL						
Outdoor inhalation of vapors and particulate matter, ingestion, and dermal contact with surficial soil	NC	*Based on depth of former UST system, depth of observed impacts, pathway is not complete*		NC	*Based on depth of former UST system, depth of observed impacts, pathway is not complete*	
SUBSURFACE SOIL						
Indoor inhalation of vapors	C	*Impcted soil in smear zone makes pathway complete*	*mw-2, mw-5, mw-7, mw-9, mw-16, mw-6, mw-8, mw-27, mw-28, SV-5, SV-6, SV-7, SV-8*	C	*Impcted soil in smear zone makes pathway complete*	*MW-10, MW-11, MW-19, SV-1, SV-2, SV-3, SV-4*
GROUNDWATER						
Indoor inhalation of vapors	C	*Pathway potentially complete for exisitng buildings*	*mw-2, mw-5, mw-7, mw-9, mw-16, mw-6, mw-8, mw-27, mw-28*	C	*Pathway potentially complete for existign and potential future buildings*	*MW-11, MW-19*
Dermal Contact with water	NC	*Depth to groundwater makes pathway incomplete*		NC	*Depth to groundwater makes pathway incomplete*	
Current Drinking Water Well	NC	*No water wells at the site or surrounding properties*		NC	*Availability of public water supply at reasonable cost makes it unlikely that future wells will be installed.*	

NOTE:
* C : Complete Pathway; NC : Not Complete

EXPOSURE MODEL - ON-SITE CONSTRUCTION WORKER			Tier 1-11 (5)
SITE NO.:	SUBMITTAL DATE: 11/17/2008, updaPREPARED BY:		
ROUTES OF EXPOSURE	C/NC*	JUSTIFICATION FOR C/NC (MANDATORY)	REPRESENTATIVE CONCENTRATION BASED ON (List borings/ wells)
SOIL TO DEPTH OF CONSTRUCTION			
Outdoor inhalation of vapors and particulate matter, ingestion, and dermal contact with soil	C	*Potentially complete based on soil data collected to date*	*mw-2, mw-5, mw-7, mw-9, mw-16, mw-6, mw-8, mw-11, mw-12, MW-19, MW-27, MW-28, SV-1, SV-2, SV-3, SV-4, SV-5, SV-6, SV-7, SV-8*
GROUNDWATER			
Dermal Contact with water	NC	*Depth to groundwater in below anticipated depth of construction*	

NOTE:
*C : Complete Pathway; NC : Not Complete

EXPOSURE MODEL - OFF-SITE CONSTRUCTION WORKER			Tier 1-11 (6)
SITE NO.:	SUBMITTAL DATE: 11/17/2008, u	PREPARED BY:	
ROUTES OF EXPOSURE	C/NC*	JUSTIFICATION FOR C/NC (MANDATORY)	REPRESENTATIVE CONCENTRATION BASED ON (List borings/ wells)
SOIL TO DEPTH OF CONSTRUCTION			
Outdoor inhalation of vapors and particulate matter, ingestion, and dermal contact with soil	*C*	*Offsite impacts are limited, but pathway is potentially complte*	*MW-16, MW-20, MW-22, MW-23, MW-24, MW-25, MW-26*
GROUNDWATER			
Dermal Contact with water	*NC*	*Depth to groundwater in below anticipated depth of construction*	

NOTE:
* C : Complete Pathway; NC : Not Complete

Calculation of On-Site Representative Concentrations for Existing Building 1

On-Site Representative Concentrations - Soil (mg/kg)

Boring/Sample Location	Date	Depth (ft)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MTBE	TPH-GRO	TPH-DRO	TPH-ORO	EDB	EDC
MW-2	04/19/99	15-17	2.72	0.25	0.25	1.16	NA	0.25	204.0	0.15	NA	NA	NA
	04/19/99	22-25	0.25	0.25	0.25	3.4	NA	0.25	997.0	0.15	NA	NA	NA
MW-2 Vadose Zone Average			1.485	0.25	0.25	2.28	NA	0.25	600.5	0.15	NA	NA	NA
MW-5	04/21/99	15-17	0.25	18.4	16.1	95.2	NA	0.25	2820.0	0.15	NA	NA	NA
	04/21/99	20-22	0.25	0.637	0.516	4.03	NA	0.25	372.0	0.15	NA	NA	NA
MW-5 Vadose Zone Average			0.25	9.52	8.31	49.62	NA	0.25	1596.0	0.15	NA	NA	NA
MW-7	04/22/99	10-12	0.25	0.25	0.25	0.25	NA	0.25	1.25	0.15	NA	NA	NA
	04/22/99	20-22	0.25	0.25	0.25	0.25	NA	0.25	1.25	1.0	NA	NA	NA
MW-7 Vadose Zone Average			0.25	0.25	0.25	0.25	NA	0.25	1.25	0.58	NA	NA	NA
Average Representative Concentrations (Subsurface			0.862	3.340	2.936	17.382	NA	0.250	732.583	0.292	NA	NA	NA
TIER 1													
Tier 1 RBTLs - Non-Residential - (Subsurface Soil) - Soil Vapor to Indoor Air (Type 2 - Native Soil)			2.62	651 (NE)	2980 (NE)	2660 (NE)	958 (NE)	825 (NE)	5760 (NE)	63400 (NE)	NA	2.69 (NE)	1.84 (NE)
Tier 1 RBTLs - Construction Worker (Ingestion, Inhalation, Dermal Contact, Type 1 - Granular UST Backfill Material)			29.9 (NE)	3,020 (NE)	6,680 (NE)	8,010 (NE)	296 (NE)	25,600 (NE)	57,600 (NE)	1,050,000 (NE)	1,010,000 (NE)	3.91 (NE)	39.1 (NE)

Entries in red indicate sample results were below detection limits; numbers entered are one half the detection limit

On-Site Representative Concentrations - Groundwater (mg/L)

MW	Date	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MTBE	TPH-GRO	TPH-DRO	TPH-ORO	EDB	EDC
MW-2	10/14/08	0.0417	0.0026	0.0086	0.0025	0.005	0.001	1.5	3.22	NA	0.000025	0.0025
	02/10/09	0.0206	0.0025	0.0025	0.0062	0.005	0.001	1.32	NA	NA	0.0025	0.0025
	05/11/09	0.0169	0.0115	0.0025	0.0087	0.005	0.001	1.08	0.54	0.404	0.0025	0.0025
	09/08/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-2 Average Concentration		0.0264	0.0055	0.0045	0.0058	0.005	0.001	1.3	1.88	0.404	0.001675	0.0025
MW-5	02/13/08	0.0311	0.0011	0.0091	0.0052	0.001	0.001	0.617	0.827	0.29	0.0025	0.0025
	10/14/08	0.111	0.0025	0.059	0.018	0.005	0.001	1.87	0.712	0.15	0.000025	0.0025
	02/10/09	0.0819	0.0025	0.0238	0.0125	0.005	0.001	0.66	0.398	0.15	0.0025	0.0025
	05/11/09	0.0577	0.0108	0.0261	0.0291	0.005	0.001	0.765	0.341	0.15	0.0025	0.0025
	09/08/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-5 Average Concentration		0.07043	0.00423	0.02950	0.01620	0.00400	0.00100	0.97800	0.56950	0.18500	0.00188	0.00250
MW-7	02/13/08	0.001	0.0025	0.0025	0.0025	0.005	0.001	0.2	0.25	0.15	0.0025	0.0025
	10/14/08	0.001	0.0025	0.0025	0.0025	0.005	0.001	0.25	0.361	0.15	0.000025	0.0025
	02/10/09	0.0037	0.0025	0.0025	0.0053	0.005	0.001	0.25	0.15	0.15	0.0025	0.0025
	05/11/09	0.0064	0.0076	0.0025	0.0068	0.005	0.001	0.25	0.15	0.15	0.0025	0.0025
	09/08/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	01/27/11	0.0325	0.003	0.0228	0.0104	0.0067	0.001	2.12	0.688	0.15	0.001	0.001
MW-7 Average Concentration		0.00892	0.00362	0.00656	0.00550	0.00534	0.00100	0.61400	0.31980	0.15000	0.00171	0.00220
Average Representative Concentrations		0.03525	0.00445	0.01352	0.00917	0.00478	0.00100	0.98400	0.92310	0.16750	0.00175	0.00240
TIER 1												
Tier 1 RBTLS - Non-Residential - GW Vapor to Indoor Air (Type 2 - Native Soil)		5.65 (NE)	573 (NE)	1400 (NE)	1130 (NE)	81.1 (NE)	4590 (NE)	278 (NE)	1690 (NE)	NA	6.21 (NE)	8.62 (NE)

Entries in red indicate sample results were below detection limits; numbers entered are one half the detection limit

Calculation of On-Site Representative Concentrations for Existing Building 2

On-Site Representative Concentrations - Soil (mg/kg)

Boring/Sample Location	Date	Depth (ft)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MTBE	TPH-GRO	TPH-DRO	TPH-ORO	EDB	EDC
MW-16	04/19/99	15-17	2.72	0.25	0.25	1.16	NA	0.25	204.0	0.15	NA	NA	NA
	04/19/99	22-25	0.25	0.25	0.25	3.4	NA	0.25	997.0	0.15	NA	NA	NA
Average Representative Concentrations (Subsurface			1.485	0.250	0.250	2.280	NA	0.250	600.500	0.150	NA	NA	NA
TIER 1													
Tier 1 RBTLs - Non-Residential - (Subsurface Soil) - Soil Vapor to Indoor Air (Type 2 - Native Soil)			2.62 (NE)	651 (NE)	2980 (NE)	2660 (NE)	958 (NE)	825 (NE)	5760 (NE)	63400 (NE)	NA	2.69 (NE)	1.84 (NE)
Tier 1 RBTLs - Construction Worker (Ingestion, Inhalation, Dermal Contact, Type 1 - Granular UST Backfill Material)			29.9 (NE)	3,020 (NE)	6,680 (NE)	8,010 (NE)	296 (NE)	25,600 (NE)	57,600 (NE)	1,050,000 (NE)	1,010,000 (NE)	3.91 (NE)	39.1 (NE)

Entries in red indicate sample results were below detection limits; numbers entered are one half the detection limit

On-Site Representative Concentrations - Groundwater (mg/L)

MW	Date	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MTBE	TPH-GRO	TPH-DRO	TPH-ORO	EDB	EDC
MW-16	02/01/08	0.0248	0.0025	0.0034	0.0028	0.005	0.001	1.15	0.761	0.23	0.0025	0.0025
	10/14/08	0.0417	0.0025	0.0086	0.0025	0.005	0.001	1.5	3.22	NA	0.000025	0.0025
	02/10/09	0.0041	0.001	0.001	0.0052	0.003	0.001	0.25	0.498	0.579	0.001	0.001
	05/11/09	0.108	0.0691	0.0156	0.0519	0.005	0.001	1.52	1.06	0.15	0.0025	0.0025
	09/08/09	0.0208	0.0117	0.0156	0.069	0.005	0.001	1.22	0.902	0.15	0.0025	0.0025
	05/04/10	0.0048	0.0066	0.0025	0.0136	0.005	0.001	0.601	0.526	0.15	0.0025	0.0025
	09/09/10	0.001	0.0046	0.001	0.0025	0.0025	0.001	0.539	0.606	0.15	0.001	0.001
	02/27/11	0.001	0.0128	0.001	0.0025	0.0025	0.001	1.77	1.85	0.15	0.001	0.001
Average Representative Concentrations		0.02573	0.01260	0.00608	0.01875	0.00406	0.00100	1.06875	1.17788	0.22271	0.00163	0.00194
TIER 1												
Tier 1 RBTLS - Non-Residential - GW Vapor to Indoor Air (Type 2 - Native Soil)		5.65 (NE)	573 (NE)	1400 (NE)	1130 (NE)	81.1 (NE)	4590 (NE)	278 (NE)	1690 (NE)	NA	6.21 (NE)	6.62 (NE)

Entries in red indicate sample results were below detection limits; numbers entered are one half the detection limit

Calculation of On-Site Representative Concentrations for Existing Building 3

On-Site Representative Concentrations - Soil (mg/kg)

Boring/Sample Location	Date	Depth (ft)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MTBE	TPH-GRO	TPH-DRO	TPH-ORO	EDB	EDC
MW-9	04/19/99	10-12	0.25	0.302	0.296	1.02	NA	0.25	35.4	0.15	NA	NA	NA
	04/19/99	20-22	0.25	0.25	0.25	0.171	NA	0.25	8.3	0.15	NA	NA	NA
Average Representative Concentrations (Subsurface			0.250	0.276	0.273	0.596	NA	0.250	21.835	0.150	NA	NA	NA
TIER 1													
Tier 1 RBTLs - Non-Residential - (Subsurface Soil) - Soil Vapor to Indoor Air (Type 2 - Native Soil)			2.62 (NE)	651 (NE)	2980 (NE)	2660 (NE)	958 (NE)	825 (NE)	5760 (NE)	63400 (NE)	NA	2.89 (NE)	1.84 (NE)
Tier 1 RBTLs - Construction Worker (Ingestion, Inhalation, Dermal Contact, Type 1 - Granular UST			29.9 (NE)	3,020 (NE)	6,680 (NE)	8,010 (NE)	296 (NE)	25,600 (NE)	57,600 (NE)	1,050,000 (NE)	1,010,000 (NE)	3.91 (NE)	39.1 (NE)

Entries in red indicate sample results were below detection limits; numbers entered are one half the detection limit

On-Site Representative Concentrations - Groundwater (mg/L)

MW	Date	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MTBE	TPH-GRO	TPH-DRO	TPH-ORO	EDB	EDC
MW-9	02/01/08	0.0148	0.0025	0.0025	0.0011	0.005	0.001	0.22	0.347	0.15	0.0025	0.0025
	10/14/08	0.001	0.0025	0.0025	0.0025	0.005	0.001	0.25	0.369	0.15	0.000025	0.0025
	02/10/09	0.0361	0.0025	0.0025	0.0085	0.005	0.001	0.837	0.349	0.15	0.0025	0.0025
	05/11/09	0.0492	0.008	0.011	0.0142	0.005	0.001	0.543	0.306	0.15	0.0025	0.0025
	09/08/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	01/12/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average Representative Concentrations		0.02528	0.00388	0.00463	0.00658	0.00500	0.00100	0.46250	0.34275	0.15000	0.00188	0.00250
TIER 1												
Tier 1 RBTLS - Non-Residential - GW Vapor to Indoor Air (Type 2 - Native Soil)		5.65 (NE)	573 (NE)	1400 (NE)	1130 (NE)	81.1 (NE)	4590 (NE)	278 (NE)	1690 (NE)	NA	6.21 (NE)	8.62 (NE)

Entries in red indicate sample results were below detection limits; numbers entered are one half the detection limit

Calculation of On-Site Representative Concentrations for Existing Building 4

On-Site Representative Concentrations - Soil (mg/kg)

Boring/Sample Location	Date	Depth (ft)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MTBE	TPH-GRO	TPH-DRO	TPH-ORO	EDB	EDC
MW-6	04/19/99	15-17	0.25	0.25	0.25	0.55	NA	0.25	5.5	75.1	NA	NA	NA
	04/19/99	20-22	0.25	0.25	0.25	0.25	NA	0.25	1.25	0.15	NA	NA	NA
MW-6 Vadose Zone Average			0.25	0.25	0.25	0.4	NA	0.25	3.355	37.625	NA	NA	NA
MW-8	04/21/99	15-17	0.25	0.25	0.25	0.25	NA	0.25	1.25	1	NA	NA	NA
	04/21/99	20-22	0.25	0.25	0.25	0.25	NA	0.25	1.25	1	NA	NA	NA
MW-8 Vadose Zone Average			0.25	0.25	0.25	0.25	NA	0.25	1.25	1.00	NA	NA	NA
Average Representative Concentrations (Subsurface			0.250	0.250	0.250	0.325	NA	0.250	2.303	19.313	NA	NA	NA
TIER 1													
Tier 1 RBTLs - Non-Residential - (Subsurface Soil) - Soil Vapor to Indoor Air (Type 2 - Native Soil)			2.62 (NE)	651 (NE)	2980 (NE)	2660 (NE)	958 (NE)	825 (NE)	5760 (NE)	83400 (NE)	NA	2.69 (NE)	1.84 (NE)
Tier 1 RBTLs - Construction Worker (Ingestion, Inhalation, Dermal Contact, Type 1 - Granular UST			29.9 (NE)	3,020 (NE)	6,680 (NE)	8,010 (NE)	296 (NE)	25,600 (NE)	57,600 (NE)	1,050,000 (NE)	1,010,000 (NE)	3.91 (NE)	39.1 (NE)

Entries in red indicate sample results were below detection limits; numbers entered are one half the detection limit

On-Site Representative Concentrations - Groundwater (mg/L)

MW	Date	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MTBE	TPH-GRO	TPH-DRO	TPH-ORO	EDB	EDC
MW-6	02/13/08	FP	FP	FP	FP	FP	FP	FP	FP	FP		
	10/14/08	5.79	0.1	1.21	1.04	0.200	0.04	36.6	70.5	26.8	0.000025	0.0025
	02/10/09	4.85	0.1	1.22	1.47	0.200	0.04	32.3	6.5	0.47	0.1	0.1
	05/11/09	2.43	0.1	0.941	0.65	0.200	0.04	27.8	3.96	0.75	0.1	0.1
	09/08/09	5.04	0.1	0.956	0.636	0.200	0.04	20.2	4.24	0.75	0.1	0.1
	01/12/10	7.28	0.125	1.48	1.22	0.250	0.5	36.9	6.04	0.75	0.125	0.125
	05/04/10	4	0.25	1.02	0.843	0.500	0.1	25	3.32	0.581	0.25	0.25
	09/09/10	5.2	0.136	0.55	0.508	0.254	0.05	12.5	2.56	0.15	0.05	0.05
	01/27/11	8.38	0.202	1.6	0.366	0.440	0.05	36	5.2	0.375	0.05	0.05
MW-6 Average Concentration		5.371	0.139125	1.122	0.844	0.2805	0.1075	28.4	12.8	3.82625	0.0969	0.0972
MW-8	02/13/08	0.42	0.006	0.004	0.0264	0.011	0.002	3.49	1.06	0.28	0.0025	0.0025
	10/14/08	0.0593	0.0025	0.0025	0.0054	0.005	0.001	1.76	1.97	0.15	0.000025	0.0025
	02/10/09	0.676	0.0025	0.0025	0.0136	0.005	0.001	2.93	1.22	0.316	0.0025	0.0025
	05/11/09	0.0881	0.0367	0.0125	0.0364	0.025	0.005	1.25	0.799	0.15	0.0125	0.0125
	09/08/09	0.0853	0.0180	0.0226	0.0987	0.0138	0.001	2.27	1.03	0.15	0.0025	0.0025
	01/12/10	2.26	0.1250	0.125	0.125	0.25	0.5	12.5	4.34	0.75	0.125	0.1250
	05/04/10	0.147	0.0229	0.0226	0.0467	0.0112	0.001	3.68	1.65	0.314	0.0025	0.0025
	09/09/10	0.442	0.0241	0.0305	0.025	0.025	0.01	5.42	9.04	0.425	0.01	0.0100
	01/27/11	0.289	0.0100	0.01	0.025	0.025	0.01	5.15	2.77	0.15	0.01	0.0100
MW-8 Average		0.4963	0.0275	0.0258	0.0447	0.0412	0.0590	4.2722	2.6532	0.2983	0.0186	0.0189
Average Representative Concentrations		2.93378	0.08332	0.57396	0.44441	0.16086	0.08325	16.34236	7.72161	2.06329	0.05775	0.05804
TIER 1												
Tier 1 RBTLS - Non-Residential - GW Vapor to Indoor Air (Type 2 - Native Soil)		5.65 (NE)	573 (NE)	1400 (NE)	1130 (NE)	81.1 (NE)	4590 (NE)	278 (NE)	1690 (NE)	NA	6.21 (NE)	8.62 (NE)

Entries in red indicate sample results were below detection limits; numbers entered are one half the detection limit

On-Site Representative Concentrations - Soil (mg/kg)

Boring/Sample Location	Date	Depth (ft)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MTBE	TPH-GRO	TPH-DRO	TPH-ORO	EDB	EDC
MW-27	03/16/11	7.5-10	1.56	0.12	0.331	0.12	1.38	NA	444.00	64.2	70.3	0.12	0.12
	03/16/11	24-25	13.80	3.96	38.30	321	17.8	NA	10800.00	232	30.4	0.7100	0.710
MW-27 Vadose Zone Average			7.68	2.04	19.3155	160.56	9.59	NA	5622	148.1	50.35	0.4150	0.415
MW-28	03/16/11	7.5-10	1.05	0.2585	2.58	0.2585	11.1	NA	795.00	41	7.7	0.259	0.2585
	03/16/11	22.5-25	44.9	198	70.7	360	27.4	NA	4290.00	18.1	7.75	2.675	2.675
MW-28 Vadose Zone Average			1.05	0.26	2.58	0.26	11.10	NA	795.00	41.00	7.7	0.2585	0.2585
SV-5	03/16/11	7.5-9.5	7.26	2.71	41.50	215.00	16.60	NA	5150.00	102.00	8	2.7050	2.705
SV-6	03/17/11	7.5-9.5	0.55	0.14	0.14	0.14	0.85	NA	189.00	47.60	8.2	0.1355	0.1355
SV-7	03/17/11	7.5-9.5	3.54	2.73	2.71	2.71	25.50	NA	4360.00	310.00	97.4	2.7100	2.71
SV-8	03/17/11	7.5-9.5	8.40	2.73	45.70	174.00	26.80	NA	6020.00	163.00	8.6	2.7250	2.725
Average Representative Concentrations (Subsurface Soil)			4.746	1.765	18.657	92.111	15.073	NA	3689.333	135.283	30.042	1.492	1.492
Average Representative Concentrations (Soil to depth of construction)			4.937	2.073	22.511	97.961	17.436	NA	3929.750	155.650	30.550	2.069	2.069
TIER 1													
Tier 1 RBTLs - Non-Residential - (Subsurface Soil) - Soil Vapor to Indoor Air (Type 2 - Native Soil)			2.62 (E)	651 (NE)	2980 (NE)	2660 (NE)	956 (NE)	825 (NE)	5760 (NE)	63400 (NE)	NA	2.69 (NE)	1.84 (NE)
Tier 1 RBTLs - Construction Worker (Ingestion, Inhalation, Dermal Contact, Type 1 - Granular UST Backfill Material)			29.9 (NE)	3,020 (NE)	6,680 (NE)	8,010 (NE)	296 (NE)	25,600 (NE)	57,600 (NE)	1,050,000 (NE)	1,010,000 (NE)	3.91 (NE)	39.1 (NE)
TIER 2													
Tier 2 SSTLs - Non-Residential - (Subsurface Soil) - Soil Vapor to Indoor Air			81.5 (NE)	12700 (NE)	54400 (NE)	48200 (NE)	12500 (NE)	24400 (NE)	91200 (NE)	1030000 (NE)	NA	26.9 (NE)	55.4 (NE)

Entries in red indicate sample results were below detection limits; numbers entered are one half the detection limit

On-Site Representative Concentrations - Groundwater (mg/L)

MW	Date	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MTBE	TPH-GRO	TPH-DRO	TPH-ORO	EDB	EDC
MW-27	03/23/11	11.9	0.706	2.29	5.08	0.602	0.025	517	3.9	3.9	0.025	0.025
MW-28	03/23/11	6.9	11.7	1.83	8.81	0.250	0.1	81.2	3.57	3.57	0.1	0.1
Average Representative Concentrations		9.40	6.20	2.06	6.95	0.43	0.06	299.1	3.74	3.74	0.06	0.06
TIER 1												
Tier 1 RBTLS - Non-Residential - GW Vapor to Indoor Air (Type 2 - Native Soil)		5.65 (E)	573 (NE)	1400 (NE)	1130 (E)	81.1 (E)	4590 (NE)	278 (E)	1690 (NE)	NA	6.21 (NE)	8.62 (NE)
TIER 2												
Tier 2 SSTLs - Non-Residential - GW Vapors to Indoor Air		155 (NE)	15700 (NE)	38300 (NE)	30800 (NE)	1810 (NE)	107000 (NE)	7500 (E)	45400 (NE)	NA	72.8 (NE)	224 (NE)

Entries in red indicate sample results were below detection limits; numbers entered are one half the detection limit

Calculation of On-Site Representative Concentrations for Hypothetical Future Onsite Building

Representative Concentrations - Soil (mg/kg)

Boring/Sample Location	Date	Depth (ft)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MTBE	TPH-GRO	TPH-DRO	TPH-ORO	EDB	EDC
MW-10	04/19/99	15-17	0.025	0.025	0.025	0.025	NA	0.025	1.25	0.15	NA	NA	NA
	04/19/99	20-22	0.25	0.25	0.25	3.4	NA	0.25	4620.00	0.15	NA	NA	NA
MW-10 Vadose Zone Average			0.1375	0.1375	0.1375	1.7125	NA	0.1375	2310.625	0.15	NA	NA	NA
MW-11	9/21/99	10-12	0.025	0.025	0.025	0.025	NA	0.025	1.25	0.15	NA	NA	NA
	9/21/99	20-22	0.25	0.25	0.025	3.4	NA	0.25	4620	0.15	NA	NA	NA
MW-11 Vadose Zone Average			0.1375	0.1375	0.025	1.7125	NA	0.1375	2310.625	0.15	NA	NA	NA
MW-19	04/21/99	13-15	0.017	0.017	0.017	0.017	0.4	0.017	35.00	11.4	5.51	0.017	0.017
	04/21/99	23-25	32.60	8.92	103.00	464.00	42.70000	0.0153	9360.00	1110	22.7	0.015300	0.0153
MW-19 Vadose Zone Average			16.31	4.47	51.51	227.01	21.54	0.02	4697.50	560.70	14.105	0.0162	0.01615
SV-1	03/16/11	7.5-9.5	0.56	0.04	0.04	0.04	0.72	NA	70.40	8.45	8.45	0.0389	0.03885
SV-2	03/16/11	7.5-8.5	0.83	0.27	2.06	2.04	497.00	NA	885.00	1030.00	651	0.2720	0.272
SV-3	03/17/11	7.5-9.5	2.38	0.28	5.99	2.39	6.47	NA	807.00	40.10	8.15	0.2550	0.255
SV-4	03/17/11	7.5-9.5	0.28	0.01	0.00	0.02	0.01	NA	28.50	49.90	8.2	0.0025	0.00275
Average Representative Concentrations (Subsurface Soil)			2.946	0.759	8.538	33.560	105.146	0.097	1586.807	241.350	137.081	0.117	0.117
Average Representative Concentrations (Soil to depth of Construction)			1.010	0.143	2.023	1.122	126.048	NA	447.225	282.113	168.950	0.142	0.142
TIER 1													
Tier 1 RSTLs - Non-Residential - (Subsurface Soil) - Soil Vapor to Indoor Air (Type 2 - Native Soil)			2.62 (E)	651 (NE)	2980 (NE)	2660 (NE)	958 (NE)	625 (NE)	5760 (NE)	63400 (NE)	NA	2.69 (NE)	1.84 (NE)
Tier 1 RSTLs - Construction Worker (Ingestion, Inhalation, Dermal Contact, Type 1 - Granular UST Backfill Material)			29.9 (NE)	3,020 (NE)	6,880 (NE)	8,010 (NE)	296 (NE)	25,600 (NE)	57,600 (NE)	1,050,000 (NE)	1,010,000 (NE)	3.91 (NE)	39.1 (NE)
TIER 2													
Tier 2 SSTLs - Non-Residential - (Subsurface Soil) - Soil Vapor to Indoor Air			61.5 (NE)	12700 (NE)	54400 (NE)	48200 (NE)	12500 (NE)	24400 (NE)	91200 (NE)	1030000 (NE)	NA	26.9 (NE)	55.4 (NE)

Entries in red indicate sample results were below detection limits; numbers entered are one half the detection limit

Representative Concentrations - Groundwater (mg/L)

MW	Date	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MTBE	TPH-GRO	TPH-DRO	TPH-ORO	EDB	EDC
MW-11	02/13/08	229	399	6260	12100	2570.000	25	1210000	NA	NA	62.5	62.5
	10/14/08	1.19	0.215	1.88	4.44	1.570	0.02	253	56.6	15	NA	NA
	02/10/09	229	399	6260	12100	2570.000	25	1210000	NA	NA	62.5	62.5
	05/11/09	6.76	0.5	0.5	1.13	1.000	0.2	50	5.04	0.75	0.5	0.5
	09/08/09	4.76	0.25	0.638	1.84	0.500	0.1	25	5.25	0.75	0.25	0.25
	01/12/10	229	399	6260	12100	2570.000	25	1210000	NA	NA	62.5	62.5
	05/04/10	4.08	0.125	0.288	0.416	0.25	0.05	12.5	1.94	0.319	0.125	0.125
	09/09/10	2.51	0.17	0.634	0.848	0.125	0.05	12.5	5.56	1.07	0.05	0.05
	01/27/11	229	399	6260	12100	2570.000	25	1210000	NA	NA	62.5	62.5
MW-11 Average Concentration		103.9222	177.4733	2,782.7	5,378.7	1,142.6050	11.1578	537,817.0	15.08	3.5770	31.3656	31.3656
MW-19	10/14/08	10.5	18.9	3.13	17	1.26	0.202	307	72.8	3	0.000025	0.0025
	02/10/09	229	399	6260	12100	2570.000	25	1210000	NA	NA	62.5	62.5
	05/11/09	7.82	8.05	1.48	6.3	0.5	0.1	83.3	4.07	0.15	0.25	0.25
	09/08/09	8.76	3.97	1.41	8.95	0.5	0.1	25	5.12	0.75	0.25	0.25
	01/12/10	229	399	6260	12100	2570.000	25	1210000	NA	NA	62.5	62.5
	05/04/10	5.37	8.06	0.955	4.35	0.5	0.1	56.6	2.99	0.357	0.25	0.25
	09/09/10	7.02	3.46	1.1	4.2	0.25	0.1	25	2.57	0.15	0.1	0.1
	01/27/11	229	399	6260	12100	2570.000	25	1210000	NA	NA	62.5	62.5
MW-19 Average Concentration		90.8088	154.9313	2348.5094	4542.3500	964.1263	9.4503	453811.9875	17.5100	0.8814	23.5438	23.5441
Average Representative Concentrations		97.37	166.20	2,565.60	4,960.53	1,053.37	10.30	495,814.49	16.29	2.23	27.45	27.45
TIER 1												
Tier 1 RSTLS - Non-Residential - GW Vapor to Indoor Air (Type 2 - Native Soil)		6.65 (E)	573 (NE)	1400 (NE)	1130 (NE)	81.1 (E)	4590 (NE)	278 (E)	1690 (NE)	NA	6.21 (E)	8.62 (NE)
TIER 2												
Tier 2 SSTLs - Non-Residential - GW Vapors to Indoor Air		155 (NE)	15700 (NE)	38300 (NE)	30900 (NE)	1810 (NE)	107000 (NE)	7500 (E)	45400 (NE)	NA	72.8 (NE)	224 (NE)

Calculation of Off-Site Representative Concentrations for East Onsite Building

Representative Concentrations - Soil (mg/kg)

Boring/Sample Location	Date	Depth (ft)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MTBE	TPH-GRO	TPH-DRO	TPH-ORO	EDB	EDC
MW-16	04/19/99	10-12	0.025	0.025	0.025	0.025	NA	0.025	1.25	0.15	NA	NA	NA
	04/19/99	15-17	0.025	0.025	0.025	0.025	NA	0.025	4.68	0.15	NA	NA	NA
MW-16 Vadose Zone Average			0.025	0.025	0.025	0.025	NA	0.025	2.983	0.15	NA	NA	NA
MW-20	10/08/08	13-15	0.02075	0.02075	0.02075	0.02075	0.02075	0.02075	184.00	4.22	1.865	0.02075	0.02075
	10/08/08	24-25	0.01345	0.01345	0.01345	0.01345	0.01345	0.01345	50.40	2.11	2.085	0.01345	0.01345
MW-20 Vadose Zone Average			0.01710	0.01710	0.01710	0.01710	0.01710	0.01710	117.20	3.17	1.97500	0.01710	0.01710
MW-22	06/16/09	14-15	0.01480	0.01480	0.01480	0.01480	1.63000	0.01480	11.05	0.37	8.51000	0.01480	0.01480
	06/16/09	17.5-20	0.01405	0.01405	0.01405	0.01405	0.14050	0.01405	11.15	1.85	1.85000	0.01405	0.01405
MW-22 Vadose Zone Average			0.01443	0.01443	0.01443	0.01443	0.88525	0.01443	11.10	5.11	5.23000	0.01443	0.01443
MW-24	06/16/09	16-17.5	0.00028	0.02110	0.02560	0.13400	0.14200	0.00028	32.50	1.82	1.82000	0.00028	0.00028
	06/16/09	22.5-25	0.00030	0.00030	0.00030	0.02740	0.06730	0.00030	12.30	1.50	1.97500	0.00030	0.00030
MW-24 Vadose Zone Average			0.00029	0.01070	0.01295	0.08070	0.10465	0.00029	22.40	1.00	1.88750	0.00029	0.00029
Average Representative Concentrations (Subsurface Soil)			0.014	0.017	0.017	0.034	0.338	0.014	38.418	2.581	3.034	0.011	0.011
Tier 1 RBTLs - Residential - (Subsurface Soil) - Soil Vapor to Indoor Air (Type 1 - Granular UST Backfill Material)			0.234 (NE)	40.7 (NE)	110 (NE)	170 (NE)	62.3 (NE)	36.1 (NE)	383 (NE)	4140 (NE)	NA	0.235 (NE)	0.135 (NE)
Tier 1 RBTLs - Residential - (Subsurface Soil) - Soil Vapor to Indoor Air (Type 2 - Native Soil)			0.5 (NE)	81 (NE)	971 (NE)	331 (NE)	119 (NE)	137 (NE)	716 (NE)	7880 (NE)	NA	0.514 (NE)	0.351 (NE)
Tier 1 RBTLs - Construction Worker (Ingestion, Inhalation, Dermal Contact, Type 1 - Granular UST Backfill Material)			29.9 (NE)	3,020 (NE)	6,680 (NE)	8,010 (NE)	296 (NE)	25,600 (NE)	57,600 (NE)	1,050,000 (NE)	1,010,000 (NE)	3.91 (NE)	39.1 (NE)

Entries in red indicate sample results were below detection limits; numbers entered are one half the detection limit

Representative Concentrations - Groundwater (mg/L)

MW	Date	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MTBE	TPH-GRO	TPH-DRO	TPH-ORO	EDB	EDC
MW-16	11/29/01	0.0025	0.0025	0.0025	0.0026	NA	0.0025	2.3	2.3	NA	NA	NA
	02/13/08	0.0246	0.0025	0.0034	0.0028	0.005	0.001	1.15	0.781	0.23	0.0025	0.0025
	10/14/08	0.003	0.0025	0.0025	0.0025	0.005	0.001	0.739	1.64	0.15	0.000025	0.0025
	02/10/09	0.0041	0.001	0.001	0.0052	0.003	0.001	0.25	0.498	0.579	0.001	0.001
	05/11/09	0.108	0.0591	0.0156	0.0519	0.005	0.001	1.52	1.08	0.15	0.0025	0.0025
	09/08/09	0.0208	0.0117	0.0156	0.069	0.005	0.001	1.22	0.802	0.15	0.0025	0.0025
	01/12/10	0.123	0.005	0.0152	0.0137	0.005	0.001	1.23	1.09	0.15	0.0025	0.0025
	05/04/10	0.0049	0.0098	0.0025	0.0136	0.005	0.001	0.001	0.528	0.15	0.0025	0.0025
	09/09/10	0.001	0.0048	0.001	0.0025	0.0025	0.001	0.539	0.008	0.15	0.001	0.001
	01/27/11	0.001	0.0128	0.001	0.0025	0.0025	0.001	1.77	1.85	0.15	0.001	0.001
MW-16 Average Concentration		0.0293	0.0109	0.0060	0.0166	0.0042	0.0012	1.1519	1.1433	0.2086	0.0017	0.0020
MW-20	10/14/08	0.139	0.0025	0.0025	0.0058	0.005	0.001	2.85	0.389	0.15	0.000025	0.0025
	02/10/09	0.328	0.0100	0.0056	0.0171	0.0025	0.001	5.63	0.385	0.15	0.001	0.0010
	05/11/09	0.911	0.0125	0.0125	0.0125	0.0125	0.005	5.12	0.584	0.15	0.0125	0.0125
	09/08/09	0.0426	0.0125	0.0125	0.0125	0.025	0.005	1.25	0.304	0.15	0.0125	0.0125
	01/12/10	0.0375	0.0025	0.0025	0.0026	0.005	0.001	3.2	0.352	0.15	0.0025	0.0025
	05/04/10	0.499	0.0250	0.025	0.025	0.5	0.01	2.5	0.659	0.15	0.025	0.0250
	09/09/10	0.272	0.0100	0.01	0.025	0.025	0.01	2.5	3.63	0.15	0.01	0.0100
	01/27/11	0.024	0.0010	0.001	0.0025	0.005	0.001	3.01	0.322	0.15	0.001	0.0010
MW-20 Average Concentration		0.2813	0.0099	0.0090	0.0129	0.0125	0.0043	3.2575	0.8294	0.1500	0.0081	0.0084
MW-22	06/17/09	0.451	0.0175	0.03	0.0292	0.01	0.002	4.33	0.565	0.15	0.003	0.003
	09/08/09	0.538	0.0125	0.0125	0.0636	0.025	0.005	5.34	0.458	0.15	0.0125	0.0125
	01/12/10	0.135	0.0125	0.103	0.0688	0.025	0.005	5.04	0.55	0.15	0.0125	0.0125
	05/04/10	0.142	0.0145	0.0148	0.0403	0.005	0.001	2.92	0.344	0.15	0.0025	0.0025
	09/09/10	0.0857	0.0142	0.0224	0.0332	0.0025	0.001	2.31	0.15	0.15	0.001	0.001
	01/27/11	0.004	0.001	0.001	0.0025	0.0025	0.001	3.4	0.316	0.15	0.001	0.001
MW-22 Average Concentration		0.222283333	0.012033333	0.030016667	0.038266667	0.011666667	0.0025	3.556666667	0.413833333	0.15	0.00575	0.00575
MW-24	06/17/09	1.83	0.0250	0.025	0.206	0.05	0.01	7.98	0.545	0.15	0.025	0.0250
	09/08/09	1.51	0.0250	0.025	0.0879	0.05	0.01	2.5	0.491	0.15	0.025	0.0250
	01/12/10	1.31	0.0625	0.0625	0.0625	0.25	0.025	6.25	0.703	0.15	0.0625	0.0625
	05/04/10	0.901	0.0625	0.0625	0.0625	0.125	0.025	6.25	0.378	0.15	0.0625	0.0625
	09/09/10	0.748	0.0100	0.01	0.025	0.025	0.01	2.5	0.366	0.15	0.01	0.0100
	01/27/11	2	0.0250	0.025	0.0625	0.0625	0.025	6.25	0.716	0.15	0.025	0.0250
MW-24 Average Concentration		1.3332	0.0350	0.0350	0.0844	0.0938	0.0175	5.2883	0.5228	0.1500	0.0350	0.0350
Average Representative Concentrations		0.46649	0.01685	0.02018	0.03829	0.04552	0.00635	3.31360	0.72734	0.16414	0.01204	0.01278
Tier 1 RBTLS - Residential - GW Vapor to Indoor Air (Type 1 - Granular UST Backfill Material)		0.621 (NE)	41.5 (NE)	102 (NE)	81.4 (NE)	5.4 (NE)	470 (NE)	20.7 (NE)	117 (NE)	NA	0.629 (NE)	0.897 (NE)
Tier 1 RBTLS - Residential - GW Vapor to Indoor Air (Type 2 - Native Soil)		1.08 (NE)	71.3 (NE)	175 (NE)	140 (NE)	10.1 (NE)	878 (NE)	34.6 (NE)	211 (NE)	NA	1.19 (NE)	1.65 (NE)

Entries in red indicate sample results were below detection limits; numbers entered are one half the detection limit

Calculation of Off-Site Representative Concentrations for Future Northeast Offsite Building - Building A

Representative Concentrations - Soil (mg/kg)

Boring/Sample Location	Date	Depth (ft)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MTBE	TPH-GRO	TPH-DRO	TPH-ORO	EDB	EDC
MW-23	06/16/09	17.5-20	4.35	0.01575	4.35	5.39	2.24	0.01575	25.60	2.075	2.075	0.01575	0.01575
	06/16/09	22.5-25	43.800	5.080	24.400	15.700	7.540	0.015	111.00	41.4	17.1	0.0152	0.015
MW-23 Vadose Zone Average			24.075	2.547875	14.375	10.545	4.89	0.01545	68.3	21.7375	9.5875	0.0155	0.01545
MW-25	08/20/09	15-17	0.001115	0.001115	0.001115	0.002235	0.002795	0.001115	2.86	5.37	6.5	0.001115	0.001115
	08/20/09	17-18	0.001125	0.001125	0.001125	0.002245	0.00281	0.001125	6.74	6.25	6.24	0.001125	0.001125
MW-25 Vadose Zone Average			0.00112	0.00112	0.00112	0.00224	0.00280	0.00112	4.80	5.81	6.37000	0.00112	0.00112
Average Representative Concentrations (Subsurface Soil)			12.038	1.274	7.188	5.274	2.446	0.008	36.550	13.774	7.979	0.008	0.008
TIER 1													
Tier 1 RBTLs - Residential - (Subsurface Soil) - Soil Vapor to Indoor Air (Type 2 - Native Soil)			0.5 (E)	81 (NE)	371 (NE)	331 (NE)	119 (NE)	157 (NE)	716 (NE)	7880 (NE)	NA	0.514 (NE)	0.351 (NE)
Tier 1 RBTLs - Construction Worker (Ingestion, Inhalation, Dermal Contact, Type 1 - Granular UST			29.9 (NE)	3,020 (NE)	6,680 (NE)	8,010 (NE)	296 (NE)	25,600 (NE)	57,600 (NE)	1,050,000 (NE)	1,010,000 (NE)	3.91 (NE)	39.1 (NE)
TIER 2													
Tier 2 SSTLs - Residential - Groundwater Vapor to Indoor Air			12.2 (NE)	3010 (NE)	12900 (NE)	11400 (NE)	2960 (NE)	4810 (NE)	21600 (NE)	24500 (NE)	NA	5.32 (NE)	10.9 (NE)

Entries in red indicate sample results were below detection limits; numbers entered are one half the detection limit

Representative Concentrations - Groundwater (mg/L)

MW	Date	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MTBE	TPH-GRO	TPH-DRO	TPH-ORO	EDB	EDC
MW-23	06/17/09	3.74	2.92	1.16	3.86	0.304	0.01	40.6	2.07	0.15	0.025	0.025
	09/08/09	5.51	3.39	0.818	2.13	0.2	0.04	25.8	2.44	0.75	0.1	0.1
	06/04/10	1.59	0.25	0.952	1.46	0.5	0.1	25.00	1.19	0.304	0.25	0.25
	09/09/10	1.49	0.0842	0.428	0.357	0.0625	0.025	6.25	1.08	0.15	0.025	0.025
MW-23 Average Concentration		3.0825	1.6611	0.8445	1.9518	0.2666	0.0438	24.4125	1.6950	0.3385	0.1000	0.1000
MW-25	08/24/09	2.8	0.0114	0.00825	0.0485	0.0025	0.00253	3.73	1.02	0.293	0.0005	0.0005
	01/12/10	0.0645	0.0625	0.421	2.02	0.125	0.025	14.4	4.12	1.5	0.0625	0.0625
	05/04/10	0.187	0.1130	0.111	0.45	0.05	0.0345	7.77	1	0.15	0.025	0.0250
	09/09/10	0.226	0.0839	0.0676	0.304	0.125	0.049	4.63	0.602	0.15	0.005	0.0050
	01/27/11	0.0024	0.0010	0.001	0.0025	0.0025	0.001	2.31	0.493	0.15	0.001	0.0010
MW-25 Average Concentration		0.6560	0.0544	0.1218	0.5650	0.0610	0.0224	6.5680	1.4870	0.4426	0.0188	0.0188
Average Representative Concentrations		1.86924	0.85771	0.48314	1.25838	0.16381	0.03308	15.49026	1.59100	0.39055	0.05940	0.05940
TIER 1												
Tier 1 RBTLS - Residential - GW Vapor to Indoor Air (Type 2 - Native Soil)		1.08 (E)	71.3 (NE)	175 (NE)	140 (NE)	10.1 (NE)	876 (NE)	34.6 (NE)	211 (NE)	NA	1.19 (NE)	1.65 (NE)
Tier 1 RBTLS - Non-Residential - GW Vapor to Indoor Air (Type 2 - Native Soil)		5.65 (NE)	573 (NE)	1400 (NE)	1130 (NE)	81.1 (NE)	4590 (NE)	278 (NE)	1690 (NE)	NA	6.21 (NE)	8.62 (NE)
TIER 2												
Tier 2 SSTLs - Residential - Groundwater Vapor to Indoor Air		29.6 (NE)	3590 (NE)	8780 (NE)	7060 (NE)	414 (NE)	20500 (NE)	1720 (NE)	10400 (NE)	NA	13.9 (NE)	42.8 (NE)

Entries in red indicate sample results were below detection limits; numbers entered are one half the detection limit

Calculation of Off-Site Representative Concentrations for Future Northeast Offsite Building - Building B

Representative Concentrations - Soil (mg/kg)

Boring/Sample Location	Date	Depth (ft)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MTBE	TPH-GRO	TPH-DRO	TPH-ORO	EDB	EDC
MW-24	06/16/09	15-17.5	0.000278	0.0211	0.0256	0.134	0.142	0.000278	32.50	1.82	1.82	0.000278	0.000278
	06/16/09	22.5-25	0.0003	0.0003	0.0003	0.027	0.067	0.0003	12.30	1.975	1.975	0.0003	0.000
MW-24 Vadose Zone Average			0.00028775	0.01069875	0.01294875	0.0807	0.10465	0.00028775	22.4	1.8975	1.8975	0.0003	0.00028775
MW-26	08/20/09	12.5-15	0.00113	0.00113	0.00113	0.00724	0.00283	0.00113	1.71	1.91	1.91	0.00113	0.00113
	08/20/09	17-19	0.174	0.00416	0.0102	0.0273	0.0304	0.00092	5.27	4.54	1.885	0.00092	0.00092
MW-26 Vadose Zone Average			0.08757	0.00265	0.00567	0.01727	0.01662	0.00103	3.49	3.23	1.89750	0.00103	0.00103
Average Representative Concentrations (Subsurface			0.044	0.007	0.009	0.049	0.061	0.001	12.045	2.561	1.898	0.001	0.001
TIER 1													
Tier 1 RBTLs - Residential - (Subsurface Soil) - Soil Vapor to Indoor Air (Type 2 - Native Soil)			0.5 (NE)	81 (NE)	371 (NE)	331 (NE)	119 (NE)	157 (NE)	716 (NE)	7880 (NE)	NA	0.514 (NE)	0.351 (NE)
Tier 1 RBTLs - Construction Worker (Ingestion, Inhalation, Dermal Contact, Type 1 - Granular UST			29.9 (NE)	3,020 (NE)	6,680 (NE)	8,010 (NE)	296 (NE)	25,600 (NE)	57,600 (NE)	1,050,000 (NE)	1,010,000 (NE)	3.91 (NE)	39.1 (NE)

Entries in red indicate sample results were below detection limits; numbers entered are one half the detection limit

Representative Concentrations - Groundwater (mg/L)

MW	Date	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MTBE	TPH-GRO	TPH-DRO	TPH-ORO	EDB	EDC
MW-24	06/17/09	1.63	0.0250	0.025	0.206	0.05	0.01	7.98	0.545	0.15	0.025	0.0250
	09/08/09	1.51	0.0250	0.025	0.0879	0.05	0.01	2.5	0.431	0.15	0.025	0.0250
	01/12/10	1.31	0.0625	0.0625	0.0625	0.25	0.025	6.25	0.703	0.15	0.0625	0.0625
	05/04/10	0.801	0.0625	0.0625	0.0625	0.125	0.025	6.25	0.376	0.15	0.0625	0.0625
	09/09/10	0.748	0.0100	0.01	0.025	0.025	0.01	2.5	0.366	0.15	0.01	0.0100
	01/27/11	2	0.0250	0.025	0.0625	0.0625	0.025	6.25	0.716	0.15	0.025	0.0250
MW-24 Average Concentration		1.3332	0.0350	0.0350	0.0844	0.0938	0.0175	5.2883	0.5228	0.1500	0.0350	0.0350
MW-26	08/24/09	0.175	1.78	2.21	8.88	0.844	0.00637	14.3	4.46	0.25	0.0005	0.0005
	01/12/10	2.7	0.1250	0.125	0.125	0.25	0.05	12.5	1.36	0.15	0.125	0.1260
	05/04/10	0.778	0.0625	0.0625	0.0625	0.125	0.025	6.25	0.897	0.15	0.0625	0.0625
	09/09/10	0.397	0.0100	0.01	0.025	0.025	0.01	2.5	0.73	0.15	0.01	0.0100
	01/27/11	3.03	0.0250	0.025	0.0625	0.0625	0.025	6.25	2.21	0.15	0.025	0.0250
MW-26 Average Concentration		1.4160	0.4005	0.4865	1.8310	0.2613	0.0233	8.3600	1.9314	0.1700	0.0446	0.0446
Average Representative Concentrations		1.37458	0.21775	0.26075	0.95770	0.17753	0.02039	6.82417	1.22712	0.16000	0.03980	0.03980
TIER 1												
Tier 1 RBTLS - Residential - GW Vapor to Indoor Air (Type 2 - Native Soil)		1.08 (E)	71.3 (NE)	175 (NE)	140 (NE)	10.1 (NE)	876 (NE)	34.6 (NE)	211 (NE)	NA	1.19 (NE)	1.65 (NE)
Tier 1 RBTLS - Non-Residential - GW Vapor to Indoor Air (Type 2 - Native Soil)		5.65 (NE)	573 (NE)	1400 (NE)	1130 (NE)	81.1 (NE)	4590 (NE)	278 (NE)	1690 (NE)	NA	6.21 (NE)	8.62 (NE)
TIER 2												
Tier 2 SSTLs - Residential - Groundwater Vapor to Indoor Air		29.5 (NE)	3590 (NE)	8780 (NE)	7050 (NE)	414 (NE)	20500 (NE)	1720 (NE)	10400 (NE)	NA	13.9 (NE)	42.8 (NE)

Entries in red indicate sample results were below detection limits; numbers entered are one half the detection limit

QUESTIONS?