

MUNICIPAL SETTINGS DESIGNATIONS (MSDs) WHAT IS AN MSD AND WHAT ARE THE BENEFITS OF HAVING AN MSD, THEIR LIMITATIONS, AND THEIR MISCONCEPTIONS



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The Municipal Settings Designation (MSD)

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- The MSD is a Deed Restriction that prohibits use of Groundwater for potable (Drinking Water) purposes and is supported City Council Ordinance or Resolution of Support and Texas Commission on Environmental Quality (TCEQ) Certification.
 - To be eligible for an MSD, groundwater must be affected above the groundwater Protective Concentration Level (PCL).
 - Recognizes that shallow groundwater is not used in most urban settings for potable purposes.
 - Prevents groundwater on the property from being used for potable purposes.
 - Eliminates the need to cleanup groundwater to potable purposes.

The MSD Process

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- Pre-MSD meeting with City
- Application to City
- City Review and Deemed Complete
- Public Meeting
- City Council Hearing
- City issues MSD Ordinance or Resolution of Support
- MSD Application to TCEQ
- MSD Certification by TCEQ

Benefits of having an MSD

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Benefits of having an MSD

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- Texas Risk Reduction Program (TRRP) Protective Cleanup Levels (PCLs) are based on people potentially using groundwater for Drinking Water Purposes and tend to be pretty stringent.
- Without an MSD, the following PCLs for the groundwater ingestion exposure pathways are applicable: $^{GW}Soil_{Ing}$, $^{GW}Soil_{Class3}$, $^{GW}GW_{Ing}$, $^{GW}GW_{Class3}$
- With an MSD, PCLs for groundwater ingestion exposure pathways are no longer applicable.
- With an MSD, alternative PCLs can then be developed based on the following non-groundwater ingestion exposure pathways: $^{Tot}Soil_{Comb}$ and $^{Air}GW_{Inh-V}$

Benefits of having an MSD

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Table 1
Tier 1 Residential Soil PCLs¹

Last Revised: March 1, 2022

Chemical of Concern	CAS	0.5 acre source area										
		TotSoil _{Comb} ² (mg/kg)	note ³	GWSoil _{Ing} (mg/kg)	note ³	GWSoil _{Class 3} (mg/kg)	note ³	AirSoil _{Inh-V} ⁴ (mg/kg)	note ³	AirGW-Soil _{Inh-V} (mg/kg)	note ³	GWSoil for Secondary MCL (mg/kg)
Tetrachloroethylene [PCE]	127-18-4	7.1E+02	c	5.0E-02	m	5.0E+00	m	9.4E+02	c	5.0E+03	c >S	
Tetrachlorophenol, 2,3,4,5-	4901-51-3	4.0E+02	n	1.5E+01	n	1.5E+03	n	–	–	–	–	–
Tetrachlorophenol, 2,3,4,6-	58-90-2	1.8E+02	n	4.5E+00	n	4.5E+02	n	–	–	–	–	–
Tetrachlorophenol, 2,3,5,6-	935-95-5	2.3E+01	n	2.2E+00	n	2.2E+02	n >S	–	–	–	–	–
Tetrachlorvinphos (Stirophos)	22248-79-9	2.6E+03	n	2.4E+03	n	2.4E+05	n >S	–	–	–	–	–
Tetradifon	116-29-0	1.0E+03	n	8.7E+01	n	8.7E+03	n >S	–	–	–	–	–
Tetraethyl dithiopyrophosphate (sulfotep)	3689-24-5	3.3E+01	n	3.9E-01	n	3.9E+01	n	–	–	–	–	–
Tetraethyl lead	78-00-2	6.7E-03	n	5.0E-04	n	5.0E-02	n	–	–	–	–	–
Tetraethyl pyrophosphate (TEPP)	107-49-3	7.3E-01	n	9.3E-03	n	9.3E-01	n	–	–	–	–	–
Tetraethylene glycol	112-60-7	2.2E+04	n	1.6E+01	n	1.6E+03	n	–	–	–	–	–
Tetrahydrofuran	109-99-9	1.5E+02	c	2.5E-01	c	2.5E+01	c	1.9E+02	c	4.6E+03	c	–
Tetrahydropyran	142-68-7	1.6E+02	c	2.7E-01	c	2.7E+01	c	2.0E+02	c	5.9E+03	c	–
Tetraoxadodecane, 2,5,8,11-	112-49-2	1.7E+03	n	1.7E+00	n	1.7E+02	n	–	–	–	–	–
Thallium	7440-28-0	5.3E+00	n	1.7E+00	m	1.7E+02	m	–	–	–	–	–

Benefits of having an MSD

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Table 3

Tier 1 Groundwater PCLs - Residential and Commercial

Last Revised: March 1, 2022

Chemical of Concern	CAS	Residential							
		^{GW} GW _{Ing} ² (mg/L)	note ⁴	^{GW} GW _{Class3} ³ (mg/L)	note ⁴	^{Air} GW _{Inh-V} 0.5 acre source area (mg/L)	note ⁴	^{Air} GW _{Inh-V} 30 acre source area (mg/L)	note ⁴
Tetrachloroethylene [PCE]	127-18-4	5.0E-03	m	5.0E-01	m	5.0E+02	c >S	6.4E+01	c
Tetrachlorophenol, 2,3,4,5-	4901-51-3	7.3E-01	n	7.3E+01	n	—	—	—	—
Tetrachlorophenol, 2,3,4,6-	58-90-2	7.3E-01	n	7.3E+01	n	—	—	—	—
Tetrachlorophenol, 2,3,5,6-	935-95-5	7.3E-01	n	7.3E+01	n >S	—	—	—	—
Tetrachlorvinphos (Stirophos)	22248-79-9	1.0E+00	n	1.0E+02	n >S	—	—	—	—
Tetradifon	116-29-0	4.9E-01	n	4.9E+01	n >S	—	—	—	—
Tetraethyl dithiopyrophosphate (sulfotep)	3689-24-5	1.2E-02	n	1.2E+00	n	—	—	—	—
Tetraethyl lead	78-00-2	2.4E-06	n	2.4E-04	n	—	—	—	—
Tetraethyl pyrophosphate (TEPP)	107-49-3	2.7E-04	n	2.7E-02	n	—	—	—	—
Tetraethylene glycol	112-60-7	8.1E+00	n	8.1E+02	n	—	—	—	—
Tetrahydrofuran	109-99-9	1.2E-01	c	1.2E+01	c	2.2E+03	c	2.9E+02	c
Tetrahydropyran	142-68-7	1.2E-01	c	1.2E+01	c	2.6E+03	c	3.4E+02	c
Tetraoxadodecane, 2,5,8,11-	112-49-2	6.1E-01	n	6.1E+01	n	—	—	—	—
Thallium	7440-28-0	2.0E-03	m	2.0E-01	m	—	—	—	—

Benefits of having an MSD

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**TABLE 4D
SOIL DATA SUMMARY - VOCs**

Commercial Property
XYZ Road
Dallas, TX

Sample ID	Sample Date	Tetrachloroethene (mg/kg)	Trichloroethene (mg/kg)	cis-1,2-Dichloroethene (mg/kg)	trans-1,2-Dichloroethene (mg/kg)	1,1-Dichloroethene (mg/kg)	Vinyl Chloride (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl benzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	sec-Butylbenzene (mg/kg)	n-Butylbenzene (mg/kg)	p-Cymene (mg/kg)	1,2-Dichlorobenzene (mg/kg)	Isopropylbenzene (mg/kg)	Methylene Chloride (mg/kg)	n-Propylbenzene (mg/kg)	1,2,4-Trimethylbenzene (mg/kg)	1,3,5-Trimethylbenzene (mg/kg)
TRRP Tier 1 Soil to Groundwater PCL (^{GW} Soil _{1st})		0.05	0.034	0.25	0.49	0.05	0.022	0.026	8.2	7.6	120	0.62	85	150	230	18	350	0.013	45	33	36
TRRP Tier 1 PCL for Class 3 Groundwater (^{GW} Soil _{Class3})		5	3.4	25	49	5	2.2	2.6	820	760	12,000	62	8,500	15,000	23,000	1,800	35,000	1.3	4,500	3,300	3,600
TRRP Tier 1 Soil PCL (^{1st} Soil _{Comb})		710	18	140	590	2,300	3.7	120	5,900	6,400	6,000	800	3,300	3,300	8,200	720	4,300	1,600	2,200	1,600	1,500
TRRP Tier 1 Subsurface Soil PCL (^{Sub} Soil _{1st})		940	31	920	920	5,200	43	160	63,000	29,000	9,400	1,400	N/A	N/A	N/A	800	9,200	13,000	6,300	4,000	3,500
TMW-1 (6)	12/09/19	<0.000546	<0.000730	<0.000445	<0.000641	<0.000410	<0.000652	<0.000306	<0.00148	<0.000496	<0.000646	0.00269 J	<0.000386	<0.000405	<0.000471	<0.000425	<0.000257	<0.00624	<0.000423	<0.000377	<0.000427
TMW-2 (4)	12/09/19	0.0251	<0.000500	<0.000305	<0.000439	<0.000281	<0.000447	<0.000210	<0.00101	<0.000340	<0.000442	0.000527 J	<0.000264	<0.000277	<0.000323	<0.000291	<0.000176	<0.00427	<0.000290	<0.000258	<0.000293
TMW-3 (4)	12/09/19	0.000818 J	<0.000546	<0.000332	<0.000480	<0.000306	<0.000488	<0.000229	<0.00111	<0.000371	<0.000483	<0.000452	<0.000288	<0.000303	<0.000352	<0.000318	<0.000192	<0.00466	<0.000316	<0.000282	<0.000319
TMW-4 (6)	12/09/19	<0.000347	<0.000464	<0.000283	<0.000408	<0.000260	<0.000415	<0.000195	<0.000940	<0.000316	<0.000410	<0.000384	<0.000245	<0.000257	<0.000299	<0.000270	<0.000163	<0.00397	<0.000269	<0.000240	<0.000272
MW-1 (4)	02/24/20	<0.000388	<0.000518	<0.000315	<0.000455	<0.000291	<0.000463	<0.000217	<0.00105	<0.000352	<0.000458	<0.000429	<0.000274	<0.000287	<0.000334	<0.000302	<0.000182	<0.00443	<0.000300	<0.000268	<0.000303
MW-1 (9)	02/24/20	<0.000346	<0.000462	<0.000281	<0.000406	<0.000259	<0.000413	<0.000194	<0.000936	<0.000314	<0.000409	<0.000383	<0.000244	<0.000256	<0.000298	<0.000269	<0.000163	<0.00395	<0.000268	<0.000239	<0.000270
MW-1 (19)	02/24/20	0.0138	<0.000500	0.000547 J	<0.000440	<0.000281	<0.000447	<0.000210	<0.00101	0.000436 J	0.00193	<0.000414	<0.000264	<0.000277	0.000466 J	<0.000291	<0.000176	<0.00427	<0.000290	0.00275 J	0.000932 J
MW-2 (7)	02/24/20	0.0197	0.0114	0.0151	0.00249 J	<0.000294	<0.000468	⁹ <0.00021	<0.00106	<0.000356	<0.000463	<0.000433	<0.000277	<0.000290	<0.000338	<0.000305	<0.000184	<0.00447	<0.000303	<0.000270	<0.000306
MW-2 (14)	02/24/20	368	6.19	<0.211	<0.304	<0.194	<0.309	<0.145	<0.701	<0.235	<0.306	<0.286	<0.183	<0.192	<0.223	0.252 J	<0.122	<2.96	<0.200	0.266 J	<0.203
MW-2 (19)	02/24/20	0.996	0.0371 J	<0.00865	<0.0125	<0.00797	<0.0127	<0.00596	0.0653 J	<0.00966	<0.0126	<0.0118	<0.00751	<0.00788	0.00978 J	<0.00828	<0.00500	0.233 J	<0.00823	0.0342 J	0.0127 J
MW-3 (6)	02/24/20	0.323	0.000726 J	0.00220 J	<0.000444	<0.000283	<0.000708	<0.000212	<0.00102	<0.000344	<0.000447	<0.000418	<0.000267	<0.000280	0.000542 J	<0.000178	<0.00432	<0.000261	<0.00266	<0.000296	
MW-3 (11)	02/24/20	4.71	0.0518 J	0.236 J	<0.0206	<0.0132	<0.0210	<0.00983	0.0746 J	<0.0159	0.0242 J	<0.0194	0.0218 J	<0.0130	<0.0151	<0.0137	0.0266 J	0.344 J	0.0323 J	0.0641 J	0.0285 J
MW-3 (18)	02/24/20	<0.00907	<0.000473	<0.00738	<0.0107	<0.00680	<0.0108	<0.00508	0.0697 J	0.0317	0.0862	<0.0100	<0.00640	0.0223 J	0.0489 J	<0.00706	0.00663 J	0.169 J	0.0241 J	0.170	0.0653 J

Benefits of having an MSD

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**TABLE 2
GROUNDWATER DATA SUMMARY - VOCs**

Commercial Property
XYZ Road
Dallas, TX

Sample ID	Sample Date	Tetrachloro-ethene (mg/L)	Trichloro-ethene (mg/L)	cis-1,2-Dichloro-ethene (mg/L)	trans-1,2-Dichloro-ethene (mg/L)	1,1-Dichloro-ethene (mg/L)	Vinyl Chloride (mg/L)	1,2-Dichloro-benzene (mg/L)	Benzene (mg/L)	Chloro-methane (mg/L)	Methylene Chloride (mg/L)	Naphthalene (mg/L)	All Other VOCs (mg/L)
TRRP Tier 1 PCL (^{GW} GW _{Ing})		0.005	0.005	0.07	0.1	0.007	0.002	0.6	0.005	0.07	0.005	0.49	Varies
TRRP Tier 1 PCL for Class 3 Groundwater (^{GW} GW _{Class3})		0.5	0.5	7	10	0.7	0.2	60	0.5	7	0.5	49	Varies
Tier 1 Non-Ingestion PCL (^{Air} GW _{Inh-V}) - 0.5 acre source area		500	24	1,200	770	1,700	3.8	1,200	180	36	21,000	320	Varies
MW-1	03/10/20	0.0110	<0.00100	<0.00100	<0.00100	<0.00100	<0.000400	<0.00100	<0.00100	<0.00100	<0.00500	<0.00200	BDL
	04/01/21	0.0659	0.00130 J	0.00419	0.000585 J	<0.000216	<0.000234	<0.000236	<0.000214	0.000698 J	<0.00191	<0.00200	BDL
	10/19/21	0.0618	0.00211 J	0.00410	<0.000256	<0.000216	<0.000234	<0.000236	<0.000214	<0.000318	<0.00191	<0.00200	BDL
	04/05/22	0.0596	0.00209 J	0.00383	0.000570 J	<0.000216	<0.000234	<0.000236	<0.000214	<0.000318	<0.00191	<0.00200	BDL
MW-2	03/10/20	Well was dry during sampling											
	03/23/20	1.01	0.0479	0.00157	<0.00100	<0.00100	0.00175 J	<0.00100	<0.00100	<0.00100	<0.00500	0.00855 J	BDL
	04/06/20	Not sampled											
	04/01/21	1.55	0.374	0.0809	0.00342	0.000643 J	0.00624	0.000240 J	<0.000214	0.000604 J	<0.00191	<0.00200	BDL
	10/19/21	2.42	0.396	0.183	<0.00512	<0.00433	<0.00467	<0.00471	<0.00429	<0.00635	<0.0383	<0.0400	BDL
	04/05/22	2.37	0.280	0.0560	0.00369	0.000578 J	0.00416	0.000268 J	<0.000214	<0.000318	<0.00191	<0.00200	BDL
MW-3	03/10/20	Well was dry during sampling											
	03/23/20	Well was dry during sampling											
	04/06/20	0.0168 [U]	<0.00100	0.0123	0.00224	<0.00100	<0.000400	<0.00100	<0.00100	<0.00100	0.00713 J	<0.00200	BDL
	04/01/21	0.102	0.00586	0.132	0.0133	<0.000216	0.00154 J	<0.000236	0.00110	<0.000318	<0.00191	<0.00200	BDL
	10/19/21	0.0970	0.0105	0.219	0.0226	<0.000216	0.0117	<0.000236	0.00283	<0.000318	<0.00191	<0.00200	BDL
	04/05/22	0.0825	0.00332 J	0.0632	0.00887	<0.000216	<0.000234	<0.000236	0.000574 J	<0.000318	<0.00191	<0.00200	BDL
MW-4	04/01/21	Well was dry during sampling											
	10/19/21	0.00256	<0.000424	<0.000174	<0.000256	<0.000216	<0.000234	<0.000236	<0.000214	<0.000318	<0.00191	<0.00200	BDL
	04/05/22	<0.000500	<0.000424	0.000231 J	<0.000256	<0.000216	<0.000234	<0.000236	<0.000214	<0.000318	<0.00191	<0.00200	BDL

MSD Misconception

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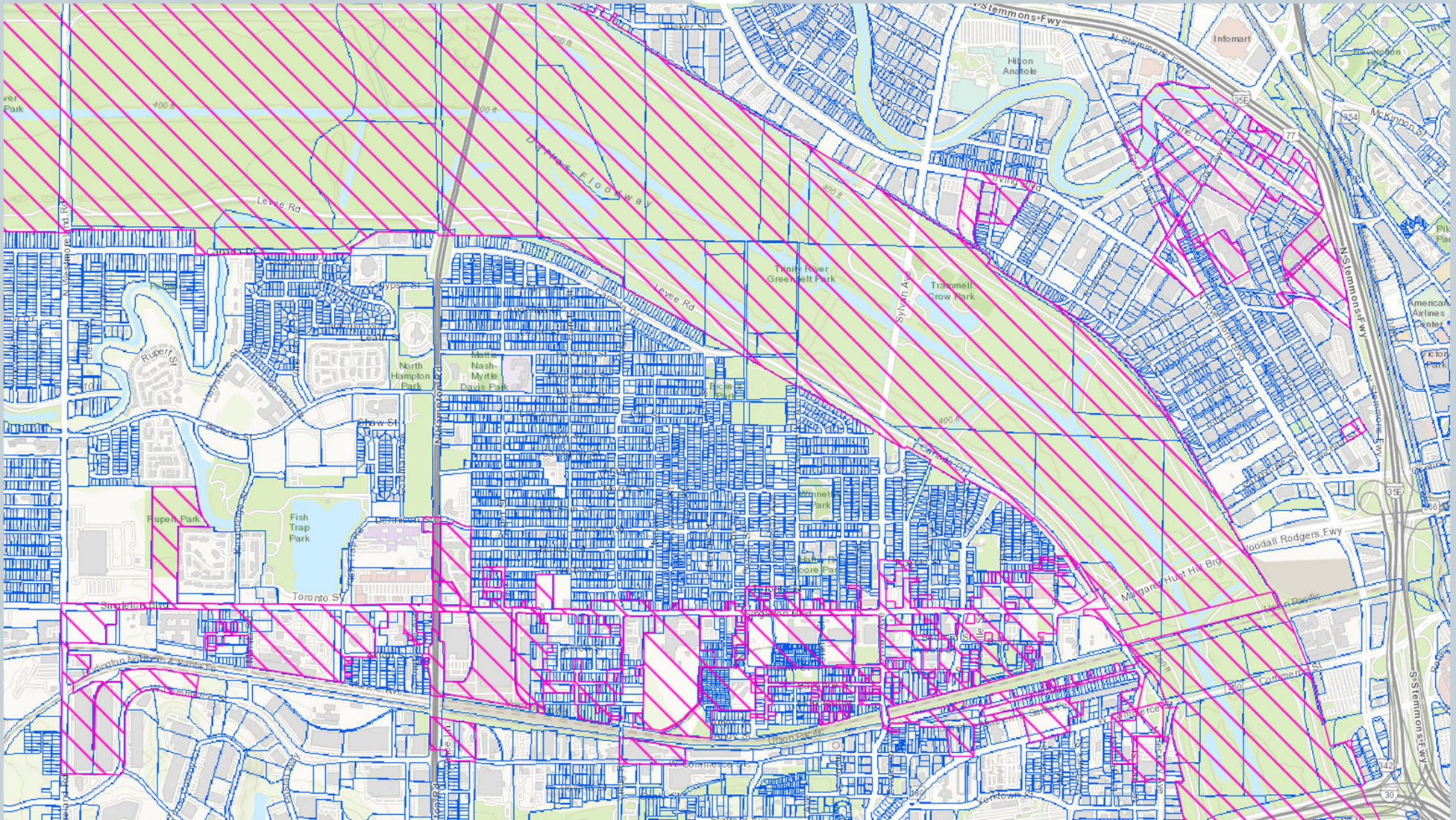
MSD Misconception

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- **Misconception - MSD Coverage = Case Closure**
 - MSD coverage does not equal Case Closure (COC or NFA).
 - The MSD is just a Deed Restriction that prohibits the use of shallow groundwater for drinking water purposes.
 - MSDs can cover multiple properties and some cities have MSDs that cover large areas known for industrial use.
 - Just because a property is located within an MSD Boundary does not necessarily mean that the property is negatively affected.
 - There is usually an anchor property that is in a TCEQ Program (VCP or Corrective Action Program) and is the basis for the MSD and other properties were grouped in on the MSD coverage.
 - Investigations should still be performed on sites where Phase I Environmental Site Assessment (Phase I ESA) identifies Recognized Environmental Conditions (RECs) due to historical property use.
 - There is still a possibility that concentrations could exceed non-ingestion PCLs - $\text{TotSoil}_{\text{Comb}}$ PCLs in soil or $\text{AirGW}_{\text{Inh-V}}$ PCLs in groundwater.

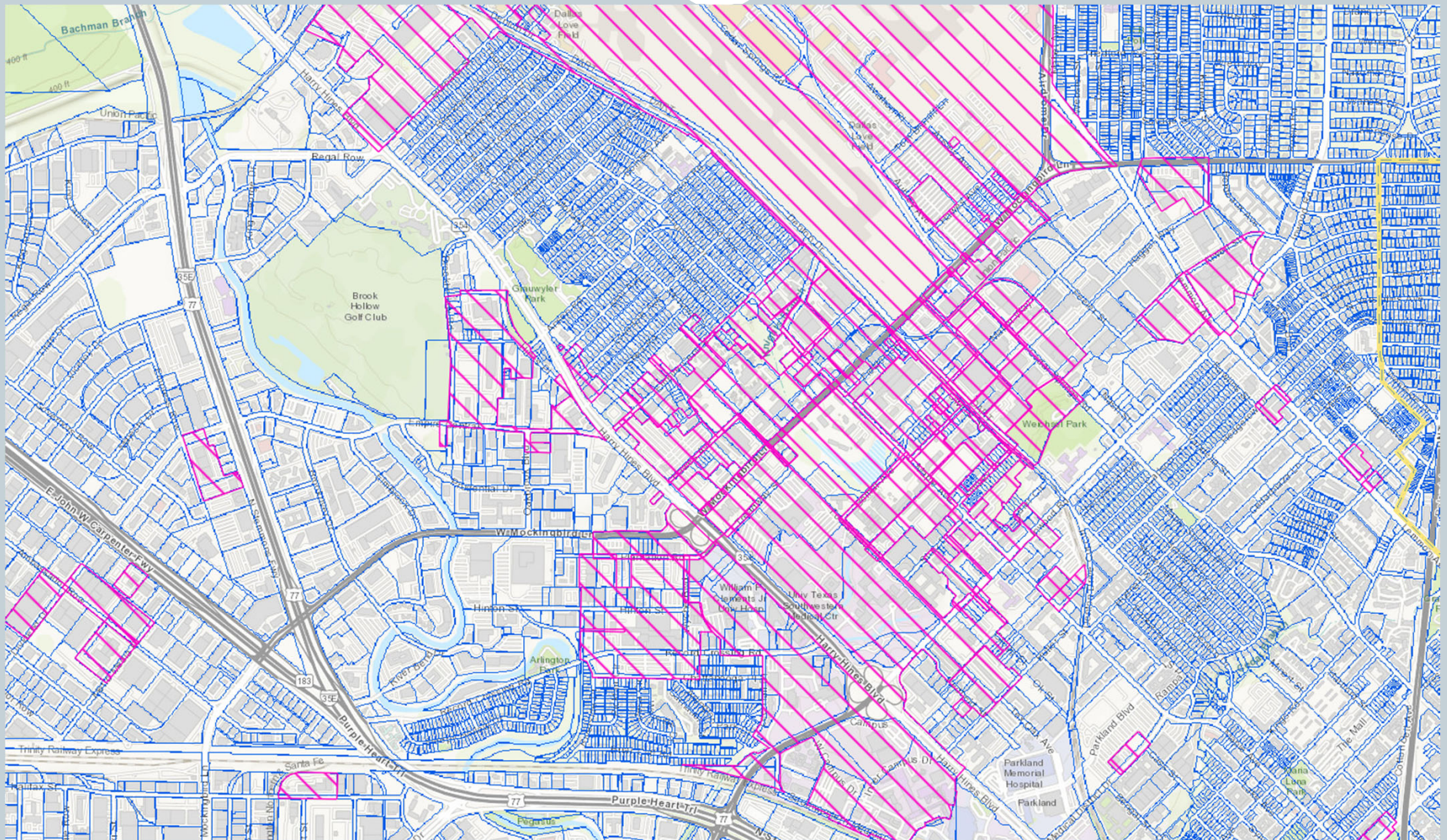
MSD Misconception

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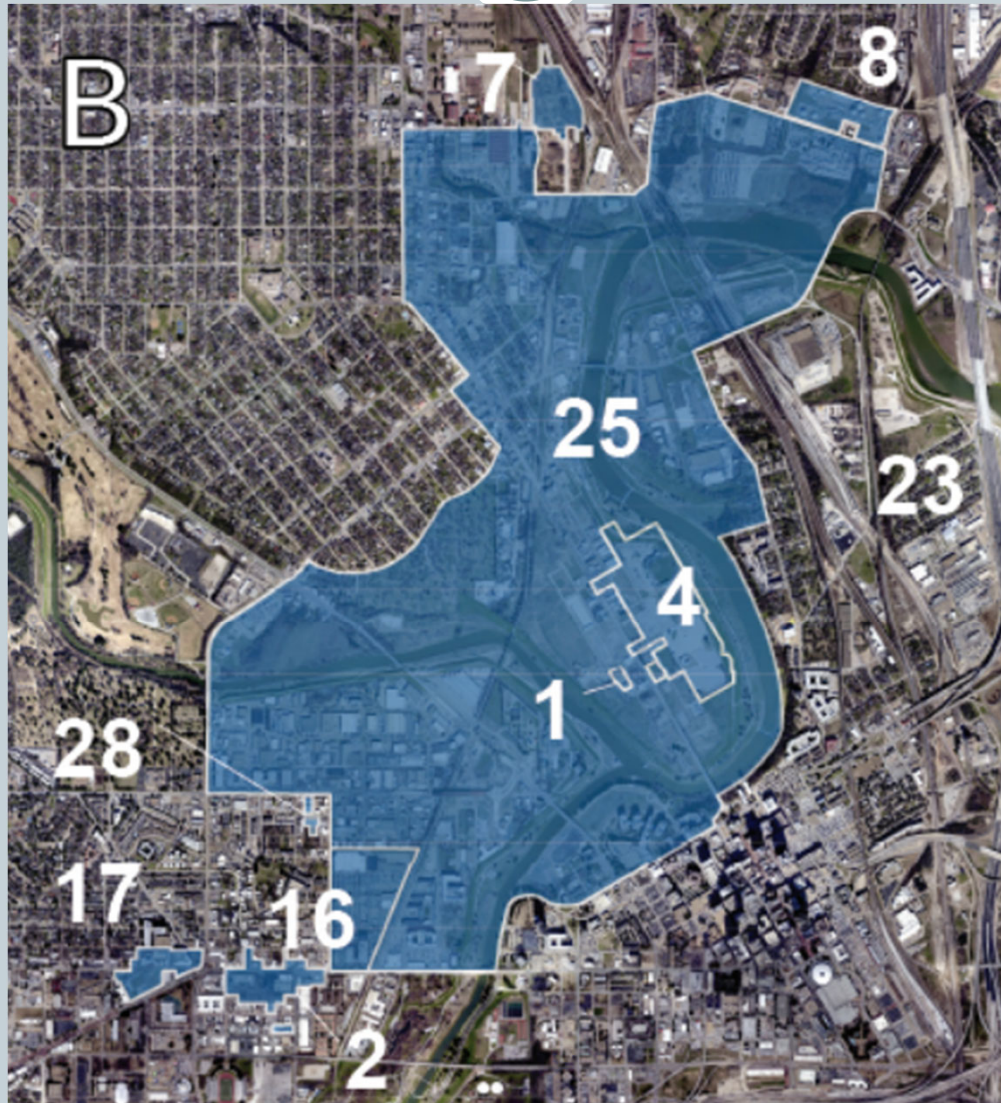
MSD Misconception

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MSD Misconception

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MSD Misconception

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		Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl chloride	1,1-Dichloroethene	1,1-Dichloroethane	Benzene	Toluene	Ethylbenzene	Xylenes, Total
Residential	Air GW _{Inh-V}	498	23.7	1229	768	3.81	1666	43047	180	63590	29732	10225
Sample	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MW-1	7/22/2013	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	8/12/2013	<0.00124	<0.00158	0.00322 J	<0.00088	<0.00085	<0.00076	<0.0005	<0.00056	<0.00055	<0.00129	<0.00198
MW-2/2R	7/22/2013	<0.001	0.48	589	1.75	164	1.43	3.74	0.0183	4.07	0.56	0.748
	8/12/2013	<0.062	0.368	647	<4.4	221	1.54	4.09	<0.028	3.71	0.401	0.507
	10/26/2013	<0.000196	0.455	203	0.873	101	0.83	3.18	0.0154	2.97	0.304	0.401
	1/28/2014	<0.1	<0.05	335	0.932	170	1.13	3.02	<0.05	3.77	0.486	0.611
MW-3	7/22/2013	<0.001	<0.001	8.82	0.0416	12.3	0.0707	0.221	0.0072	0.011	<0.001	<0.001
	8/12/2013	<0.00124	0.00193 J	10.4	<0.22	17.3	0.108	0.279	0.013	0.0156	<0.00129	<0.00198
MW-4	7/22/2013	<0.001	<0.001	0.0203	<0.001	0.0044	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	8/12/2013	<0.00124	<0.00158	0.0225	<0.00088	0.00409 J	<0.00076	<0.0005	<0.00056	<0.00055	<0.00129	<0.00198
MW-5	7/22/2013	<0.001	0.0562	0.0134	<0.001	0.0023	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	8/12/2013	<0.00124	0.0624	0.00768	<0.00088	<0.00085	<0.00076	<0.0005	<0.00056	<0.00055	<0.00129	<0.00198
MW-6	10/26/2013	<0.000196	0.00081 J	14.5	0.0349	24	0.0537	0.0932	0.00377 J	0.03	0.00154 J	0.00183 J
	1/28/2014	<0.002	<0.001	26.5	0.0732	31.7	0.086	0.0811	0.00282 J	0.0305	0.0019 J	<0.001
MW-7	10/26/2013	<0.000196	0.00118 J	0.00159 J	<0.000113	0.00094 J	<0.000111	<0.000103	<0.000097	0.00024 J	<0.00008	<0.000103
	1/28/2014	<0.002	0.00936	0.0218	<0.001	0.00199 J	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
MW-8	10/26/2013	<0.000196	<0.00013	0.0842	0.0016 J	0.0405	<0.000111	0.00104 J	0.00011 J	<0.000164	<0.00008	<0.000103
	1/28/2014	<0.002	<0.001	0.389	0.00805	0.0482	<0.001	0.00395 J	<0.001	<0.001	<0.001	<0.001
MW-9	11/4/2013	<0.000196	<0.00013	<0.000118	<0.000113	<0.000102	<0.000111	0.00024 J	0.00448 J	0.00157 J	<0.00008	<0.000103
	1/28/2014	<0.002	<0.001	<0.001	<0.001	<0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
MW-10	10/26/2013	<0.000196	0.00147 J	0.00048 J	<0.000113	<0.000102	<0.000111	<0.000103	<0.000097	<0.000164	<0.00008	<0.000103
	1/28/2014	<0.002	<0.001	<0.001	<0.001	<0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
MW-11	1/28/2014	<0.002	<0.001	0.167	0.00633	0.0405	0.00142 J	0.001 J	<0.001	<0.001	<0.001	<0.001

Why MSDs are a good Tool on Pollution Cases

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Why MSDs are a good Tool on Pollution Cases

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- The timing to obtain closure using remedial technologies could require many years to complete cleanup with years of subsequent confirmation groundwater sampling and could involve substantial costs to satisfy state regulators.
 - The MSD allows for predictability in costs and timing involved to obtain regulatory closure (COC or NFA).
 - Regulatory closure issued with an MSD can withstand repeated scrutiny over time.

Resources

TCEQ MSD Website:

<https://www.tceq.texas.gov/remediation/msd.html>

City of Dallas MSD Website:

<https://dallascityhall.com/departments/OEQ/Pages/msd.aspx>

City of Fort Worth Website:

[https://www.fortworthtexas.gov/departments/code-compliance/
environmental-quality/services/msd](https://www.fortworthtexas.gov/departments/code-compliance/environmental-quality/services/msd)

City of Houston MSD Website:

<https://www.publicworks.houstontx.gov/msd>

QUESTIONS

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