

Memorandum

TO: City of Auburn Hills Brownfield Redevelopment Authority

FROM: Brian Westhoff, Senior Project Manager, AKT Peerless

DATE: April 12, 2022

SUBJECT: Galloway Creek – 1st Quarter 2022 Results

Galloway Creek Sampling

The City of Auburn Hills retained AKT Peerless to coordinate and conduct sampling of the Galloway Creek from four locations within the city limits. One surface water and one sediment sample were collected from each location (refer to attached Figure).

Sample Locations

- Location A: One surface water and one sediment sample were taken from the Galloway Creek north of 4470 Castlewood Drive.
- Location B: One surface water and one sediment sample were taken from the Galloway Creek along Hole #12 at the Fieldstone Golf Club.
- Location C: One surface water and one sediment sample were taken from the Galloway Creek west of 1361 N Opdyke Road.
- Location D: One surface water and one sediment sample were taken from the Galloway Creek west of 1400 N Squirrel Road.

Analytical Results

Four surface water and four sediment samples were submitted to Fibertec Environmental Services for analysis of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), herbicides, pesticides, Michigan 10 Metals, and hexavalent chromium.

Sediment Results:

- Chromium (total) detected at all four sediment locations was in the trivalent chromium form. Hexavalent chromium was not detected in any of the sediment samples at concentrations exceeding Residential Cleanup Criteria. Therefore, the Chromium (total) is not a concern.
- Location C exceeded Residential Drinking Water Protection Criteria and GSIP Criteria for Arsenic but was below Statewide Default Background Levels.
- Barium, Cadmium, Copper, Lead, Zinc and Fluorene were above detections limits but below Residential Cleanup Criteria.
- The sediment samples were below method detection limits for the remaining VOCs, SVOCs, PCBs, herbicides, pesticides, and Michigan 10 Metals.

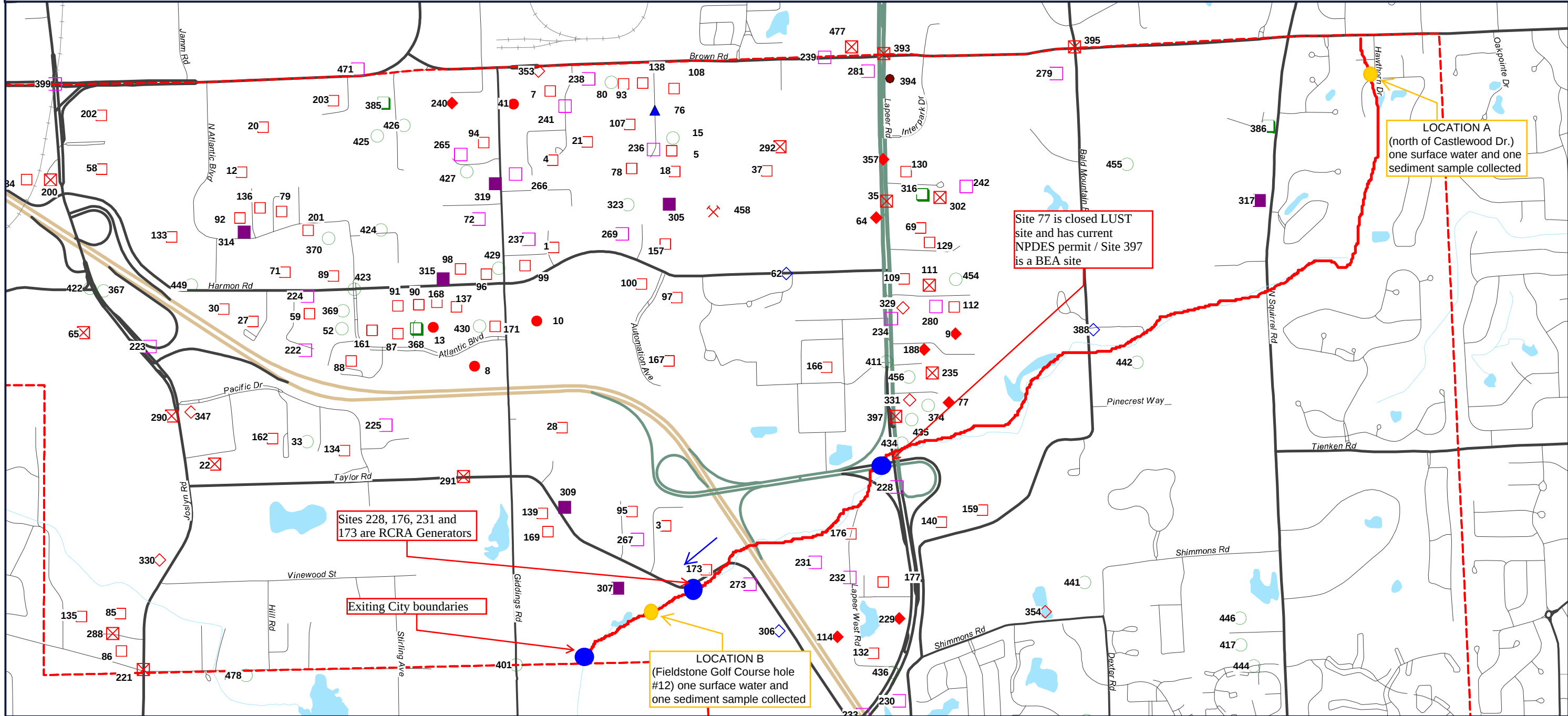
Surface Water Results:

- The surface water samples were below method detection limits for VOCs, SVOCs, PCBs, herbicides, pesticides, Michigan 10 Metals, and hexavalent chromium.

Next Actions:

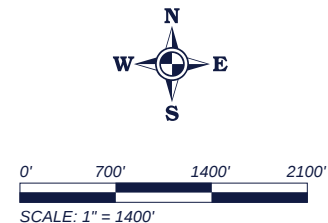
- Future sampling will be on a quarterly basis for the rest of 2022.

RADIUS MAP

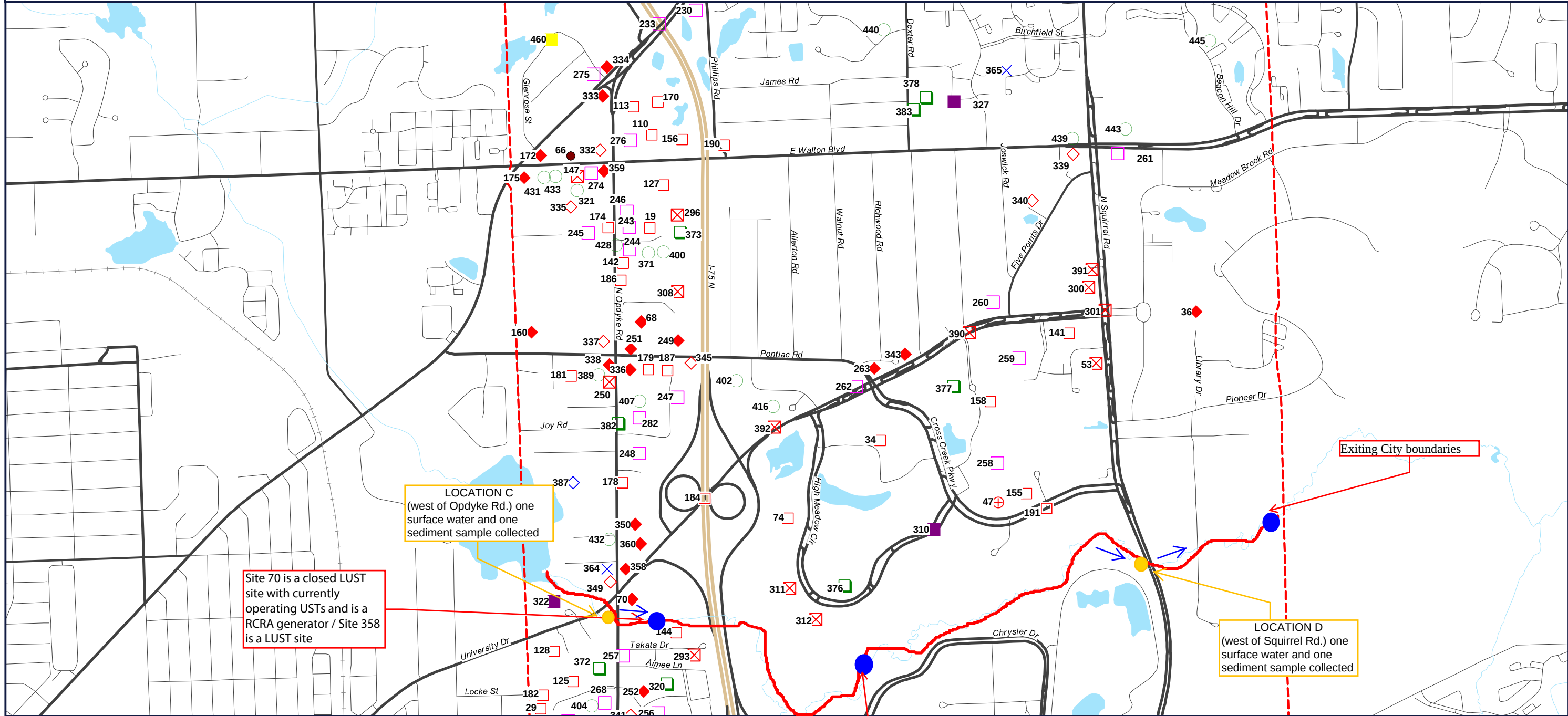


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|----------------------|---------|----------|-----------|----------|------|
| Target Property (TP) | PART201 | SEMSARCH | RAST | NPDES | ICIS |
| RCRA GR05 | BF | ECHOR05 | BF | ERNSMI | |
| PART201 | RUST | BRS | FRSMI | NPDES | |
| BRS | LUST | NMS | HMIRSR05 | ERNSMI | |
| LUST | FRSMI | FUDS | RCRA GR05 | BFR | |
| SSTs | BEA | MLTS | ICEC | MRDS | |
| WDS | IF | ICIS | CLEANERS | ECHOR05 | |
| RCRA GR05 | WDS | RUST | BEA | ALTFUELS | |
| RCRA GR05 | | | | | |

Auburn Hills Michigan
Auburn Hills, Michigan
48326



RADIUS MAP



- | | | | | | |
|----------------------|---------|----------|-----------|----------|-------------------------|
| Target Property (TP) | PART201 | SEMSARCH | RAST | NPDES | ICIS |
| RCRA GR05 | BF | ECHOR05 | BF | ERNSMI | |
| PART201 | RUST | BRS | FRSMI | NPDES | |
| BRS | LUST | NMS | HMIRSR05 | ERNSMI | DIRECTION OF WATER FLOW |
| LUST | FRSMI | FUDS | RCRA GR05 | BFR | |
| SSTS | BEA | MLTS | ICEC | MRDS | |
| WDS | IF | ICIS | CLEANERS | ECHOR05 | |
| RCRA GR05 | WDS | RUST | BEA | ALTFUELS | SAMPLE LOCATIONS |
| RCRA GR05 | | | | | |



Table 1 - Summary of Sediment Analytical Results
Galloway Creek
Auburn Hills, Michigan
AKT Peerless Project No. 13038F-3-20

		Residential														
Parameters*	Chemical Abstract Service Number	Statewide Default Background Levels	Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Soil Volatilization to Indoor Air Inhalation Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation Criteria	Direct Contact Criteria	Soil Saturation Concentration Screening Levels	Sample Location	Location A	Location B	Location C	Location D
*(Refer to detailed laboratory report for method reference data)												Collection Date	03/25/22	03/25/22	03/25/22	03/25/22
												Depth	Surface	Surface	Surface	Surface
Metals		NA	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg			ug/Kg	ug/Kg	ug/Kg	ug/Kg
Arsenic	7440-38-2	5,800	4,600	4,600	NLV	NLV	NLV	NLV	7.2E+5	7,600	NA		2,700	2,900	5,600	4,200
Barium (B)	7440-39-3	75,000	1.3E+6	(G)	NLV	NLV	NLV	NLV	3.3E+8	3.7E+7	NA		14,000	19,000	28,000	10,000
Cadmium (B)	7440-43-9	1,200	6,000	(G,X)	NLV	NLV	NLV	NLV	1.7E+6	5.5E+5	NA		51	100	230	<50
Chromium, Total	7440-47-3	18,000 (total)	30,000	3,300	NLV	NLV	NLV	NLV	2.6E+5	2.5E+6	NA		5,800	8,700	23,000	5,900
Chromium III (B,H)	16065-83-1	18,000 (total)	1.0E+9 (D)	(G,X)	NLV	NLV	NLV	NLV	3.3E+8	7.9E+8	NA					
Chromium VI	18540-29-9	NA	30,000	3,300	NLV	NLV	NLV	NLV	2.6E+5	2.5E+6	NA		<520	570	<510	<490
Copper (B)	7440-50-8	32,000	5.8E+6	(G)	NLV	NLV	NLV	NLV	1.3E+8	2.0E+7	NA		3,900	6,800	29,000	3,900
Lead (B)	7439-92-1	21,000	7.0E+5	(G,X)	NLV	NLV	NLV	NLV	1.0E+8	4.0E+5	NA		3,000	14,000	12,000	3,200
Mercury, Total	7439-97-6	130	1,700	50 (M); 1.2	48,000	52,000	52,000	52,000	2.0E+7	1.6E+5	NA		<50	<50	<50	<50
Selenium (B)	7782-49-2	410	4,000	400	NLV	NLV	NLV	NLV	1.3E+8	2.6E+6	NA		<200	<200	<200	<200
Silver (B)	7440-22-4	1,000	4,500	100 (M); 27	NLV	NLV	NLV	NLV	6.7E+6	2.5E+6	NA		<100	<100	<100	<100
Zinc (B)	7440-66-6	47,000	2.4E+6	(G)	NLV	NLV	NLV	NLV	ID	1.7E+8	NA		18,000	35,000	57,000	19,000
		NA														
PCBs ug/Kg		NA														
PCB, Aroclor 1016	12674-11-2	NA											<100	<100	<100	<100
PCB, Aroclor 1221	11104-28-2	NA											<100	<100	<100	<100
PCB, Aroclor 1232	11141-16-5	NA											<100	<100	<100	<100
PCB, Aroclor 1242	53469-21-9	NA											<100	<100	<100	<100
PCB, Aroclor 1248	12672-29-6	NA											<100	<100	<100	<100
PCB, Aroclor 1254	11097-69-1	NA											<100	<100	<100	<100
PCB, Aroclor 1260	11096-82-5	NA											<100	<100	<100	<100
PCB, Aroclor 1262	37324-23-5	NA											<100	<100	<100	<100
PCB, Aroclor 1268	11100-14-4	NA											<100	<100	<100	<100
Polychlorinated biphenyls (PCBs) (J,T)	1336-36-3	NA	NLL	NLL	3.0E+6	2.4E+5	7.9E+6	7.9E+6	5.2E+6	(T)	NA		<100	<100	<100	<100
Organochlorine Herbicides		NA														
Dalapon	75-99-0	NA	4,000	NA	NLV	NLV	NLV	NLV	ID	1.9E+7	5.9E+7		<100	<100	<100	<100
Dicamba	1918-00-9	NA	4,400	NA	NA	NLV	NLV	NLV	ID	3.4E+6	NA		<100	<100	<100	<100
2,4-Dichlorophenoxyacetic acid	94-75-7	NA	1,400	4,400	NLV	NLV	NLV	NLV	6.7E+9	2.5E+6	NA		<200	<200	<200	<200
Dinoseb	88-85-7	NA	300	200 (M); 43	NLV	NLV	NLV	NLV	2.7E+8	66,000 (DD)	1.4E+5		<100	<100	<100	<100
Silvex (2,4,5-TP)	93-72-1	NA	3,600	2,200	NLV	NLV	NLV	NLV	ID	1.7E+6	NA		<200	<200	<200	<200
Organochlorine Pesticides		NA														
Aldrin	309-00-2	NA	NLL	NLL	1.3E+6	58,000	58,000	58,000	6.4E+5	1,000	NA		<20	<20	<20	<20
Chlordane (J)	57-74-9	NA	NLL	NLL	1.1E+7	1.2E+6	1.2E+6	1.2E+6	3.1E+7	31,000	NA		<25	<25	<25	<25
4-4'-DDD	72-54-8	NA	NLL	NLL	NLV	NLV	NLV	NLV	4.4E+7	95,000	NA		<20	<20	<20	<20
4-4'-DDE	72-55-9	NA	NLL	NLL	NLV	NLV	NLV	NLV	3.2E+7	45,000	NA		<20	<20	<20	<20
4-4'-DDT	50-29-3	NA	NLL	NLL	NLV	NLV	NLV	NLV	3.2E+7	57,000	NA		<20	<20	<20	<20
Dieldrin	60-57-1	NA	NLL	NLL	1.4E+5	19,000	19,000	19,000	6.8E+5	1,100	NA		<20	<20	<20	<20
Endosulfan I	959-98-8	NA											<20	<20	<20	<20
Endosulfan II	33213-65-9	NA											<20	<20	<20	<20
Endrin	72-20-8	NA	NLL	NLL	NLV	NLV	NLV	NLV	ID	65,000	NA		<20	<20	<20	<20
Heptachlor	76-44-8	NA	NLL	NLL	3.5E+5	62,000	62,000	62,000	2.4E+6	5,600	NA		<20	<20	<20	<20

Table 1 - Summary of Sediment Analytical Results
Galloway Creek
Auburn Hills, Michigan
AKT Peerless Project No. 13038F-3-20

Heptachlor epoxide	1024-57-3	NA	NLL	NLL	NLV	NLV	NLV	NLV	1.2E+6	3,100	NA	<20
Hexachlorobutadiene (C-46)	87-68-3	NA	26,000	91	1.3E+5	1.3E+5	1.3E+5	1.3E+5	1.4E+8	1.0E+5	3.5E+5	<330
alpha-Hexachlorocyclohexane	319-84-6	NA	18	ID	30,000	12,000	22,000	25,000	1.7E+6	2,600	NA	<20
beta-Hexachlorocyclohexane	319-85-7	NA	37	ID	NLV	NLV	NLV	NLV	5.9E+6	5,400	NA	<20
Lindane	58-89-9	NA	20 (M); 7.0	20 (M); 1.1	ID	ID	ID	ID	ID	8,300	NA	<20
Methoxychlor	72-43-5	NA	16,000	NA	ID	ID	ID	ID	ID	1.9E+6	NA	<50
Semivolatiles												
Aniline	62-53-3	NA	1,100	330 (M); 80	NLV	NLV	NLV	NLV	6.7E+7	3.3E+5	4.5E+6	<330
Azobenzene	103-33-3	NA	4,200	ID	6.1E+6	6.3E+5	6.3E+5	6.3E+5	1.0E+8	1.4E+5	NA	<330
Benzyl alcohol	100-51-6	NA	2.0E+5	NA	NLV	NLV	NLV	NLV	3.3E+11	3.2E+8 (C)	5.8E+6	<3,300
4-Bromophenyl Phenylether	101-55-3											<330
Butyl benzyl phthalate	85-68-7	NA	2.2E+6 (C)	1.2E+5 (X)	NLV	NLV	NLV	NLV	4.7E+10	3.6E+7 (C)	3.1E+5	<330
Carbazole	86-74-8	NA	9,400	1,100	NLV	NLV	NLV	NLV	6.2E+7	5.3E+5	NA	<330
4-Chloro-3-methylphenol	59-50-7	NA	5,800	280	NLV	NLV	NLV	NLV	ID	4.5E+6	NA	<280
Bis(2-chloroethoxy)methane	111-91-1											<330
bis(2-Chloroethyl)ether (I)	111-44-4	NA	100	100 (M); 20	8,300	3,800	3,800	3,800	9.4E+6	13,000	2.2E+6	<100
Bis(2-chloroisopropyl) Ether	108-60-1											<330
beta-Chloronaphthalene	91-58-7	NA	6.2E+5	NA	ID	ID	ID	ID	ID	5.6E+7	NA	<330
2-Chlorophenol	95-57-8	NA	900	360	4.3E+5	9.6E+5	9.6E+5	9.6E+5	1.2E+9	1.4E+6	1.9E+7	<330
4-Chlorophenyl Phenylether	7005-72-3											<330
Dibenzofuran	132-64-9	NA	ID	1,700	2.0E+6	1.3E+5	1.3E+5	1.3E+5	6.7E+6	ID	NA	<330
2,4-Dichlorophenol	120-83-2	NA	1,500	330 (M); 220	NLV	NLV	NLV	NLV	5.1E+9	6.6E+5 (DD)	1.8E+6	<330
Diethyl phthalate	84-66-2	NA	1.1E+5	2,200	NLV	NLV	NLV	NLV	3.3E+9	1.7E+8 (C)	7.4E+5	<330
2,4-Dimethylphenol	105-67-9	NA	7,400	7,600	NLV	NLV	NLV	NLV	4.7E+9	1.1E+7	NA	<330
Dimethyl phthalate	131-11-3	NA	1.5E+6 (C)	NA	NLV	NLV	NLV	NLV	3.3E+9	1.0E+9 (C,D)	7.9E+5	<330
Di-n-butyl phthalate	84-74-2	NA	9.6E+5 (C)	11,000	NLV	NLV	NLV	NLV	3.3E+9	2.7E+7 (C)	7.6E+5	<330
2,4-Dinitrophenol	51-28-5											<870
2,4-Dinitrotoluene	121-14-2	NA	430	NA	NLV	NLV	NLV	NLV	1.6E+7	48,000	NA	<330
2,6-Dinitrotoluene	606-20-2											<330
Di-n-octyl phthalate	117-84-0	NA	1.0E+8	ID	NLV	NLV	NLV	NLV	3.1E+10	6.9E+6	1.4E+8	<330
bis(2-Ethylhexyl)phthalate	117-81-7	NA	NLL	NLL	NLV	NLV	NLV	NLV	7.0E+8	2.8E+6	1.0E+7	<330
Hexachlorobenzene (C-66)	118-74-1	NA	1,800	350	41,000	17,000	17,000	17,000	6.8E+6	8,900	NA	<330
Hexachlorocyclopentadiene (C-56)	77-47-4	NA	3.2E+5	ID	30,000	50,000	50,000	50,000	1.3E+7	2.3E+6 (C)	7.2E+5	<330
Hexachloroethane	67-72-1	NA	430	1,800 (X)	40,000	5.5E+5	9.3E+5	9.3E+5	2.3E+8	2.3E+5	NA	<330
Isophorone	78-59-1	NA	15,000	26,000 (X)	NLV	NLV	NLV	NLV	1.2E+10	4.8E+6 (C)	2.4E+6	<330
2-Methyl-4,6-dinitrophenol	534-52-1	NA	830 (M); 400	NA	NLV	NLV	NLV	NLV	1.3E+8	79,000	NA	<830
Methylphenol, 2-	95-48-7											<330
Methylphenol, 3- and 4-	MEPH1314											<660
2-Nitroaniline	88-74-4											<330
3-Nitroaniline	99-09-2											<830
4-Nitroaniline	100-01-6											<830
Nitrobenzene (I)	98-95-3	NA	330 (M); 68	3,600 (X)	91,000	54,000	54,000	54,000	4.7E+7	1.0E+5	4.9E+5	<330
2-Nitrophenol	88-75-5	NA	400	ID	NLV	NLV	NLV	NLV	ID	6.3E+5	NA	<330
4-Nitrophenol	100-02-7											<830
N-Nitrosodimethylamine	62-75-9											<330
n-Nitroso-di-n-propylamine	621-64-7	NA	330 (M); 100	NA	NLV	NLV	NLV	NLV	1.6E+6	1,200	1.5E+6	<330
N-Nitrosodiphenylamine	86-30-6	NA	5,400	NA	NLV	NLV	NLV	NLV	2.2E+9	1.7E+6	NA	<330
Pentachlorophenol	87-86-5	NA	22	(G,X)	NLV	NLV	NLV	NLV	1.0E+8	90,000	NA	<800
Phenol	108-95-2	NA	88,000	9,000	NLV	NLV	NLV	NLV	4.0E+10	4.0E+7 (C,DD)	1.2E+7	<330
Pyridine (I)	110-86-1	NA	400	NA	1,100	8,200	40,000	97,000	2.3E+8	2.3E+5 (C)	37,000	<330

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Galloway Creek
Auburn Hills, Michigan
AKT Peerless Project No. 13038F-3-20

2,4,5-Trichlorophenol	95-95-4	NA	39,000	NA	NLV	NLV	NLV	NLV	2.3E+10	2.3E+7	NA	<330	<450	<430	<330
2,4,6-Trichlorophenol	88-06-2	NA	2,400	330 (M); 100	NLV	NLV	NLV	NLV	1.0E+9	7.1E+5	NA	<330	<450	<430	<330
Semivolatiles, PNAs															
Acenaphthene	83-32-9	NA	3.0E+5	8,700	1.9E+8	8.1E+7	8.1E+7	8.1E+7	1.4E+10	4.1E+7	NA	<330	<450	<430	<330
Acenaphthylene	208-96-8	NA	5,900	ID	1.6E+6	2.2E+6	2.2E+6	2.2E+6	2.3E+9	1.6E+6	NA	<330	<450	<430	<330
Anthracene	120-12-7	NA	41,000	ID	1.0E+9 (D)	1.4E+9	1.4E+9	1.4E+9	6.7E+10	2.3E+8	NA	<330	<450	<430	<330
Benzo(a)anthracene (Q)	56-55-3	NA	NLL	NLL	NLV	NLV	NLV	NLV	ID	20,000	NA	<330	<450	<430	<330
Benzo(a)pyrene (Q)	50-32-8	NA	NLL	NLL	NLV	NLV	NLV	NLV	1.5E+6	2,000	NA	<330	<450	<430	<330
Benzo(b)fluoranthene (Q)	205-99-2	NA	NLL	NLL	ID	ID	ID	ID	ID	20,000	NA	<330	<450	<430	<330
Benzo(g,h,i)perylene	191-24-2	NA	NLL	NLL	NLV	NLV	NLV	NLV	8.0E+8	2.5E+6	NA	<330	<450	<430	<330
Benzo(k)fluoranthene (Q)	207-08-9	NA	NLL	NLL	NLV	NLV	NLV	NLV	ID	2.0E+5	NA	<330	<450	<430	<330
Chrysene (Q)	218-01-9	NA	NLL	NLL	ID	ID	ID	ID	ID	2.0E+6	NA	<330	<450	<430	<330
Dibenzo(a,h)anthracene (Q)	53-70-3	NA	NLL	NLL	NLV	NLV	NLV	NLV	ID	2,000	NA	<330	<450	<430	<330
Fluoranthene	206-44-0	NA	7.3E+5	5,500	1.0E+9 (D)	7.4E+8	7.4E+8	7.4E+8	9.3E+9	4.6E+7	NA	<330	<450	470	<330
Fluorene	86-73-7	NA	3.9E+5	5,300	5.8E+8	1.3E+8	1.3E+8	1.3E+8	9.3E+9	2.7E+7	NA	<330	<450	<430	<330
Indeno(1,2,3-cd)pyrene (Q)	193-39-5	NA	NLL	NLL	NLV	NLV	NLV	NLV	ID	20,000	NA	<330	<450	<430	<330
2-Methylnaphthalene	91-57-6	NA	57,000	4,200	2.7E+6	1.5E+6	1.5E+6	1.5E+6	6.7E+8	8.1E+6	NA	<330	<450	<430	<330
Phenanthrene	85-01-8	NA	56,000	2,100	2.8E+6	1.6E+5	1.6E+5	1.6E+5	6.7E+6	1.6E+6	NA	<330	<450	<430	<330
Pyrene	129-00-0	NA	4.8E+5	ID	1.0E+9 (D)	6.5E+8	6.5E+8	6.5E+8	6.7E+9	2.9E+7	NA	<330	<450	<430	<330
Toxaphene															
Toxaphene	8001-35-2	NA	24,000	8,200	NLV	NLV	NLV	NLV	9.7E+6	20,000	NA	<170	<170	<170	<170
Volatiles															
Acetone (I)	67-64-1	NA	15,000	34,000	2.9E+8 (C)	1.3E+8	1.3E+8	1.9E+8	3.9E+11	2.3E+7	1.1E+8	<1,000	<1,000	<1,000	<1,000
Acrylonitrile (I)	107-13-1	NA	100 (M); 52	100 (M); 40	6,600	5,000	5,100	10,000	4.6E+7	16,000	8.3E+6	<160	<170	<160	<140
Benzene (I)	71-43-2	NA	100	4,000 (X)	1,600	13,000	34,000	79,000	3.8E+8	1.8E+5	4.0E+5	<50	<50	<50	<50
Bromobenzene (I)	108-86-1	NA	550	NA	3.1E+5	4.5E+5	4.5E+5	4.5E+5	5.3E+8	5.4E+5	7.6E+5	<100	<100	<100	<100
Bromochloromethane	74-97-5											<100	<100	<100	<100
Bromodichloromethane	75-27-4	NA	1,600 (W)	ID	1,200	9,100	9,700	19,000	8.4E+7	1.1E+5	1.5E+6	<100	<100	<100	<100
Bromoform	75-25-2	NA	1,600 (W)	ID	1.5E+5	9.0E+5	9.0E+5	9.0E+5	2.8E+9	8.2E+5	8.7E+5	<160	<170	<160	<140
Bromomethane	74-83-9	NA	200	100	860	11,000	57,000	1.4E+5	3.3E+8	3.2E+5	2.2E+6	<200	<200	<200	<200
2-Butanone (MEK) (I)	78-93-3	NA	2.6E+5	44,000	5.4E+7 (C)	2.9E+7	2.9E+7	3.5E+7	6.7E+10	1.2E+8 (C,DD)	2.7E+7	<820	<840	<780	<750
n-Butylbenzene	104-51-8	NA	1,600	ID	ID	ID	ID	ID	2.0E+9	2.5E+6	1.0E+7	<82	<84	<78	<71
sec-Butylbenzene	135-98-8	NA	1,600	ID	ID	ID	ID	ID	4.0E+8	2.5E+6	1.0E+7	<82	<84	<78	<71
tert-Butylbenzene (I)	98-06-6	NA	1,600	ID	ID	ID	ID	ID	6.7E+8	2.5E+6	1.0E+7	<82	<84	<78	<71
Carbon disulfide (I,R)	75-15-0	NA	16,000	ID	76,000	1.3E+6	7.9E+6	1.9E+7	4.7E+10	7.2E+6 (C,DD)	2.8E+5	<250	<250	<250	<250
Carbon tetrachloride	56-23-5	NA	100	760 (X)	190	3,500	12,000	28,000	1.3E+8	96,000	3.9E+5	<50	<50	<50	<50
Chlorobenzene (I)	108-90-7	NA	2,000	500	1.2E+5	7.7E+5	9.9E+5	2.1E+6	4.7E+9	4.3E+6 (C)	2.6E+5	<50	<50	<50	<50
Chloroethane	75-00-3	NA	8,600	22,000 (X)	2.9E+6 (C)	3.0E+7	1.2E+8	2.8E+8	6.7E+11	2.6E+6 (C)	9.5E+5	<250	<250	<250	<250
Chloroform	67-66-3	NA	1,600 (W)	7,000	7,200	45,000	1.2E+5	2.7E+5	1.3E+9	1.2E+6	1.5E+6	<50	<50	<50	<50
Chloromethane (I)	74-87-3	NA	5,200	ID	2,300	40,000	4.1E+5	1.0E+6	4.9E+9	1.6E+6 (C)	1.1E+6	<250	<250	<250	<250
o-Chlorotoluene (I)	95-49-8	NA	3,300	ID	2.7E+5	1.2E+6	2.9E+6	6.3E+6	4.7E+9	4.5E+6 (C)	5.0E+5	<50	<50	<50	<50
Dibromochloromethane	124-48-1	NA	1,600 (W)	ID	3,900	24,000	24,000	33,000	1.3E+8	1.1E+5	6.1E+5	<160	<170	<160	<140
Dibromochloropropane	96-12-8	NA	10 (M); 4.0	ID	220	260	260	260	5.6E+5	4,400 (C)	1,200	<250	<250	<250	<250
Dibromomethane	74-95-3	NA	1,600	NA	ID	ID	ID	ID	ID	2.5E+6 (C)	2.0E+6	<250	<250	<250	<250
1,2-Dichlorobenzene	95-50-1	NA	14,000	280	1.1E+7 (C)	3.9E+7	3.9E+7	5.2E+7	1.0E+11	1.9E+7 (C)	2.1E+5	<100	<100	<100	<100
1,3-Dichlorobenzene	541-73-1	NA	170	680	26,000	79,000	79,000	1.1E+5	2.0E+8	2.0E+5 (C)	1.7E+5	<100	<100	<100	<100
1,4-Dichlorobenzene	106-46-7	NA	1,700	360	19,000	77,000	77,000	1.1E+5	4.5E+8	4.0E+5	NA	<100	<100	<100	<100
Dichlorodifluoromethane	75-71-8	NA	95,000	ID	9.0E+5	5.3E+7	5.5E+8	1.4E+9	3.3E+12	5.2E+7 (C)	1.0E+6	<410	<420	<390	<350

Table 1 - Summary of Sediment Analytical Results
Galloway Creek
Auburn Hills, Michigan
AKT Peerless Project No. 13038F-3-20

1,1-Dichloroethane	75-34-3	NA	18,000	15,000	2.3E+5	2.1E+6	5.9E+6	1.4E+7	3.3E+10	2.7E+7 (C)	8.9E+5		<82	<84	<78	<71
1,2-Dichloroethane (I)	107-06-2	NA	100	7,200 (X)	2,100	6,200	11,000	26,000	1.2E+8	91,000	1.2E+6		<82	<84	<78	<71
cis-1,2-Dichloroethylene	156-59-2	NA	1,400	12,000	22,000	1.8E+5	4.2E+5	9.9E+5	2.3E+9	2.5E+6 (C)	6.4E+5		<50	<50	<50	<50
trans-1,2-Dichloroethylene	156-60-5	NA	2,000	30,000 (X)	23,000	2.8E+5	8.3E+5	2.0E+6	4.7E+9	3.8E+6 (C)	1.4E+6		<50	<50	<50	<50
1,1-Dichloroethylene (I)	75-35-4	NA	140	2,600	62	1,100	5,300	13,000	6.2E+7	2.0E+5	5.7E+5		<50	<50	<50	<50
1,2-Dichloropropane (I)	78-87-5	NA	100	4,600 (X)	4,000	25,000	50,000	1.1E+5	2.7E+8	1.4E+5	5.5E+5		<82	<84	<78	<71
cis-1,3-Dichloropropylene	10061-01-5												<82	<84	<78	<71
trans-1,3-Dichloropropylene	10061-02-6												<82	<84	<78	<71
Ethylbenzene (I)	100-41-4	NA	1,500	360	87,000	7.2E+5	1.0E+6	2.2E+6	1.0E+10	2.2E+7 (C)	1.4E+5		<50	<50	<50	<50
Ethylene dibromide	106-93-4	NA	20 (M); 1.0	110 (X)	670	1,700	1,700	3,300	1.4E+7	92	8.9E+5		<50	<50	<50	<50
2-Hexanone	591-78-6	NA	20,000	ID	9.9E+5	1.1E+6	1.1E+6	1.4E+6	2.7E+9	3.2E+7 (C)	2.5E+6		<2,500	<2,500	<2,500	<2,500
Isopropyl benzene	98-82-8	NA	91,000	3,200	4.0E+5 (C)	1.7E+6	1.7E+6	2.8E+6	5.8E+9	2.5E+7 (C)	3.9E+5		<250	<250	<250	<250
4-Methyl-2-pentanone (MIBK) (I)	108-10-1	NA	36,000	ID	3.7E+7 (C)	4.5E+7	4.5E+7	6.7E+7	1.4E+11	5.6E+7 (C)	2.7E+6		<2,500	<2,500	<2,500	<2,500
Methylene chloride	75-09-2	NA	100	30,000 (X)	45,000	2.1E+5	5.9E+5	1.4E+6	6.6E+9	1.3E+6	2.3E+6		<160	<170	<160	<140
Methyl-tert-butyl ether (MTBE)	1634-04-4	NA	800	1.4E+5 (X)	9.9E+6 (C)	2.5E+7	3.9E+7	8.7E+7	2.0E+11	1.5E+6	5.9E+6		<250	<250	<250	<250
Naphthalene	91-20-3	NA	35,000	730	2.5E+5	3.0E+5	3.0E+5	3.0E+5	2.0E+8	1.6E+7	NA		<330	<330	<330	<330
n-Propylbenzene (I)	103-65-1	NA	1,600	ID	ID	ID	ID	ID	1.3E+9	2.5E+6	1.0E+7		<100	<100	<100	<100
Styrene	100-42-5	NA	2,700	2,100 (X)	2.5E+5	9.7E+5	9.7E+5	1.4E+6	5.5E+9	4.0E+5	5.2E+5		<82	<84	<78	<71
1,1,1,2-Tetrachloroethane	630-20-6	NA	1,500	ID	6,200	36,000	54,000	1.0E+5	4.2E+8	4.8E+5 (C)	4.4E+5		<100	<100	<100	<100
1,1,2,2-Tetrachloroethane	79-34-5	NA	170	1,600 (X)	4,300	10,000	10,000	14,000	5.4E+7	53,000	8.7E+5		<82	<84	<78	<71
Tetrachloroethylene	127-18-4	NA	100	1,200 (X)	11,000	1.7E+5	4.8E+5	1.1E+6	2.7E+9	2.0E+5 (C)	88,000		<82	<84	<78	<71
Toluene (I)	108-88-3	NA	16,000	5,400	3.3E+5 (C)	2.8E+6	5.1E+6	1.2E+7	2.7E+10	5.0E+7 (C)	2.5E+5		<50	<50	<50	<50
1,2,4-Trichlorobenzene	120-82-1	NA	4,200	5,900 (X)	9.6E+6 (C)	2.8E+7	2.8E+7	2.8E+7	2.5E+10	9.9E+5 (DD)	1.1E+6		<250	<250	<250	<250
1,1,1-Trichloroethane	71-55-6	NA	4,000	1,800	2.5E+5	3.8E+6	1.2E+7	2.8E+7	6.7E+10	5.0E+8 (C)	4.6E+5		<82	<84	<78	<71
1,1,2-Trichloroethane	79-00-5	NA	100	6,600 (X)	4,600	17,000	21,000	44,000	1.9E+8	1.8E+5	9.2E+5		<50	<50	<50	<50
Trichloroethylene	79-01-6	NA	100	4,000 (X)	1,000	11,000	25,000	57,000	1.3E+8	1.1E+5 (DD)	5.0E+5		<82	<84	<78	<71
Trichlorofluoromethane	75-69-4	NA	52,000	NA	2.8E+6 (C)	9.2E+7	6.3E+8	1.5E+9	3.8E+12	7.9E+7 (C)	5.6E+5		<100	<100	<100	<100
1,2,3-Trichloropropane	96-18-4	NA	840	NA	4,000	9,200	9,200	11,000	2.0E+7	1.3E+6 (C)	8.3E+5		<160	<170	<160	<140
1,2,3-Trimethylbenzene	526-73-8												<100	<100	<100	<100
1,2,4-Trimethylbenzene (I)	95-63-6	NA	2,100	570	4.3E+6 (C)	2.1E+7	5.0E+8	5.0E+8	8.2E+10	3.2E+7 (C)	1.1E+5		<100	<100	<100	<100
1,3,5-Trimethylbenzene (I)	108-67-8	NA	1,800	1,100	2.6E+6 (C)	1.6E+7	3.8E+8	3.8E+8	8.2E+10	3.2E+7 (C)	94,000		<100	<100	<100	<100
Vinyl chloride	75-01-4	NA	40	260 (X)	270	4,200	30,000	73,000	3.5E+8	3,800	4.9E+5		<41	<42	<40	<40
Xylenes (I)	1330-20-7	NA	5,600	980	6.3E+6 (C)	4.6E+7	6.1E+7	1.3E+8	2.9E+11	4.1E+8 (C)	1.5E+5		<150	<150	<150	<150

Table 2: Summary of Surface Water Analytical Results
Galloway Creek
Auburn Hills, Michigan
AKT Peerless Project No. 13038F-3-20

Residential											
Parameters	Chemical Abstract Service Number	Drinking Water Criteria	Groundwater Surface Water Interface Criteria	Groundwater Volatilization to Indoor Air Inhalation Criteria	Water Solubility	Flammability and Explosivity Screening Level	Sample Location	Location A	Location B	Location C	Location D
(Refer to detailed laboratory report for method reference data)							Collection Date	03/25/22	03/25/22	03/25/22	03/25/22
							Screen Depth	Surface	Surface	Surface	Surface
Metals											
Arsenic	7440-38-2	10 (A)	10	NLV	NA	ID		<5.0	<5.0	<5.0	<5.0
Barium (B)	7440-39-3	2,000 (A)	(G)	NLV	NA	ID		<100	<100	<100	<100
Cadmium (B)	7440-43-9	5.0 (A)	(G,X)	NLV	NA	ID		<1.0	<1.0	<1.0	<1.0
Chromium, Total	7440-47-3	100 (A)	11	NLV	NA	ID		<10	<10	<10	<10
Chromium VI	18540-29-9	100 (A)	11	NLV	NA	ID		<5.0	<5.0	<5.0	<5.0
Copper (B)	7440-50-8	1,000 (E)	(G)	NLV	NA	ID		<4.0	<4.0	<4.0	<4.0
Lead (B)	7439-92-1	4.0 (L)	(G,X)	NLV	NA	ID		<3.0	<3.0	<3.0	<3.0
Mercury, Total	7439-97-6	2.0 (A)	0.0013	56 (S)	56	ID		<0.20	<0.20	<0.20	<0.20
Selenium (B)	7782-49-2	50 (A)	5.0	NLV	NA	ID		<5.0	<5.0	<5.0	<5.0
Silver (B)	7440-22-4	34	0.2 (M); 0.06	NLV	NA	ID		<0.20	<0.20	<0.20	<0.20
Zinc (B)	7440-66-6	2,400	(G)	NLV	NA	ID		<50	<50	<50	<50
PCBs											
PCB, Aroclor 1016	12674-11-2							<0.20	<0.20	<0.20	<0.20
PCB, Aroclor 1221	11104-28-2							<0.20	<0.20	<0.20	<0.20
PCB, Aroclor 1232	11141-16-5							<0.20	<0.20	<0.20	<0.20
PCB, Aroclor 1242	53469-21-9							<0.20	<0.20	<0.20	<0.20
PCB, Aroclor 1248	12672-29-6							<0.20	<0.20	<0.20	<0.20
PCB, Aroclor 1254	11097-69-1							<0.20	<0.20	<0.20	<0.20
PCB, Aroclor 1260	11096-82-5							<0.20	<0.20	<0.20	<0.20
PCB, Aroclor 1262	37324-23-5							<0.20	<0.20	<0.20	<0.20
PCB, Aroclor 1268	11100-14-4							<0.20	<0.20	<0.20	<0.20
Polychlorinated biphenyls (PCBs) (J,T)	1336-36-3	0.5 (A)	0.2 (M); 2.6E-5	45 (S)	44.7	ID		<0.20	<0.20	<0.20	<0.20
Pesticides											
Dalapon	75-99-0	200 (A)	NA	NLV	5.02E+8	ID		<10	<10	<10	<10
Dicamba	1918-00-9	220	NA	NLV	4.5E+6	ID		<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenoxyacetic acid	94-75-7	70 (A)	220	NLV	6.80E+5	ID		<10	<10	<10	<10
Dinoseb	88-85-7	7.0 (A)	1.0 (M); 0.48	NLV	52,000	ID		<5.0	<5.0	<5.0	<5.0
Silvex (2,4,5-TP)	93-72-1	50 (A)	30	NLV	1.40E+5	ID		<1.0	<1.0	<1.0	<1.0
Pesticides, Chlorinated											
Aldrin	309-00-2	0.098	0.01 (M); 8.7E-6	180 (S)	180	ID		<0.010	<0.010	<0.010	<0.010
Chlordane (J)	57-74-9	2.0 (A)	2.0 (M); 0.00025	56 (S)	56	ID		<0.050	<0.050	<0.050	<0.050
4-4'-DDD	72-54-8	9.1	NA	NLV	90	ID		<0.020	<0.020	<0.020	<0.020
4-4'-DDE	72-55-9	4.3	NA	NLV	120	ID		<0.020	<0.020	<0.020	<0.020
4-4'-DDT	50-29-3	3.6	0.02 (M); 1.1E-5	NLV	25	NA		<0.020	<0.020	<0.020	<0.020
Dieldrin	60-57-1	0.11	0.02 (M); 6.5E-6	200 (S)	195	ID		<0.020	<0.020	<0.020	<0.020
Endosulfan I	959-98-8							<0.030	<0.030	<0.030	<0.030
Endosulfan II	33213-65-9							<0.020	<0.020	<0.020	<0.020
Endrin	72-20-8	2.0 (A)	ID	NLV	250	ID		<0.020	<0.020	<0.020	<0.020
Heptachlor	76-44-8	0.4 (A)	0.01 (M); 0.0018	180 (S)	180	ID		<0.010	<0.010	<0.010	<0.010

Table 2: Summary of Surface Water Analytical Results
Galloway Creek
Auburn Hills, Michigan
AKT Peerless Project No. 13038F-3-20

Residential												
Parameters	Chemical Abstract Service Number	Drinking Water Criteria	Groundwater Surface Water Interface Criteria	Groundwater Volatilization to Indoor Air Inhalation Criteria	Water Solubility	Flammability and Explosivity Screening Level	Sample Location	Location A	Location B	Location C	Location D	
(Refer to detailed laboratory report for method reference data)							Collection Date	03/25/22	03/25/22	03/25/22	03/25/22	
							Screen Depth	Surface	Surface	Surface	Surface	
Heptachlor epoxide	1024-57-3	0.2 (A)	ID	NLV	200	ID		<0.010	<0.010	<0.010	<0.010	
Hexachlorobutadiene (C-46)	87-68-3	15	0.053	1,600	3,230	ID		<5.0	<5.0	<5.0	<5.0	
alpha-Hexachlorocyclohexane	319-84-6	0.43	ID	2,000 (S)	2,000	ID		<0.010	<0.010	<0.010	<0.010	
beta-Hexachlorocyclohexane	319-85-7	0.88	ID	NLV	240	ID		<0.010	<0.010	<0.010	<0.010	
Lindane	58-89-9	0.2 (A)	0.03 (M); 0.026	ID	6,800	ID		<0.010	<0.010	<0.010	<0.010	
Methoxychlor	72-43-5	40 (A)	NA	ID	45	ID		<0.50	<0.50	<0.50	<0.50	
Semivolatiles												
Aniline	62-53-3	53	4.0 (M); 3.0	NLV	3.60E+7	NA		<4.0	<4.0	<4.0	<4.0	
Azobenzene	103-33-3	23	ID	6,400 (S)	6,400	ID		<5.0	<5.0	<5.0	<5.0	
Benzyl alcohol	100-51-6	10,000	NA	NLV	4.40E+7	ID		<5.0	<5.0	<5.0	<5.0	
4-Bromophenyl Phenylether	101-55-3							<5.0	<5.0	<5.0	<5.0	
Butyl benzyl phthalate	85-68-7	1,200	67 (X)	NLV	2,690	ID		<5.0	<5.0	<5.0	<5.0	
Carbazole	86-74-8	85	10 (M); 4.0	NLV	7,480	ID		<5.0	<5.0	<5.0	<5.0	
4-Chloro-3-methylphenol	59-50-7	150	7.4	NLV	3.90E+6	ID		<5.0	<5.0	<5.0	<5.0	
Bis(2-chloroethoxy)methane	111-91-1							<5.0	<5.0	<5.0	<5.0	
bis(2-Chloroethyl)ether (I)	111-44-4	2.0	1.0 (M); 0.79	38,000	1.72E+7	1.7E+7 (S)		<1.0	<1.0	<1.0	<1.0	
Bis(2-chloroisopropyl) Ether	108-60-1							<5.0	<5.0	<5.0	<5.0	
beta-Chloronaphthalene	91-58-7	1,800	NA	ID	6,740	ID		<5.0	<5.0	<5.0	<5.0	
2-Chlorophenol	95-57-8	45	18	4.9E+5	2.20E+7	ID		<5.0	<5.0	<5.0	<5.0	
4-Chlorophenyl Phenylether	7005-72-3							<5.0	<5.0	<5.0	<5.0	
Dibenzofuran	132-64-9	ID	4.0	10,000 (S)	10,000	ID		<4.0	<4.0	<4.0	<4.0	
2,4-Dichlorophenol	120-83-2	73	11	NLV	4.50E+6	ID		<5.0	<5.0	<5.0	<5.0	
Diethyl phthalate	84-66-2	5,500	110	NLV	1.08E+6	NA		<5.0	<5.0	<5.0	<5.0	
2,4-Dimethylphenol	105-67-9	370	380	NLV	7.87E+6	ID		<5.0	<5.0	<5.0	<5.0	
Dimethyl phthalate	131-11-3	73,000	NA	NLV	4.19E+6	NA		<5.0	<5.0	<5.0	<5.0	
Di-n-butyl phthalate	84-74-2	880	9.7	NLV	11,200	NA		<5.0	<5.0	<5.0	<5.0	
2,4-Dinitrophenol	51-28-5							<20	<20	<20	<20	
2,4-Dinitrotoluene	121-14-2	7.7	NA	NLV	2.70E+5	ID		<5.0	<5.0	<5.0	<5.0	
2,6-Dinitrotoluene	606-20-2							<5.0	<5.0	<5.0	<5.0	
Di-n-octyl phthalate	117-84-0	130	ID	NLV	3,000	ID		<5.0	<5.0	<5.0	<5.0	
bis(2-Ethylhexyl)phthalate	117-81-7	6.0 (A)	14	NLV	340	NA		<5.0	<5.0	<5.0	<5.0	
Hexachlorobenzene (C-66)	118-74-1	1.0 (A)	0.2 (M); 0.0003	440	6,200	ID		<5.0	<5.0	<5.0	<5.0	
Hexachlorocyclopentadiene (C-56)	77-47-4	50 (A)	ID	130	1,800	ID		<5.0	<5.0	<5.0	<5.0	
Hexachloroethane	67-72-1	7.3	6.7 (X)	27,000	50,000	ID		<5.0	<5.0	<5.0	<5.0	
Isophorone	78-59-1	770	1,300 (X)	NLV	1.20E+7	ID		<5.0	<5.0	<5.0	<5.0	
2-Methyl-4,6-dinitrophenol	534-52-1	20 (M); 2.6	NA	NLV	2.00E+5	ID		<20	<20	<20	<20	
Methylphenol, 2-	95-48-7		82					<5.0	<5.0	<5.0	<5.0	
Methylphenol, 3- and 4-	MEPH1314		25					<10	<10	<10	<10	
2-Nitroaniline	88-74-4							<20	<20	<20	<20	
3-Nitroaniline	99-09-2							<20	<20	<20	<20	
4-Nitroaniline	100-01-6							<20	<20	<20	<20	
Nitrobenzene (I)	98-95-3	3.4	180 (X)	2.8E+5	2.09E+6	NA		<3.0	<3.0	<3.0	<3.0	

Table 2: Summary of Surface Water Analytical Results
Galloway Creek
Auburn Hills, Michigan
AKT Peerless Project No. 13038F-3-20

Residential											
Parameters	Chemical Abstract Service Number	Drinking Water Criteria	Groundwater Surface Water Interface Criteria	Groundwater Volatilization to Indoor Air Inhalation Criteria	Water Solubility	Flammability and Explosivity Screening Level	Sample Location	Location A	Location B	Location C	Location D
(Refer to detailed laboratory report for method reference data)							Collection Date	03/25/22	03/25/22	03/25/22	03/25/22
							Screen Depth	Surface	Surface	Surface	Surface
2-Nitrophenol	88-75-5	20	ID	NLV	2.50E+6	ID		<5.0	<5.0	<5.0	<5.0
4-Nitrophenol	100-02-7							<20	<20	<20	<20
N-Nitrosodimethylamine	62-75-9							<5.0	<5.0	<5.0	<5.0
n-Nitroso-di-n-propylamine	621-64-7	5.0 (M); 0.19	NA	NLV	9.89E+6	ID		<5.0	<5.0	<5.0	<5.0
N-Nitrosodiphenylamine	86-30-6	270	NA	NLV	35,100	ID		<5.0	<5.0	<5.0	<5.0
Pentachlorophenol	87-86-5	1.0 (A)	(G,X)	NLV	1.85E+6	ID		<20	<20	<20	<20
Phenol	108-95-2	4,400	450	NLV	8.28E+7	NA		<5.0	<5.0	<5.0	<5.0
Pyridine (I)	110-86-1	20 (M); 7.3	NA	5,500	3.00E+5	81,000		<5.0	<5.0	<5.0	<5.0
2,4,5-Trichlorophenol	95-95-4	730	NA	NLV	1.20E+6	ID		<5.0	<5.0	<5.0	<5.0
2,4,6-Trichlorophenol	88-06-2	120	5.0	NLV	8.00E+5	ID		<4.0	<4.0	<4.0	<4.0
Semivolatiles, PNAs											
Acenaphthene	83-32-9	1,300	38	4,200 (S)	4,240	ID		<5.0	<5.0	<5.0	<5.0
Acenaphthylene	208-96-8	52	ID	3,900 (S)	3,930	ID		<5.0	<5.0	<5.0	<5.0
Anthracene	120-12-7	43 (S)	ID	43 (S)	43.4	ID		<5.0	<5.0	<5.0	<5.0
Benzo(a)anthracene (Q)	56-55-3	2.1	ID	NLV	9.4	ID		<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene (Q)	50-32-8	5.0 (A)	ID	NLV	1.62	ID		<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene (Q)	205-99-2	1.5 (S, AA)	ID	ID	1.5	ID		<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0 (M); 0.26 (S)	ID	NLV	0.26	ID		<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene (Q)	207-08-9	1.0 (M); 0.8 (S)	NA	NLV	0.8	ID		<1.0	<1.0	<1.0	<1.0
Chrysene (Q)	218-01-9	1.6 (S)	ID	ID	1.6	ID		<1.0	<1.0	<1.0	<1.0
Dibenzo(a,h)anthracene (Q)	53-70-3	2.0 (M); 0.21	ID	NLV	2.49	ID		<2.0	<2.0	<2.0	<2.0
Fluoranthene	206-44-0	210 (S)	1.6	210 (S)	206	ID		<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	880	12	2,000 (S)	1,980	ID		<5.0	<5.0	<5.0	<5.0
Indeno(1,2,3-cd)pyrene (Q)	193-39-5	2.0 (M); 0.022 (S)	ID	NLV	0.022	ID		<2.0	<2.0	<2.0	<2.0
2-Methylnaphthalene	91-57-6	260	19	25,000 (S)	24,600	ID		<5.0	<5.0	<5.0	<5.0
Phenanthrene	85-01-8	52	2.0 (M); 1.7	1,000 (S)	1,000	ID		<2.0	<2.0	<2.0	<2.0
Pyrene	129-00-0	140 (S)	ID	140 (S)	135	ID		<5.0	<5.0	<5.0	<5.0
Toxaphene											
Toxaphene	8001-35-2	3.0 (A)	1.0 (M); 6.8E-5	NLV	740	ID		<1.0	<1.0	<1.0	<1.0
Volatiles											
Naphthalene	91-20-3	520	11	31,000 (S)	31,000	NA	<5.0	<5.0	<5.0	<5.0	
1,2,4-Trichlorobenzene	120-82-1	70 (A)	99 (X)	3.0E+5 (S)	3.00E+5	NA	<5.0	<5.0	<5.0	<5.0	