

## ATTACHMENT G

### Underground Injection Control (UIC) Monitoring Parameters and Monitoring Schedule for Leamington ASR Project (13)

Analyte	CAS Number	Units	Maximum Contaminant Level (MCL)	Secondary Drinking Water Regulations	New Injectate Characterization (1)	Yearly Injectate	3-Year Injectate	6-Year Injectate	Baseline Well GW Characterization	Yearly Well GW	3-Year Well GW
<b><i>Inorganics and Metals:</i></b>											
Aluminum	7429-90-5	mg/L		0.05 to 0.2	X		X		X		X
Antimony	7440-36-0	mg/L	0.006		X		X		X		X
Arsenic	7440-38-2	mg/L	0.01		X		X		X		X
Barium	7440-39-3	mg/L	2		X		X		X		X
Beryllium	7440-41-7	mg/L	0.004		X		X		X		X
Cadmium	7440-43-9	mg/L	0.005		X		X		X		X
Chloride	7647-14-5	mg/L		250	X		X		X		X
Chromium (Total)	7440-47-3	mg/L	0.1		X		X		X		X
Copper	7440-50-8	mg/L		1	X		X		X		X
Cyanide (as free Cyanide)	143-33-9	mg/L	0.2		X		X		X		X
Fluoride	7681-49-4	mg/L	4	2	X		X		X		X
Iron	7439-89-6	mg/L		0.3	X		X		X		X
Manganese	7439-96-5	mg/L		0.05	X		X		X		X
Mercury (inorganic)	7487-94-7	mg/L	0.002		X		X		X		X
Nickel	7440-02-0	mg/L			X		X		X		X
Selenium	7782-49-2	mg/L	0.05		X		X		X		X
Silver	7440-22-4	mg/L		0.1	X		X		X		X
Sodium		mg/L			X		X		X		X
Sulfate (2)	7757-82-6	mg/L	1,000	250	X		X		X		X
Thallium	7440-28-0	mg/L	0.002		X		X		X		X
Total Dissolved Solids (3)		mg/L	2000	500	X		X		X		X
Zinc	7440-66-6	mg/L		5	X		X		X		X

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<b>Nitrate/Nitrite:</b>											
Nitrate (as Nitrogen)	14797-55-8	mg/L	10		X	X			X	X	
Nitrite (as Nitrogen)	14797-65-0	mg/L	1		X	X			X	X	
Total Nitrate and Nitrite (as N)		mg/L	10		X	X			X	X	
<b>Asbestos:</b>											
Asbestos (4)	1332-21-4	million fibers/L longer than 10 microns	7		X				X		
<b>Volatile Organic Contaminants (VOC):</b>											
Benzene	71-43-2	mg/L	0.005		X		X		X		X
Carbon tetrachloride	56-23-5	mg/L	0.005		X		X		X		X
Dichlorobenzene o-	95-50-1	mg/L	0.6		X		X		X		X
Dichlorobenzene p-	106-46-7	mg/L	0.075		X		X		X		X
Dichloroethane (1,2-)	107-06-2	mg/L	0.005		X		X		X		X
Dichloroethylene (1,1-)	75-35-4	mg/L	0.007		X		X		X		X
Dichloroethylene (cis-1,2-)	156-59-2	mg/L	0.07		X		X		X		X
Dichloroethylene (trans-1,2-)	156-60-5	mg/L	0.1		X		X		X		X
Dichloromethane	75-09-2	mg/L	0.005		X		X		X		X
Dichloropropane (1,2-)	78-87-5	mg/L	0.005		X		X		X		X
Ethylbenzene	100-41-4	mg/L	0.7		X		X		X		X
Monochlorobenzene	108-90-7	mg/L	0.1		X		X		X		X
Styrene	100-42-5	mg/L	0.1		X		X		X		X
Tetrachloroethylene	127-18-4	mg/L	0.005		X		X		X		X
Toluene	108-88-3	mg/L	1		X		X		X		X
Trichlorobenzene (1,2,4-)	120-82-1	mg/L	0.07		X		X		X		X

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Trichloroethane (1,1,1-)	71-55-6	mg/L	0.2		X		X		X		X
Trichloroethane (1,1,2-)	79-00-5	mg/L	0.005		X		X		X		X
Trichloroethylene	79-01-6	mg/L	0.005		X		X		X		X
Vinyl chloride	75-01-4	mg/L	0.002		X		X		X		X
Xylenes	1330-20-7	mg/L	10		X		X		X		X
<b>Pesticides:</b>											
2,4 - D (2,4 - dichlorophenoxyacetic acid)	94-75-7	mg/L	0.07		X				X		X
2,4,5-TP (Silvex)	93-72-1	mg/L	0.05		X				X		X
Alachlor	15972-60-8	mg/L	0.002		X				X		X
Aldicarb	116-06-3	mg/L	0.003		X				X		X
Aldicarb sulfone	1646-88-4	mg/L	0.003		X				X		X
Aldicarb sulfoxide	1646-87-3	mg/L	0.004		X				X		X
Atrazine	1912-24-9	mg/L	0.003		X				X		X
Benzo(a)pyrene (PAH)	50-32-8	mg/L	0.0002		X				X		X
Carbofuran	1563-66-2	mg/L	0.04		X				X		X
Chlordane	57-74-9	mg/L	0.002		X				X		X
Dalapon (sodium salt)	75-99-0	mg/L	0.2		X				X		X
Di(2-ethylhexyl) adipate	103-23-1	mg/L	0.4		X				X		X
Di(2-ethylhexyl) phthalate	117-81-7	mg/L	0.006		X				X		X
Dinoseb	88-85-7	mg/L	0.007		X				X		X
Endrin	72-20-8	mg/L	0.002		X				X		X
Heptachlor	76-44-8	mg/L	0.0004		X				X		X
Heptachlor epoxide	1024-57-3	mg/L	0.0002		X				X		X
Hexachlorobenzene	118-74-1	mg/L	0.001		X				X		X
Hexachlorocyclopentadiene	77-47-4	mg/L	0.05		X				X		X

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Lindane	58-89-9	mg/L	0.0002		X				X		X
Methoxychlor	72-43-5	mg/L	0.04		X				X		X
Oxamyl (Vydate)	23135-22-0	mg/L	0.2		X				X		X
Pentachlorophenol	87-86-5	mg/L	0.001		X				X		X
Picloram	2/1/1918	mg/L	0.5		X				X		X
Polychlorinated biphenyls (PCBs)	1336-36-3	mg/L	0.0005		X				X		X
Simazine	122-34-9	mg/L	0.004		X				X		X
Toxaphene	8001-35-2	mg/L	0.003		X				X		X
<b>Radionuclides:</b>											
Gross alpha particle activity (including Radium 226 but excluding Radon and Uranium)		pCi/L	15		X			X	X		X
Radium-226 (only required if gross alpha is >= 5pCi/L)	7440-14-4	pCi/L	5					X	X		X
Radium-228	7440-14-4	pCi/L	5					X	X		X
Uranium (only if gross alpha MCL is exceeded)	7440-61-1	mg/L	0.03		X			X	X		X
Gross beta particle and photon emitters (5)		mrem/yr	4		X			X	X		X
Tritium (only if gross beta exceeds 50 pCi/L)		pCi/L	20,000		X			X	X		X
Strontium-90 (only if gross beta exceeds 50 pCi/L)		pCi/L	8		X			X	X		X
Radon	10043-92-2	pCi/L			X			X	X		X

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<b>Total Trihalomethanes (TTHMs): (required only if Chlorine is used as disinfectant) (6)</b>											
		mg/L	0.08		X	X			X	X	
Chloroform	67-66-3	mg/L			X	X			X	X	
Bromodichloromethane	75-27-4	mg/L			X	X			X	X	
Dibromochloromethane	124-48-1	mg/L			X	X			X	X	
Bromoform	75-25-2	mg/L			X	X			X	X	
<b>Haloacetic acids (HAA5): (required only if Chlorine is used as disinfectant) (7)</b>											
		mg/L	0.06		X	X			X	X	
<i>Trihaloacetic acids (THAAs)</i>											
Trichloroacetic acid (TCAA)	76-03-9	mg/L			X	X			X	X	
<i>Dihaloacetic acids (DHAAs)</i>											
Dichloroacetic acid (DCAA)	76-43-6	mg/L			X	X			X	X	
Dibromoacetic acid (DBAA)	631-64-1	mg/L			X	X			X	X	
<i>Monohaloacetic acids (MHAAs)</i>											
Monochloroacetic acid (MCAA)	79-11-8	mg/L			X	X			X	X	
Monobromoacetic acid (MBAA)	79-08-3	mg/L			X	X			X	X	

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<b>Disinfectants and Their By-Products: (8)</b>											
Chloramine (only if used as a disinfectant)	10599-90-3	mg/L	4		X	X			X	X	
Chlorine	7782-50-5	mg/L	4		X	X			X	X	
Chlorine Dioxide (only if used as a disinfectant)	10049-04-4	mg/L	0.8		X	X			X	X	
Chlorite (only if Chlorine Dioxide is used as a disinfectant)	7758-19-2	mg/L	1		X	X			X	X	
Bromide / Bromate (only if Ozone is used as a disinfectant) (9)	24959-67-9	mg/L			X	X			X	X	
<b>Turbidity:</b>											
		NTU	(10)		X	X			X	X	
<b>Total Coliform:</b>											
			(11)		X	X			X	monthly	
<b>Additional Parameters for New Source Monitoring to Comply with DDW Requirements:</b>											
Color		Color Units		15	X				X		
Corrosivity				Non-Corrosive	X				X		
Foaming Agents		mg/L		0.5	X				X		
Odor		Threshold Odor Number		3	X				X		

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pH		pH units		6.5 – 8.5	X	X			X	X	X
Ammonia, as N		mg/L			X				X		
Boron		mg/L			X				X		
Calcium		mg/L			X				X		
Lead		mg/L			X				X		
Magnesium		mg/L			X				X		
Potassium		mg/L			X				X		
Specific Conductivity at 25 <sup>o</sup> C		µmhos/cm			X	X			X	X	X
Bicarbonate		mg/L			X				X		
Carbon Dioxide		mg/L			X				X		
Carbonate		mg/L			X				X		
Hydroxide		mg/L			X				X		
Phosphorous, Ortho as P		mg/L			X				X		
Silica, dissolved as SiO <sub>2</sub>		mg/L			X				X		
Surfactant as MBAS		mg/L			X				X		
Total Hardness as CaCO <sub>3</sub>		mg/L			X				X		
Alkalinity as CaCO <sub>3</sub>		mg/L			X				X		
Temperature		degrees C or F				X			X	X	X
Total Organic Carbon (TOC) (12)		mg/L			X				X		

## NOTES:

- (1) Permittee shall analyze any new injection source annually for the permit cycle. This is to comply with the Division of Drinking Water's requirement for new source monitoring.
- (2) According to Utah DDW, if Sulfate is greater than 500 mg/l the water management must demonstrate that no better water is available.
- (3) DDW has TDS limits of 2,000 mg/l but because of the Ground Water/UIC Rules, injection of water with TDS concentrations greater than the TDS limit of the Ground Water Class of the receiving aquifer is not permitted.
- (4) Asbestos monitoring is not required unless the new source is located in area of natural deposits of asbestos or the distribution system contains any asbestos cement piping.
- (5) See R309-200-5(4) (d) for actual MCL of 4 millirem/year. Use 50 pCi/L as a screening level for further analysis.
- (6) According to Utah DDW, the maximum contaminant level for community water systems serving a population of 10,000 or more and utilizing chlorine as a disinfectant is 80 µg/l as a location based running annual average.
- (7) HAA5 includes MCAA, DCAA, TCAA, MBAA, and DBAA
- (8) The permit limits for disinfectants are maximum residual disinfectant levels (MRDLs) and not MCLs
- (9) DWQ has added bromide to the analytical parameter list with an analytical method reporting limit not to exceed 0.02 mg/L. If the bromide concentration exceeds 0.04 mg/L, permittee will be required to analyze for bromate concentrations.
- (10) The turbidity limit for surface water sources or ground water sources under the direct influence of surface water is 0.3 NTU in at least 95% of the samples per month. The turbidity limit for slow sand filtration and diatomaceous earth filtration is 1.0 NTU in at least 95% of the samples per month. The turbidity level for ground water sources not under the direct influence of surface water is 5.0 NTU.
- (11) For a system which collects less than 40 samples per month, no more than one sample per month may be total coliform-positive. For a system which collects 40 or more samples per month, no more than 5.0 % of the samples collected during a month may be total coliform-positive. Any fecal coliform-positive or Escherichia coliform (E. coli)-positive repeat sample or any total coliform-positive repeat sample following a fecal coliform-positive or E.coli-positive routine sample constitutes an acute MCL violation for total coliforms. This applies to samples taken throughout the distribution system. For the injection wells, no more than 5% of the monthly samples collected of the plant effluent may be total coliform-positive.
- (12) If surface water is the source of the injectate, total organic carbon (TOC) shall be included for analysis.
- (13) Contact the Utah Division of Drinking Water for any analytical data that may be available for any injectate source or ground water before commencing a monitoring plan.