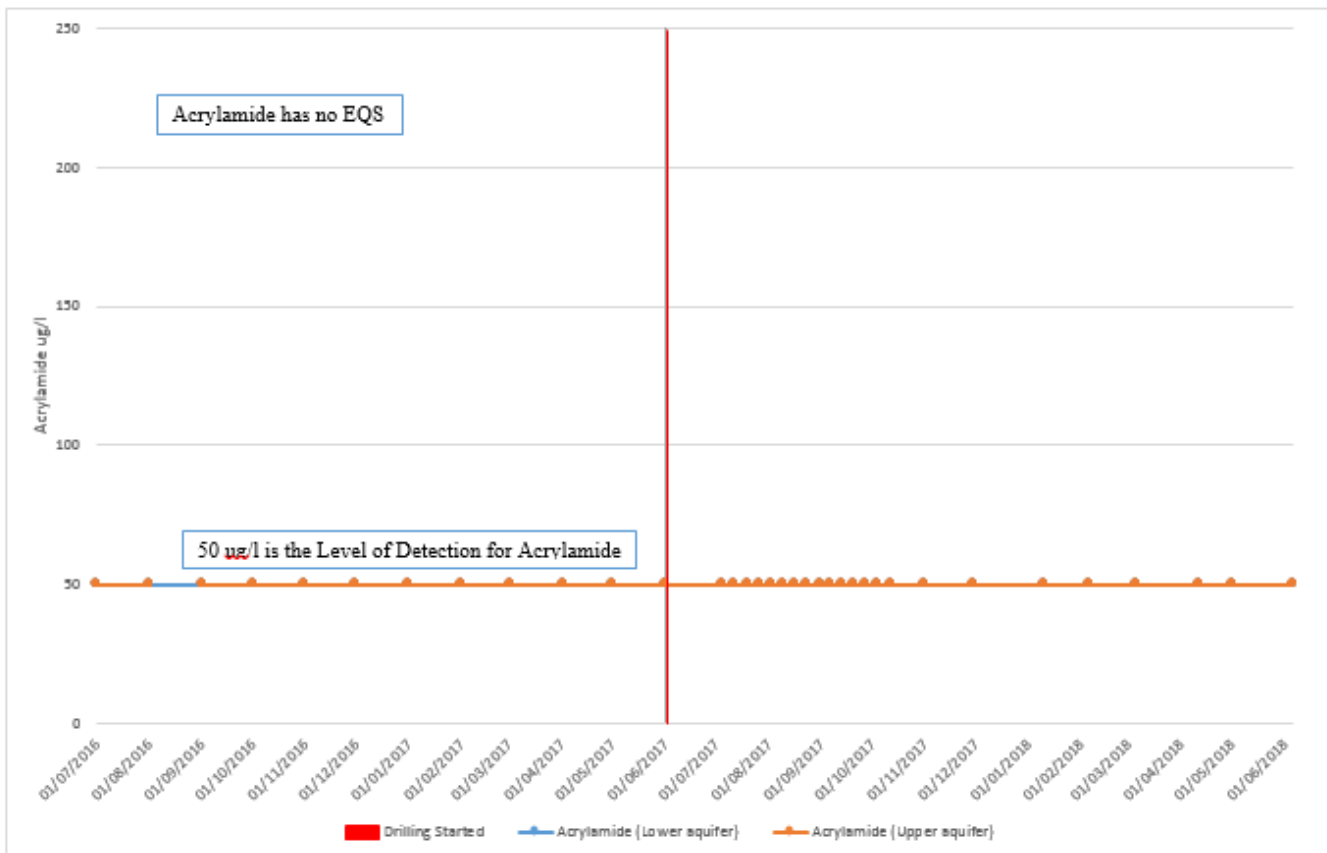


# Preston New Road Groundwater Monitoring Data Q2 2018

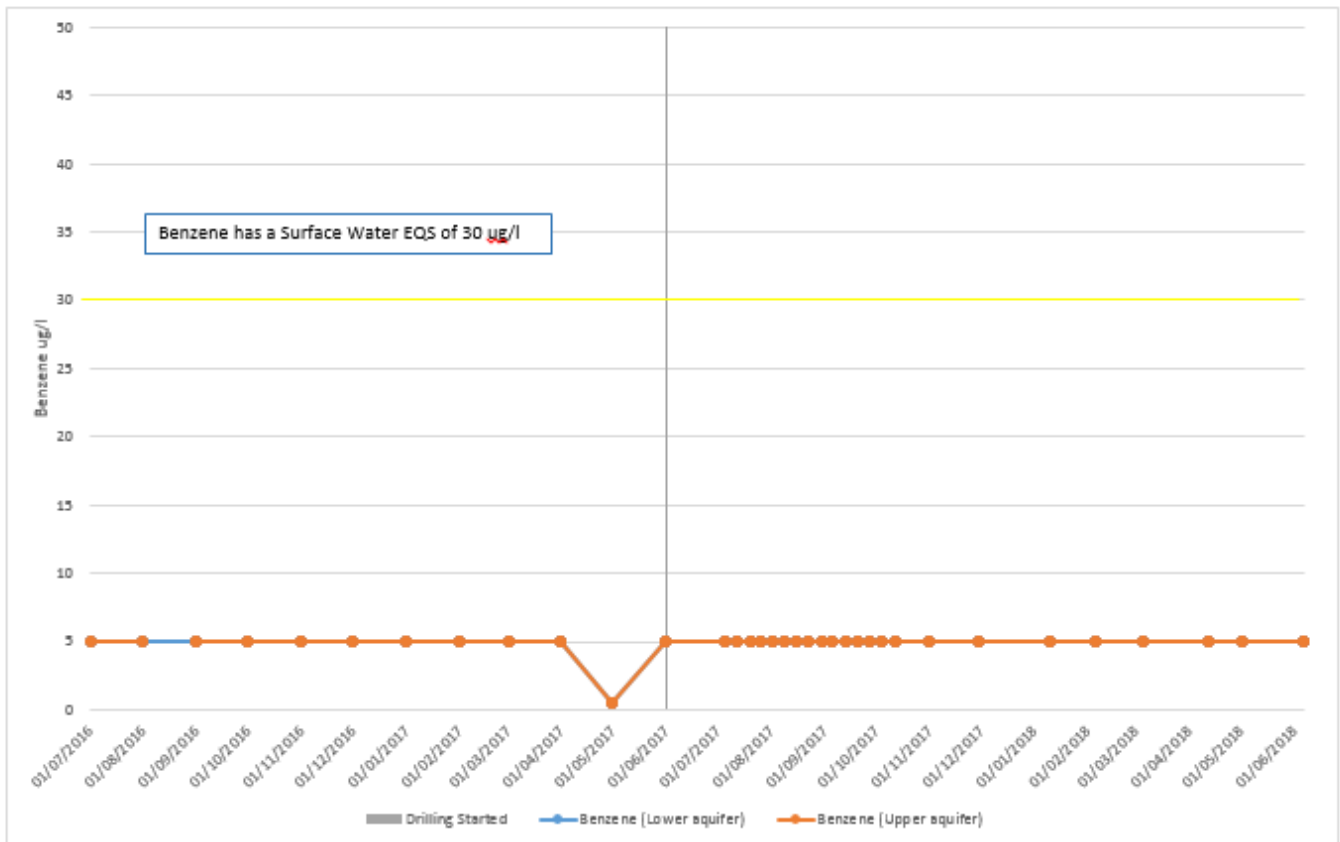
The following report includes Cuadrilla's quarterly groundwater monitoring data for Q2 2018 (April - June 2018).

## Acrylamide



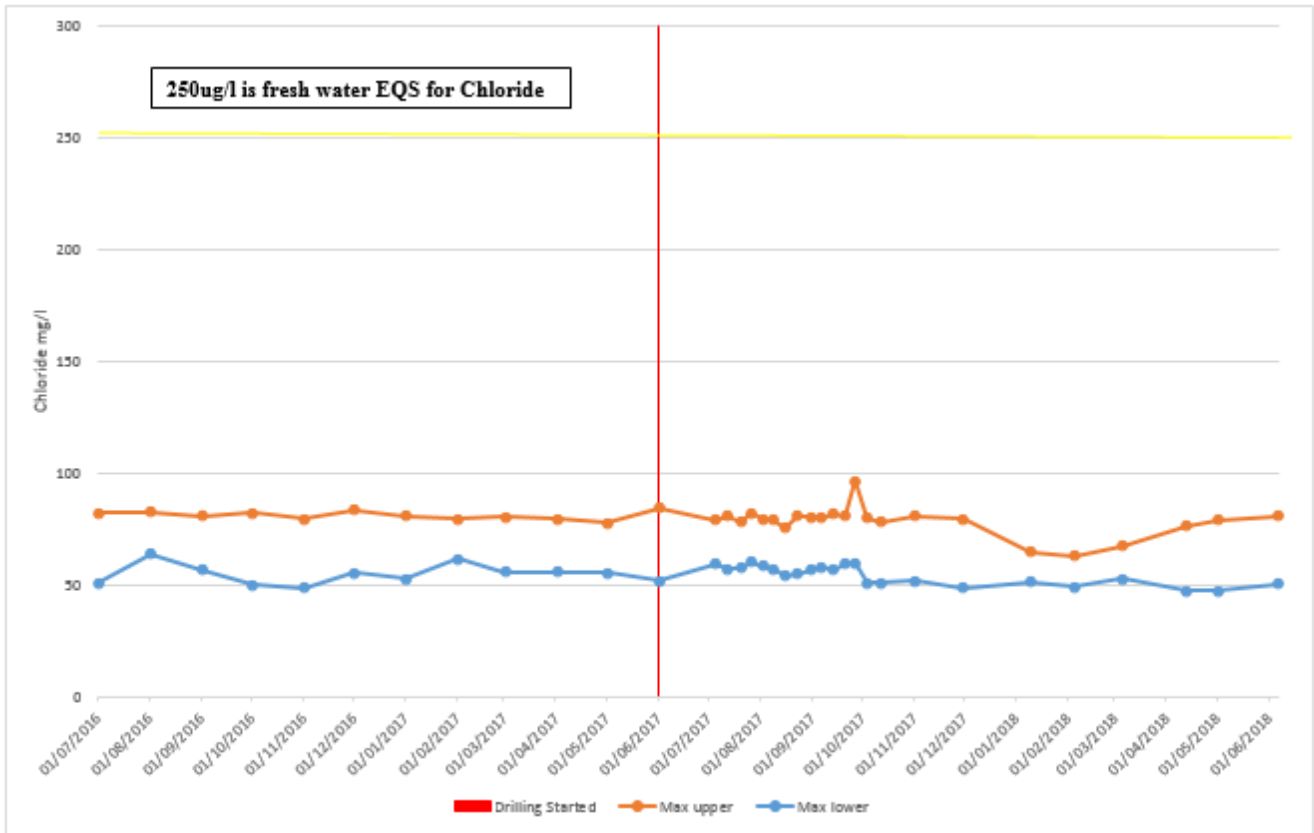
**Groundwater Monitoring Preston New Road Acrylamide in 2 aquifers**

## Benzene



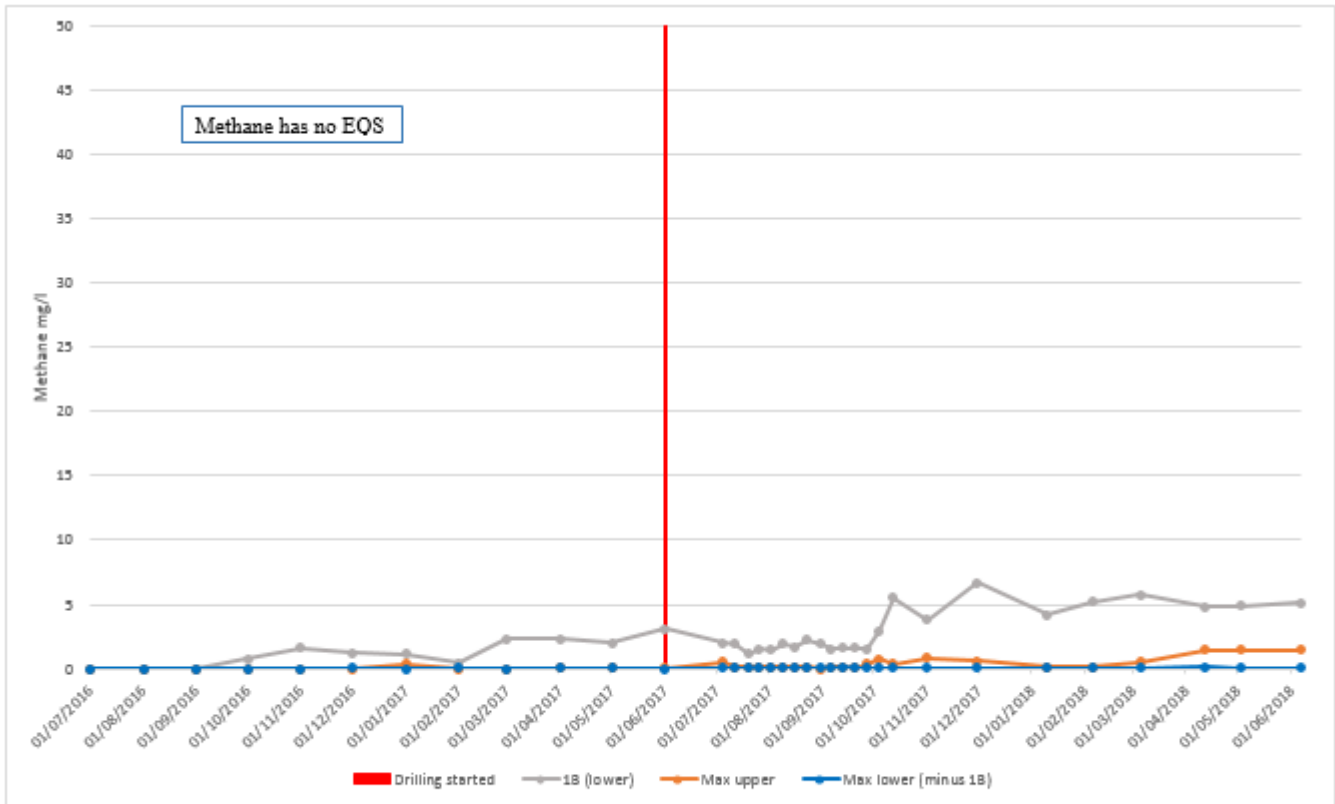
**Groundwater Monitoring Preston New Road Benzene in 2 Aquifers (Maximum Values)**

# Chloride



**Groundwater Monitoring Preston New Road Chloride in 2 Aquifers (Maximum Values)**

# Methane



**Groundwater Monitoring Preston New Road Methane in 2 aquifers (Maximum Values)**

## Cuadrilla Preston New Road Groundwater Quality Monitoring Q2 2018 - Upper Aquifer

Substance/ Parameter	1(A)			2(A)			3(A)			4(A)		
	12-Apr-18	02-May-18	06-Jun-18	12-Apr-18	02-May-18	06-Jun-18	12-Apr-18	02-May-18	06-Jun-18	12-Apr-18	02-May-18	06-Jun-18
Dissolved Aluminium #	20	20	20	20	20	20	20	20	20	20	20	20
Dissolved Antimony #	2	2	2	2	2	2	2	2	2	3	3	2
Dissolved Arsenic #	2.5	2.5	2.5	2.5	2.5	2.5	2.5	5.4	2.5	2.5	2.5	6.3
Dissolved Barium #	177	156	166	107	97	100	49	45	47	144	137	89
Dissolved Beryllium	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Dissolved Boron	31	24	35	44	31	40	57	33	54	33	12	42
Dissolved Cadmium #	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Dissolved Calcium #	114.8	123.2	114.9	115.5	119.8	116.9	113.3	115	113.3	115.8	118.4	119.6
Total Dissolved Chromium #	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Dissolved Cobalt #	2	2	2	2	2	2	2	2	2	2	2	2
Dissolved Copper #	7	7	7	7	7	7	7	7	7	7	7	7
Total Dissolved Iron #	20	20	20	20	20	20	20	20	20	20	20	406
Dissolved Lead #	5	5	5	5	5	5	5	5	5	5	5	5
Dissolved Lithium	8	8	10	10	9	14	14	14	13	9	8	12
Dissolved Magnesium #	34.8	38.3	38.5	34.5	36.6	38.2	32.6	33.4	36	34.4	35.3	35.1
Dissolved Mercury #	1	1	1	1	1	1	1	1	1	1	1	1
Dissolved Nickel #	2	2	2	2	2	2	2	2	2	2	2	11
Dissolved Potassium #	2.3	2.6	2.7	2.9	3.1	3.3	1.8	1.9	2.1	1.7	1.6	1.9
Dissolved Selenium #	3	3	3	3	3	3	3	3	3	3	3	3
Dissolved Silver	5	5	5	5	5	5	5	5	5	5	5	5
Dissolved Sodium #	30.9	33.3	34.4	26.2	26.9	29.2	30.6	30.4	34.2	39.1	39.4	32.6
Dissolved Strontium	247	221	241	282	278	301	547	494	571	240	204	455
Dissolved Vanadium #	1.8	1.5	1.5	1.5	2.3	1.5	1.5	1.5	1.5	1.7	1.5	1.5
Dissolved Zinc #	3	3	3	3	3	3	6	12	4	3	3	5
EPH (C8-C40) #	10	10	10	10	10	10	10	10	10	10	10	10
GRO (>C4-C8) #	10	10	10	10	10	10	10	10	10	10	10	10
GRO (>C8-C12) #	10	10	10	10	10	10	10	10	10	10	10	10
GRO (>C4-C12) #	10	10	10	10	10	10	10	10	10	10	10	10
MTBE #	5	5	5	5	5	5	5	5	5	5	5	5
Benzene #	5	5	5	5	5	5	5	5	5	5	5	5
Toluene #	5	5	5	5	5	5	5	5	5	5	5	5
Ethylbenzene #	5	5	5	5	5	5	5	5	5	5	5	5
m/p-Xylene #	5	5	5	5	5	5	5	5	5	5	5	5
o-Xylene #	5	5	5	5	5	5	5	5	5	5	5	5
Fluoride	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Bromide	0.12	0.06	0.05	0.12	0.05	0.05	0.12	0.05	0.05	0.09	0.06	0.05
Chloride #	60.6	62.8	63.7	49.7	51.6	53.3	53	53.8	55.7	75.9	78.8	80.5
Nitrate as NO3 #	40.3	44.2	33.6	41.7	46.5	32.4	0.8	0.4	0.5	27.7	29.6	27.4
Nitrite as NO2 #	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Ammoniacal Nitrogen as NH4 #	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Dissolved Ethene #	1	1	1	1	1	1	1	1	1	1	1	1
Dissolved Ethane #	1	1	1	1	1	1	1	1	1	1	1	1
Dissolved Butane	2	2	2	2	2	2	2	2	2	2	2	2
Dissolved Propane	2	2	2	2	2	2	2	2	2	2	2	2
Dissolved Methane	0.51	1.45	1.45	0.01	0.01	0.01	0.12	0.08	0.08	0.01	0.01	0.01
Dissolved Carbon Dioxide	42.1	63.2	38.4	35.9	37.9	29.5	33.3	29.8	29.9	43.8	26.6	35.1
δ13C - CH4	-41.7	-59.2	-57	-	-	-	-	-	-	-	-	-
δ13C - CO2	-23.9	-27.1	-26.6	-23.3	-24.2	-24.1	-22.4	-23.4	-24	-23.9	-24.6	-24.2
Total Alkalinity as CaCO3 #	338	338	326	318	346	338	320	336	360	350	370	354
Acrylamide	50	50	50	50	50	50	50	50	50	50	50	50
Laurylamine	50	50	50	50	50	50	50	50	50	50	50	50
Hydroxyethyl ethylene diamine	50	50	50	50	50	50	50	50	50	50	50	50
Myristyl dimethylamine	50	50	50	50	50	50	50	50	50	50	50	50
Octyldimethylamine	50	50	50	50	50	50	50	50	50	50	50	50
para phenylene diamine	50	50	50	50	50	50	50	50	50	50	50	50
BOD (Settled) #	1	7	3	1	1	1	1	1	1	1	1	1
COD (Settled) #	7	7	14	9	7	5	15	7	11	7	7	5
pH #	7.07	7.63	7.09	7.07	7.35	7.22	7.09	7.41	7.35	7.05	6.81	7.27
Salinity	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total Dissolved Solids #	674	580	608	654	589	632	601	596	566	660	641	642
Total Suspended Solids #	15	64	10	10	10	10	10	10	10	10	10	10

## Interpretation of Data

The data high-lighted in yellow show marginal increases over the background monitoring undertaken in the first year, but are not considered to be statistically significant. Dissolved Methane is seen to increase against the background maximum recorded within the 1st year in BH 1(A). The British Geological Survey have also detected Methane in other parts of the aquifer and stated that Methane (CH<sub>4</sub>) is also often detected, though rarely at high concentrations. The composition of CH<sub>4</sub>, where present, suggests that it has been produced in the superficial sediments by microbial reaction of organic matter.

## Cuadrilla Preston New Road Groundwater Quality Monitoring Q2 2018 - Lower Aquifer

Substance/ Parameter	1(B)			2(B)			3(B)			4(B)		
	12-Apr-18	02-May-18	06-Jun-18	12-Apr-18	02-May-18	06-Jun-18	12-Apr-18	02-May-18	06-Jun-18	12-Apr-18	02-May-18	06-Jun-18
Dissolved Aluminium #	20	20	20	20	20	20	20	20	20	20	20	20
Dissolved Antimony #	2	2	2	2	2	2	2	2	2	2	2	2
Dissolved Arsenic #	2.5	2.5	2.5	9.3	17.7	13.1	2.8	2.5	2.5	11.4	16.4	11.1
Dissolved Barium #	143	116	112	69	66	70	55	56	59	68	63	63
Dissolved Beryllium	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.5
Dissolved Boron	41	31	42	47	37	47	48	31	49	47	26	45
Dissolved Cadmium #	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.5
Dissolved Calcium #	99.9	104.2	98.2	113.6	115.4	114.3	109	111.8	113.1	114.8	116.2	119.3
Total Dissolved Chromium #	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.5	1.5	1.5	1.5	1.5
Dissolved Cobalt #	2	2	2	2	2	2	2	2	2	2	2	2
Dissolved Copper #	7	7	7	7	7	7	7	7	7	7	7	7
Total Dissolved Iron #	20	20	20	660	606	668	531	520	549	747	674	714
Dissolved Lead #	5	5	5	5	5	5	6	5	5	5	5	5
Dissolved Lithium	10	11	10	13	12	15	13	14	12	13	14	13
Dissolved Magnesium #	35.2	38.8	39.4	32.7	33.8	36.6	33	32.5	35.1	33.6	34.5	37.6
Dissolved Mercury #	1	1	1	1	1	1	1	1	1	1	1	1
Dissolved Nickel #	2	2	2	2	2	2	2	2	2	2	2	2
Dissolved Potassium #	1.8	1.9	1.9	1.8	1.8	1.9	2.8	1.9	2	1.7	1.7	1.9
Dissolved Selenium #	3	3	3	3	3	3	3	3	3	3	3	3
Dissolved Silver	5	5	5	5	5	5	5	5	5	5	5	5
Dissolved Sodium #	41.9	47.2	48.5	28.1	28	31.3	26.4	26.7	28.9	26.3	25.9	28.2
Dissolved Strontium	246	207	222	603	529	608	522	435	494	555	500	551
Dissolved Vanadium #	2.7	1.5	1.5	1.5	1.5	1.5	1.6	1.5	1.5	1.5	1.5	1.5
Dissolved Zinc #	7	5	3	3	3	3	4	3	3	3	3	3
EPH (C8-C40) #	10	10	10	10	10	10	10	10	10	10	10	10
GRO (>C4-C8) #	10	10	10	10	10	10	10	10	10	10	10	10
GRO (>C8-C12) #	10	10	10	10	10	10	10	10	10	10	10	10
GRO (>C4-C12) #	10	10	10	10	10	10	10	10	10	10	10	10
MTBE #	5	5	5	5	5	5	5	5	5	5	5	5
Benzene #	5	5	5	5	5	5	5	5	5	5	5	5
Toluene #	5	5	5	5	5	5	5	5	5	5	5	5
Ethylbenzene #	5	5	5	5	5	5	5	5	5	5	5	5
m/p-Xylene #	5	5	5	5	5	5	5	5	5	5	5	5
o-Xylene #	5	5	5	5	5	5	5	5	5	5	5	5
Fluoride	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Bromide	0.12	0.05	0.05	0.1	0.07	0.07	0.12	0.07	0.05	0.12	0.05	0.05
Chloride #	43	42.3	43.6	47.2	44.5	50	46	47.1	48.6	46.5	43.1	45.3
Nitrate as NO3 #	4	5.4	3.5	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2
Nitrite as NO2 #	0.19	0.15	0.12	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Ammoniacal Nitrogen as NH4 #	0.03	0.03	0.03	0.05	0.05	0.04	0.03	0.03	0.03	0.06	0.06	0.05
Dissolved Ethene #	1	1	1	1	1	1	1	1	1	1	1	1
Dissolved Ethane #	1	1	1	1	1	1	1	1	1	1	1	1
Dissolved Butane	2	2	2	2	2	2	2	2	2	2	2	2
Dissolved Propane	2	2	2	2	2	2	2	2	2	2	2	2
Dissolved Methane	4.8	4.9	5.14	0.01	0.01	0.01	0.12	0.05	0.08	0.01	0.01	0.01
Dissolved Carbon Dioxide	42.7	39	38	35.6	30.6	29.9	29	25.2	28.2	37.7	36.3	35.8
δ13C - CH4	-61.2	-62.2	-65.3	-	-	-	-	-	-	-	-	-
δ13C - CO2	-29.2	-30.7	-31.8	-23.1	-22.6	-23.2	-23.1	-23.5	-24.2	-22.4	-23	-23.3
Total Alkalinity as CaCO3 #	366	388	400	352	342	356	336	338	290	348	348	346
Acrylamide	50	50	50	50	50	50	50	50	50	50	50	50
Laurylamine	50	50	50	50	50	50	50	50	50	50	50	50
Hydroxyethyl ethylene diamine	50	50	50	50	50	50	50	50	50	50	50	50
Myristyl dimethylamine	50	50	50	50	50	50	50	50	50	50	50	50
Octyldimethylamine	50	50	50	50	50	50	50	50	50	50	50	50
para phenylene diamine	50	50	50	50	50	50	50	50	50	50	50	50
BOD (Settled) #	4	8	3	1	1	1	1	1	1	1	1	1
COD (Settled) #	12	7	14	8	7	9	7	7	12	7	7	7
pH #	7.11	7.2	7.29	7.08	7.4	7.34	7.17	6.86	7.31	7.01	6.84	7.38
Salinity	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total Dissolved Solids #	623	533	549	611	600	641	601	559	606	603	588	623
Total Suspended Solids #	170	185	119	10	10	10	10	10	10	10	10	10

customer service line  
03708 506 506

incident hotline  
0800 80 70 60

floodline  
03459 88 11 88

## Interpretation of Data

The data high-lighted in yellow show marginal increases over the background monitoring undertaken in the first year, but are not considered to be statistically significant. Dissolved Methane is seen to increase against the background maximum recorded within the 1st year in BH 1(B). The British Geological Survey have also detected Methane in other parts of the aquifer and stated that Methane (CH<sub>4</sub>) is also often detected, though rarely at high concentrations. The composition of CH<sub>4</sub>, where present, suggests that it has been produced in the superficial sediments by microbial reaction of organic matter.