

EPL20350 MONITORING RESULTS 2017/2018 – Leewood Soil Monitoring Results

LICENCE HOLDER
PREMISES

Santos NSW (Eastern) Pty Ltd
Narrabri Gas Field
X Line Road, NARRABRI NSW 2390

LICENCE NUMBER
EPL LINK (EPA SITE)

Environment Protection Licence 20350
<http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOlicence.aspx?DOCID=33816&SYSUID=1&LICID=20350>

SCHEDULED ACTIVITY

Coal seam gas exploration, assessment and production

EPL PERIOD

May 1st 2018 to April 30th 2019

REPORTING PERIOD

October 2018

PUBLISHED DATE

October 2018

MONITORING BY
ANALYSIS BY

Santos
Australian Laboratory Services Pty Ltd

Table 1: EPL20350 WATER MONITORING LOCATIONS

Spatial reference: GDA94 MGA Zone 55

EPA Identification No.	Monitoring type	Location	Easting	Northing
7	Groundwater quality monitoring	BWD27PRORA01	755429.176	6604670.682
8	Groundwater quality monitoring	BWD27PRUPS02	755433.048	6604684.807
9	Groundwater quality monitoring	BWD26PRUPS01	749372.750	6609376.690
10	Groundwater quality monitoring	BWD26PRLPS02	749364.450	6609363.350
11	Groundwater quality monitoring	DWH14PRUPS01	764703.313	6617145.443
12	Groundwater quality monitoring	DWH14PRLPS02	764689.147	6617119.109
13	Groundwater quality monitoring	DWH14PRPUR03	764696.211	6617132.298
14	Groundwater quality monitoring	DWH3PRUPS01	762239.680	6605589.320
15	Groundwater quality monitoring	DWH3PRLPS02	762251.050	6605598.980
16	Groundwater quality monitoring	NYOPRORA01	736293.460	6643110.400
17	Groundwater quality monitoring	NYOPRUPS02	736308.800	6643107.840
18	Groundwater quality monitoring	BWD27PRLPS03	755436.361	6604699.035
20	Groundwater quality monitoring	BHN14PRORA01	747158.130	6626109.120
21	Groundwater quality monitoring	BHN14PRUPS02	747152.710	6626123.910
22	Groundwater quality monitoring	TULPRNAP01	774464.070	6612048.130
23	Groundwater quality monitoring	TULPRDGY02	774466.480	6612032.980
24	Groundwater quality monitoring	BWDMW13D	753863.300	6608108.510
25	Groundwater quality monitoring	BWDMW13S	753864.820	6608109.300
26	Groundwater quality monitoring	BWDMW12S	753830.650	6608202.740
27	Groundwater quality monitoring	BWDMW12D	753831.910	6608203.710
28	Groundwater quality monitoring	BWDMW12I	753832.680	6608202.250
29	Groundwater quality monitoring	BWDMW2	753912.830	6608241.350
30	Groundwater quality monitoring	BWDMW3	753935.870	6608254.020
31	Groundwater quality monitoring	BWDMW4D	753980.810	6608285.740
32	Groundwater quality monitoring	BWDMW4	753984.140	6608288.040
33	Groundwater quality monitoring	BWDMW15S	753868.090	6608258.340
34	Groundwater quality monitoring	BWDMW15D	753867.100	6608256.570
35	Groundwater quality monitoring	BWDMW16S	753858.950	6608316.490
36	Groundwater quality monitoring	BWDMW16D	753856.980	6608315.570
37	Groundwater quality monitoring	LWDMW1D	751387.930	6623862.960
38	Groundwater quality monitoring	LWDMW1S	751388.920	6623862.460
39	Groundwater quality monitoring	LWDMW1I	751390.640	6623861.850
40	Groundwater quality monitoring	LWDMW2S	751102.840	6622293.020
41	Groundwater quality monitoring	LWDMW2D	751101.810	6622293.150
42	Groundwater quality monitoring	LWDMW3D	751876.160	6622163.760
43	Groundwater quality monitoring	LWDMW3S	751876.470	6622164.930
44	Groundwater level monitoring	DWH8AGMB1	765546.740	6616987.990
45	Groundwater level monitoring	DWH8AGMB2	765546.740	6616987.990
46	Groundwater level monitoring	DWH8AGMB3	765546.740	6616987.990
47	Groundwater level monitoring	BWD28QGUPS01	752949.898	6604219.732

EPA Identification No.	Monitoring type	Location	Easting	Northing
48	Groundwater level monitoring	BWD28QGLPS01	752949.898	6604219.732
49	Groundwater level monitoring	BWD28QGPUR01	752949.898	6604219.732
50	Groundwater quality monitoring	WPKMW01	755684.140	6638105.310
51	Groundwater quality monitoring	WPKMW01D	755689.750	6638097.350
52	Groundwater quality monitoring	WPKMW02	755671.200	6638034.290
53	Groundwater quality monitoring	WPKMW04	755632.500	6637993.070
54	Groundwater quality monitoring	WPKMW07	755501.160	6638207.530
55	Groundwater quality monitoring	WPKMW08	755634.110	6638166.870
56	Groundwater quality monitoring	WPKMW09D	755663.980	6637988.200
57	Groundwater quality monitoring	WPKMW09S	755664.400	6637990.540
58	Groundwater quality monitoring	WPKMW12S	755456.180	6638228.910
59	Groundwater quality monitoring	WPKMW13I	755552.650	6638189.560
60	Groundwater quality monitoring	WPKMW13S	755554.880	6638189.050
61	Groundwater quality monitoring	WPKMW14D	755364.510	6638049.060
62	Groundwater quality monitoring	WPKMW14S	755364.770	6638048.260
63	Groundwater quality monitoring	WPKMW15D	755365.480	6638233.360
64	Groundwater quality monitoring	WPKMW15S	755365.500	6638230.740
65	Groundwater quality monitoring	WPKMW16D	755051.030	6637988.500
66	Groundwater quality monitoring	WPKMW16S	755050.530	6637986.640
67	Groundwater quality monitoring	WPKMW17D	756151.060	6638128.320
68	Groundwater quality monitoring	WPKMW17S	756149.540	6638128.050
69	Produced water storage dam	BWDPD2	753875.870	6607995.060
70	Produced water storage dam	BWDPD3	753992.170	6608125.970
71	Produced water storage dam	LWDPD1CELL4	751473.349	6623513.252
72	Produced water storage dam	LWDPD1CELL3	751460.723	6623323.850
73	Produced water storage dam	LWDPD1CELL2	751428.103	6623124.978
74	Produced water storage dam	LWDPD1CELL1	751390.223	6622935.575
75	Produced water storage dam	TFDPD1	755611.600	6638072.850
76	Produced water storage dam	TFDPD2	755480.110	6638099.040
77	Treated water quality monitoring	LWWTDPD1	751648.020	6622508.310
78	Groundwater quality monitoring	WPKMW18S	755944.010	6638100.840
79	Groundwater quality monitoring	WPKMW18I	755945.070	6638105.040
80	Groundwater quality monitoring	LWDMW4	752080.540	6623038.940
81	Groundwater quality monitoring	LWDMW5	752491.080	6623301.160
82	Groundwater quality monitoring	LWDMW6	752667.550	6623165.030
83	Soil quality monitoring	LWDSMP1	751942.34	6622941.21
84	Soil quality monitoring	LWDSMP2	752164.06	6623143.83
85	Soil quality monitoring	LWDSMP3	752572.60	6623126.32
86	Soil quality monitoring	LWDSMP4	752457.14	6622764.26

	Units	EPA Identification No Location Depth (mm) Date Sampled Sample obtained Sample Method LOR	83	83	83	83	83	83
			LWDSMP1 0-250 17/07/2017 Yes Grab sample RESULT	LWDSMP1 250-500 17/07/2017 Yes Grab sample RESULT	LWDSMP1 500-750 17/07/2017 Yes Grab sample RESULT	LWDSMP1 750-1000 17/07/2017 Yes Grab sample RESULT	LWDSMP1 1000-2000 17/07/2017 Yes Grab sample RESULT	LWDSMP1 2000-3000 17/07/2017 Yes Grab sample RESULT
Aluminium	mg/kg		14000	25000	27000	23000	29000	32000
Boron	mg/kg		0.23	0.31	0.3	0.17	0.096	0.08
Calcium	mg/kg	100	240	<100	<100	<100	<100	<100
Cation Exchange Capacity (CEC)	cmol(+)/kg		4.2	9.2	8.8	9.5	11	11
Chloride	mg/kg	10	21	24	93	310	430	430
Copper	mg/kg		2.6	4.3	4.8	4.9	6.2	5.3
Electrical Conductivity	µS/cm		140	160	220	340	440	430
Exchangeable Sodium (Percentage)	%		11.4	21.7	28.4	28.4	31.8	33.6
Hydraulic Conductivity	m/sec ⁻¹		4.17E-06	1.85E-06	1.96E-06	1.96E-06	1.96E-06	1.23E-06
Iron	mg/kg		10000	17000	18000	15000	21000	23000
Magnesium	mg/kg		810	1800	1900	1800	2300	2500
Manganese	mg/kg		28	56	35	24	23	24
Nitrogen (nitrate)	mg/kg	0.5	2.3	1.1	1.7	5.7	5.9	3.5
pH	pH Unit		5.3	6.8	6.6	6.1	5.4	4.7
Phosphorus (Total)	mg/kg		46	38	33	27	32	32
Phosphorus (Available - Colwell)	mg/kg	5	7.4	<5	<5	<5	<5	<5
Potassium	mg/kg		340	610	650	580	750	770
Sodium	mg/kg	30	210	720	910	1000	1400	1400
Sodium Adsorption Ratio	-		6	2.1	3.8	8.8	7.3	15
Total Organic Carbon	%	0.15	0.43	0.23	<0.15	<0.15	<0.15	<0.15
Total Sulfate	mg/kg		55	27	32	34	26	32
Zinc	mg/kg		5.6	9.3	9.8	9.6	16	14

	Units	EPA Identification No Location Depth (mm) Date Sampled Sample obtained Sample Method LOR	83	83	83	83	83	83
			LWDSMP1 0-250 26/06/2018 Yes Grab sample RESULT	LWDSMP1 250-500 26/06/2018 Yes Grab sample RESULT	LWDSMP1 500-750 26/06/2018 Yes Grab sample RESULT	LWDSMP1 750-1000 26/06/2018 Yes Grab sample RESULT	LWDSMP1 1000-2000 26/06/2018 Yes Grab sample RESULT	LWDSMP1 2000-3000 26/06/2018 Yes Grab sample RESULT
Aluminium	mg/kg		8600	13000	19000	20000	17000	15000
Boron	mg/kg		0.23	0.38	0.45	0.2	0.098	0.15
Calcium	mg/kg	100	830	180	<100	<100	290	470
Cation Exchange Capacity (CEC)	cmol(+)/kg		2.9	6.5	11	11	10	8.2
Chloride	mg/kg		17	20	50	210	340	300
Copper	mg/kg		2.5	2.9	4.5	5.3	4.3	3.6
Electrical Conductivity	µS/cm		100	110	180	260	350	360
Exchangeable Sodium (Percentage)	%		3.4	31.0	28.0	16.9	29.0	30.9
Hydraulic Conductivity	m/sec ⁻¹		8.6E-10	9.3E-11	2.9E-10	7.7E-10	7.1E-10	2.1E-10
Iron	mg/kg		7000	10000	14000	15000	21000	13000
Magnesium	mg/kg		460	1100	1900	2000	1700	1300
Manganese	mg/kg		72	57	110	85	54	43
Nitrogen (nitrate)	mg/kg		2.7	2.3	3	5.5	6	4.3
pH	pH Unit		5.0	5.6	6.6	6.1	5.8	5.4
Phosphorus (Total)	mg/kg		86	52	43	39	54	54
Phosphorus (Available - Colwell)	mg/kg	5	12	6.2	<5	<5	9	15
Potassium	mg/kg		330	380	560	580	540	440
Sodium	mg/kg	30	<30	280	760	1000	830	620
Sodium Adsorption Ratio	-		1.4	3.8	3.1	16	17	15
Total Organic Carbon	%	0.15	0.76	0.41	0.25	0.33	0.24	0.42
Total Sulfate	mg/kg		40	26	26	35	34	54
Zinc	mg/kg		4.7	6.2	9.3	10	11	8.9

	Units	EPA Identification No Location Depth (mm) Date Sampled Sample obtained Sample Method LOR	84	84	84	84	84	84
			LWDSMP2 0-250 17/07/2017 Yes Grab sample RESULT	LWDSMP2 250-500 17/07/2017 Yes Grab sample RESULT	LWDSMP2 500-750 17/07/2017 Yes Grab sample RESULT	LWDSMP2 750-1000 17/07/2017 Yes Grab sample RESULT	LWDSMP2 1000-2000 17/07/2017 Yes Grab sample RESULT	LWDSMP2 2000-3000 17/07/2017 No *Refusal RESULT
Aluminium	mg/kg		20000	31000	34000	30000	30000	
Boron	mg/kg		0.2	0.46	0.42	0.21	1	
Calcium	mg/kg	100	580	<100	<100	130	<100	
Cation Exchange Capacity (CEC)	cmol(+)/kg		7	12	17	18	13	
Chloride	mg/kg		87	260	500	590	460	
Copper	mg/kg		4.2	6.4	8.8	8.4	8.8	
Electrical Conductivity	µS/cm		230	350	530	630	500	
Exchangeable Sodium (Percentage)	%		18.5	26.6	28.2	26.6	30	
Hydraulic Conductivity	m/sec ⁻¹		1.33E-06	3.09E-06	1.33E-06	**Core failed	3.27E-06	
Iron	mg/kg		14000	20000	22000	19000	21000	
Magnesium	mg/kg		1200	2400	3400	3400	3300	
Manganese	mg/kg		33	38	77	91	76	
Nitrogen (nitrate)	mg/kg		1.7	2	0.75	0.57	2	
pH	pH Unit		5.7	5.7	6.9	7.2	7.1	
Phosphorus (Total)	mg/kg		55	51	54	42	50	
Phosphorus (Available - Colwell)	mg/kg	5	<5.0	<5.0	<5.0	<5.0	<5.0	
Potassium	mg/kg		490	800	1000	810	1100	
Sodium	mg/kg	30	550	1200	1700	1600	1500	
Sodium Adsorption Ratio	-		9	6.3	18	19	20	
Total Organic Carbon	%	0.15	0.5	0.24	0.2	0.17	<0.15	
Total Sulfate	mg/kg		63	46	75	86	64	
Zinc	mg/kg		9	15	17	16	19	

	Units	EPA Identification No Location Depth (mm) Date Sampled Sample obtained Sample Method LOR	84	84	84	84	84	84
			LWDSMP2 0-250 26/06/2018 Yes Grab sample RESULT	LWDSMP2 250-500 26/06/2018 Yes Grab sample RESULT	LWDSMP2 500-750 26/06/2018 Yes Grab sample RESULT	LWDSMP2 750-1000 26/06/2018 Yes Grab sample RESULT	LWDSMP2 1000-2000 26/06/2018 Yes Grab sample RESULT	LWDSMP2 2000-3000 26/06/2018 Yes Grab sample RESULT
Aluminium	mg/kg		14000	30000	28000	28000	26000	27000
Boron	mg/kg		0.26	0.35	0.4	0.48	0.43	0.094
Calcium	mg/kg	100	2600	460	300	240	680	160
Cation Exchange Capacity (CEC)	cmol(+)/kg		6.7	14	17	18	15	17
Chloride	mg/kg		37	61	52	46	110	270
Copper	mg/kg		5.6	6.7	7.3	8.6	8.3	6.4
Electrical Conductivity	µS/cm		220	180	150	150	310	400
Exchangeable Sodium (Percentage)	%		13.4	22.8	25.8	28.8	29.3	33.5
Hydraulic Conductivity	m/sec ⁻¹		2.0E-9	2.8E-10	8.2E-10	5.2E-10	8.3E-10	1.0E-10
Iron	mg/kg		10000	19000	19000	18000	17000	21000
Magnesium	mg/kg		1100	2300	2500	3000	3000	3100
Manganese	mg/kg		59	48	82	120	70	54
Nitrogen (nitrate)	mg/kg		20	8.1	7.5	6.5	14	3.4
pH	pH Unit		5.1	5.1	6.6	7.1	7	6.6
Phosphorus (Total)	mg/kg		100	56	57	55	70	46
Phosphorus (Available - Colwell)	mg/kg	5	17	6.8	8.7	8.2	20	9.4
Potassium	mg/kg		470	790	820	860	940	1200
Sodium	mg/kg	30	240	750	1000	1100	1100	1300
Sodium Adsorption Ratio	-		5.4	4.8	5.2	9.4	16	21
Total Organic Carbon	%	0.15	1.5	0.29	<0.15	<0.15	0.27	<0.15
Total Sulfate	mg/kg		72	24	18	18	56	57
Zinc	mg/kg		8.1	15	14	15	16	15

*LWDSMP2: 2000-3000 No sample due to refusal (core hit sandstone)

**Core failed under laboratory conditions

	Units	EPA Identification No Location Depth (mm) Date Sampled Sample obtained Sample Method LOR	85	85	85	85	85	85
			LWDSMP3 0-250 17/07/2017 Yes Grab sample RESULT	LWDSMP3 250-500 17/07/2017 Yes Grab sample RESULT	LWDSMP3 500-750 17/07/2017 Yes Grab sample RESULT	LWDSMP3 750-1000 17/07/2017 Yes Grab sample RESULT	LWDSMP3 1000-2000 17/07/2017 Yes Grab sample RESULT	LWDSMP3 2000-3000 17/07/2017 No *Refusal RESULT
Aluminium	mg/kg		18000	27000	35000	35000	33000	
Boron	mg/kg		0.3	0.26	0.21	0.22	0.16	
Calcium	mg/kg	100	540	<100	<100	<100	<100	
Cation Exchange Capacity (CEC)	cmol(+)/kg		3.2	9.7	20	17	17	
Chloride	mg/kg		25	100	310	290	310	
Copper	mg/kg		4.5	4.7	9.3	8.4	9	
Electrical Conductivity	µS/cm		300	240	470	410	520	
Exchangeable Sodium (Percentage)	%		10	25.7	26.0	25.8	25.2	
Hydraulic Conductivity	m/sec ⁻¹		8.33E-06	8.33E-06	6.41E-06	1.79E-06	1.75E-06	
Iron	mg/kg		12000	18000	23000	22000	24000	
Magnesium	mg/kg		930	2000	4400	3500	4300	
Manganese	mg/kg		67	29	190	120	220	
Nitrogen (nitrate)	mg/kg		0.7	<0.50	1	<0.50	2.4	
pH	pH Unit		4.6	5.6	7.2	6.8	7.4	
Phosphorus (Total)	mg/kg		100	50	66	62	64	
Phosphorus (Available - Colwell)	mg/kg	5	5.7	<5.0	<5.0	<5.0	<5.0	
Potassium	mg/kg		520	610	1000	1000	1200	
Sodium	mg/kg	30	290	810	1600	1500	1500	
Sodium Adsorption Ratio	-		3.7	2.2	18	16	18	
Total Organic Carbon	%	0.15	0.79	0.31	<0.15	0.2	0.15	
Total Sulfate	mg/kg		130	32	110	76	120	
Zinc	mg/kg		7.6	11	18	17	18	

	Units	EPA Identification No Location Depth (mm) Date Sampled Sample obtained Sample Method LOR	85	85	85	85	85	85
			LWDSMP3 0-250 26/06/2018 Yes Grab sample RESULT	LWDSMP3 250-500 14/08/2018 Yes Grab sample RESULT	LWDSMP3 500-750 26/06/2018 Yes Grab sample RESULT	LWDSMP3 750-1000 26/06/2018 Yes Grab sample RESULT	LWDSMP3 1000-2000 26/06/2018 Yes Grab sample RESULT	LWDSMP3 2000-3000 26/06/2018 Yes Grab sample RESULT
Aluminium	mg/kg		13000	13000	24000	35000	21000	18000
Boron	mg/kg		0.26	0.48	0.28	0.22	0.11	0.031
Calcium	mg/kg	100	2300	2100	140	<100	470	<100
Cation Exchange Capacity (CEC)	cmol(+)/kg		7.1	7.2	20	17	13	12
Chloride	mg/kg		<10.0	23	200	320	150	300
Copper	mg/kg		4.7	15	6.6	11	6.2	6.1
Electrical Conductivity	µS/cm		370	240	420	510	350	390
Exchangeable Sodium (Percentage)	%		1.4	9.7	28.5	30.5	24.6	26.6
Hydraulic Conductivity	m/sec ⁻¹		1.2E-9	1.6E-9	3.9E-10	1.5E-10	5.6E-10	4.6E-10
Iron	mg/kg		11000	11000	17000	23000	18000	22000
Magnesium	mg/kg		780	1200	2500	5200	2800	2200
Manganese	mg/kg		100	33	140	200	100	52
Nitrogen (nitrate)	mg/kg		2.1	9.3	8.2	5	3.2	2.3
pH	pH Unit		6.1	6.1	7	7.4	7.2	6.6
Phosphorus (Total)	mg/kg		120	54	66	79	78	61
Phosphorus (Available - Colwell)	mg/kg	5	13	8	11	8.9	14	8.1
Potassium	mg/kg		510	380	670	1200	950	820
Sodium	mg/kg	30	150	410	910	1600	830	810
Sodium Adsorption Ratio	-		1.2	6.1	17	16	16	19
Total Organic Carbon	%	0.15	0.68	0.45	0.17	<0.15	0.18	<0.15
Total Sulfate	mg/kg		230	110	84	110	65	78
Zinc	mg/kg		8.1	9.1	13	21	13	13

*LWDSMP3: 2000-3000 No sample due to refusal (core hit sandstone)

	Units	EPA Identification No Location Depth (mm) Date Sampled Sample obtained Sample Method LOR	86	86	86	86	86	86
			LWDSMP4 0-250 17/07/2017 Yes Grab sample RESULT	LWDSMP4 250-500 17/07/2017 Yes Grab sample RESULT	LWDSMP4 500-750 17/07/2017 Yes Grab sample RESULT	LWDSMP4 750-1000 17/07/2017 Yes Grab sample RESULT	LWDSMP4 1000-2000 17/07/2017 Yes Grab sample RESULT	LWDSMP4 2000-3000 17/07/2017 Yes Grab sample RESULT
Aluminium	mg/kg		15000	19000	35000	39000	36000	34000
Boron	mg/kg		0.36	0.63	0.91	0.9	0.75	0.57
Calcium	mg/kg	100	2100	480	210	100	130	<100
Cation Exchange Capacity (CEC)	cmol(+)/kg		7.6	8.1	17	20	14	11
Chloride	mg/kg		13	45	130	180	120	100
Copper	mg/kg		4.3	4.3	7.2	10	10	8.3
Electrical Conductivity	µS/cm		500	200	280	310	300	260
Exchangeable Sodium (Percentage)	%		3.8	17.2	22.9	26	30	33.6
Hydraulic Conductivity	m/sec ⁻¹		1.67E-05	4.39E-06	2.08E-06	1.25E-06	*Core failed	5.95E-06
Iron	mg/kg		10000	13000	23000	25000	24000	23000
Magnesium	mg/kg		930	1400	2900	3700	3700	3300
Manganese	mg/kg		110	49	38	42	48	40
Nitrogen (nitrate)	mg/kg		1.4	0.59	<0.50	<0.50	2.3	1.2
pH	pH Unit		5.7	5.8	6.4	6.8	6.8	6.5
Phosphorus (Total)	mg/kg		92	55	47	57	42	40
Phosphorus (Available - Colwell)	mg/kg	5	5.3	<5.0	<5.0	<5.0	<5.0	<5.0
Potassium	mg/kg		630	530	900	1100	1200	1200
Sodium	mg/kg	30	220	530	1200	1600	1600	1500
Sodium Adsorption Ratio	-		2.7	3.3	4.7	6.4	4	2.8
Total Organic Carbon	%	0.15	1.1	0.59	0.2	<0.15	0.17	<0.15
Total Sulfate	mg/kg		300	52	50	44	50	42
Zinc	mg/kg		9	8.9	17	22	22	19

	Units	EPA Identification No Location Depth (mm) Date Sampled Sample obtained Sample Method LOR	86	86	86	86	86	86
			LWDSMP4 0-250 26/06/2018 Yes Grab sample RESULT	LWDSMP4 250-500 14/08/2018 Yes Grab sample RESULT	LWDSMP4 500-750 26/06/2018 Yes Grab sample RESULT	LWDSMP4 750-1000 26/06/2018 Yes Grab sample RESULT	LWDSMP4 1000-2000 26/06/2018 Yes Grab sample RESULT	LWDSMP4 2000-3000 26/06/2018 Yes Grab sample RESULT
Aluminium	mg/kg		10000	13000	30000	30000	17000	17000
Boron	mg/kg		0.28	0.41	0.48	0.38	0.36	0.1
Calcium	mg/kg	100	1700	450	<100	<100	1100	<100
Cation Exchange Capacity (CEC)	cmol(+)/kg		6	9.9	20	22	12	9.4
Chloride	mg/kg		19	<10.0	96	110	55	76
Copper	mg/kg		3.1	28	7.7	10	6.4	2.7
Electrical Conductivity	µS/cm		530	230	250	210	320	120
Exchangeable Sodium (Percentage)	%		1.6	13.1	30.5	29.5	23.3	31.9
Hydraulic Conductivity	m/sec ⁻¹		6.8E-9	5.5E-10	2.9E-9	8.0E-10	1.3E-9	9.5E-11
Iron	mg/kg		8100	9900	21000	21000	13000	16000
Magnesium	mg/kg		670	1300	3000	3500	1800	1800
Manganese	mg/kg		60	28	34	48	75	17
Nitrogen (nitrate)	mg/kg		17	3.5	4	4	6	2.7
pH	pH Unit		6.2	6.1	6.2	6.9	6.9	6.8
Phosphorus (Total)	mg/kg		88	43	44	55	90	24
Phosphorus (Available - Colwell)	mg/kg	5	17	11	10	14	19	11
Potassium	mg/kg		460	390	910	960	690	660
Sodium	mg/kg	30	170	340	1300	1400	610	650
Sodium Adsorption Ratio	-		1.9	7.8	9	9.9	12	4.3
Total Organic Carbon	%	0.15	0.63	0.54	<0.15	<0.15	0.46	<0.15
Total Sulfate	mg/kg		300	85	31	19	130	11
Zinc	mg/kg		7.5	8.3	17	19	12	8.2

*Core failed under laboratory conditions