



**M<sup>C</sup>WILLIAM'S**  
FAMILY WINEMAKERS

## EPA ENVIRONMENTAL MONITORING

EPA Identification point number	Type of Monitoring Point	Type of Discharge Point	How Monitored	Location Description	Detail	Pollutant											
						EC	Exch. Ca	Exch. Mg	Exch. K	Exch. Na	Nitrate	N (total)	pH	P (total)	K	SAR	P sorption capacity
<a href="#">Point 3: Soil Sample Chardonnay 7</a>	Soil quality monitoring		Soil sample.	Soil control point "EPA 3" on site map.	Test												
					unit of measure	µs/cm	cmol(+)/kg	cmol(+)/kg	cmol(+)/kg	cmol(+)/kg	mg/kg	mg/kg	pH	mg/kg	mg/kg	SAR	mg/kg
					frequency								yearly			spec. freq 1	
					sampling method								composite sample				

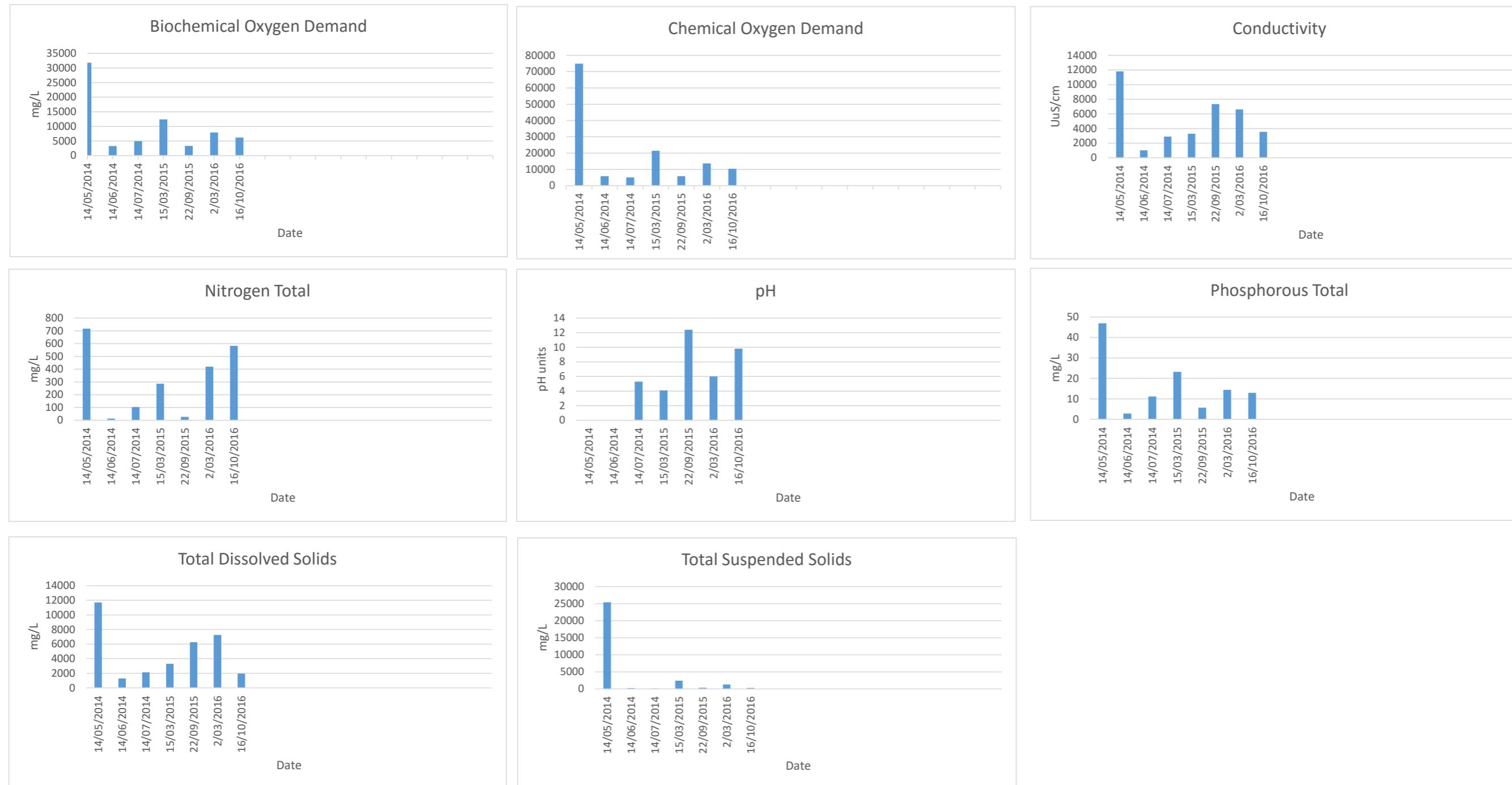
EPA Identification point number	Type of Monitoring Point	Type of Discharge Point	How Monitored	Location Description	Detail	<u>Standing Water Level</u>	Pollutant											
<u>Point 8: Piezometer</u>	Groundwater quality monitoring.	Soil control point "EPA 8" on site map.	Groundwater sample.	unit of measure frequency sampling method	Test		ammonia	Ca	EC	Mg	Nitrate N	N (total)	pH	P (total)	K	Na		
<u>South End Lined Dam</u>	Standing water level monitoring		Groundwater level m'mnt.		metres	mg/L	mg/L	µs/cm	mg/L	mg/L	mg/L	mg/L	pH	mg/L	mg/L	mg/L		
					every 6 months									yearly				
					inspection									representative sample				

EPA Identification point number	Type of Monitoring Point	Type of Discharge Point	How Monitored	Location Description	Detail	<u>Standing Water Level</u>	Pollutant											
<u>Point 9: Piezometer</u> <u>South West End</u> <u>Row 8 Touriga 13</u>	Groundwater quality monitoring. Standing water level monitoring	Groundwater sample. Soil control point "EPA 9" on site map.	Groundwater level m'mnt.	Soil control point "EPA 9" on site map.	Test		ammonia	Ca	EC	Mg	Nitrate N	N (total)	pH	P (total)	K	Na		
					unit of measure	metres	mg/L	mg/L	µs/cm	mg/L	mg/L	mg/L	pH	mg/L	mg/L	mg/L		
					frequency	every 6 months									yearly			
					sampling method	inspection									representative sample			

EPA Identification point number	Type of Monitoring Point	Type of Discharge Point	How Monitored	Location Description	Detail	<u>Standing Water Level</u>	Pollutant										
<a href="#">Point 10: Piezometer</a>	Groundwater quality monitoring.		Groundwater sample.	Soil control point "EPA 10" on site map.	Test		ammonia	Ca	EC	Mg	Nitrate N	N (total)	pH	P (total)	K	Na	
<a href="#">South West Point F128 dam</a>	Standing water level monitoring		Groundwater level m'mnt.		unit of measure	metres	mg/L	mg/L	µs/cm	mg/L	mg/L	mg/L	pH	mg/L	mg/L	mg/L	
					frequency	every 6 months								yearly			
					sampling method	inspection								representative sample			

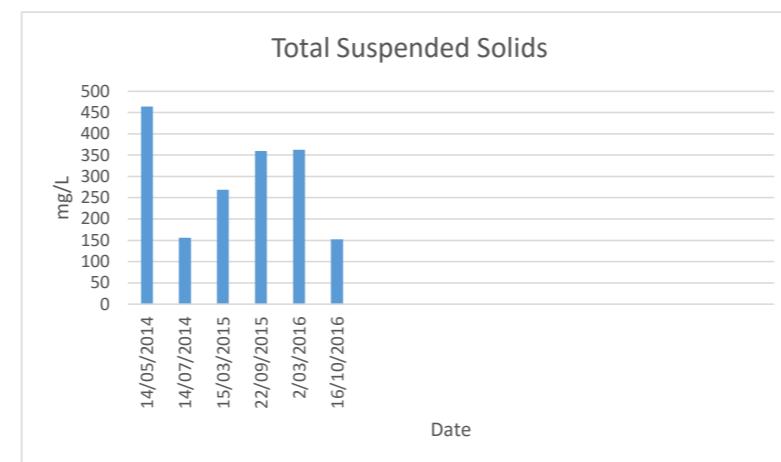
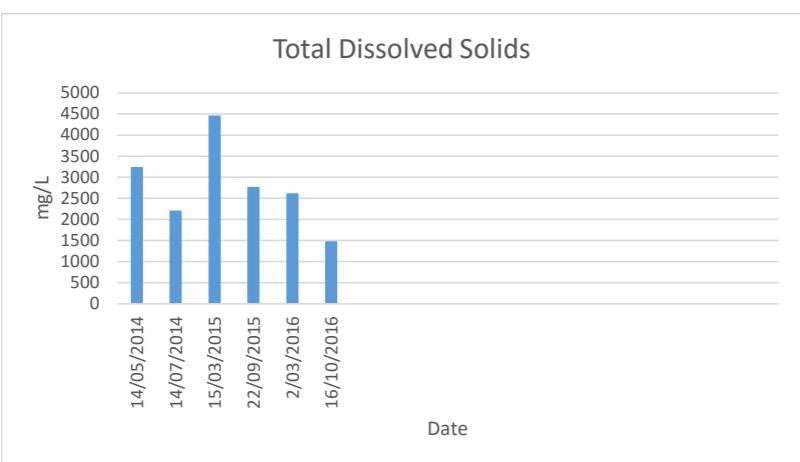
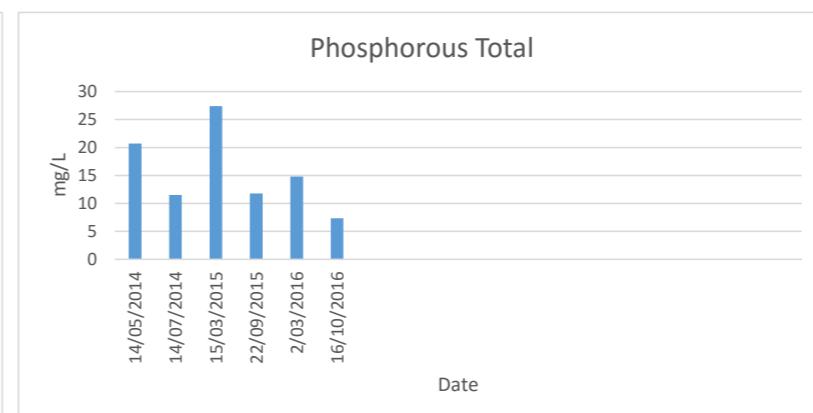
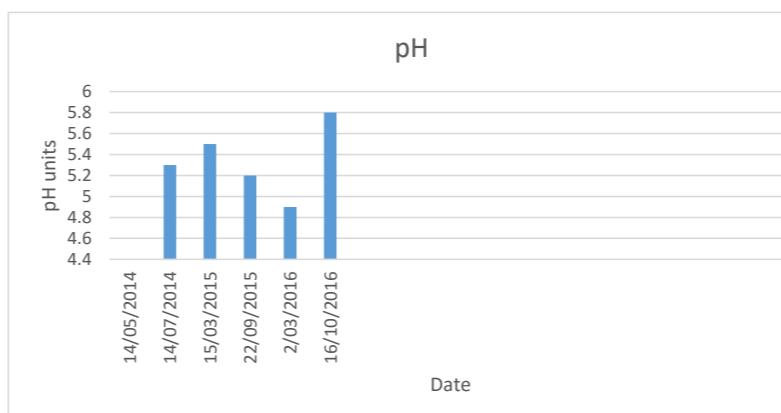
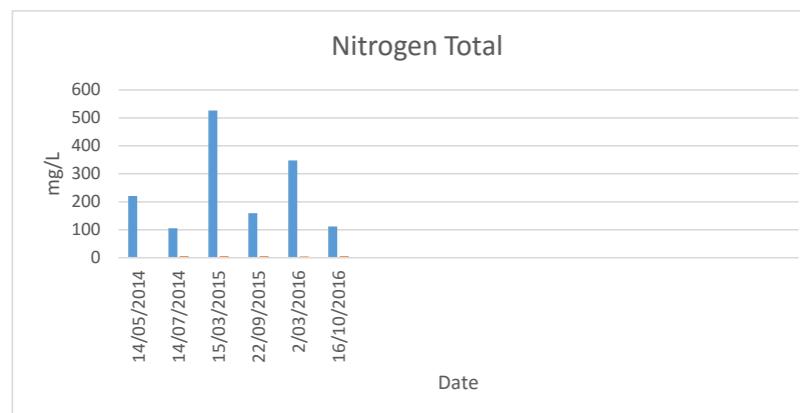
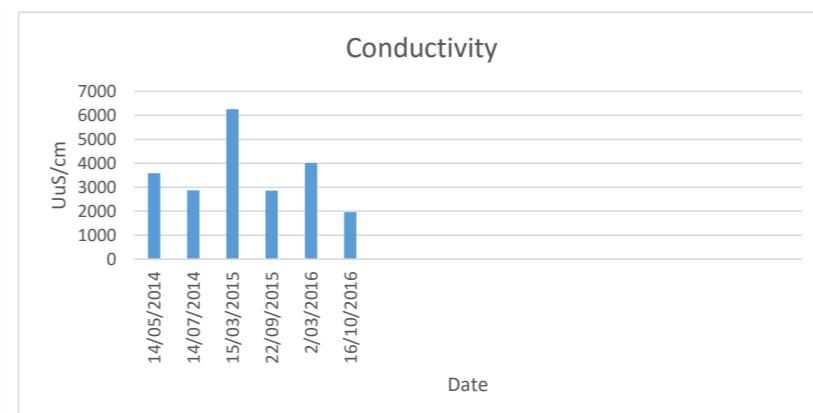
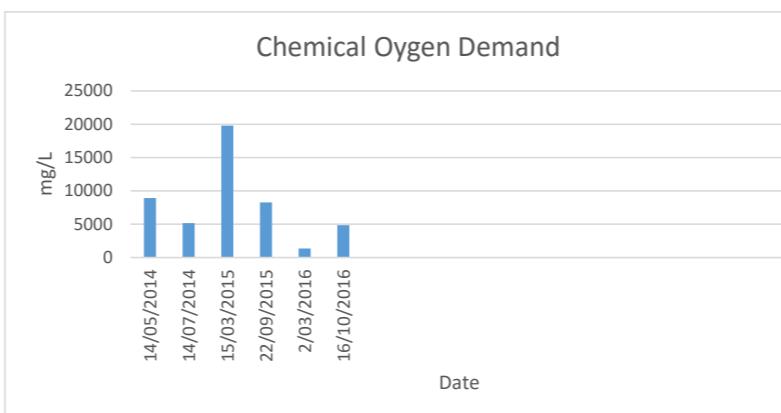
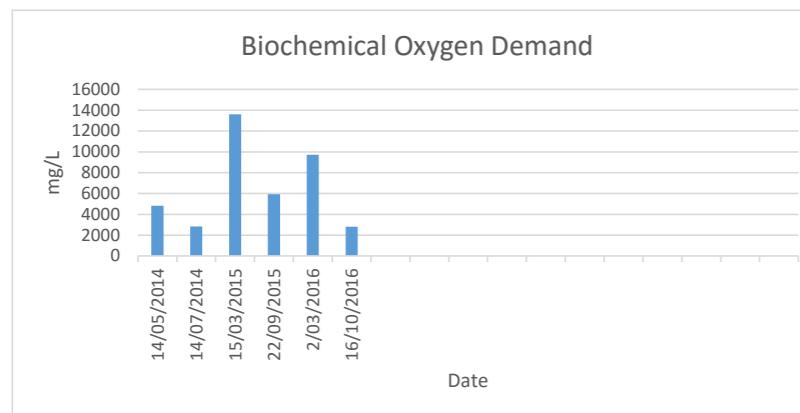
### Point 1: Influent Quality Monitoring

Type of Test	Name of Test	Test	Units	Date												
				14/05/2014	14/06/2014	14/07/2014	14/08/2014	14/09/2014	14/10/2014	15/03/2015	22/09/2015	2/03/2016	16/10/2016			
Quality monitoring	Biological oxygen demand	BOD	mg/L	31800	3260	4950	12400	3320	7920	6190						
Quality monitoring	Chemical oxygen demand	COD	mg/L	74900	5820	5060	21400	5850	13700	10400						
Quality monitoring	Electrical conductivity	EC	µS/cm	11800	1020	2900	3290	7330	6610	3540						
Quality monitoring	Nitrogen	N (total)	mg/L	717	13	103	286	27	420	582						
Quality monitoring	pH	pH	pH	n/a	n/a	5.3	4.1	12.4	6	9.8						
Quality monitoring	Phosphorus	P (total)	mg/L	47	2.8	11.2	23.2	5.69	14.4	12.9						
Quality monitoring	Sodium absorption ratio	SAR	SAR	<1	2	2	1	2	2	3						
Quality monitoring	Total dissolved solids	TDS	mg/L	11700	1280	2140	3310	6250	7240	1960						
Quality monitoring	Total suspended solids	TSS	mg/L	25400	254	144	2410	322	1310	312						



## Point 2: Effluent Quality Monitoring

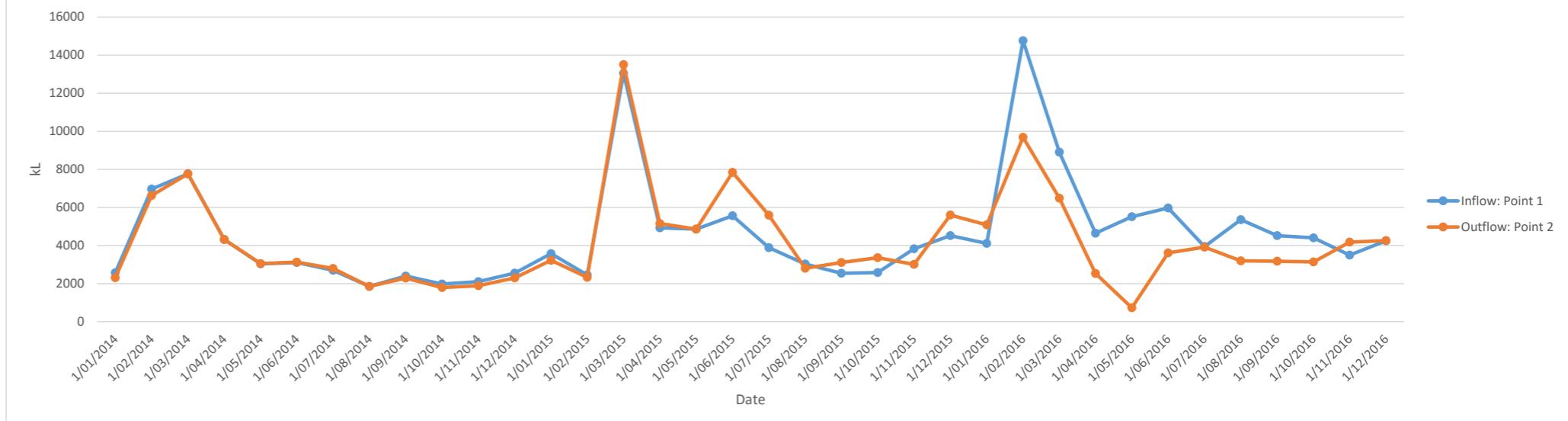
Type of Test	Name of Test	Test	Units	Date							
				14/05/2014	14/07/2014	15/03/2015	22/09/2015	2/03/2016	16/10/2016		
Quality monitoring	Biological oxygen demand	BOD	mg/L	4830	2820	13600	5920				
Quality monitoring	Chemical oxygen demand	COD	mg/L	8940	5160	19800	8260	1350	4860		
Quality monitoring	Electrical conductivity	EC	µs/cm	3580	2870	6260	2860	4010	1960		
Quality monitoring	Nitrogen	N (total)	mg/L	221	105	527	159	348	112		
Quality monitoring	pH	pH	pH		5.3	5.5	5.2	4.9	5.8		
Quality monitoring	Phosphorus	P (total)	mg/L	20.7	11.5	27.4	11.8	14.8	7.33		
Quality monitoring	Sodium absorption ratio	SAR	SAR	1	2	1	1	2	6		
Quality monitoring	Total dissolved solids	TDS	mg/L	3240	2210	4460	2770	2620	1480		
Quality monitoring	Total suspended solids	TSS	mg/L	464	156	269	360	363	152		



### Influent (Inflow) vs Effluent (Outflow)

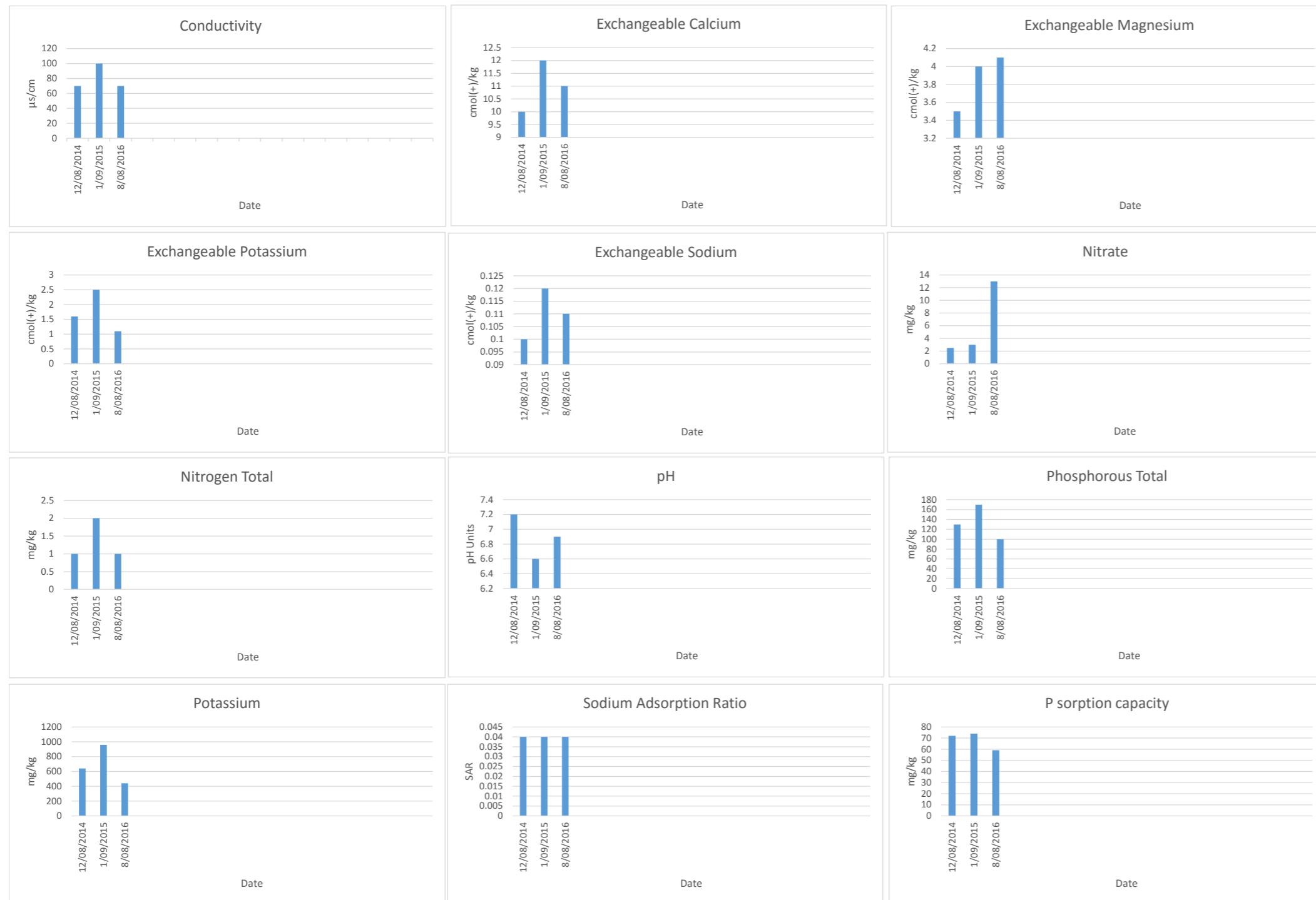
Date	Inflow: Point 1	Outflow: Point 2
27/01/2014	2566	2309
24/02/2014	6970	6622
31/03/2014	7760	7760
28/04/2014	4315	4316
26/05/2014	3043	3044
30/06/2014	3110	3122
28/07/2014	2698	2798
25/08/2014	1854	1854
29/09/2014	2391	2290
27/10/2014	1979	1787
24/11/2014	2100	1890
29/12/2014	2554	2300
26/01/2015	3578	3220
23/02/2015	2451	2330
30/03/2015	13047	13503
27/04/2015	4927	5155
25/05/2015	4858	4865
29/06/2015	5558	7839
27/07/2015	3882	5593
31/08/2015	3027	2800
28/09/2015	2543	3110
26/10/2015	2584	3360
30/11/2015	3826	3010
31/12/2015	4524	5600
31/01/2016	4110	5080
29/02/2016	14760	9680
31/03/2016	8900	6490
30/04/2016	4651	2530
31/05/2016	5515	730
30/06/2016	5971	3610
31/07/2016	3942	3914
31/08/2016	5354	3190
30/09/2016	4515	3174
31/10/2016	4398	3135
30/11/2016	3497	4176
31/12/2016	4249	4253

Effluent Inflow vs Effluent Outflow



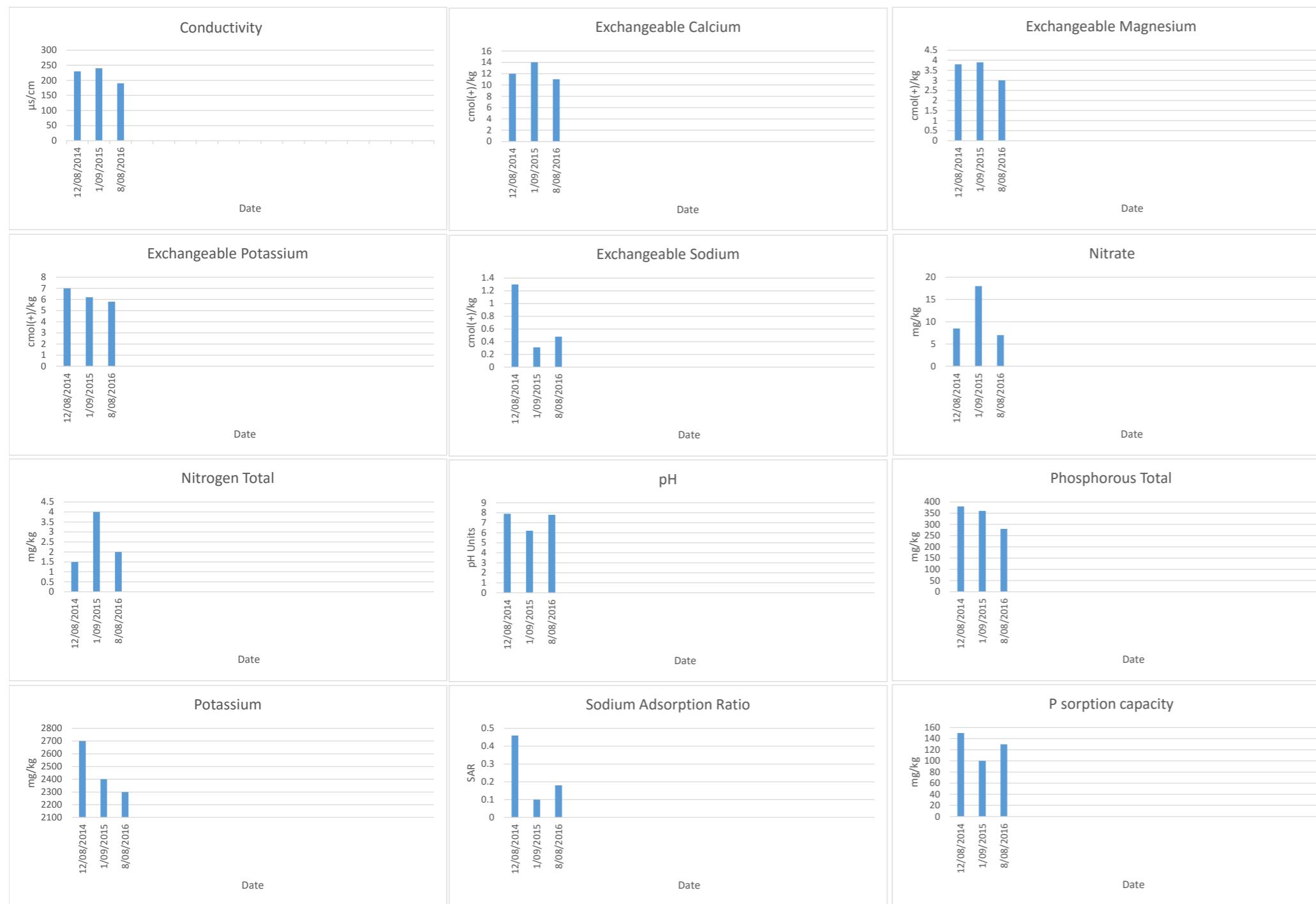
### Point 3: Soil Test Results Chardonnay 7

Type of Test	Name of Test	Test	Units	12/08/2014	1/09/2015	8/08/2016
Quality monitoring	Electrical conductivity	EC	µs/cm	70	100	70
Quality monitoring	Exchangeable calcium	Exch. Ca	cmol(+)/kg	10	12	11
Quality monitoring	Exchangeable magnesium	Exch. Mg	cmol(+)/kg	3.5	4	4.1
Quality monitoring	Exchangeable potassium	Exch. K	cmol(+)/kg	1.6	2.5	1.1
Quality monitoring	Exchangeable sodium	Exch. Na	cmol(+)/kg	0.1	0.12	0.11
Quality monitoring	Nitrate nitrogen	Nitrate	mg/kg	2.5	3	13
Quality monitoring	Total nitrogen	N (total)	mg/kg	1	2	1
Quality monitoring	pH	pH	pH	7.2	6.6	6.9
Quality monitoring	Total phosphorus	P (total)	mg/kg	130	170	100
Quality monitoring	Potassium	K	mg/kg	640	960	440
Quality monitoring	Sodium absorption ratio	SAR	SAR	0.04	0.04	0.04
Quality monitoring	P sorption capacity	P sorption capacity	mg/kg	72	74	59



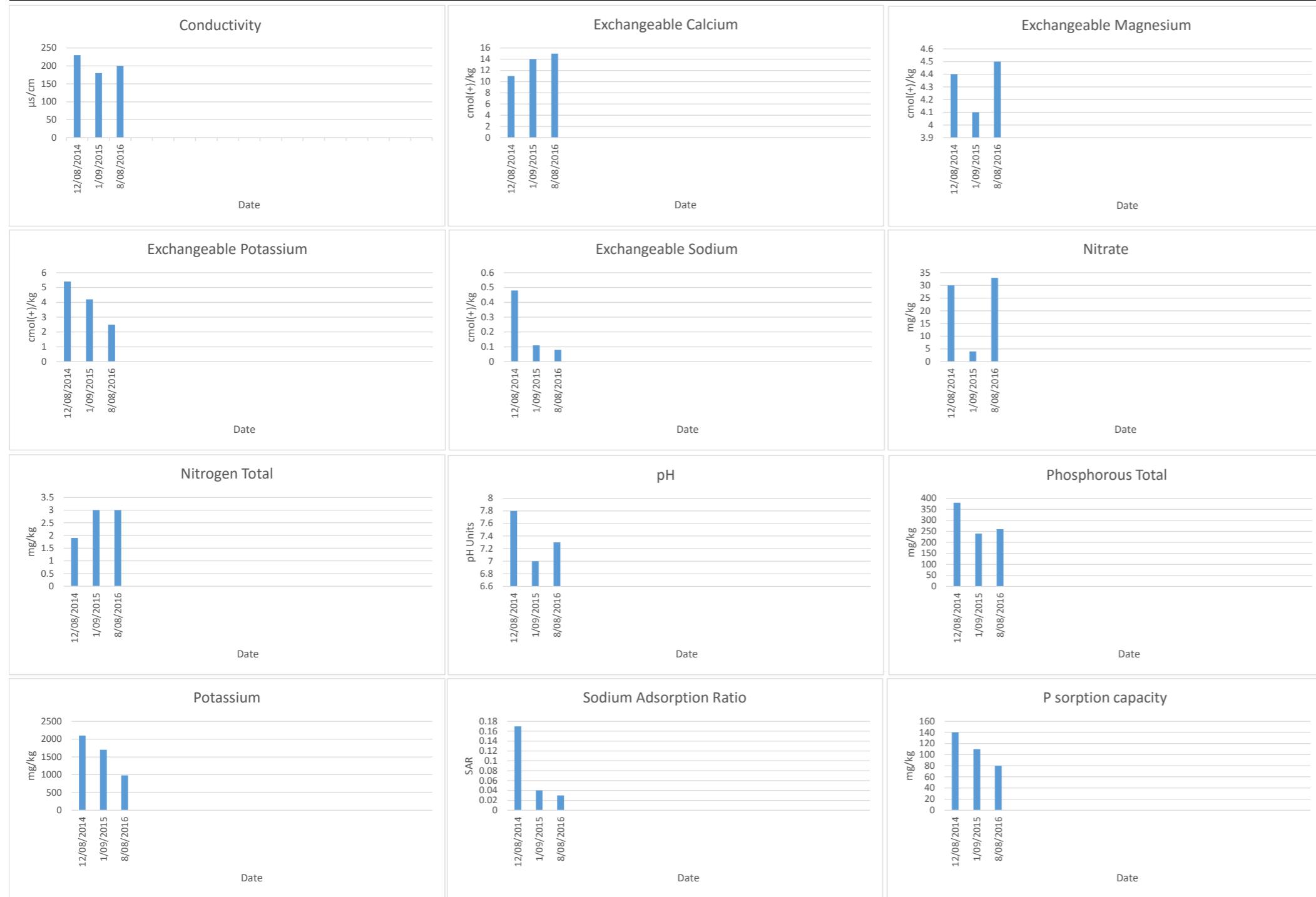
**Point 4: Soil Test Results Canada Muscat 11**

Type of Test	Name of Test	Test	Units	12/08/2014	1/09/2015	8/08/2016
Quality monitoring	Electrical conductivity	EC	µs/cm	230	240	190
Quality monitoring	Exchangeable calcium	Exch. Ca	cmol(+)/kg	12	14	11
Quality monitoring	Exchangeable magnesium	Exch. Mg	cmol(+)/kg	3.8	3.9	3
Quality monitoring	Exchangeable potassium	Exch. K	cmol(+)/kg	7	6.2	5.8
Quality monitoring	Exchangeable sodium	Exch. Na	cmol(+)/kg	1.3	0.31	0.48
Quality monitoring	Nitrate nitrogen	Nitrate	mg/kg	8.5	18	7
Quality monitoring	Total nitrogen	N (total)	mg/kg	1.5	4	2
Quality monitoring	pH	pH	pH	7.9	6.2	7.8
Quality monitoring	Total phosphorus	P (total)	mg/kg	380	360	280
Quality monitoring	Potassium	K	mg/kg	2700	2400	2300
Quality monitoring	Sodium absorption ratio	SAR	SAR	0.46	0.1	0.18
Quality monitoring	P sorption capacity	P sorption capacity	mg/kg	150	100	130

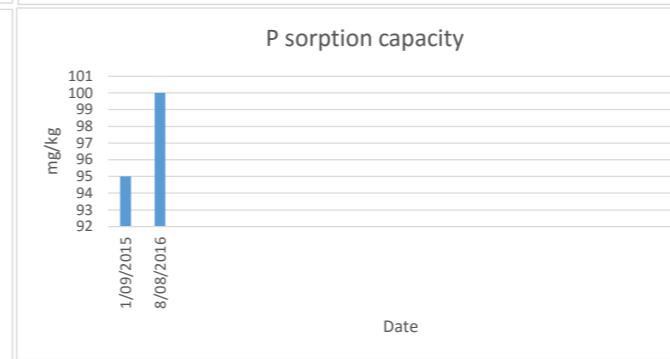
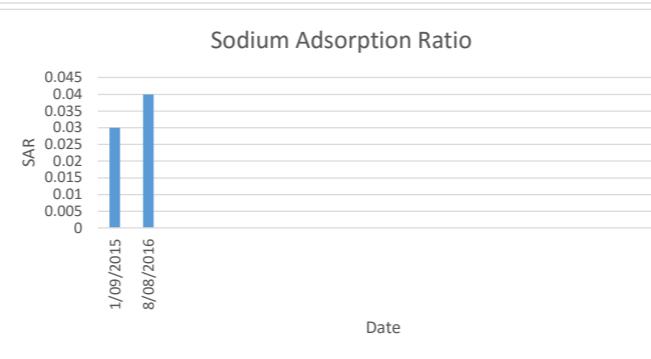
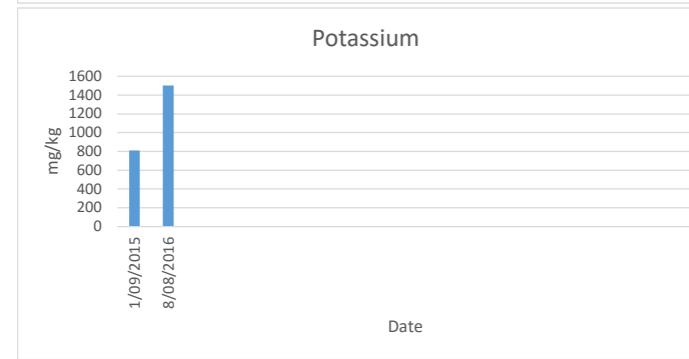
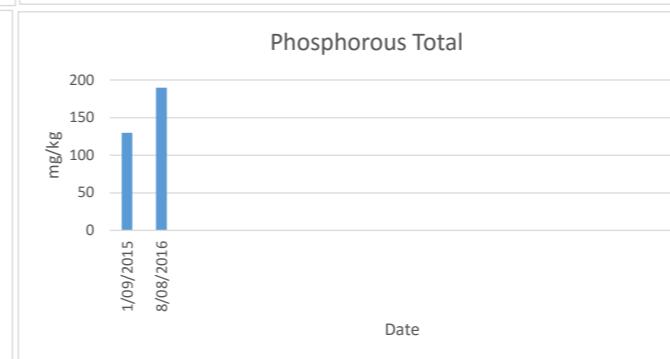
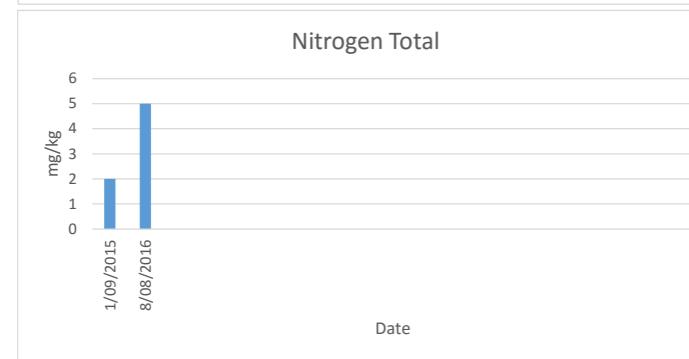
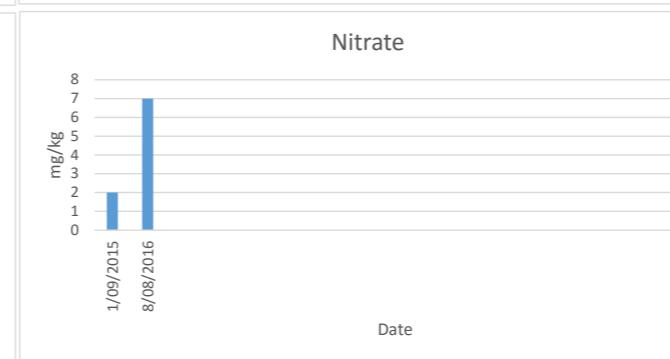
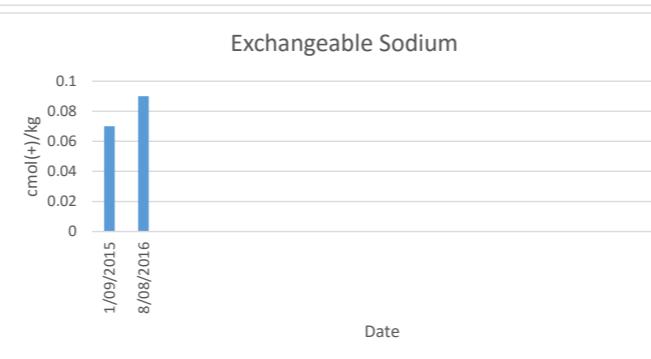
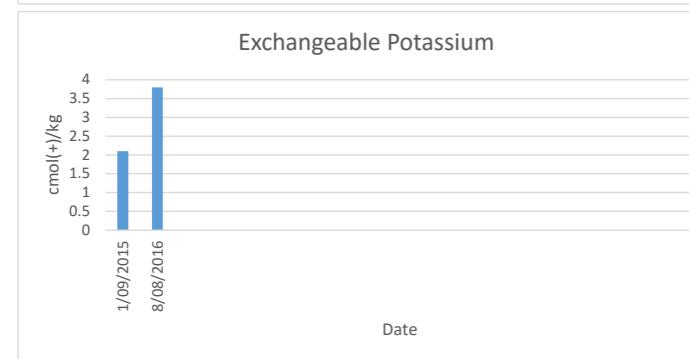
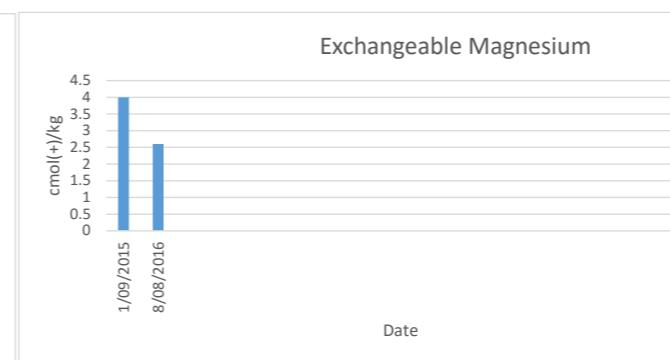
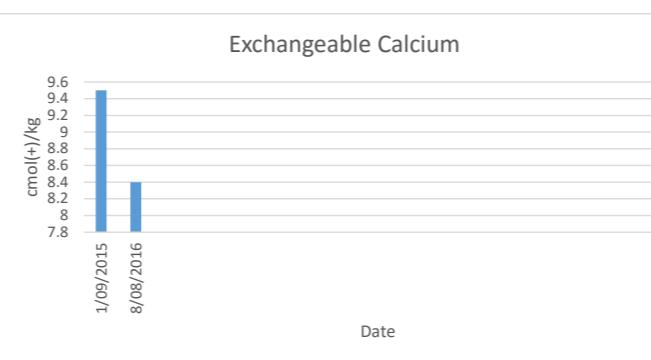
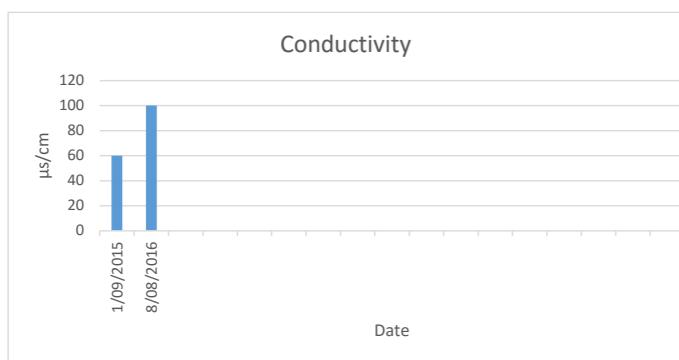


**Point 5: Soil Test Results Red Frontignac 12**

Type of Test	Name of Test	Test	Units	12/08/2014	1/09/2015	8/08/2016
Quality monitoring	Electrical conductivity	EC	µS/cm	230	180	200
Quality monitoring	Exchangeable calcium	Exch. Ca	cmol(+)/kg	11	14	15
Quality monitoring	Exchangeable magnesium	Exch. Mg	cmol(+)/kg	4.4	4.1	4.5
Quality monitoring	Exchangeable potassium	Exch. K	cmol(+)/kg	5.4	4.2	2.5
Quality monitoring	Exchangeable sodium	Exch. Na	cmol(+)/kg	0.48	0.11	0.08
Quality monitoring	Nitrate nitrogen	Nitrate	mg/kg	30	4	33
Quality monitoring	Total nitrogen	N (total)	mg/kg	1.9	3	3
Quality monitoring	pH	pH	pH	7.8	7	7.3
Quality monitoring	Total phosphorus	P (total)	mg/kg	380	240	260
Quality monitoring	Potassium	K	mg/kg	2100	1700	980
Quality monitoring	Sodium adsorption ratio	SAR	SAR	0.17	0.04	0.03
Quality monitoring	P sorption capacity	P sorption capacity	mg/kg	140	110	80

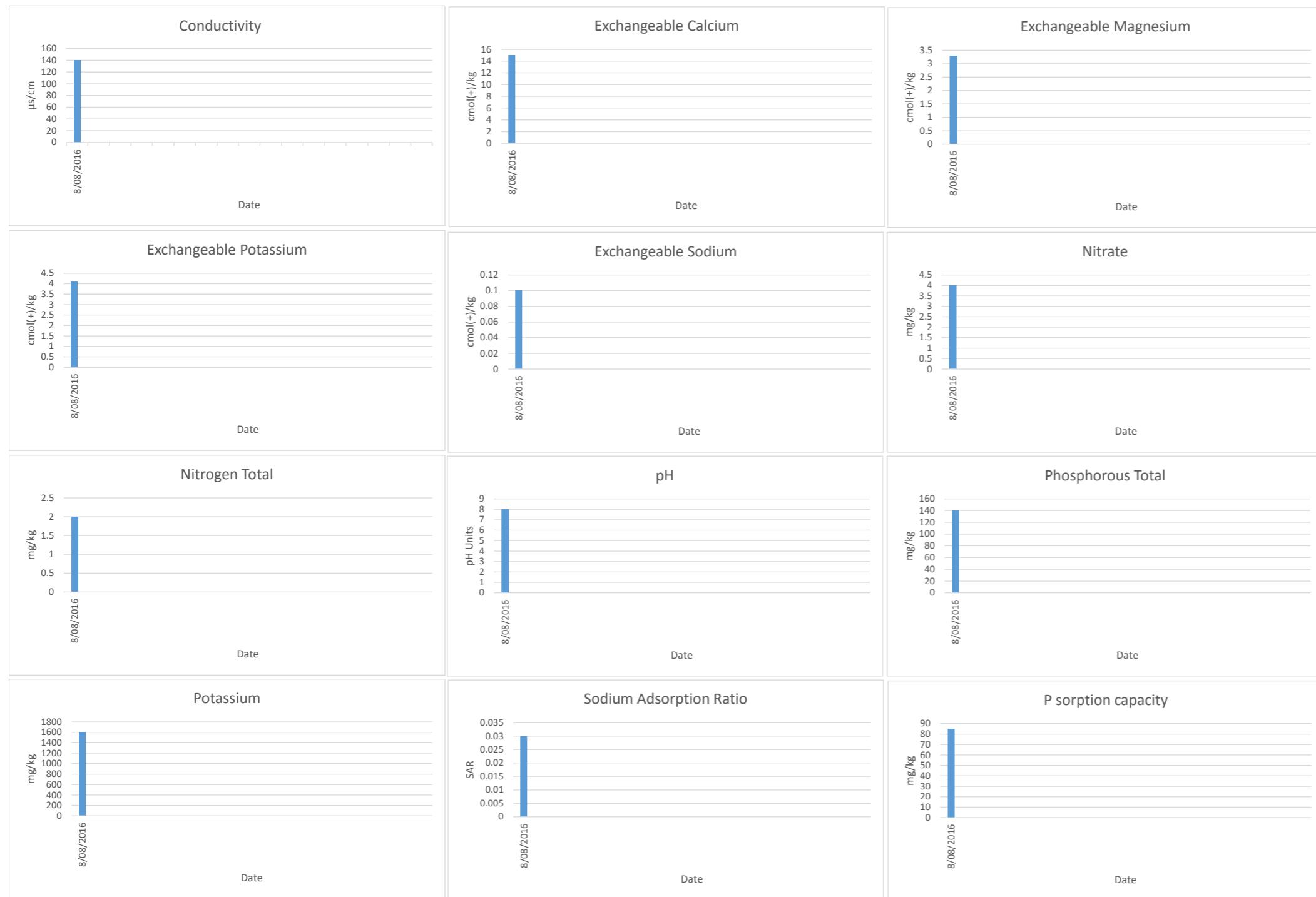


## **Point 11: Soil Test Results Old Chardonnay 5**

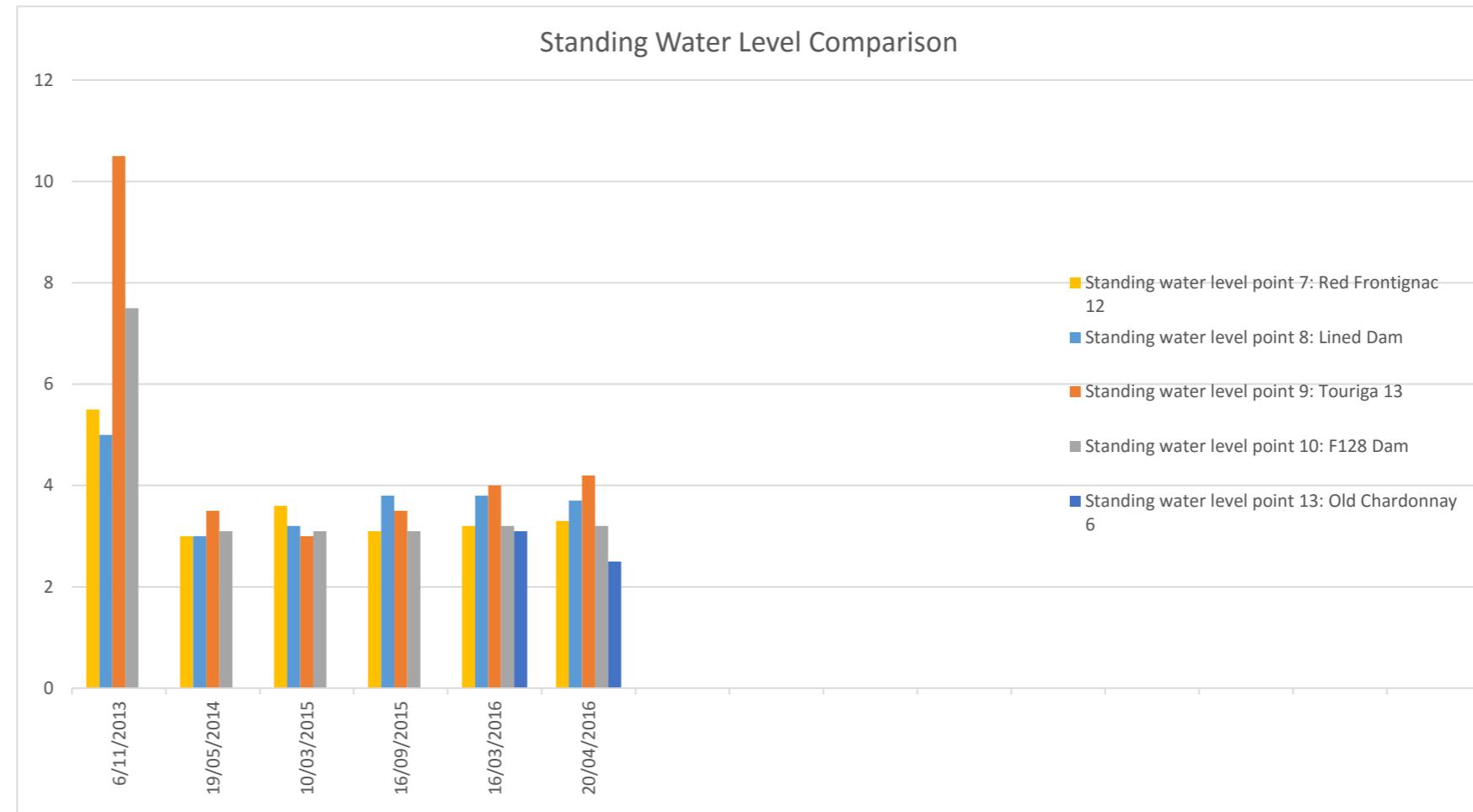


**Point 12: Soil Test Results Old Chardonnay 6**

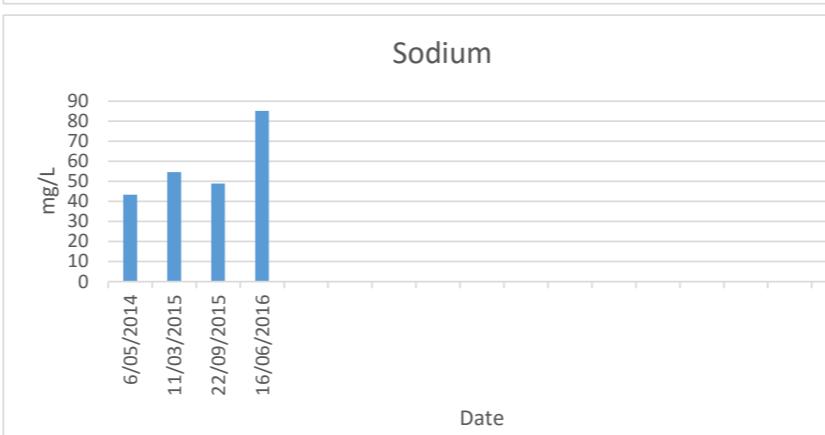
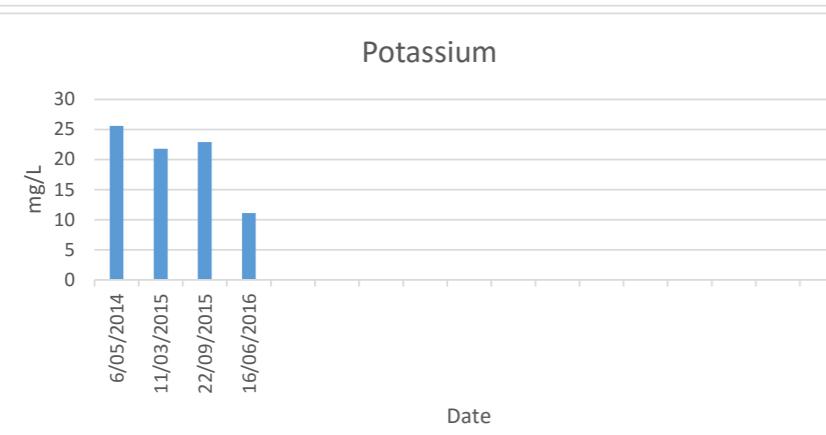
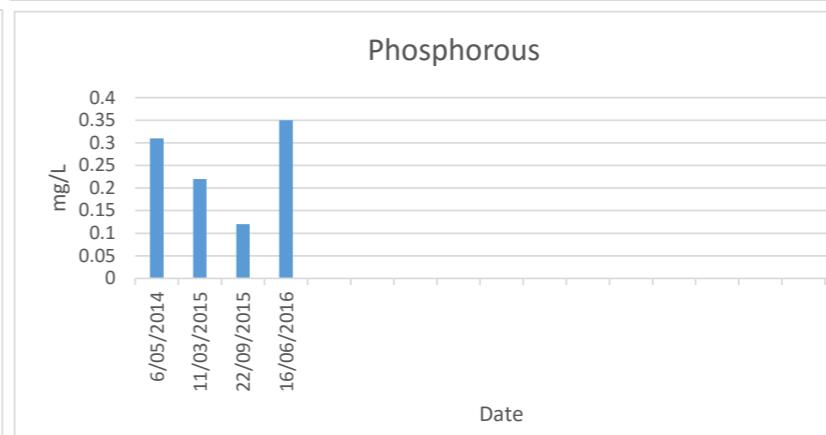
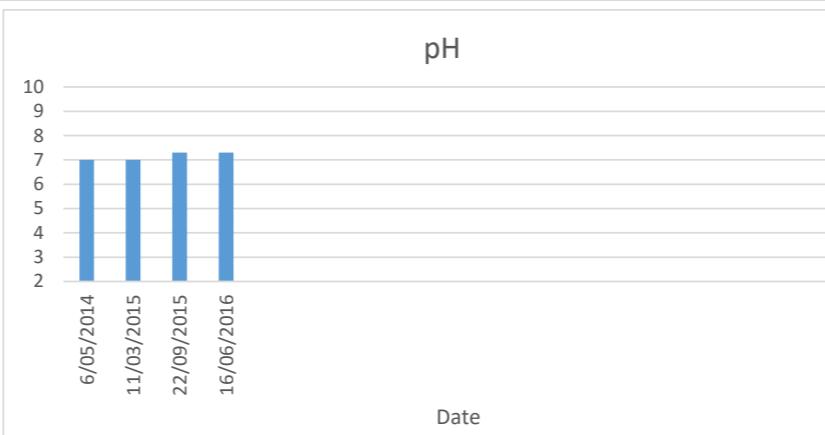
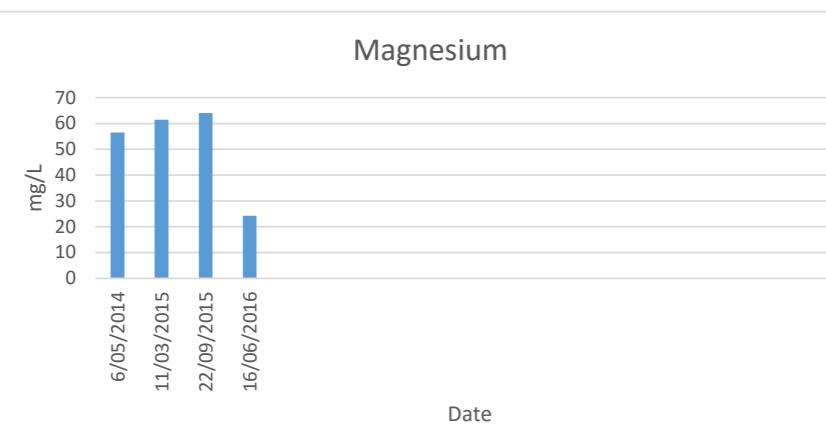
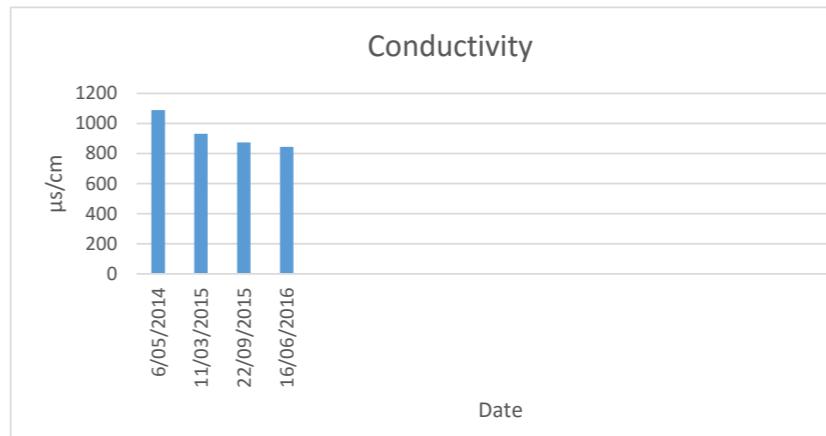
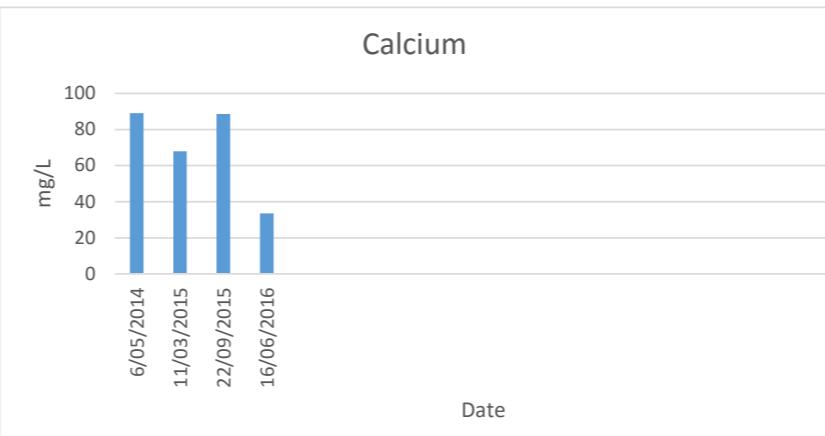
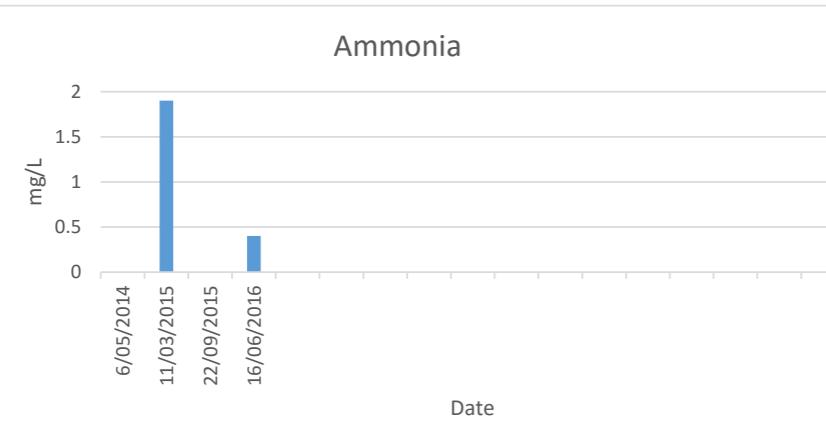
Type of Test	Name of Test	Test	Units	Date
Quality monitoring	Electrical conductivity	EC	µs/cm	8/08/2016
Quality monitoring	Exchangeable calcium	Exch. Ca	cmol(+)/kg	15
Quality monitoring	Exchangeable magnesium	Exch. Mg	cmol(+)/kg	3.3
Quality monitoring	Exchangeable potassium	Exch. K	cmol(+)/kg	4.1
Quality monitoring	Exchangeable sodium	Exch. Na	cmol(+)/kg	0.1
Quality monitoring	Nitrate nitrogen	Nitrate	mg/kg	4
Quality monitoring	Total nitrogen	N (total)	mg/kg	2
Quality monitoring	pH	pH	pH	8
Quality monitoring	Total phosphorus	P (total)	mg/kg	140
Quality monitoring	Potassium	K	mg/kg	1600
Quality monitoring	Sodium absorption ratio	SAR	SAR	0.03
Quality monitoring	P sorption capacity	P sorption capacity	mg/kg	85



## Piezometer Standing Water Levels: depth in metres below surface

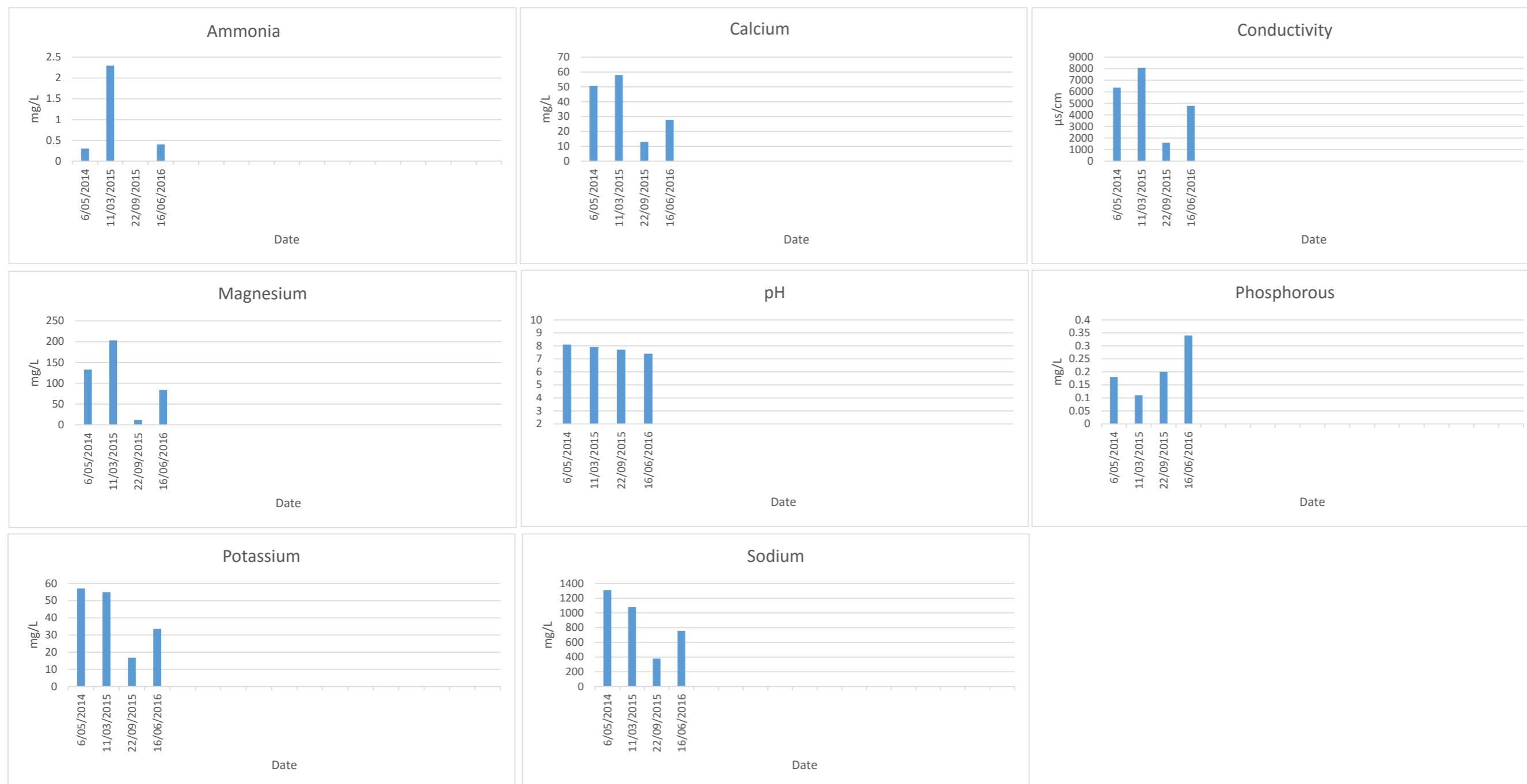


## Point 7: Piezometer Water Quality Test Results Red Frontignac 12 Row

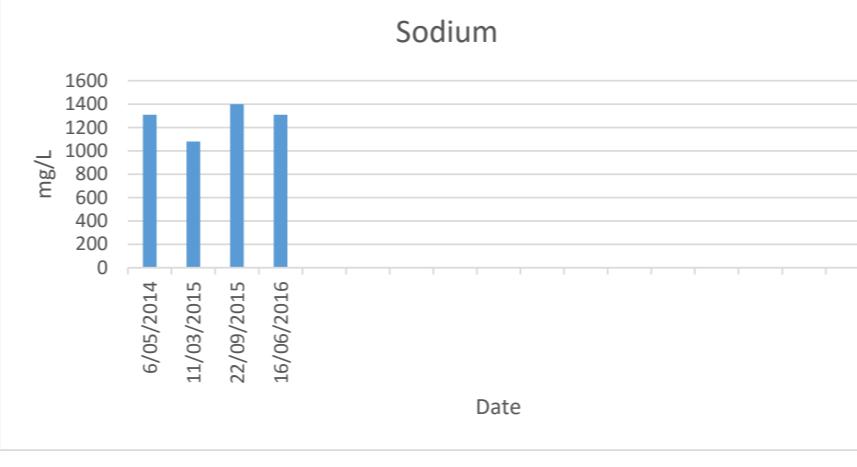
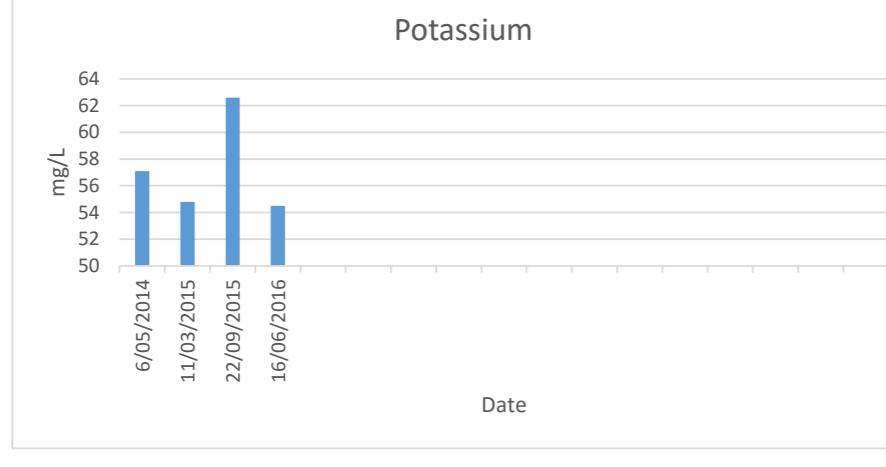
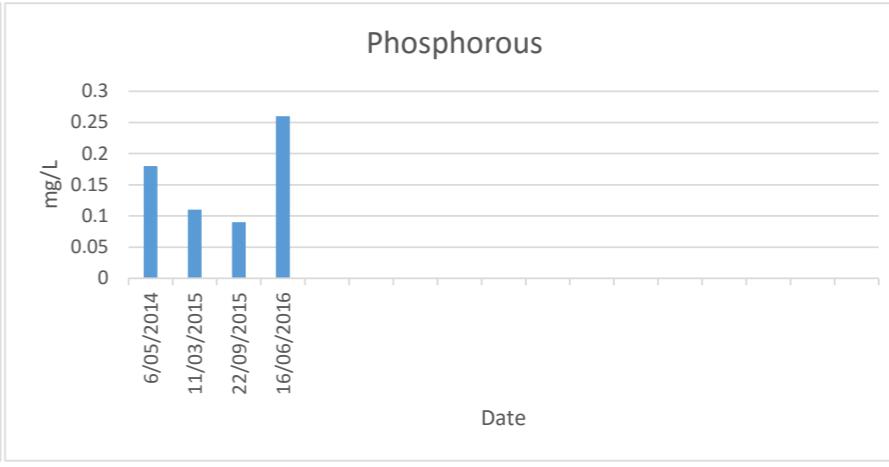
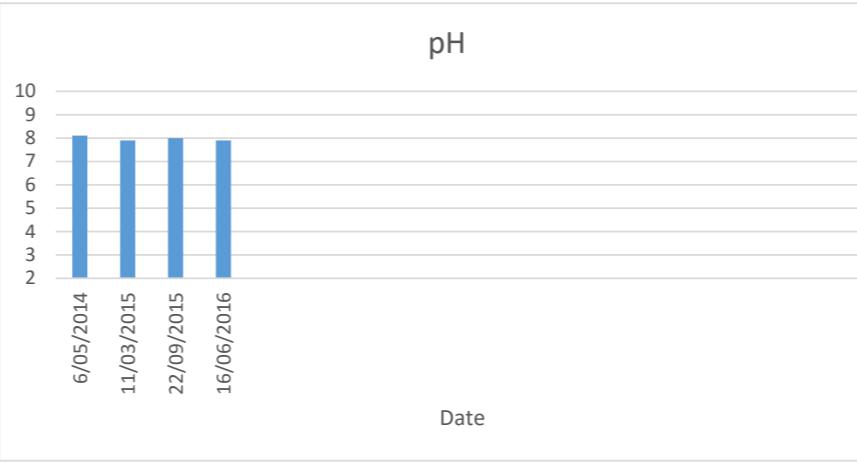
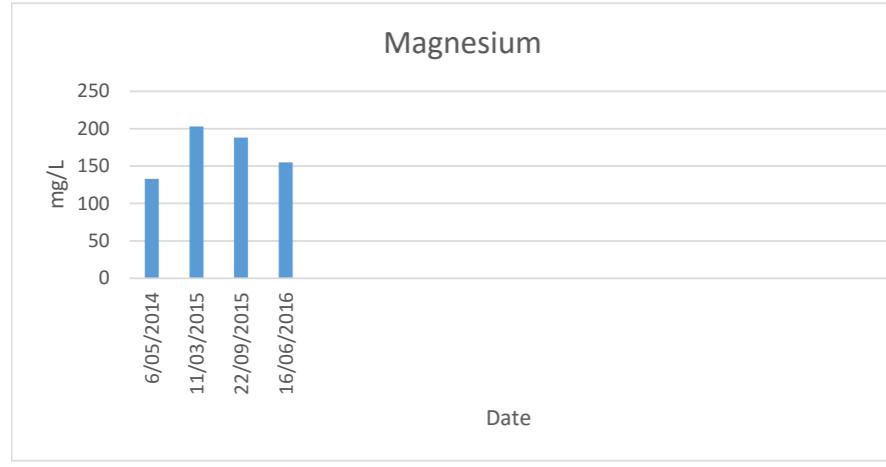
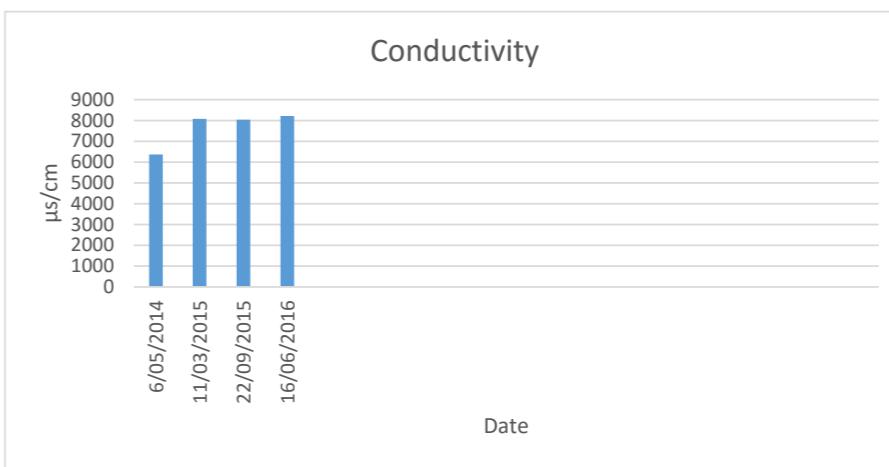
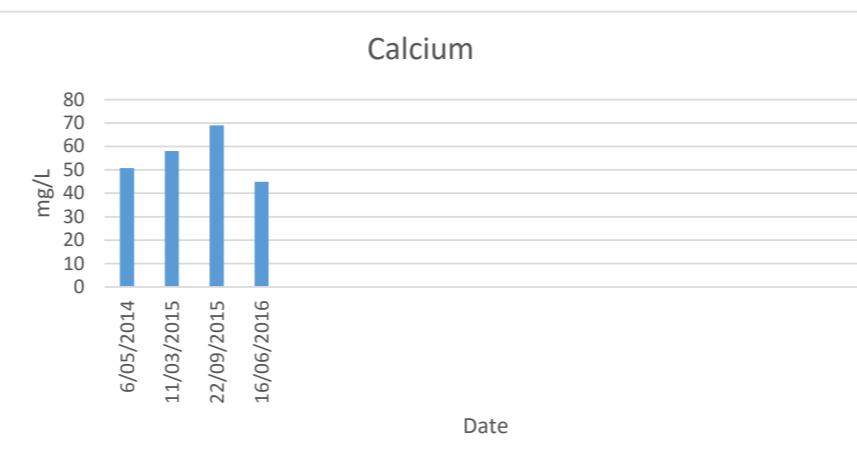
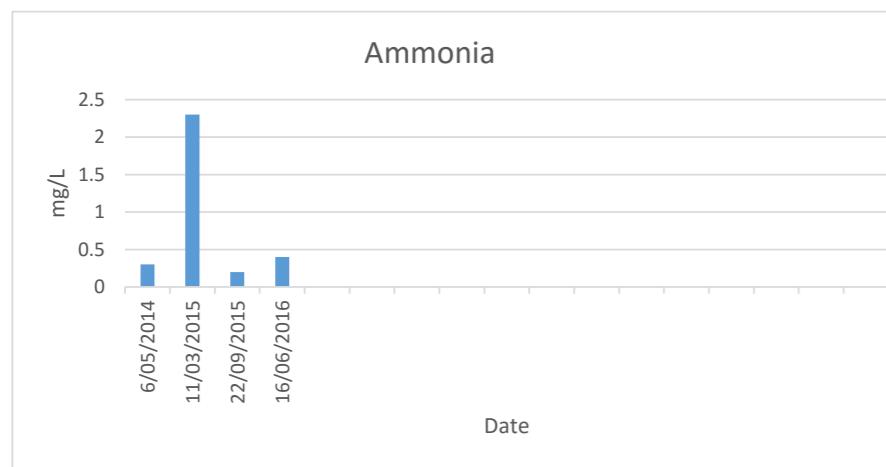


## **Point 8: Piezometer Water Quality Test Results Lined Dam SW Enc.**

Date

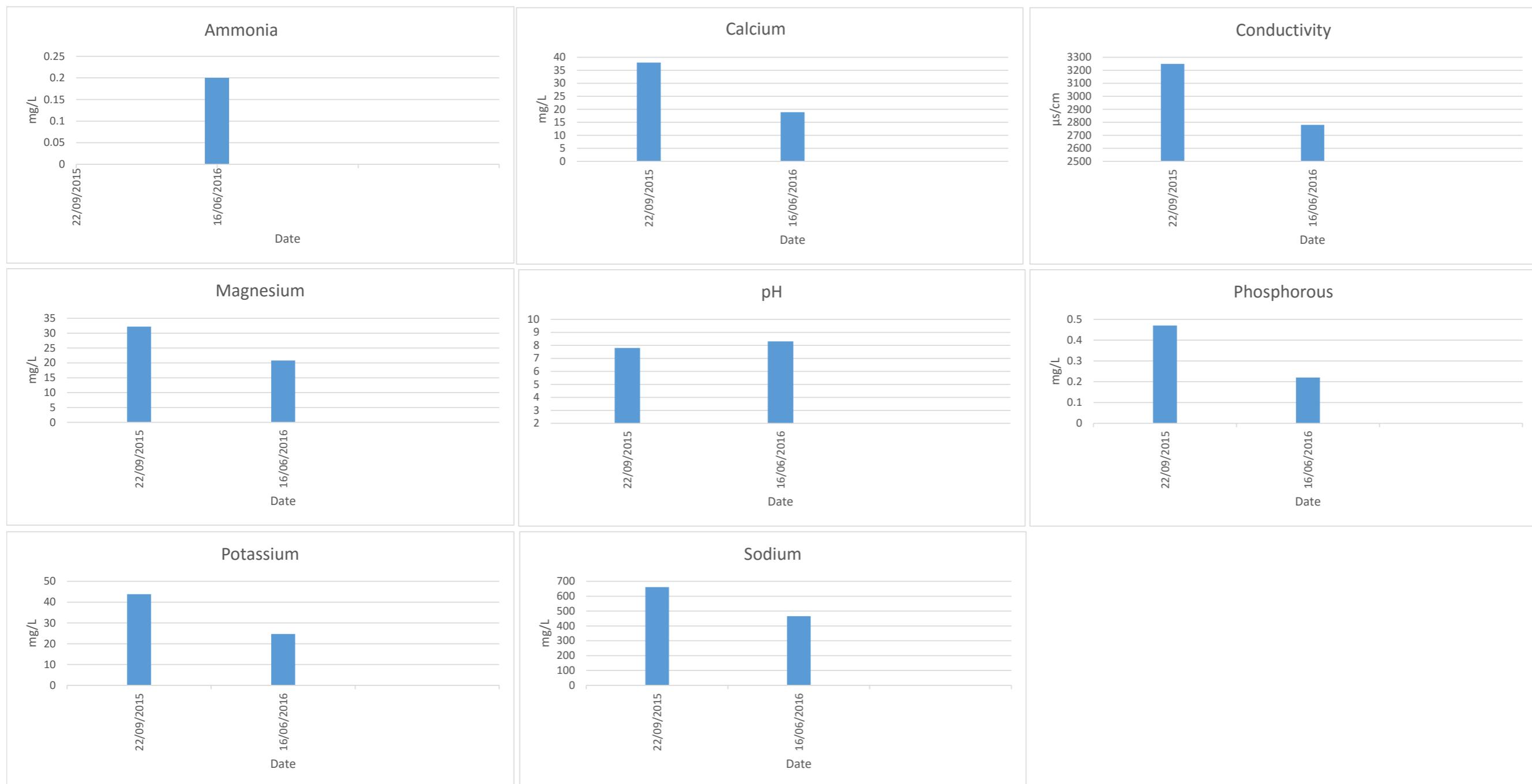


Point 9: Piezometer Water Quality Test Results Touriga SW End



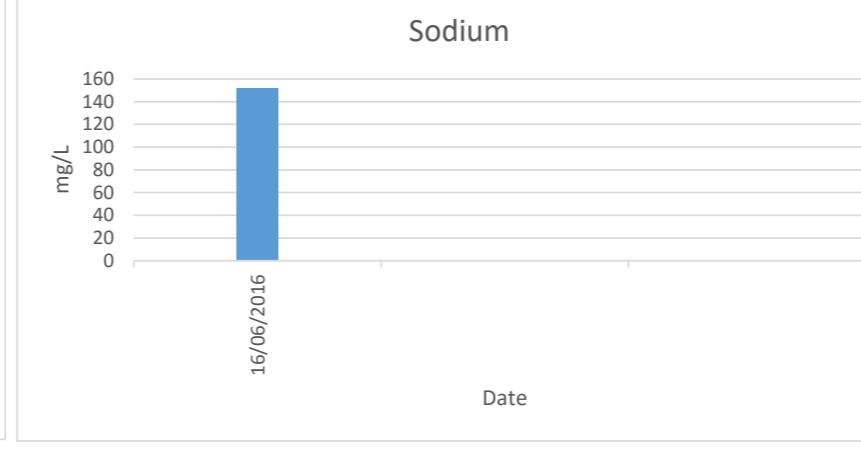
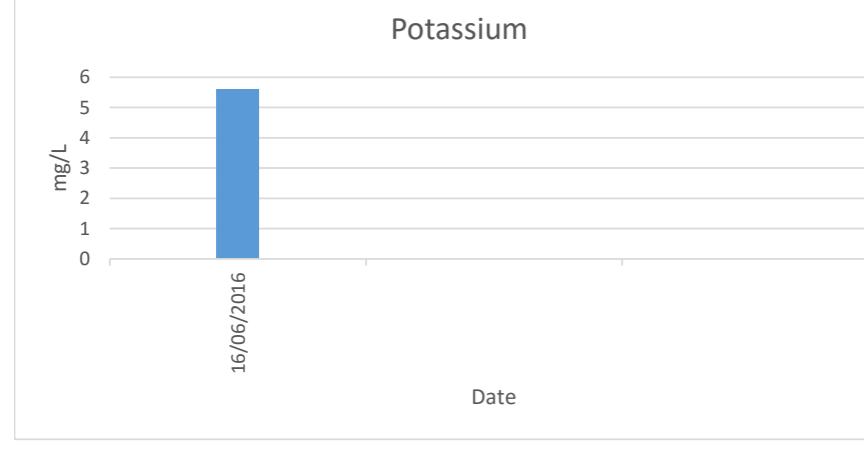
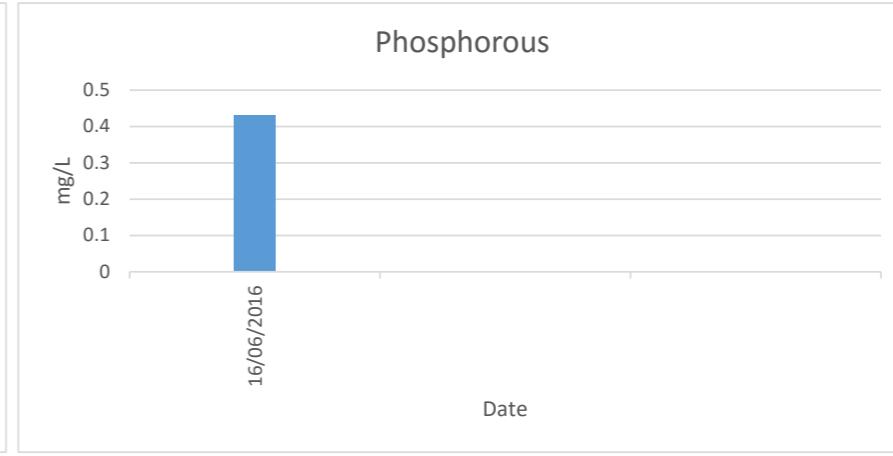
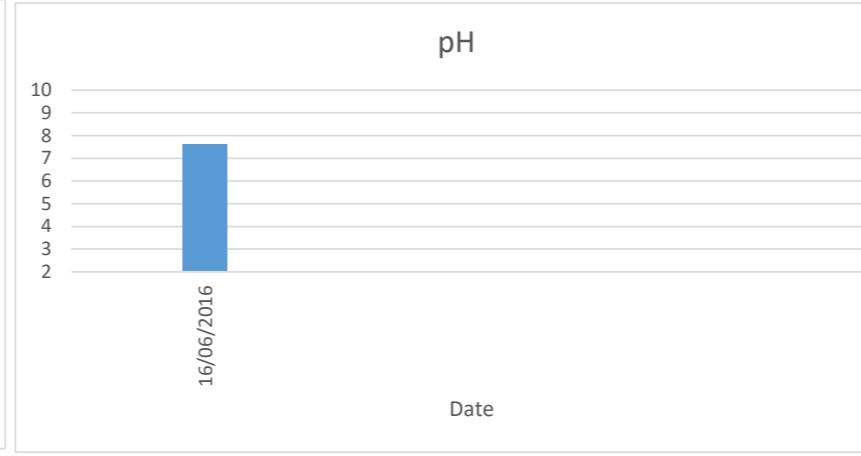
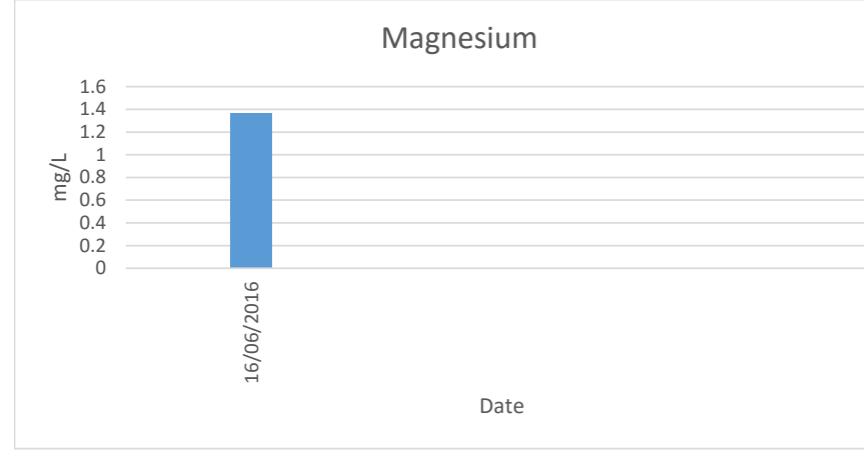
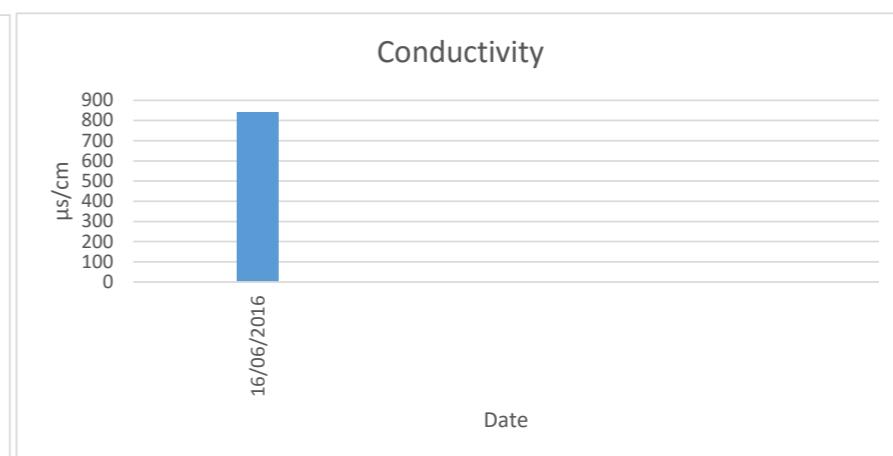
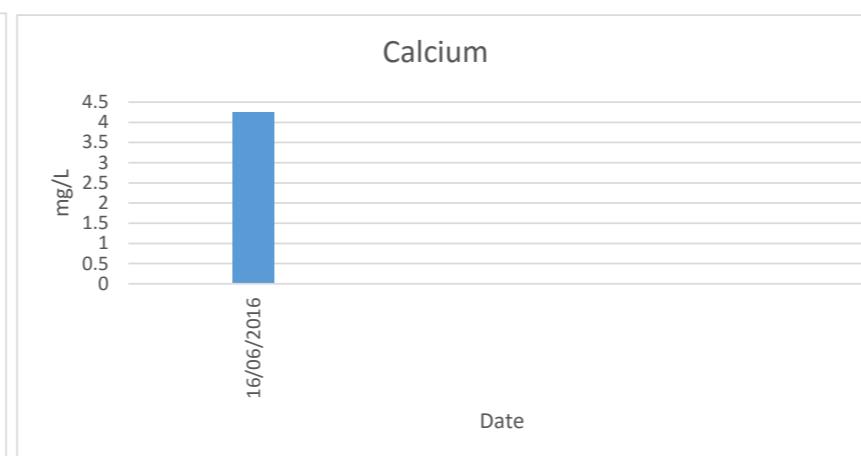
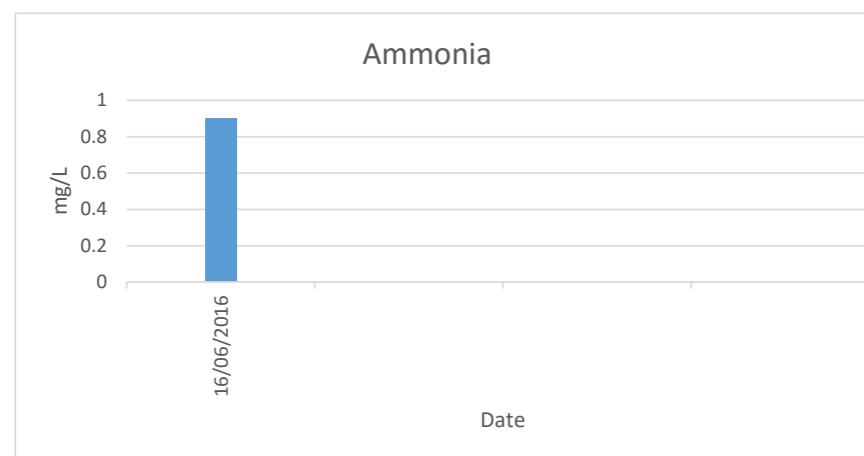
Point 10: Piezometer Water Quality Test Results F128 Dam SW Point

Date



#### **Point 13: Piezometer Water Quality Test Results Old Chardonnay 6 SW End**

Date



**EPA ENVIRONMENTAL MONITORING**

Type of Monitoring Point	How Monitored	Location Description	Frequency
Odour	Odour Intensity and Descriptor Sheet; observation.	Boundary of evaporation ponds "EPA 21" & "EPA 22" on site map.	Daily (working days)

Type of Monitoring Point	How Monitored	Location Description	Frequency
Weather conditions other than rainfall - temperature, wind speed, wind direction, humidity	Handheld weather meter	Boundary of evaporation ponds "EPA 21" & "EPA 22" on site map.	Daily (working days)

Type of Monitoring Point	How Monitored	Location Description	Frequency
Rainfall	Rain gauge	Boundary of evaporation ponds "EPA 21" & "EPA 22" on site map.	Daily (working days)

Type of Monitoring Point	How Monitored	Location Description	Frequency
Biosolids Cake	Biosolids sample, laboratory analysis	Evaporation ponds sludge	As required

<b>Test Type</b>	<b>EPA Reference Points</b>	<b>Frequency of Monitoring</b>	<b>Next Sample Date</b>
Soil quality monitoring	3, 4, 5, 6, 11	Annual	1/09/2016
Groundwater quality monitoring	7, 8, 9, 10	Annual	11/03/2016
Groundwater standing level	7, 8, 9, 10	6 monthly	16/03/2016
Effluent quality monitoring: inflow and outflow	1, 2	6 monthly	15/03/2016
Effluent volume monitoring: inflow and outflow	1,2	Monthly	28/10/2015