

### Annual Environmental Management Report

Woodlawn Bioreactor and Crisps Creek Intermodal Facility

November 2015

**Cover:** Tree planting restoration works along Crisps Creek on 'Pylara', the Veolia owned property adjoining the Woodlawn Eco Project. The restoration project was jointly funded by the NSW South East Local Land Service and involved Conservation Volunteers Australia and the Tarago and Taylors Creek Landcare groups. Photo: Vanessa Seaton, Veolia.

### **Quality Information**

Prepared by:

James Easterbrook Environmental Officer - Woodlawn

5. Benhat

Reviewed by:

Authorised by:

Stephen Bernhart Project Manager – Resource Recovery

Henry Gundry

Woodlawn Facilities Manager

Address:

Veolia Environmental Services Pty Ltd Woodlawn Bioreactor 612 Collector Road, Tarago NSW 2580

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# Contents

1	Intro	duction	.7
1	.1	Site Overview	.7
1	.2	Legislative Requirements	.8
Pa	rt 1 EF	PL 11436	.9
Wo	odlaw	vn Bioreactor	.9
2	Biore	eactor Operations1	0
2	2.1	Bioreactor Licence Conditions1	0
2	2.2	Complaints1	4
3	Biore	eactor Environmental Monitoring1	6
3	3.1	Bioreactor Monitoring Points1	6
3	3.2	Bioreactor Monitoring Results1	8
	3.2.1	Bioreactor Landfill Gas Monitoring Results1	8
	3.2.2	2 Bioreactor Air Quality Monitoring Results2	22
	3.2.3	Bioreactor Surface Water Monitoring Results2	23
	3.2.4	Bioreactor Leachate Monitoring Results2	28
	3.2.5	5 Bioreactor Groundwater Monitoring Results	30
	3.2.6	Bioreactor Piezometers Level Monitoring Results4	4
	3.2.7	7 Bioreactor Evaporation Dam Volume Monitoring Results4	6
Pa	rt 2 EF	PL 114554	8
Cri	sps Ci	reek Intermodal Facility4	8
4	Inter	modal Facility Operations4	-9
۷	l.1	IMF Licence Conditions4	-9
5	IMF	Environmental Monitoring5	52
5	5.1	IMF Monitoring Points	52
5	5.2	IMF Monitoring Results	52
	5.2.1	I IMF Surface Water Monitoring Results5	52
	5.2.2	2 IMF Air Quality Monitoring Results5	54
Re	ferenc	es5	;9
Ap	pendic	ces6	51
ŀ	Append	dix 1 Site Location Plan6	3
ŀ	Append	dix 2 EPL Boundary6	5
ŀ	Append	dix 3 Monitoring Locations Plan6	57
ŀ	Append	dix 4 Tabulated Monitoring Results6	9
ŀ	Append	dix 5 Monitoring Trend Graphs7	1
ŀ	Append	dix 6 MB19 and MB20 Monitoring Results7	3

### **List of Tables**

Table 2.1: Bioreactor Licence Conditions	10
Table 3.1: Bioreactor Licensed Monitoring Points	16
Table 3.2.1: Bioreactor Landfill Gas Monitoring Results	18
Table 3.2.1.1: Subsurface Gas Monitoring Result	18
Table 3.2.1.2: Landfill Gas Extraction Booster Monitoring Results Summary	18
Table 3.2.1.3: Surface Gas Monitoring Results Summary	19
Table 3.2.1.4: Landfill Gas Flare Monitoring Results	19
Table 3.2.2: Bioreactor Air Quality Monitoring Results	22
Table 3.2.2.1: Dust Monitoring Results	22
Table 3.2.3: Bioreactor Surface Water Monitoring Results	24
Table 3.2.4: Bioreactor Leachate Monitoring Results	28
Table 3.2.5: Bioreactor Groundwater Monitoring Results	31
Table 3.2.6: Bioreactor Piezometers Level Monitoring Results	44
Table 3.2.7: ED3 Water Volume Monitoring Results	46
Table 4.1: IMF Licence Conditions	49
Table 5.1: IMF Licensed Monitoring Points	52
Table 5.2.1: IMF Surface Water Monitoring Results	53
Table 5.2.2: Dust Monitoring Results	55
Table 6.1: 2014/2015 Reporting Period Recommendations	56

# **List of Figures**

Figure 3.2.1.1 – Landfill Gas Engine Exhaust Point – Nitrogen Oxide Flow (mg/m <sup>3</sup> )	20
Figure 3.2.1.2 – Landfill Gas Engine Exhaust Point – Hydrogen Sulphide (mg/m <sup>3</sup> )	21
Figure 3.2.1.3 – Landfill Gas Engine Exhaust Point – Sulphuric Acid Mist and Sulphur Trioxide (mg/m <sup>3</sup> )	21
Figure 3.2.2.1 – Bioreactor Depositional Dust Levels (g/m <sup>2</sup> /month)	23
Figure 3.2.4.1 – Leachate Trends – Leachate Dam	29
Figure 3.2.4.2 – Leachate Trends – Leachate Recirculation System	30
Figure 3.2.5A – Groundwater Levels – MB1 to MB17 and ED3B	42
Figure 3.2.5B – Groundwater Levels – WM1 to WM6	43
Figure 3.2.5C – Groundwater Levels – MW8S to MW10S	43
Figure 3.2.6.1 – Piezometer Standing Water Levels – P44 to P100	45
Figure 3.2.7.1 – Evaporation Dam 3 Water Volume (Megalitres)	47
Figure 5.2.2.1 – IMF Depositional Dust Levels – DG18	55

### 1. Introduction

# 1 Introduction

### 1.1 Site Overview

The Woodlawn Eco Project Site (the Eco Project Site), owned and operated by Veolia Australia and New Zealand (Veolia), is located approximately 250 kilometres (km) south west of Sydney in the NSW Southern Highlands. A site location plan is provided in **Appendix 1**. The Eco Project Site, which covers an area of 6000 hectares, comprises of the Pylara and Woodlawn properties. An integral part of the Woodlawn property is the Woodlawn Bioreactor (the Bioreactor), where waste landfilling and landfill gas extraction occurs in the void of a remnant open cut mine, approximately 33 million cubic metres (m<sup>3</sup>) in capacity.

The Bioreactor has been operating since September 2004, with the collection of landfill gas from landfilled waste to extract methane for energy generation commencing in 2008. This occurs at the adjacent Woodlawn Bio Energy Power Station (the Power Station).

Waste to the Bioreactor from Sydney is transported in shipping containers via rail and unloaded onto road trucks at the Crisps Creek Intermodal Facility (IMF), also owned and operated by Veolia and located approximately 8 km away in the township of Tarago. Local waste from neighboring councils and businesses ia transported via road.

In accordance with relevant legislative requirements and industry, the environmental performance of the Bioreactor and the IMF is managed to quite stringent conditions, the reporting of which forms the basis of this Annual Environmental Monitoring Report (AEMR). The AEMR has been prepared in accordance with Environmental Protection Licences (EPL) 11436 and 11455, issued and regulated by the NSW Environment Protection Authority (EPA) for the Bioreactor and the IMF respectively.

The AEMR is submitted to the EPA in conjunction with the Annual Returns which comprise statements of compliance and summaries of monitoring and compliance for both sites, as required under Condition R1 of the EPLs for the reporting period of 6 September 2014 to 5 September 2015.

# 1. Introduction

### 1.2 Legislative Requirements

The main legislative instruments governing the activities undertaken at and the environmental performance of the Bioreactor and the IMF pertaining to this AEMR are the Environmental Planning and Assessment Act 1979 (EP&A Act) regulated by the Department of Planning and Environment (DPE) and the Protection of the Environment Operations Act 1997 (POEO Act) regulated by the EPA, as well as their associated regulations.

A supervisory licence (EPL 11437) is also maintained by Goulburn Mulwaree Council (the Council) to supervise the Bioreactor operations, under section 87 of the POEO Act, for a putrescible waste landfill site not operated by a public authority. The Council ensures compliance with the types and volumes of waste received at the Bioreactor, any design works and other matters that the Council deems necessary to facilitate the implementation of a waste strategy under the Waste Avoidance and Resource Recovery (WARR) Act 2001.

Conditions of the Development Consent, Project Approvals and EPLs stipulate the environmental and operational parameters that need to be addressed by Veolia in the management strategies, adopted for both the sites, to maintain compliance and are detailed, where relevant, in this AEMR which is split into a section for each site.

# Part 1 EPL 11436

Woodlawn Bioreactor

# **2 Bioreactor Operations**

### 2.1 Bioreactor Licence Conditions

In accordance with EPL 11436, the Bioreactor is permitted to accept material classified as General Solid Waste (Putrescible) as described in the Waste Classification Guidelines (EPA, 2014) for the activity 'Waste disposal by application to land'. While energy generation is not a requirement of the EPL, Veolia adopts this practice as a sustainable environmental solution for the site.

In addition to the waste management activities, the site EPL mandates the administrative, operative and reporting conditions for the Bioreactor, as described in **Table 2.1** below. A licenced boundary plan is provided in **Appendix 2**.

Condition		Compliance with Condition		
1.	Administrative conditions	Noted		
2.	Discharges to air and water and application to land	Noted		
3.	Limit conditions	L1. Pollution of Waters The Bioreactor is deemed a zero discharge site, as all surface and storm water that comes into contact with waste or leachate is captured, stored and treated onsite. Non contaminated water is managed through diversion drains and bunds. No water was discharged during this reporting period.		
		L3. Waste All waste received at the Bioreactor during this reporting period was in accordance with the waste types permitted in the EPL. Waste generated onsite was deposited in the Bioreactor.		
		L4. Noise Limits No noise complaints were received during this reporting period indicating that noise at the Bioreactor was likely maintained within the 35 dB(A) LAeq (15 minute) criteria at the nearest residential receiver. Noise monitoring will be undertaken by Veolia on the receipt of any such complaints.		
		<b>L5. Hours of Operation</b> All operational activities at the Bioreactor, including haulage of waste from the IMF were undertaken between 6:00 am and 10:00 pm, Monday to Saturday during this reporting period as permitted under the Development Consent. Veolia were granted an exemption by the EPA to operate Sunday 21 December 2014.		
		L6. Potentially Offensive Odour 63 odour complaints were received at the premises during this reporting period. It should be noted that 2 complainants were responsible for 87% of the complaints.		

### Table 2.1: Bioreactor Licence Conditions

Condition Compliance with Condition			
	An annual independent odour audit is used to assess the effectiveness of odour control measures and to identify improvements to existing odour management practices at the site. The odour audit report indicated Veolia has implemented all recommendations from the previous odour audit.		
	Veolia also actively engages with the community through use of odour diaries and attendance at local community meetings, such as the Tarago and District Progress Association Inc. The odour diaries are collected and reviewed as part of the annual odour audit.		
	Veolia will continue to implement recommended actions from the odour audit in combination with improving current odour control measures identified by Veolia.		
	Veolia received a Penalty Infringement Notice (PIN) and official caution for an odour detected on the 16 <sup>th</sup> of January 2015. Veolia submitted a response to the EPA in regards to the PIN and, as of the end of the reporting period, it is still being reviewed by the EPA. A gas extraction system blockage may have caused odour being detected. Veolia have installed an additional communication system onsite to provide realtime feedback on gas extraction system performance. In conjunction with these improvements, Veolia is improving its leachate treatment abilities to manage liquid in the waste more effectively to improve gas capture and mitigate odour.		
4. Operating conditions	<b>O1. Activities Carried out in Competent Manner</b> All licenced activities undertaken at the Bioreactor in this reporting period were carried out in a competent manner and under a high standard of anyiropmental management for which Veolia is certified under ISO 14001		
	O2 Maintenance of Plant and Equipment		
	The maintenance of Plant and Equipment The maintenance and operation of all plant and equipment on the premises associated with the licenced activities was undertaken in a proper and efficient condition as required by qualified technicians. All major plant and equipment at the site is stored in a computerised maintenance management system in order to schedule and complete the required maintenance. All Veolia operators hold the appropriate qualifications and licenses to operate plant and equipment used as part of Bioreactor operations.		
	<b>O3. Dust</b> All operations and activities were carried out at the Bioreactor in a manner to minimise dust at the boundary of the premises. These included all access roads from the IMF to the Bioreactor and the haul road used for ancillary operations being sealed, the use of water trucks for dust suppression as required and monthly sampling to monitor for the presence and quantity of depositional dust.		
	<b>O4. Emergency Response</b> The Emergency Response Plan (ERP) for the Bioreactor is maintained on the premises and electronically on Veolia's National Integrated Management System, an online platform for storing Veolia policies procedures and plans.		

Condition	Compliance with Condition
	The ERP contains procedures for minimising the risk of and managing incidents such as fires, spills, explosions etc. at the Bioreactor, as well as a Pollution Incidence Response Management Plan (PIRMP) in accordance with the EPL. As per the PIRM requirements, the ERP is tested annually.
	<b>O5.</b> Processes and Management The processes and management of water quality is documented and implemented on site in accordance with the EPL and the Landfill Environmental Management Plan (LEMP) for the Bioreactor. The LEMP provides guidance on the management of surface and stormwater systems such as drainage and pumping networks to divert clean water from any water that has come in contact with waste or leachate.
	Clean surface and stormwater collected from within the void is pumped to Evaporation Dam 3 South (ED3S) for evaporation.
	Water contaminated by waste or leachate is collected and treated in the Leachate Treatment System before being transferred to Evaporation Dam 3 North (ED3N) for evaporation. Mechanical evaporators may be used to assist evaporation and are controlled by wind direction sensors to prevent the drifting of sprayed liquids from the premises.
	The wash bay, used for cleaning of containers and equipment associated with Bioreactor operations, collects sediment in a drainage sump. This sump is periodically drained and the resultant waste deposited in the Bioreactor where it is directed to the leachate collection and treatment systems.
	A new wheel wash was installed in January 2015 to improve Veolia's capacity clean the undercarriage of vehicles exiting the Bioreactor and eliminate tracking of mud onto regional roads. Waste water from the cleaning process is directed back into the Bioreactor.
	Veolia maintains site access for the supervisory holder for EPL 11437, which is Goulburn Mulwaree Council (the Council). Veolia grants the Council's representative access to the site and all requested documentation and records. All instructions provided by the Council's representative were complied with by Veolia in this reporting period.
	This supervisory process provides a secondary compliance check for the design, construction, extension and maintenance of all engineered features of the Bioreactor and ensures they are completed in compliance with the Development Consent and the EPL for the site.
	<b>O6. Waste Management</b> All licenced activities associated with this condition were carried out in accordance during this reporting period.
	A closure plan shall be submitted prior to the closure date of the Bioreactor.
	Monitoring undertaken within the Bioreactor void and around the licenced boundary during this reporting period validated that groundwater flows form

### Condition **Compliance with Condition** an inward gradient towards the void ensuring no outward movement of leachate occurs. The leachate recirculation, collection and treatment system was continued to be maintained and operated to optimise the Bioreactor conditions for treatment of leachate, other waste waters and contaminated storm waters. Excess leachate was extracted and treated in the Leachate Treatment System and transferred for storage in ED3N lagoons 1, 2 and 3 (ED3N-1, ED3N-2, ED3N-3). Clay lined barriers were continued to be installed in the southern portion of the void wall as detailed in the previous reporting period. Leachate from the waste accepted at the Clyde Transfer Terminal was the only liquid imported into the void during this reporting period and was processed through the leachate treatment system as approved by the EPA. Virgin Excavated Natural Material (VENM) was sourced from onsite and offsite locations for use as cover material during the reporting period. All waste accepted within the Bioreactor in this reporting period was screened prior to final disposal in accordance with the requirements of the Veolia Control of Non Conforming Waste Procedure and NSW Resource Recovery Screening & Recording of Waste Procedure to ensure only conforming waste is received. Veolia will undertake final capping of the Bioreactor when required and in accordance with the EPL. Veolia operate the Bioreactor to maximise the production of landfill gas for generation of renewable energy at the Power Station, with 2 auxiliary flares as back up treatment of landfill gas emissions captured. The generators and flares satisfy the design, installation and operational requirements within the EPL. A 6th landfill gas generator was installed and commissioned on 12 September 2014 to increase the installed capacity of the Power Station to 6 Megawatts (MW). The landfill gas extraction and utilisation infrastructure in the Bioreactor has been designed to meet the conditions of the landfill including settlement. In this reporting period, Veolia continued to construct temporary access roads to minimise waste delivery vehicles coming in contact with and tracking waste to external surfaces. Dedicated site vehicles that only operate within the void and other operational areas were utilised with a wheel wash facility operating for vehicles exiting the facility. In addition to tracking of waste, a monthly site inspection checklist

	Condition	Compliance with Condition
		appended to the Site Management Plan is used to ensure the practical
		measures in place at the site to prevent litter leaving the premises.
		07. Other Operating Conditions
		No drill holes were required to be sealed during this reporting period.
5.	Monitoring and recording	Noted, all compliance monitoring was carried out in this reporting period in
	conditions	accordance with EPL requirements. The results of which are detailed, along
		with any non-conformances, in Section 3.
6.	Reporting conditions	Noted and addressed in this AEMR and the annual return documents,
		where relevant. Notifications to the EPA were undertaken in a timely
		fashion.
7.	General conditions	Noted.
8.	Pollution studies and	U1. Trial of Alternative Daily Cover
	reduction programs	Veolia is in the process of requesting a new trial period for the use of
		alternate daily cover materials.
		U2. ED3N-1 Leachate Management
		At the end of this reporting period veolia had a licence variation application submitted to the EPA to remove this condition from the licence as these
		activities have been completed. This is expected to be improved within the
		next reporting period.
		Monthly monitoring of the leachate aeration dam was undertaken during this
		reporting period to ensure efficient performance. The evaporation dams
		consistency of the treated leachate quality. The results of this monitoring
		indicated that the evaporation dams were being maintained in an alkaline
		state.
		Odour emissions testing was undertaken in October 2014 and the results
		Indicated the odour emission profile for the evaporation dams (ED3N-1,
		$e^{-3i^2-2}$ , $e^{-3i^2-3} \propto e^{-3i^2-4}$ were below the historical reporting periods.
		Veolia completed a minor upgrade to the leachate treatment system
		involving the installation of a baffle in the aeration dam to create an anoxic
		and aerobic zones in the dam, which aims to increase the efficiency of the
		treatment process. The polymer used to flocculate the activated sludge was
		also changed in order to increase the effectiveness.
9.	Special Conditions	Noted.

### 2.2 Complaints -

Veolia operates a 24 hour telephone complaints line that enables the receipt of complaints from members of the public, as required under the EPL. Other complaints that were received off site during this reporting period were logged by Goulburn-Mulwaree Council and the EPA. Veolia recorded a total of 63 complaints, relating only to odour, during this reporting period. Upon receipt of an odour complaint, Veolia recorded all details into the site complaints register as required under the EPL and Site Management followed up with the complainant to determine the nature (and scale) of the odour.

In order to proactively engage in effective odour management, Veolia participates in regular community liaisons to encourage and gather feedback from the local residents regarding the odour performance at the Bioreactor. These liaisons are facilitated either through the Community Liaison Committee (CLC) to voice their concerns with the Bioreactor Site and also at the Tarago Progress Association Inc. (TADPAI) meetings. Veolia continues to implement activities to eliminate and minimise odour sources at the site based on annual odour audit recommendations.

Odour diaries were issued in December 2014 to 12 residents located throughout the regional area to identify odour events and record their intensity. Diaries were collected in July 2015 for review internally and for the annual external odour audit. Odour loggers, measuring Hydrogen Sulphide (0-10ppm), were also installed at an onsite and offsite location. Data from these loggers will be assessed in the next reporting period.

# 3 Bioreactor Environmental Monitoring

### 3.1 Bioreactor Monitoring Points

Veolia is required to monitor environmental performance of the Bioreactor under EPL 11436. **Table 3.1** details the EPL ID, sampling location, frequency and the type of monitoring undertaken at each licensed point. A monitoring location plan is included in **Appendix 3**.

EPA ID	Sampling Location	Frequency	Type of Monitoring
1	GMBH1	Quarterly	Subsurface Gas
2	GMBH2		
4	GMBH4		
5	Gas Extraction Booster	Annual	Landfill Gas Input
6	Landfill Surface	Quarterly	Surface Gas
7	Landfill Gas Flare	Annual / Continuous	Air Discharge
8	Landfill Gas Engine Exhaust Point – Gen 1	Annual	Air Discharge
9	Meteorological Station	Continuous	Meteorological
10	DG28 – Pylara	Monthly	Particulates – Deposited
11	DG22		Matter
12	DG24		
13	Site 115 – Allianoyonyige Creek	Quarterly	Surface Water
14	Spring 2 – Crisps Creek		
15	Site 105 – Crisps Creek		
16	WM200 – RWD		
17	WM201 – ERC		
18	WM202 – ED3S		
19	WM203 – ED3N		
21	Pond 2		
	(Decommissioned)		
22	Pond 3		
23	Leachate Pond	Annual	Leachate
24	Leachate Recirculation System		
25	MB1	Quarterly / Annual	Groundwater
26	MB2		
27	MB3		
28	MB4		
29	MB5		
30	MB6		

### Table 3.1: Bioreactor Licensed Monitoring Points

EPA ID	Sampling Location	Frequency	Type of Monitoring
31	MB7		
32	MB8		
33	MB10		
34	MB11		
35	MB12		
36	MB13		
37	MB14		
38	MB15	Quarterly / Annual	Groundwater
39	MB16		
40	MB17		
41	ED3B		
42	WM1		
43	WM3 (Decommissioned)		
44	WM4		
45	WM5		
46	WM6		
47	WM7 (Decommissioned)		
48	P38A & P38B	Quarterly	Standing Water Level
49	P44A & P44B		
50	P45A & P45B		
51	P58A & P58B		
52	P59A & P59B		
53	P100A & P100B		
54	ED3	Monthly	Storage Volume
55	MW8S	Quarterly / Annual	Groundwater
56	MW8D		
57	MW9S		
58	MW10S		
	(Dry well)		

All monitoring data collected at the monitoring points identified in **Table 3.1** during this reporting period has been tabulated and provided in **Section 3.2** or in **Appendix 4**. Graphs of data collected have been developed to assist in the assessment of trends and depict any variability within the monitoring results are presented in **Section 3.2** or in **Appendix 5**.

### 3.2 Bioreactor Monitoring Results

### 3.2.1 Bioreactor Landfill Gas Monitoring Results

Parameter		Ros	ulte/Discussi	on			
Subsurface Gas	Monitoring of 3 subsurface gas monitoring bores (GMB) was undertaken on						
	a quarterly basis as per EPL requirements and is summarised in Table 3.2.1.1 below:						
	Table 3.2.1.1: Subsurface Gas Monitoring Result						
	Gas		Purged Metha	ane Reading (%	<b>%</b> )		
	Monitori Bore II	Monitoring Bore ID 12/03/2015 19/06/2015 30/07/2015 21/08/2015					
	GMBH	<b>1</b> 0.1	0	0	0		
	GMBH	<b>2</b> 0.1	0	0.1	0		
	GMBH	4 0.2	0	0.1	0		
	The results show that the gas collection network is effectively capturing and controlling landfill gas within the landfill void. Engineered impermeable barriers and the natural subsurface of the void wall also minimises the potential movement of landfill gas from the Bioreactor, allowing for maximum extraction through the gas collection system.						
Landfill Gas Extraction Booster	The data rep is consistent <b>3.2.1.2</b> below	The data reported for the landfill gas extraction booster at the Power Station is consistent to the historical average since 2008 as summarised in <b>Table 3.2.1.2</b> below:					
	TUDIE 5.	2.1.2. Lunujin C Res	ults Summo	un buuster i irv	vionitoring		
		Parameter	Histo	rical 2014/	2015		
			Aver	age Res	sult		
		Temperature (° C	<b>;)</b> 36	.7 39	.1		
	Volumetric Flow (m3/hr) 2761 3010						
	Methane (%) 52.1 50.4						
	The detailed data for each of the parameters required under the EPL for the gas extraction booster is provided in <b>Table 1</b> (refer <b>Appendix 4</b> ).						
Surface Gas	Surface gas requirement tabulated da	monitoring was c s, which are summ ata is available in <b>Ta</b>	ompleted on a arised in <b>Tab</b> I <b>ble 2</b> (refer Ap	a quarterly bas le 3.2.1.3 belo opendix 4).	sis as per EPL w. The detailed		

#### Table 3.2.1: Bioreactor Landfill Gas Monitoring Results

Annual Environmental Management Report Woodlawn Bioreactor and Crisps Creek Intermodal Facility

Parameter	_	Resu	Its/Discussion			
	Table 3.2.1.3	: Surface G	ias Monitorii	ng Results Su	ımmary	
	Parameter	Minin	num Maxi	imum Ave	erage	
	Methane (%)	0.00	02 0.1	197 0.	005	
Methane was detected in varying amounts over the waste surface wit overall average of 0.005% during this reporting period which was lower 0.01% from the previous reporting period.						
	The emission threshold concentration for methane detected in surface gas emission testing is 500 parts per million (0.05%), as recommended in (Environmental Guidelines for Solid Waste Landfills, January 1996).					
	Surface gas monitoring enables site operational personnel to investigate and apply corrective actions where any high concentrations of methane has been detected to maintain the effectiveness of the landfill cap and prevent migration of landfill gas through preferential pathways to the surface.					
	This can include application of cover material in areas of the void demonstrating settlement cracking, commissioning and rebalancing of gas extraction wells and installing additional gas collection infrastructure. During this reporting period a new vegetation mulch bio-cover was implemented around wells which has assisted in mitigating odour and reducing surface gas emissions.					
Landini Gas Flare	The landfill gas flares are manufactured to a residence time of 0.3 seconds with a destruction efficiency of 98% for methane and non methanogenic organic compounds to meet the requirements of the EPL. Monitoring was continuously performed during this reporting period, an average of which is summarised in <b>Table 3.2.1.4</b> below.					
	Parar	neter	Units	Result		
	Temp	erature	°C	1085.4		
	Resid	ence Time	Seconds	< 0.3		
					-	
Landfill Gas Engine Exhaust Point(s)	Monitoring of a land the reporting period however due to its from generator 3 w with the previous m (refer <b>Appendix 4</b> )	dfill gas engine d. The monitor unavailability a as taken as re nonitoring perio	e 3's exhaust po ing point stated at the time of mo presentative. Th od and presente	int was complet in the EPL is G onitoring, measu ne results are co ed in <b>Tables 3.1</b>	ted during enerator 1, urement onsistent to <b>3.5</b>	
	Concentration limit EPL, all of which w this reporting perio demonstrated in <b>Fi</b> • Nitrogen O • Hydrogen 4	s for each of the ere below the d and consiste <b>gures 3.2.1.1</b> xides; Sulphide; Acid Mist; and	ne following poll threshold for ea ent with previous – <b>3.2.1.3</b> .	utants are stipul ich exhaust poir sly reported leve	lated in the nt test within ils, as	

Parameter	Results/Discussion
	Sulphur Trioxide.
	An upward trend in nitrogen oxides was noted from the previous monitoring period however was still within the concentration threshold.



Figure 3.2.1.1 – Landfill Gas Engine Exhaust Point – Nitrogen Oxide Flow (mg/m<sup>3</sup>)



Figure 3.2.1.2 – Landfill Gas Engine Exhaust Point – Hydrogen Sulphide (mg/m<sup>3</sup>)



### 3.2.2 Bioreactor Air Quality Monitoring Results

Table 3.2	.2: Bioreac	tor Air Qua	ity Monitor	ing Result	S	
Parameter			Results/Dis	cussion		
Meteorological Station	Veolia oper climatic dat not limited t Wir Wir Ter Rai Sol Sol	ates an onsite a listed in the co): and speed at 10 and direction at mperature at 2 mperature at 1 infall; ar radiation; a ma theta at 10	meteorologica EPL. Meteorolo m; 10m; m; 0m; 0m; nd	I station to c ogical data re	ontinuously i ecorded inclu	monitor ıdes (but is
	Meteorolog made availa and calibrat Hydrometric request.	ical data is log able for the 20 tion of the met c Consulting S	ged in 15 minu 14/2015 report eorological sta ervices. Calibr	ite and 24 ho ing period up tion is carried ation reports	our intervals oon request. d out quarter can be prov	and can be Servicing ly by ided upon
Particulates/Dust Monitoring	Monitoring of basis as rec consistent w The results summarised with the det	of 3 deposition quired under th with previously of total solids d for each of th called results to Table 3.2.	al dust gauges the EPL, the rest reporting period found within the monitoring lo abulated in <b>Tak</b>	(DG) was c sults of which ods as depic e deposition ocations in <b>T</b> oles 4.1 - 4.3	completed on a are general ted in <b>Figure</b> al dust samp <b>able 3.2.2.1</b> (refer <b>Appe</b> a <i>Results</i>	a monthly ly <b>3.2.2.1</b> . oles are below, ondix 4).
		Dust	Sumr	nary Total S	Solids	
		Gauge	(	g/m2/month	)	
			Minimum	Maximum	Average	
		DG22	0.4	3.9	1.64	
		DG24	0.2	17	5.87	
		DG28	1.2	16	5.52	
	The maximum g/m2/month the Void. Ex this gauge of Resources was frequen The reading property of	um dust level i n at DG24 in A xtensive earth during this per mine drilling ri nted by dump g of 16 g/m2/m Pylara, in Feb	recorded in this pril 2015 which works were cor iod to create an gs located arou trucks and hea nonth at DG28, ruary 2015 is a	s reporting per n is located on inducted in the n access roa und ED3S. T vy vehicles t located at the bnormal. Give	eriod was 17 on the Weste ie immediate id for multiple his new acce throughout th ne Veolia own ven that for t	rn side of vicinity of Heron ess road his process. ned he
	correspond	ing month the	e were no sim	ilar levels red	corded at the	dust

Parameter	Results/Discussion
	gauges located within the proximity of the landfill void, it can be inferred that this dust emission was not as a result of the Bioreactor activities and can be treated as an outlier. Veolia infer that this result is due to activities, such as mowing and/or camp fires, in the immediate vicinity.
	Overall dust suppression is generally consistent with previous years and a measure of the dust control measures that the site has in place.



Figure 3.2.2.1 – Bioreactor Depositional Dust Levels (g/m<sup>2</sup>/month)

### 3.2.3 Bioreactor Surface Water Monitoring Results

The findings from water quality monitoring of surface water locations required under the EPL is summarised in **Table 3.2.3** below with detailed data provided in **Tables 5.1 - 5.8** (refer **Appendix 4**). Key quality indicators selected to identify likely impacts from the Bioreactor include:

- pH,
- Electrical conductivity (EC),
- Ammonia (NH<sub>3</sub>),

- Total organic carbon (TOC),
- Iron (Fe),
- Sulphate (SO<sub>4</sub>), and
- Zinc (Zn).

These are depicted in the trend graphs (Figures 3.2.3.1 – 3.2.3.8) provided in Appendix 5.

Parameter	Results/Discussion
Site 115 – Allianyonyige Creek	Site 115 is situated downstream of the evaporation dams. 3 out of 4 quarterly monitoring events required under the EPL were undertaken in this reporting period and have been documented in the Annual Return. Based on the results provided in <b>Table 5.1</b> (refer <b>Appendix 4</b> ), the pollutant concentration trends from previous monitoring periods are generally consistent
	<ul> <li>Mean pH at 8.15 (overall range of 6.1 – 8.6) for this location indicates slightly alkaline water.</li> <li>EC ranges overall between 805 – 2970 μS/cm, indicating fresh to brackish water. This period recorded lower EC readings than the previous reporting period (174 – 4360 μS/cm). Variability can be affected by dilution during rainfall events and evapo-concentration as is likely based on Woodlawn's local climatic conditions and seen historically (Earth2Water, 2010).</li> <li>NH<sub>3</sub> at 0.1mg/L and TOC at mean of 14 mg/L concentrations recorded in this monitoring period remain consistent with historical monitoring results</li> <li>Other key indicators (SO<sub>4</sub>, Iron, Lead and Zinc) are not required to be sampled under the EPL and were not sampled in this reporting period.</li> </ul>
Spring 2	<ul> <li>Spring 2 is located upstream of the Bioreactor and is adjacent to Crisps Creek, therefore provides background water quality information to site operations. This location naturally overflows to Crisps Creek in wet weather events.</li> <li>5 monitoring events were undertaken, an additional 1 than required by the quarterly EPL schedule, in this reporting period and have been documented in the Annual Return. Water quality trend in Spring 2, based on the results provided in Table 5.2 (refer Appendix 4), is consistent with water quality from historical monitoring results.</li> </ul>
	<ul> <li>pH is slightly lower than previous years (average 4.63) which is within the overall range of 3.5 – 8.5 for this location;</li> <li>EC (average 870 µS/cm) for this reporting period is indicative of</li> </ul>

Table 3.2.3: Bioreactor Surface Water Monitoring Results

Parameter	Results/Discussion
	<ul> <li>fresh water.</li> <li>SO<sub>4</sub> (average 211 mg/L) shows an identical trend to conductivity, again indicating a direct affect on EC.</li> <li>Fe (average 0.8 mg/L) and Zn (average 15 mg/L) concentrations continue to show slow decline from overall averages with some variability likely due to dilution following wet weather periods and concentration during drier periods.</li> <li>NH<sub>3</sub> (average 0.38 mg/L) and TOC (average 10.4 mg/L) concentrations recorded in this monitoring period were consistent with historical monitoring results.</li> </ul>
Site 105 – Crisps Creek	<ul> <li>Site 105 is located downstream of the Bioreactor and tailings dams. 3 out of 4 quarterly monitoring events required under the EPL were undertaken in this monitoring period, due to insufficient flow, and have been documented in the Annual Return.</li> <li>Water quality trends in Site 105, based on the results provided in Table 5.3 (refer Appendix 4) are consistent with previous monitoring results.</li> <li>pH (average 7.9) is within the overall range of 5.4 – 8.6 for this location, indicating relatively neutral water;</li> <li>EC (average 3003 µS/cm) is consistent with historical results, reflecting brackish water.</li> <li>TOC (average 17.33 mg/L) and NH<sub>3</sub> (average 0.1 mg/L) were consistent with historical trends.</li> <li>Other key indicators (SO<sub>4</sub>, Iron, Lead and Zinc) are not required to be sampled under the EPL and were not sampled in this reporting period.</li> </ul>
WM200 Raw Water Dam	<ul> <li>The Raw Water Dam is located to the west of the dolerite stockpile and collects uncontaminated water. Quarterly monitoring events were undertaken in accordance with EPL conditions.</li> <li>Based on the results provided in Table 5.4 (refer Appendix 4), the results for WM200 remain generally consistent with the previous reporting periods.</li> <li>pH (average 7.2 – 7.9) indicates slightly alkaline water;</li> <li>EC (average 1460 µS/cm) is slightly lower than the last monitoring period (average 1500 µS/cm) and is indicative of fresh/brackish water;</li> <li>SO<sub>4</sub> level (average 434 mg/L) was generally consistent with previous trends;</li> <li>Zn and Fe levels appear to have stabilised at averages of 24 mg/L and 0.2 mg/L respectively, which are lower than the previous reporting period of 52mg/L and 0.78mg/L. Based on historical evidence, it appears the variability in the heavy metals may be quite cyclical;</li> <li>TOC was an average of 18.75 mg/L in this reporting period, a slight</li> </ul>

Parameter	Results/Discussion
	increase in trend although relatively consistent with historical
	results. This could be reflective of the presence of organic matter
	<ul> <li>NH<sub>2</sub> at 0.1 mg/L is at guite low levels at this location.</li> </ul>
WM201 – Entrance Road	The Entrance Road Culvert collects surface water runoff from the Woodlawn
Culvert	<ul> <li>Bioreactor administration office and workshop areas. 2 monitoring events were undertaken during this reporting period, the results of which are provided in Table 5.5 (refer Appendix 4). Monitoring contractors did not report flow at this site during the first two quarters of the reporting period.</li> <li>pH is consistent (average 6.6) with previous reporting periods and remains within the overall range of 4.5 – 8.2 for this location;</li> <li>EC at 170 µS/cm is reflective of fresh water and lower than previous reporting periods. EC variability can be caused by dilution during rainfall events.</li> <li>Other key indicators (SO<sub>4</sub>, Iron, Lead and Zinc) are not required to be sampled under the EPL and were not sampled in this reporting period</li> </ul>
	Veolia will continue to monitoring this location in the next reporting period for
	any intery contaminant run on impacts.
WM202 – Evaporation Dam 3 South	Evaporation Dam 3 South is a storage point to manage stormwater from the void by evaporation. Quarterly monitoring events were undertaken in accordance with EPL conditions.
	Water quality results indicated a similar trend to previously reported data as seen <b>in Table 5.6</b> (refer <b>Appendix 4</b> ).
	<ul> <li>pH levels indicate an acidic, yet stable trending result with the average pH of 2.9 consistent from previous reporting period;</li> <li>Fe (average 65mg/L) is consistent with previous reporting period;</li> <li>Zn at an average of 845 mg/L shows in increase from the average reporting in the previous period (810 mg/L) however is well within the maximum measured at this location of 1964 mg/L;</li> <li>SO<sub>4</sub> shows a decrease of an average of 7310 mg/L from an average of 8456 mg/L reported in the previous period</li> <li>EC (average 8387 µS/cm) remains within the overall average. Both SO<sub>4</sub> and EC concentrations reflect the signature for Acid Mine Drainage (AMD) contaminated waters from remnant mining operations stored in Evaporation Dam 3 South.</li> <li>NH<sub>3</sub> concentrations (average 73.4 mg/L) declined slightly over the course of the reporting period.</li> </ul>
WM203 – Evaporation Dam 3 North	Evaporation Dam 3 North (ED3N) is a storage point to manage leachate by evaporation. Quarterly monitoring events were undertaken in accordance with the EPL.

Parameter	Results/Discussion
	<ul> <li>Based on the water quality results provided in Table 5.7 (refer Appendix 4), for WM203, the following can be confirmed:</li> <li>pH (average 6.89) shows a upward trend with the 2<sup>nd</sup> quarter close to achieving neutrality (6.94). The 3<sup>rd</sup> and 4<sup>th</sup> quarter results are alkaline and trending upwards.</li> <li>EC average 24925 μS/cm is trending upward from previously reported period (average 19832.5μS/cm);</li> <li>SO<sub>4</sub> averages (12023 mg/L) appears to be generally consistent with previous reporting periods upward trend.</li> <li>Fe levels appear to have decreased slightly from the previous reporting periods to 2.3 mg/L from a minimum of 5.9 mg/L but Zn levels show a slight average increase from 410 – 550 mg/L to an average of 720 mg/L.</li> <li>NH<sub>3</sub> concentrations (average 855.25 mg/L) remained stable over the course of the reporting period (771 – 936mg/L).</li> <li>TOC is trending upward (average 558 mg/L) from the previous reporting period. The reading of 8 mg/L in quarter 1 is not consistent with other results and can therefore be classified as an outlier.</li> </ul>
Pond 3	<ul> <li>Pond 3 is situated on a bench within the landfill void at a relative level (RL) of 740 m above sea level. Pond 3 acts as a transfer point to capture stormwater from the walls of the landfill void to Evaporation Dam 3.</li> <li>Quarterly monitoring events were undertaken in accordance with the EPL, the results of which are tabulated in <b>Table 5.8</b> (refer <b>Appendix 4</b>). These water quality results consistent results with previous reporting periods.</li> <li>pH average of 3.14 confirms acidic nature of water that comes in contact with the void walls and is consistent with previous period range of 2.7 – 4.1.</li> <li>EC (2755 µS/cm) remains similar with previous results, showing variability (1330 – 3450 µS/cm), likely due to weather influences;</li> <li>SO<sub>4</sub> trends (average 3240 mg/L) mirror variability of EC (2500 – 5600mg/L);</li> <li>Fe at 67 mg/L is consistent with the previous reporting period and continuing to show a slight decline;</li> <li>Zn (average 13.325 mg/L) also shows a declining trend;</li> <li>NH<sub>3</sub> (average 13.325 mg/L) and TOC (average 6.5 mg/L) both mirror a similar trend which appears quite variable over historical monitoring results.</li> </ul>

### 3.2.4 Bioreactor Leachate Monitoring Results

Leachate quality monitoring is undertaken annually at 2 monitoring locations in the Bioreactor as required by the EP. The findings from this reporting period are summarised in **Table 3.2.4** below with the detailed data provided in **Tables 6.1** and **6.2** (refer **Appendix 4**). The key quality indicators selected to characterize the leachate and identify any migration into groundwater or surface water monitoring locations include:

- pH,
- Electrical Conductivity (EC),
- Sulphate (SO<sub>4</sub>),
- Lead (Pb),
- Zinc (Zn),
- Ammonia (NH<sub>3)</sub>, and
- Total Organic Carbon (TOC).

These are depicted in the subsequent trend graphs Figures 3.2.4.1 and 3.2.4.2.

#### Table 3.2.4: Bioreactor Leachate Monitoring Results

Parameter	Results/Discussion
Leachate Dam	The leachate dam is located at the northwest rim of the landfill void where leachate collected and extracted from the void is treated by aeration to oxidise organic compounds. An annual monitoring round was completed during this reporting period as per the requirements of the EPL. Based on the results provided in <b>Table 6.1</b> (refer <b>Appendix 4</b> ), the characteristics of the leachate are:
	<ul> <li>pH (8.47) is indicative of an increasingly alkaline state from the previous reporting period result of 7.09</li> <li>EC (26,900 μS/cm) is consistent with previous reporting period;</li> <li>SO<sub>4</sub>, one of the dominant anions, (738 mg/L) continues to decrease from the previous reporting periods;</li> <li>Both Pb (0.096 mg/L) and Zn (33.1 mg/L) show an increase in trend from the previous reporting period. This is consistent with the overall average for this location.</li> <li>NH<sub>3</sub> (1780 mg/L) is consistent with previous reporting readings;</li> <li>TOC (2410 mg/L) is slightly higher than the previous reporting period (1500 mg/L) but remains considerably lower than previous reporting periods.</li> </ul>
	Leachate quality sampled at this point will be affected by the status of the Leachate Treatment System and how long the leachate has been subjected to the treatment process.
Leachate Recirculation System	The leachate recirculation system is located within the landfill void, comprised of a network of drainage sumps, pipes, pumps and wells that are used to collect and extract leachate from the waste mass.

Parameter	Results/Discussion
	An annual round was completed during this reporting period in accordance with the EPL, the results of which are detailed in the <b>Table 6.2</b> (refer <b>Appendix 4</b> ).
	<ul> <li>Based on these results, the leachate collected directly from the recirculation system displays similar characteristics to the leachate pond, with some exceptions as summarised below:</li> <li>pH (7.85) is generally consistent with previous reporting period and slightly less alkaline than the dam;</li> <li>EC (33,500 µS/cm) is consistent with the previous reporting period (33,000 µS/cm) and is generally consistent with the overall annual average for this location;</li> <li>SO<sub>4</sub> (632 mg/L) shows a significant increase from the previous reporting period, however is still less than the overall annual average for this location;</li> <li>Both Pb and Zinc show increasing trends from previous reporting period, 0.08 mg/L and 1.75 Mg/L respectively, but are significantly lower than historical averages.</li> <li>TOC (4460 mg/L) shows a slight decrease from the previous reporting period but is generally consistent with historical monitoring results.</li> </ul>



Figure 3.2.4.1 – Leachate Trends – Leachate Dam



Figure 3.2.4.2 – Leachate Trends – Leachate Recirculation System

### 3.2.5 Bioreactor Groundwater Monitoring Results

Groundwater quality monitoring at 24 locations was undertaken in this reporting period as required by the EPL, comprising 1 annual and 3 quarterly rounds of monitoring, the results of which are summarised in **Table 3.2.5** below. Detailed data is provided in Tables **7.1** – **7.24** (refer **Appendix 4**).

The groundwater monitoring well network allows for an assessment of potential impacts from the waste operations at the Bioreactor, evaporation dams and tailing dams. The key quality indicators selected to detect any pollutants in groundwater samples are the same as those deemed characteristic for leachate and are as follows:

- pH
- Electrical Conductivity (EC),
- Sulphate (SO<sub>4</sub>),
- Lead (Pb),
- Zinc (Zn),
- Ammonia (NH<sub>3)</sub>, and
- Total Organic Carbon (TOC).

These are depicted in the trend graphs **Figures 3.2.5.1** to **3.2.5.24** (refer **Appendix 5**). In addition to water quality monitoring, standing water levels (SWL) of the wells are also measured in metres relative to sea level (m RL) and are depicted in the subsequent graphs Figures **3.2.5A**, **3.2.5B** and **3.2.5C**.

<ul> <li>MB1 is located down gradient of the landfill void. Based on the results provided in Table 7.1 (refer Appendix 4), the groundwater quality at this location can be described as:</li> <li>SWL (average 77.4.1 m RL) was slightly higher than the long term average since 2004 (769.98);</li> <li>pH (average 7.27) neutral – to slightly alkaline consistent with previous reporting period;</li> <li>EC (average 1517.5 µS/cm) is slightly higher than but generally consistent with previous readings representing fresh water;</li> <li>SQ<sub>4</sub> (average 286.0 mg/L) mirrors EC with a slightly increasing trend but generally consistent with previous periods.</li> <li>Pb (average 0.0030 mg/L) is generally consistent with previous periods. Zn (average 0.63 mg/L) is seen to be rising from previous reporting period.</li> <li>NH<sub>5</sub> (average 0.01) is consistent with previous reporting period.</li> <li>NH<sub>5</sub> (average 0.01) is consistent with previous reporting period.</li> <li>NH<sub>5</sub> (average 0.01) is consistent with previous reporting period.</li> <li>NH<sub>5</sub> (average 0.01) is consistent with previous reporting period however with intermittent sampling, not enough data points exist for a line of best fit. The concentration is indicative of natural conditions. Veolia will continue to monitoring this parameter in the future to ensure water quality at this location at previous reporting period.</li> <li>MB2</li> <li>MB2 is located upstream of Evaporation Dam 2. Based on the results provided in Table 7.2 (refer Appendix 4), the groundwater quality at this location are be described as:</li> <li>SWL (average 77.6 m RL) was consistent with long term average since 2004;</li> <li>pH (average 6.66) neutral, consistent with previous reporting period;</li> <li>EC (average 6.66) mod/L, intro-onsistent with previous reporting periods;</li> <li>Pb (average 6.66) neutral, consistent with previous reporting period;</li> <li>EC (average 6.760 m RL) was consistent with previous reporting</li></ul>	Parameter	Results/Discussion
<ul> <li>MB2</li> <li>MB2 is located upstream of Evaporation Dam 2. Based on the results provided in Table 7.2 (refer Appendix 4), the groundwater quality at this location can be described as: <ul> <li>SWL (average 778.6 m RL) was consistent with long term average since 2004;</li> <li>pH (average 6.66) neutral, consistent with previous reporting period;</li> <li>EC (average 6780 µS/cm) and SO<sub>4</sub> (average 4040 mg/L) is consistent with previous periods;</li> <li>Pb (average 0.00023 mg/L) indicates a stable trend consistent with the previous reporting period.</li> <li>Zn (average 0.111 mg/L) is generally consistent with previous reporting periods.</li> <li>NH<sub>3</sub> &lt;0.1 mg/L) same as previous monitoring periods.</li> </ul> </li> <li>All trends indicate fairly stable concentration and there is no indication of contamination from mining or Bioreactor activities. No significant variations</li> </ul>	MB1	<ul> <li>MB1 is located down gradient of the landfill void. Based on the results provided in Table 7.1 (refer Appendix 4), the groundwater quality at this location can be described as:</li> <li>SWL (average 774.1 m RL) was slightly higher than the long term average since 2004 (769.98);</li> <li>pH (average 7.27) neutral – to slightly alkaline consistent with previous reporting period;</li> <li>EC (average 1517.5 µS/cm) is slightly higher than but generally consistent with previous readings representing fresh water;</li> <li>SO<sub>4</sub> (average 286.0 mg/L) mirrors EC with a slightly increasing trend but generally consistent with previous periods;</li> <li>Pb (average 0.0030 mg/L) is generally consistent with previous periods. Zn (average 0.63 mg/L) is seen to be rising from previous reporting period.</li> <li>NH<sub>3</sub> (average 0.1) is consistent with previous reporting periods.</li> <li>TOC (4 mg/L) has declined from the previous reporting period however with intermittent sampling, not enough data points exist for a line of best fit. The concentration is indicative of natural conditions. Veolia will continue to monitoring this parameter in the future to ensure water quality at this location is preserved.</li> </ul>
	MB2	<ul> <li>MB2 is located upstream of Evaporation Dam 2. Based on the results provided in Table 7.2 (refer Appendix 4), the groundwater quality at this location can be described as:</li> <li>SWL (average 778.6 m RL) was consistent with long term average since 2004;</li> <li>pH (average 6.66) neutral, consistent with previous reporting period;</li> <li>EC (average 6780 µS/cm) and SO<sub>4</sub> (average 4040 mg/L) is consistent with previous periods;</li> <li>Pb (average 0.00023 mg/L) indicates a stable trend consistent with the previous reporting period.</li> <li>Zn (average 0.111 mg/L) is generally consistent with previous reporting periods.</li> <li>NH<sub>3</sub> (&lt;0.1 mg/L) same as previous monitoring periods of non detection rates;</li> <li>TOC (3 mg/L) is consistent with previous reporting periods.</li> </ul>

#### Table3.2.5: Bioreactor Groundwater Monitoring Results

Parameter	Results/Discussion
	or anomalies were recorded for any analyte tested during this monitoring period.
MB3	<ul> <li>MB3 is located upstream of the Bioreactor and mine site. Based on the results provided in Table 7.3 (refer Appendix 4), the groundwater quality at this location can be described as:</li> <li>SWL (average 791.28 m RL) was consistent with long term average since 2004;</li> <li>pH (average 6.85) near neutral is consistent with previous reporting period;</li> <li>EC (average 2017.5 μS/cm) is consistent with previous readings representing fresh water;</li> <li>SO<sub>4</sub> (average 33.9 mg/L) is stable and consistent with previous periods;</li> <li>Pb (average 0.0002 mg/L) remains stable while Zn (average 0.03975mg/L) is slightly higher than the previous reporting period.</li> <li>NH<sub>3</sub> (&lt; 0.1 mg/L) is consistent with previous monitoring periods of non detection rates;</li> <li>TOC (4 mg/L) result is consistent with historical results. The concentration is indicative of natural conditions. Veolia will continue to monitoring this parameter in the future to ensure water quality at this location is preserved.</li> </ul>
	All trends indicate fairly stable concentration and provide an indication of background groundwater concentrations.
MB4	<ul> <li>MB4 is located downstream of the Bioreactor. Based on the results provided in Table 7.4 (refer Appendix 4), the groundwater quality at this location can be described as:</li> <li>SWL (average 774.2 m RL) was consistent with long term average since 2004;</li> <li>pH (average 5.34) slightly acidic, consistent with previous reporting period;</li> <li>EC (average 1630 µS/cm) represents fresh water salinity and is consistent with previous period. This trend is reflected in SO<sub>4</sub> (average 204.75 mg/L) results for this period;</li> <li>Pb (average 0.0048 mg/L) remains stable while Zn (average 0.77 mg/L) is seen to fluctuate which appears consistent with historical cyclic trends;</li> <li>NH<sub>3</sub> (&lt; 0.1 mg/L) is consistent with previous monitoring periods of non detection rates;</li> <li>TOC (1 mg/L) result is consistent with historical results. The concentration is indicative of natural conditions. Veolia will continue to monitoring this parameter in the future to ensure water quality at this location is preserved.</li> </ul>
MB5	MB5 is located upstream of the Western Tailings Dam at the Waste Rock Dump area. Based on the results provided in <b>Table 7.5</b> (refer <b>Appendix 4</b> ), the groundwater quality at this location can be described as:

Parameter	Results/Discussion
	<ul> <li>SWL (average 828.04 m RL) was consistent with long term average since 2004.</li> </ul>
	<ul> <li>pH (average 5.04) acidic, consistent with previous reporting period, reflecting the characteristic of tailings and waste rock. Note quarter 1 result of 7.62 is historically uncharacteristic and can be treated as an outlier (average 4.12 when excluded) and may be reflective of rain water variability;</li> <li>EC (average 8100 µS/cm) is consistent historically with brackish water quality;</li> <li>SO<sub>4</sub> (average 5735 mg/L) mirrors the trend of EC;</li> <li>Pb (average 0.0019 mg/L) and Zn (average 189 mg/L) are consistent with the previous reporting period;</li> <li>NH<sub>3</sub> (average 0.2) is slightly lower than previous reporting period and consistent with long term average;</li> <li>TOC (5 mg/L) appears consistent with historical results. The concentration is indicative of natural conditions. Veolia will continue to monitoring this parameter in the future to ensure water quality at this location is preserved.</li> </ul>
	All trends indicate fairly stable concentration and there is no indication of contamination from Bioreactor activities. There is indication of impacts from mining activities at this monitoring location although this has been ongoing prior to Veolia obtaining the site. No significant variations or anomalies were recorded for any analyte tested during this monitoring period.
MB6	<ul> <li>MB6 is located downstream of Evaporation Dam 3 and upstream of the Bioreactor. Based on the results provided in Table 7.6 (refer Appendix 4), the groundwater quality at this location can be described as:</li> <li>SWL (average 790.29 m RL) was consistent with historical results;</li> <li>pH (average 5.61) slightly acidic consistent with previous reporting period;</li> <li>EC (average 5412.5 µS/cm) represents brackish water and the trend is mirrored by SO<sub>4</sub> (average 841.25 mg/L) consistent with previous periods;</li> <li>Pb (average 0.0008 mg/L) shows a decreasing trend while Zn (average 11.49 mg/L) is seen to be slightly higher than previous reporting period;</li> <li>NH<sub>3</sub> (average 0.3) is slightly higher than previous monitoring periods of non detection rates but can be attributed to an uncharacteristic result of 8 mg/L in quarter 1 (average 0.14 when excluded) which is consistent with historical results;</li> <li>TOC (4 mg/L) appears consistent with historical results. The concentration is indicative of natural conditions. Veolia will continue to monitoring this parameter in the future to ensure water quality at this location is preserved.</li> </ul>

Parameter	Results/Discussion
MB7	<ul> <li>MB7 is located upstream of Evaporation Dam 3. Based on the results provided in Table 7.7 (refer Appendix 4), the groundwater quality at this location can be described as: <ul> <li>SWL (average 785.74 m RL) was consistent with long term average since 2004;</li> <li>pH (average 7.0) neutral is consistent with the previous reporting period;</li> <li>EC (average 9047 µS/cm) shows an increasing trend whilst SO<sub>4</sub> (average 190.25 mg/L) is overall consistent with previous periods;</li> <li>Pb (average 0.0002 mg/L) is consistent throughout the reporting period whilst Zn (average 3.18 mg/L) shows a fluctuating trend consistent with historical cycles;</li> <li>NH<sub>3</sub> (&lt; 0.1 mg/L) is consistent with the previous reporting period. The concentration is indicative of natural conditions. Veolia will continue to monitoring this parameter in the future to ensure water quality at this location is preserved.</li> </ul> </li> <li>All trends indicate fairly stable concentration and there is no indication of contamination from mining or Bioreactor activities.</li> </ul>
MB8	<ul> <li>MB8 is located downstream of the Bioreactor on 'Pylara' farm, the agricultural enterprise surrounding the Woodlawn site. Based on the results provided in Table 7.8 (refer Appendix 4), the groundwater quality at this location can be described as: <ul> <li>SWL (average 748.75 m RL) was consistent with previous periods;</li> <li>pH (average 7.26) neutral to slightly alkaline is consistent with previous reporting period;</li> <li>EC (average 3555 µS/cm) and SO<sub>4</sub> (average 111.5 mg/L) show a stable trend, overall consistent with previous periods;</li> <li>Pb (average 0.00028 mg/L) and Zn (average 0.0975 mg/L) show a fluctuating trend consistent with historical cycles;</li> <li>NH<sub>3</sub> (&lt; 0.1 mg/L) is consistent with previous reporting period. The concentration is indicative of natural conditions. Veolia will continue to monitoring this parameter in the future to ensure water quality at this location is preserved.</li> </ul> </li> <li>All trends indicate fairly stable concentrations and no indication of contamination from mining or Bioreactor activities is evident.</li> </ul>
MB10	<ul> <li>MB10 is located adjacent to Evaporation Dam 1. Based on the results provided in Table 7.9 (refer Appendix 4), the groundwater quality at this location can be described as: <ul> <li>SWL (average 781.34 m RL) was consistent with long term average since 2004;</li> <li>pH (average 7.0) neutral with previous reporting period;</li> <li>EC (average 7505 µS/cm) is of brackish quality consistent with previous readings representing fresh water;</li> <li>SO<sub>4</sub> (average 3722.5 mg/L) mirrors EC and is generally consistent</li> </ul> </li> </ul>

Parameter	Results/Discussion
	<ul> <li>with previous periods;</li> <li>Pb (average 0.000275 mg/L) is stable while Zn (average 0.08 mg/L) is generally consistent with previous reporting periods when an abnormal result (0.21 mg/L) in quarter 3 is excluded (0.040 mg/L mean).</li> <li>NH<sub>3</sub> (&lt; 0.1 mg/L) is consistent with previous monitoring periods of non detection rates;</li> <li>TOC (5 mg/L) appears consistent with the previous reporting period. The concentration is indicative of natural conditions. Veolia will continue to monitoring this parameter in the future to ensure water quality at this location is preserved.</li> </ul>
MB11	<ul> <li>MB11 is located between Evaporation Dam 2 (ED2) and the Seepage Collection Trench (SCT), which is a dedicated capture area for seepage waters. Based on the results provided in Table 7.10 (refer Appendix 4), the groundwater quality at this location can be described as: <ul> <li>SWL (average 782.25 m RL) was consistent with long term average since 2004;</li> <li>pH (average 3.8) acidic and consistent with previous reporting period;</li> <li>EC (average 35,350 µS/cm) consistent with previous readings for saline water;</li> <li>SO<sub>4</sub> (average 47,150 mg/L) mirrors the trend of EC but is generally consistent with previous periods;</li> <li>Pb (average 0.02 mg/L) shows a decreasing trend while Zn (average 4304 mg/L) is slightly lower than previous reporting period.</li> <li>NH<sub>3</sub> (average 0.275 mg/L) is slightly higher than previous monitoring periods which were close to non-detection limits;</li> <li>TOC (14 mg/L) is slightly higher than previous reporting period but still indicative of natural conditions.</li> </ul> </li> </ul>
	Any fluctuations in trends is influenced by seepage water from ED2, which has been ongoing since Veolia assumed responsibility for the site however there is no indication of increasing trends. Veolia is managing the water volume in ED2 by promoting evaporation and limiting inputs from rainfall to minimise the volume of seepage at this location. In addition to monitoring this well. Veolia monitor groundwater wells MB19 and MB20 located down gradient of the SCT. These wells are monitored to determine downgrade migration from the SCT. Results of these wells have
	been tabulated and provided in <b>Tables 11.1</b> and <b>11.2</b> (refer <b>Appendix 6</b> ). The evaporation dams have been previously identified by Veolia for rehabilitation. During the reporting period Heron Resources assumed responsibilities for SML20. Heron Resources are preparing a new Mining Operations Plan in consultation with the Department of Resources and Energy.

Parameter	Results/Discussion
MB12	<ul> <li>MB12 is also located at ED2 SCT, adjacent to MB11. Based on the results provided in Table 7.11 (refer Appendix 4), the groundwater quality at this location can be described as: <ul> <li>SWL (average 778.29 m RL) consistent with previous historical results noting that results were heavily skewed by an inaccurate reading in 2013-14 Quarter 1 (747.15 m RL) which is not possible due to well depth (possible transcription error);</li> <li>pH (average 3.6) acidic and consistent with previous reporting period;</li> <li>EC (average 40,425 µS/cm) consistent with previous readings for saline water;</li> <li>SO<sub>4</sub> (average 56,650 mg/L) mirrors EC is slightly lower than previous reporting period but generally consistent with historical records;</li> <li>Pb (average 0.91 mg/L) and Zn (average 6842.5 mg/L) show a decreasing trend although generally stable and consistent with previous reporting period.</li> <li>NH<sub>3</sub> (average 0.6 mg/L) is consistent with previous monitoring periods of close to non detection rates;</li> <li>TOC (14 mg/L) is slightly lower than previous reporting period</li> </ul> </li> </ul>
	All trends indicate fairly stable concentrations.
MB13	<ul> <li>MB13 is located downstream of Evaporation Dam 1 (ED1) and surface water monitoring point Site 115. Based on the results provided in Table 7.12 (refer Appendix 4), the groundwater quality at this location can be described as: <ul> <li>SWL (average 746.3 m RL) was consistent with long term average since 2004;</li> <li>pH (average 7.2) neutral to slightly alkaline consistent with previous reporting period;</li> <li>EC (average 3377 µS/cm) consistent with previous readings for brackish water;</li> <li>SO<sub>4</sub> (average 75.8 mg/L) mirrors EC and is generally consistent with previous periods;</li> <li>Pb (average 0.0004 mg/L) remains stable while Zn (average 0.65 mg/L) is variable but consistent with historical records.</li> <li>NH<sub>3</sub> (&lt; 0.1 mg/L) is at non detection rates;</li> <li>TOC (8 mg/L) appears consistent with previous reporting period and indicative of organic matter being present in the groundwater at this location, which may be influenced by local microbial communities rather than Bioreactor operations.</li> </ul> </li> </ul>
MB14	<ul> <li>MB14 is located upstream of Evaporation Dam 2. Based on the results provided in Table 7.13 (refer Appendix 4), the groundwater quality at this location can be described as:</li> <li>SWL (average 783.2 m RL) consistent with long term average since 2004;</li> </ul>
Parameter	Results/Discussion
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	<ul> <li>pH (average 7.3) neutral – to slightly alkaline consistent with previous reporting period;</li> <li>EC (average 3397.5 µS/cm) consistent with previous reporting period for brackish water;</li> <li>SO<sub>4</sub> (average 1805 mg/L) is higher than the previous reporting period but generally consistent with historical records;</li> <li>Pb (average 0.0002 mg/L) remains stable while Zn (average 0.162 mg/L) displays a fluctuating trend consistent with previous reporting periods.</li> <li>NH<sub>3</sub> (&lt; 0.1 mg/L) is at non detection rates;</li> <li>TOC (4 mg/L) consistent with historical results is indicative of natural conditions.</li> </ul> No significant variations or anomalies were recorded for any analyte tested at this location during this monitoring period.
MB15	<ul> <li>MB15 is located downstream of the Waste Rock Dam (WRD). Based on the results provided in Table 7.14 (refer Appendix 4), the groundwater quality at this location can be described as:</li> <li>SWL (average 764.86 m RL) was consistent with long term average since 2004;</li> <li>pH (average 6.9) near neutral and generally consistent with historical results;</li> <li>EC (average 7815 µS/cm) representative of brackish water and SO<sub>4</sub> (average 5512.5 mg/L) follow a similar and stable trend consistent with previous periods;</li> <li>Pb (average 0.0002 mg/L) and Zn (average 2.77 mg/L) is higher than previous reporting period but displays a fluctuating trend consistent with historical cycles;</li> <li>NH<sub>3</sub> (average 0.1) is lower than previous monitoring periods at non detection rates;</li> <li>TOC (9 mg/L) is higher than the previous reporting period but comparable with historical results and indicative of natural conditions, which may include some influence from microbial communities;</li> <li>All trends indicate fairly stable concentrations, with the exception of fluctuating metal trends.</li> <li>The waste rock area has been previously identified by Veolia for rehabilitation. During the reporting period Heron Resources assumed responsibilities for SML20. Heron Resources are preparing a new Mining Operations Plan in consultation with the Department of Resources and Energy. There is no indication of contamination from Bioreactor activities at this monitoring location.</li> </ul>
MB16	<ul> <li>MB16 is located downstream of the WRD. Based on the results provided in Table 7.15 (refer Appendix 4), the groundwater quality at this location can be described as: <ul> <li>SWL (average 769 mRL) was consistent with long term average since 2004;</li> <li>pH (average 3.15) acidic consistent with previous reporting period;</li> </ul> </li> </ul>

<ul> <li>EC (average 35.875 µS/cm) representative of brackish water and SQ<sub>4</sub> (average 63.600 mg/L) follows similar trends consistent with previous periods;</li> <li>Pb (average 0.5 mg/L) remains while Zn (average 6907 mg/L) is consistent with a long term upward trend.</li> <li>NH<sub>4</sub> (average 8.4 mg/L) is stable and consistent with previous monitoring periods;</li> <li>TOC (32 mg/L) is consistent with previous monitoring period indicating the likely presence of organic matter present in groundwater at this location (which may also be attributed to microbial communities).</li> <li>There appears to be no indication of contamination from Bioreactor activities.</li> <li>MB17 MB17 is located upstream of the WRD Based on the results provided in Table 7.16 (refer Appendix 4), the groundwater quality at this location can be described as:         <ul> <li>SWL (average 767.8 mRL) was consistent with previous reporting period;</li> <li>EC (average 12025 µS/cm) indicating brackish water and SQ<sub>4</sub> (average 10170 mg/L) is consistent with previous reporting period;</li> <li>Pb (average 0.0005 mg/L) shows a decreasing trend while Zn (average 7.6 mg/L) is at non detection rates;</li> <li>NT-CC (10mg/L) is at non detection rates;</li> <li>TOC (10mg/L) is consistent with long term averages and confirms the abnormality of 140 mg/L from the previous reporting period.</li> <li>NH<sub>4</sub> (&lt; 0.1 rg/L) is consistent with long allowed ero ansure water quality at this location is not evident.</li> </ul> </li> <li>ED3B is located downstream of Evaporation Dam 3. Based on the results provided in Table 7.17 (refer Appendix 4), the groundwater quality at this location can be described as:         <ul> <li>SWL (average 7.807.1 mRL) was consistent with long term averages since 2004;</li> <li>PH (average 7.18) is neutral – slightly alkaline and consistent with previous reporting period;</li> <li>SWL (<!--</th--><th>Parameter</th><th>Results/Discussion</th></li></ul></li></ul>	Parameter	Results/Discussion
<ul> <li>MB17</li> <li>MB17 is located upstream of the WRD. Based on the results provided in Table 7.16 (refer Appendix 4), the groundwater quality at this location can be described as:</li> <li>SWL (average 767.8 mRL) was consistent with long term average since 2004;</li> <li>pH (average 6.5) is slightly acidic consistent with previous reporting period;</li> <li>EC (average 12025 µS/cm) indicating brackish water and SQ<sub>4</sub> (average 10170 mg/L) follow similar trends consistent with previous periods;</li> <li>Pb (average 0.0005 mg/L) shows a decreasing trend while Zn (average 7.6 mg/L) is seen to be rising from previous reporting period.</li> <li>NH<sub>3</sub> (&lt; 0.1 mg/L) is at non detection rates;</li> <li>TOC (10mg/L) is consistent with long term averages and confirms the abnormality of 140 mg/L from the previous reporting period. Veolia will continue to monitoring this parameter in the future to ensure water quality at this location is preserved.</li> <li>Contamination from Bioreactor activities at this location is not evident.</li> <li>ED3B</li> <li>ED3B ED3B is located downstream of Evaporation Dm 3. Based on the results provided in Table 7.17 (refer Appendix 4), the groundwater quality at this location can be described as:</li> <li>SWL (average 785.11 mRL) was consistent with long term average since 2004;</li> <li>pH (average 1088.25 mg/L) follow similar trends consistent with previous reporting period;</li> <li>EC (average 1088.25 mg/L) follow similar trends consistent with previous reporting period;</li> <li>M (average 1.8 mg/L) is at non detection rates;</li> </ul>		<ul> <li>EC (average 35,875 µS/cm) representative of brackish water and SO<sub>4</sub> (average 63,600 mg/L) follows similar trends consistent with previous periods;</li> <li>Pb (average 0.5 mg/L) remains while Zn (average 6907 mg/L) is consistent with a long term upward trend.</li> <li>NH<sub>3</sub> (average 8.4 mg/L) is stable and consistent with previous monitoring periods;</li> <li>TOC (32 mg/L) is consistent with previous monitoring period indicating the likely presence of organic matter present in groundwater at this location (which may also be attributed to microbial communities).</li> </ul>
<ul> <li>PH (average 6.5) is slightly acidic consistent with previous reporting period;</li> <li>EC (average 12025 μS/cm) indicating brackish water and SQ<sub>4</sub> (average 10170 mg/L) follow similar trends consistent with previous periods;</li> <li>Pb (average 0.0005 mg/L) shows a decreasing trend while Zn (average 7.6 mg/L) is seen to be rising from previous reporting period.</li> <li>NH<sub>3</sub> (&lt; 0.1 mg/L) is at non detection rates;</li> <li>TOC (10mg/L) is consistent with long term averages and confirms the abnormality of 140 mg/L from the previous reporting period. Veolia will continue to monitoring this parameter in the future to ensure water quality at this location is preserved.</li> <li>Contamination from Bioreactor activities at this location is not evident.</li> <li>ED3B ED3B is located downstream of Evaporation Dam 3. Based on the results provided in Table 7.17 (refer Appendix 4), the groundwater quality at this location can be described as:</li> <li>SWL (average 785.11 mRL) was consistent with long term average since 2004;</li> <li>pH (average 7.18) is neutral – slightly alkaline and consistent with previous reporting period;</li> <li>EC (average 780.5 μS/cm) indicating brackish water and SQ<sub>4</sub> (average 1088.25 mg/L) follow similar trends consistent with previous periods;</li> <li>Pb (average 0.00023 mg/L) remains stable while Zn (average 2.46 mg/L) is seen to be rising from previous reporting pariod at consistent 2.5 mg/L) follow similar trends consistent with previous periods;</li> <li>Pb (average 0.00023 mg/L) was significantly different to historical records.</li> <li>NH<sub>4</sub> (&lt; 0.1 mg/L) is at non detection rates;</li> </ul>	MB17	<ul> <li>MB17 is located upstream of the WRD. Based on the results provided in</li> <li>Table 7.16 (refer Appendix 4), the groundwater quality at this location can be described as:</li> <li>SWL (average 767.8 mRL) was consistent with long term average since 2004:</li> </ul>
<ul> <li>Contamination from Bioreactor activities at this location is not evident.</li> <li>ED3B</li> <li>ED3B is located downstream of Evaporation Dam 3. Based on the results provided in Table 7.17 (refer Appendix 4), the groundwater quality at this location can be described as:         <ul> <li>SWL (average 785.11 mRL) was consistent with long term average since 2004;</li> <li>pH (average 7.18) is neutral – slightly alkaline and consistent with previous reporting period;</li> <li>EC (average 7807.5 µS/cm) indicating brackish water and SO<sub>4</sub> (average 1088.25 mg/L) follow similar trends consistent with previous periods;</li> <li>Pb (average 0.00023 mg/L) remains stable while Zn (average 2.46 mg/L) is seen to be rising from previous reporting period noting that Quarter 2's result (9.38 mg/L) was significantly different to historical records.</li> <li>NH<sub>3</sub> (&lt; 0.1 mg/L) is at non detection rates;</li> </ul> </li> </ul>		<ul> <li>pH (average 6.5) is slightly acidic consistent with previous reporting period;</li> <li>EC (average 12025 μS/cm) indicating brackish water and SO<sub>4</sub> (average 10170 mg/L) follow similar trends consistent with previous periods;</li> <li>Pb (average 0.0005 mg/L) shows a decreasing trend while Zn (average 7.6 mg/L) is seen to be rising from previous reporting period.</li> <li>NH<sub>3</sub> (&lt; 0.1 mg/L) is at non detection rates;</li> <li>TOC (10mg/L) is consistent with long term averages and confirms the abnormality of 140 mg/L from the previous reporting period. Veolia will continue to monitoring this parameter in the future to ensure water quality at this location is preserved.</li> </ul>
<ul> <li>ED3B</li> <li>ED3B is located downstream of Evaporation Dam 3. Based on the results provided in Table 7.17 (refer Appendix 4), the groundwater quality at this location can be described as:</li> <li>SWL (average 785.11 mRL) was consistent with long term average since 2004;</li> <li>pH (average 7.18) is neutral – slightly alkaline and consistent with previous reporting period;</li> <li>EC (average 7807.5 μS/cm) indicating brackish water and SO<sub>4</sub> (average 1088.25 mg/L) follow similar trends consistent with previous periods;</li> <li>Pb (average 0.00023 mg/L) remains stable while Zn (average 2.46 mg/L) is seen to be rising from previous reporting period noting that Quarter 2's result (9.38 mg/L) was significantly different to historical records.</li> <li>NH<sub>3</sub> (&lt; 0.1 mg/L) is at non detection rates;</li> </ul>		Contamination from Bioreactor activities at this location is not evident.
	ED3B	<ul> <li>ED3B is located downstream of Evaporation Dam 3. Based on the results provided in Table 7.17 (refer Appendix 4), the groundwater quality at this location can be described as:</li> <li>SWL (average 785.11 mRL) was consistent with long term average since 2004;</li> <li>pH (average 7.18) is neutral – slightly alkaline and consistent with previous reporting period;</li> <li>EC (average 7807.5 µS/cm) indicating brackish water and SO<sub>4</sub> (average 1088.25 mg/L) follow similar trends consistent with previous periods;</li> <li>Pb (average 0.00023 mg/L) remains stable while Zn (average 2.46 mg/L) is seen to be rising from previous reporting period noting that Quarter 2's result (9.38 mg/L) was significantly different to historical records.</li> <li>NH<sub>3</sub> (&lt; 0.1 mg/L) is at non detection rates;</li> </ul>

Parameter	Results/Discussion
	previous reporting periods.
	All trends indicate fairly stable concentrations at this location with no evidence of contamination from mining or Bioreactor activities.
WM1	<ul> <li>WM1 is located northeast of the landfill void. Based on the results provided in Table 7.18 (refer Appendix 4), the groundwater quality at this location can be described as: <ul> <li>SWL (average 737.8 m RL) is stable and consistent with the previous reporting period;</li> <li>pH (average 7.3) neutral – to slightly alkaline consistent with previous reporting period;</li> <li>EC (average 2232.5 µS/cm) represents slightly brackish water, consistent with previous readings;</li> <li>SO<sub>4</sub> (average 1011.5 mg/L) is similar in trend to EC;</li> <li>Pb (average 0.001 mg/L) shows a decreasing trend while Zn (average 4.29 mg/L) remains stable from previous reporting period.</li> <li>NH<sub>3</sub> (&lt; 0.1 mg/L) is at non detection rates;</li> <li>TOC (5 mg/L) is consistent with previous monitoring period reflecting natural conditions;</li> </ul> </li> </ul>
	evidence of contamination from mining or Bioreactor activities.
WM3	Decommissioned. Veolia has submitted a licence amendment application to remove this monitoring point from the licence. We expect this to be finalised in the next reporting period.
WM4	<ul> <li>WM4 is located northeast of the void. Based on the results provided in Table 7.19 (refer Appendix 4), the groundwater quality at this location can be described as:</li> <li>SWL (average 639.11 mRL) has seen a noticeable increase since previous reporting periods. This increase is likely due to the compaction of landfill waste within the void preventing water ingress.</li> <li>pH (average 6.9) neutral is slightly lower than previous periods but generally consistent;</li> <li>EC (average 1997.5 µS/cm) is generally consistent with previous readings representing fresh water;</li> <li>SO<sub>4</sub> (average 991/5 mg/L) is similar to EC trend;</li> <li>Pb (average 0.0015 mg/L) and Zn (average 0.98 mg/L) both seen to be fluctuating, which appears consistent with historical cyclic trends;</li> <li>NH<sub>3</sub> (&lt; 0.25 mg/L) is higher than previous reporting periods but consists of an anomalous reading in Quarter 4 (0.7 mg/L). Subsequent monitoring has seen a return to below detection limit readings;</li> <li>TOC (3 mg/L) is lower than previous readings consistent with previous monitoring period reflecting natural conditions;</li> </ul>
	tested during this monitoring period from the data available.

Parameter	Results/Discussion
WM5	<ul> <li>WM5 is located to the west of the void near Evaporation Dam 3 South.</li> <li>Based on the results provided in Table 7.20 (refer Appendix 4), the groundwater quality at this location can be described as: <ul> <li>SWL (average 785.1 mRL) is consistent with long term averages;</li> <li>pH (average 7.4) neutral is slightly lower than previous period but generally consistent;</li> <li>EC (average 6652.5 µS/cm) is representative of saline water and consistent with the previous reporting period;</li> <li>SO<sub>4</sub> (average 160 mg/L) is similar to previous reporting period (158.5 mg/L). Noting that the 2013-14 AEMR had a transcription error (reading 888 mg/L instead of 158.5 mg/L)</li> <li>Pb (average 0.0002 mg/L) and Zn (average 0.10625 mg/L) are both lower than the previous reporting period but can be seen to be fluctuating which appears consistent with historical cyclic trends;</li> <li>NH<sub>3</sub> (&lt; 0.1 mg/L) is at non detection rates;</li> <li>TOC (10 mg/L) is consistent with previous monitoring period reflecting natural conditions;</li> </ul> </li> </ul>
WM6	<ul> <li>WM6 is located to the west of the void adjacent to Evaporation Dam 3 North. Based on the results provided in Table 7.21 (refer Appendix 4), the groundwater quality at this location can be described as: <ul> <li>SWL (average 785.8 m RL) is consistent with previous reporting period;</li> <li>pH (average 5.85) is slightly acidic, but stable and consistent with previous reporting period;</li> <li>EC (average 13,575 µS/cm) represents brackish to slightly saline water, consistent with previous reporting period;</li> <li>SO<sub>4</sub> (average 335.5 mg/L) mirrors EC's stable trend;</li> <li>Pb (average 0.006 mg/L) and Zn (average 0.269 mg/L) are both lower than the previous reporting period are generally consistent with historical fluctuations.</li> <li>NH<sub>3</sub> (&lt; 0.1 mg/L) is at non detection rates;</li> <li>TOC (5 mg/L) is consistent with previous monitoring period reflecting natural conditions;</li> </ul> </li> </ul>
	All trends are relatively consistent and there is no indication of contamination from mining or Bioreactor activities.
WM7	Decommissioned. Veolia has submitted a licence amendment application to remove this monitoring point from the licence. We expect this to be finalised in the next reporting period.
MW8S	<ul> <li>MW8S is located northern side of ED3N. Based on the results provided in Table 7.22 (refer Appendix 4), the groundwater quality at this location can be described as: <ul> <li>SWL (average 785.4 m RL) was consistent with long term average since 2004;</li> <li>pH (average 6.85) near neutral and consistent with previous reporting period;</li> </ul> </li> </ul>

Woodlawn Bioreactor and Crisps Creek Intermodal Facility

Parameter	Results/Discussion
	<ul> <li>EC (average 11650 µS/cm) remains stable with previous reporting period results;</li> <li>SO<sub>4</sub> (average 1405 mg/L) shows a slight decreasing trend but is</li> </ul>
	<ul> <li>generally consistent with previous periods;</li> <li>Pb (average 0.15 mg/L) shows an increasing trend while Zn (average 4.98 mg/L) is seen to be declining from previous reporting period.</li> </ul>
	<ul> <li>NH<sub>3</sub> (&lt; 0.1 mg/L) is at non detection rates;</li> <li>TOC (11 mg/L) is consistent with previous monitoring period reflecting natural conditions;</li> </ul>
	The fluctuations noted could be attributed to the recharging of this well only following significant wet weather events which indicates that this well intercepts the shallow unconfined aquifer.
	There is no indication of contamination from mining or Bioreactor activities.
MW8D	MW8D is located adjacent to MW8S. Based on the results provided in <b>Table 7.23</b> (refer <b>Appendix 4</b> ), the groundwater quality at this location can be described as:
	• SWL (average 785.95 m RL) was consistent with long term average since 2004;
	<ul> <li>pH (average 6.7) slightly acidic to neutral consistent with previous reporting period. Noting that Quarter 2 result (7.58 mg/L) is abnormal from the long term average</li> </ul>
	<ul> <li>EC (average 10550 µS/cm) represents brackish water which is consistent with previous readings;</li> </ul>
	<ul> <li>SO<sub>4</sub> (average 4/02.5 mg/L) mirrors EC consistent with previous periods;</li> <li>Pb (average 0.0007 mg/L) and Zn (average 17.9 mg/L) are both</li> </ul>
	<ul> <li>NH<sub>3</sub> (&lt; 0.1 mg/L) is at non detection rates;</li> </ul>
	• TOC (4 mg/L) is consistent with previous monitoring period reflecting natural conditions;
	All trends indicate fairly stable concentrations with no evidence of contamination from mining or Bioreactor activities.
MW9S	MW9S is located on the northwest side of ED3N. Based on the results provided in <b>Table 7.24</b> (refer <b>Appendix 4</b> ), the groundwater guality at this
	location can be described as:
	<ul> <li>SWL (average 786.6) was consistent with previous reporting period;</li> <li>pH (average 6.8) close to neutral consistent with previous reporting period;</li> </ul>
	<ul> <li>EC (average 11,100 µS/cm) remains stable, consistent with previous reporting period for brackish water;</li> </ul>
	• SO <sub>4</sub> (average 5042.5 mg/L) is lower than the previous reporting period and consistent with previous periods;
	<ul> <li>Pb (average 0.0003 mg/L) and Zn (average 1.428 mg/L) were both generally consistent with historical results noting that Quarter 1 (4.77 mg/L) was substantially anomalous with historical readings.</li> </ul>
L	<ul> <li>NH<sub>3</sub> (&lt; 0.1 mg/L) is at non detection rates;</li> </ul>

Parameter	Results/Discussion
	<ul> <li>TOC (6 mg/L) reflecting natural conditions is consistent with historical results;</li> </ul>
	No significant variations or anomalies were recorded for any analyte tested at this location during this monitoring period.
MW10S	MW10S is located on the northeast side of ED3.
	No sampling of MW10S could be undertaken during the reporting period as this well was continually dry This has been a consistent observation since the well was commissioned in 2007.
	No data is available to produce tables or graphs for this monitoring point.



Figure 3.2.5A – Groundwater Levels – MB1 to MB17 and ED3B



Figure 3.2.5B – Groundwater Levels – WM1 to WM6





### 3.2.6 Bioreactor Piezometers Level Monitoring Results

Measurements for groundwater standing water levels (SWL) in the vicinity of the Bioreactor were undertaken at 5 out of 6 piezometers around the landfill void in accordance with the EPL and have been documented in the Annual Return. Each location consists of a shallow (reference A) and deep (reference B) piezometer.

The findings of the monitoring are summarised in Table 3.2.6 below and detailed quarterly levels are provided in Tables 8.1 - 8.5 (refer **Appendix 4**)

Parameter	Results/Discussion
P38A & P38B	Access to the monitoring location P38 has been restricted by Site Management due to safety concerns regarding the instability of this area of the void. The EPA has been notified of the geotechnical safety concerns therefore monitoring of this site ceased in 2010. Veolia have submitted a licence variation application to remove this
	monitoring point and expect this to be finalised in the next reporting period.
P44A & P44B	P44 is located east of the void. Standing water levels are presented in <b>Table 8.1</b> (refer <b>Appendix 4</b> ).
	SWL in P44A (shallow aquifer)) indicated a variable standing water level from 717.69 metres Relative Level (m RL) to 718.99m RL during this reporting period, similar to previous trends, indicative of rainfall and infiltration influence.
	SWL in P44B (deep) has increased approximately 10 m from the previous reporting period and is trending upward. This increase is likely due to the compaction of landfill waste at higher levels within the void preventing water ingress.
P45A & P45B	P45 is located east of the mine void, and to the south of P44. Standing water levels are presented in <b>Table 8.2</b> (refer <b>Appendix 4</b> ).
	SWL in P45A (shallow) showed a range of 724.66m RL to 726.22m RL, stable and is approximately 10 m higher than previous reporting periods.
	SWL in P45B (deep) fluctuated between 724.31 m RL and 725.91 m RL and is about 5m higher than previous reporting periods.
	This increase is likely due to the compaction of landfill waste at higher levels within the void preventing water ingress.
P58A & P58B	P58 is located west of the void. Standing water levels are presented in <b>Table 8.3</b> (refer <b>Appendix 4</b> ).
	SWL in P58A (shallow) showed a range of 763.85m RL to 768.382m RL and is stable.

#### Table 3.2.6: Bioreactor Piezometers Level Monitoring Results

Parameter	Results/Discussion
	SWL in P58B (deep) is similar to previous reporting period fluctuating between 754.86 m RL and 756.15 mRL.
P59A & P59B	P59 is located west of the void and to the south of P58. Standing water levels are presented in <b>Table 8.4</b> (refer <b>Appendix 4</b> ).
	SWL in P59A (shallow) ranged from 787.33m RL to 787.60 m RL in this reporting period, consistent with previous reporting period.
	SWL in P59B (deep) ranged between 786.78 and 788, which is almost identical to the level within the shallow piezometer as per previous reporting periods.
P100A & P100B	P100 is located northeast of the void. Standing water levels are presented in <b>Table 8.5</b> (refer <b>Appendix 4</b> ).
	SWL in P100A (shallow) is lower than previous reporting periods averaging between 738.88 m RL to 740.05 m RL.
	P100B (deep) averaged between 707.28 m RL and 719.05 m RL which indicates water above the base level of 698.29 m RL which has been recorded in previous periods.
	This increase is likely due to the compaction of landfill waste at higher levels within the void preventing water ingress.





### 3.2.7 Bioreactor Evaporation Dam Volume Monitoring Results

The Evaporation Dam 3 (ED3) system comprises extracted (and treated) leachate from the landfill void and captured stormwater. The water volume has to be maintained in Evaporation Dam 3 to below 323 Megalitres as specified in the EPL.

Water levels are taken monthly as detailed in **Table 3.2.7**, which shows that the dam levels have been kept at an average of 213.99 Megalitres in this reporting period. The subsequent graph, **Figure 3.2.7.1** shows the overall trend over time.

Dete		ED3N	ED3N	ED3N	ED3N	ED3 System
Date	ED35	Lagoon 1	Lagoon 2	Lagoon 3	Lagoon 4	Total Volume
Sep-14	79.4	24.33	13.58	18.06	45.7	181.07
Oct-15	83	23.37	17.94	17.32	43.5	185.13
Nov-14	83	23.08	18.58	16.4	41.65	182.71
Dec-14	83	22.25	21.44	17.19	44.44	188.32
Jan-15	96.4	22.08	17.44	17.46	50.88	204.26
Feb-15	115	21.58	21.34	18	47.94	223.86
Apr-15	104.4	21.57	15.11	16.93	51.88	209.89
Apr-15	98	21.74	13.06	17.32	61.1	211.22
May-15	112.1	21.49	15.78	17	62.5	228.87
Jun-15	109.6	21.66	20.03	17.19	66.85	235.33
Jul-15	121.4	23.28	22.12	17.66	67.17	251.63
Aug-15	129	23.63	21.33	17.66	74	265.62
Minimum	79	21.49	13.06	16.4	41.65	181.07
Mean	89.88	22.505	18.15	17.35	54.80	213.99
Maximum	115	24.33	22.12	18.06	74	265.62

#### Table 3.2.7: ED3 Water Volume Monitoring Results



Figure 3.2.7.1 – Evaporation Dam 3 Water Volume (Megalitres)

### Part 2 EPL 11455 Crisps Creek Intermodal Facility

# 4 Intermodal Facility Operations

Veolia operates the Crisps Creek Intermodal Facility (IMF) which is comprised of a hardstand located adjacent to the regional rail network (approximately 1 km south of Tarago train station and 8 km from the Bioreactor) to enable transfer of containerized waste received by rail from Sydney onto road trucks and subsequent to the Bioreactor for disposal.

### 4.1 IMF Licence Conditions

The IMF is operated under EPL 11455 which details the operating conditions and environmental monitoring requirements as noted in **Table 4.1**.

Condition	Compliance with Condition
1. Administrative conditions	Noted
2. Discharges to air and water and application to land	Noted
3. Limit conditions	<b>L1. Pollution of Waters</b> All clean surface and storm water collected at the IMF was diverted to the onsite retention system for storage, as part of the first flush stormwater management system, in this reporting period. Following rainfall events, surface water monitoring was undertaken to assess the water quality prior to discharge into the Mulwaree River.
	L5. Waste All waste received at the IMF during this reporting period was in accordance with the waste types permitted in the EPL, received via rail from the Clyde Transfer Terminal in Sydney. All waste was maintained in sealed containers and transported to the Bioreactor on the same day.
	L6. Noise Limits No noise complaints were received during this reporting period indicating that noise from operational activities at the IMF was likely maintained within the 35 dB(A) LAeq (15 minute) criteria at the nearest residential receiver. Similarly it can be inferred that noise from freight trains did not exceed 45 dB(A) LAeq (15 minute and 50 dB(A) LAeq (15 minute before and after 7:00 am respectively. Noise monitoring will be undertaken by Veolia on the receipt of any such complaints.
	<b>L7. Hours of Operation</b> All operational activities at the IMF including haulage of waste to the Bioreactor were undertaken between 6:00 am and 10:00 pm, Monday to Saturday during this reporting period as permitted under the DA. Veolia were granted an exemption by the EPA to operate Sunday 21 December 2014.

#### Table 4.1: IMF Licence Conditions



# **IMF** Operations

	Condition	Compliance with Condition
		L8. Potentially Offensive Odour
		No odour complaints were received for the IMF during this reporting period.
4.	Operating conditions	O1. Activities Carried out in Competent Manner
		All licenced activities undertaken at the IMF in this reporting period were
		carried out in a competent manner and under a high standard of
		environmental management for which Veolia is certified under ISO 14001.
		O2. Maintenance of Plant and Equipment
		The maintenance and operation of all plant and equipment on the premises
		associated with the licenced activities was undertaken in a proper and
		efficient condition as required by qualified technicians. All major plant and
		equipment at the site is stored in a computerised maintenance management
		system in order to schedule and complete the required maintenance. All
		Veolia operators hold the appropriate qualifications and licenses to operate
		plant and equipment used as part of IMF operations.
		O3. Dust Control
		All operations and activities were carried out at the IMF in a manner to
		minimise dust at the boundary of the premises. These included operating on
		a hardstand site with fully paved access roads to the site. All haulage of
		waste to the Bioreactor occurred within enclosed containers. Monitoring for
		the presence and quantity of depositional dust is undertaken monthly to
		OA Stermuster and Westewater Menagement Operating Phase
		The first flush stormwater management system was operated effectively in
		this reporting period in accordance with the EPL requirements to capture all
		the clean storm and surface water from the payed and sealed areas of the
		IMF. No sewage was removed from the IMF in this reporting period.
		Uncontaminated stormwater is permitted under the EPL to be utilised in
		vegetated areas of the IMF, as requirement.
		O5.Tracking of Mud and Waste
		As all waste container unloading and movements occurred within enclosed
		containers on a hardstand site, tracking of mud and waste from the IMF did
		not occur during this reporting period. No opening of containers was
		required to be undertaken at the IMF during this reporting period.
		O6. Waste Transportation
		All containers utilised in the transportation of waste in this reporting period
		were maintained in accordance with the EPL requirements to minimise
		potential odour emissions. All containers had rubber seals to prevent the
		leakage of leachate during transport and handling activities.
		O7. Fire Extinguishment
		There were no fires at the IMF during this reporting period.
		O8. Fire Fighting Capability
		All Veolia operators are trained in handling emergency situations, which
		include fire fighting in accordance with site specific Emergency Response
		Plans.
		Fire extinguishers and a 20,000 litre water tank were maintained onsite
		auring this reporting period to enable effective fire fighting capabilities. In
		addition, Crisps Creek and Mulwaree River are located adjacent to the IMF

Condition	Compliance with Condition
	as approved and readily available water source for fire fighting. The Tarago Fire Brigade is also located approximately 1 km from the site which enables fast mobilisation at the site.
5. Monitoring and recording conditions	Noted, all compliance monitoring was carried out in this reporting period in according to EPL requirements, the results of which are detailed, along with any non conformances in Section 5.
6. Reporting conditions	Noted and addressed in this AEMR and the annual return documents, where relevant. Notifications to the EPA were undertaken in a timely fashion.
General conditions	Noted.
Pollution studies and reduction	N/A
programs	
Special Conditions	N/A

# 5. IMF Environmental Monitoring

# 5 IMF Environmental Monitoring

### 5.1 IMF Monitoring Points

Veolia is required to monitor environmental performance of the IMF under the site EPL. **Table 5.1** details the EPA ID, Veolia monitoring point identification, frequency and the type of monitoring undertaken at each licensed point. A monitoring location plan is included in **Appendix 3**.

EPA ID	Veolia ID	Frequency Type of Monitor	
1	Site 110 - Upstream	6 x Annually	Surface Water
2	Site 150 - Downstream		
3	IMF First Flush		
4	DG18 IMF	Monthly	Dust / Particulates
•	Bereini	monany	Baot, Faithoalatoo

#### Table 5.1: IMF Licensed Monitoring Points

Veolia also undertakes additional surface water quality monitoring at Site 130 (located upstream of Crisps Creek Intermodal in Mulwaree River) to provide additional background quality information.

### 5.2 IMF Monitoring Results

### 5.2.1 IMF Surface Water Monitoring Results

Surface water quality monitoring at 3 monitoring locations was undertaken as required by the EPL, the findings of which are summarised in **Table 5.2.1**. Detailed quality results are provided in **Tables 9.1** to **9.4** (refer **Appendix 4**). The key quality indicators selected to identify any contamination in the receiving surface waters from site operations include:

- pH,
- Electrical Conductivity (EC),
- Sulphate (SO<sub>4</sub>),
- Iron (Fe),
- Zinc (Zn),
- Ammonia (NH<sub>3)</sub>, and
- Total Organic Carbon (TOC).

These are depicted in trend graphs Figures 5.2.1.1 to 5.2.1.4 (refer Appendix 5).

## 5. IMF Environmental Monitoring

### Table 5.2.1: IMF Surface Water Monitoring Results

<ul> <li>Site 110 - Upstream</li> <li>Site 110 is located upstream of the IMF in Crisps Creek. It is approximately 8 km downstream of the Bioreactor.</li> <li>Results provided in Table 9.1 (refer Appendix 4) indicate the following trends:</li> <li>pH is close to neutral (average 7.73), slightly higher than the previous reporting period;</li> <li>EC (average 1448 µS/cm) is slightly higher but generally consisten with the previous period and representative of fresh water salinity;</li> <li>SO<sub>4</sub> (average 150 mg/L) is slightly lower but generally consisten with previous reporting period;</li> <li>Fe (average 0.7) is consistent with previous reporting periods, whils Zinc indicates a fluctuating trend (average 0.186 mg/L), consisten with historical cyclic results;</li> <li>NH<sub>3</sub> (average 0.12 mg/L) is slightly above previous reporting</li> </ul>
<ul> <li>Results provided in Table 9.1 (refer Appendix 4) indicate the following trends:</li> <li>pH is close to neutral (average 7.73), slightly higher than the previous reporting period;</li> <li>EC (average 1448 µS/cm) is slightly higher but generally consisten with the previous period and representative of fresh water salinity;</li> <li>SO<sub>4</sub> (average 150 mg/L) is slightly lower but generally consisten with previous reporting period;</li> <li>Fe (average 0.7) is consistent with previous reporting periods, whils Zinc indicates a fluctuating trend (average 0.186 mg/L), consisten with historical cyclic results;</li> <li>NH<sub>3</sub> (average 0.12 mg/L) is slightly above previous reporting</li> </ul>
<ul> <li>pH is close to neutral (average 7.73), slightly higher than the previous reporting period;</li> <li>EC (average 1448 µS/cm) is slightly higher but generally consisten with the previous period and representative of fresh water salinity;</li> <li>SO<sub>4</sub> (average 150 mg/L) is slightly lower but generally consisten with previous reporting period;</li> <li>Fe (average 0.7) is consistent with previous reporting periods, whils Zinc indicates a fluctuating trend (average 0.186 mg/L), consisten with historical cyclic results;</li> <li>NH<sub>3</sub> (average 0.12 mg/L) is slightly above previous reporting</li> </ul>
<ul> <li>EC (average 1448 µS/cm) is slightly higher but generally consisten with the previous period and representative of fresh water salinity;</li> <li>SO<sub>4</sub> (average 150 mg/L) is slightly lower but generally consisten with previous reporting period;</li> <li>Fe (average 0.7) is consistent with previous reporting periods, whils Zinc indicates a fluctuating trend (average 0.186 mg/L), consisten with historical cyclic results;</li> <li>NH<sub>3</sub> (average 0.12 mg/L) is slightly above previous reporting</li> </ul>
<ul> <li>SO<sub>4</sub> (average 150 mg/L) is slightly lower but generally consisten with previous reporting period;</li> <li>Fe (average 0.7) is consistent with previous reporting periods, whils Zinc indicates a fluctuating trend (average 0.186 mg/L), consisten with historical cyclic results;</li> <li>NH<sub>3</sub> (average 0.12 mg/L) is slightly above previous reporting periods.</li> </ul>
<ul> <li>Fe (average 0.7) is consistent with previous reporting periods, whils Zinc indicates a fluctuating trend (average 0.186 mg/L), consisten with historical cyclic results;</li> <li>NH<sub>3</sub> (average 0.12 mg/L) is slightly above previous reporting periods by a standard but a stand</li></ul>
<ul> <li>NH<sub>3</sub> (average 0.12 mg/L) is slightly above previous reporting</li> </ul>
periods but continues to be at almost non-detection levels.
<ul> <li>TOC (average 11.8 mg/L) is lower than the previous reporting period and is generally reflective of natural organic matter in streams.</li> </ul>
While the indicator trends for this location indicate some variability ove time, this is not uncommon when sampling intermittent streams.
Site 120 is leasted upstroom of the IME in the Muluyaree Diver
Site 130 - Upstream Site 150 is located upstream of the IMF in the Mulwaree River.
trends:
<ul> <li>pH is close to neutral (average 7.78), slightly higher than the previous reporting period;</li> </ul>
<ul> <li>EC (average 584 µS/cm) is higher than the previous reporting period but representative of fresh water salinity;</li> </ul>
<ul> <li>SO<sub>4</sub> (average 29.5 mg/L) is also slightly higher but generally consistent with previous reporting period;</li> </ul>
<ul> <li>Fe and Zn, average 0.43 mg/L and 0.02 mg/L respectively indicate consistency with fluctuating cycles in previous reporting periods;</li> </ul>
<ul> <li>NH<sub>3 (</sub>&lt; 0.1mg/L) continued to be not detected during this reporting period.</li> </ul>
<ul> <li>TOC (average 9.3 mg/L) is lower than previous reporting periods.</li> </ul>
Site 150 – Mulwaree River Site 150 is located 2 km downstream of the IMF on the Mulwaree River which is also downstream of a railway bridge and Braidwood Road.
Results provided in <b>Table 9.3</b> (refer <b>Appendix 4</b> ) indicate the following trends:
pH (average 7.85) is slightly alkaline, consistent with the previous

## IMF Environmental Monitoring

Parameter	Results/Discussion		
	reporting period;		
	<ul> <li>EC (average 1069 µS/cm) shows a slight upward trend but is generally consistent with the previous period and fresh water salinity;</li> </ul>		
	<ul> <li>SO<sub>4</sub> (average 105 mg/L) is also slightly higher, reflecting EC trend, but generally consistent with previous reporting period;</li> </ul>		
	<ul> <li>Fe and Zn, average 0.25 mg/L and 0.05 mg/L are lower than the previous reporting period but reflective of fluctuating cycles.</li> </ul>		
	<ul> <li>NH<sub>3 (</sub>&lt; 0.1mg/L) continued to be not detected during this reporting period.</li> </ul>		
	<ul> <li>TOC (average 10.8 mg/L), is slightly lower but generally consistent with previous reporting periods;</li> </ul>		
	These results are consistent with the trends for Site 110.		
First Flush Stormwater Outlet	The IMF First Flush is located at the surface water outlet point of the site, prior to runoff into Crisps Creek.		
	Results provided in <b>Table 9.4</b> (refer <b>Appendix 4</b> ) indicate the following trends:		
	• pH (average 7.54) is close to neutral, consistent with the previous reporting period;		
	<ul> <li>EC (average 267.67 µS/cm) shows a slight downward trend but is generally consistent with the previous period and fresh water salinity;</li> </ul>		
	<ul> <li>SO<sub>4</sub> (average 33.75 mg/L) is also slightly lower, reflecting EC trend, but generally consistent with previous reporting period;</li> </ul>		
	<ul> <li>Fe and Zn, average 0.91 mg/L and 0.79 mg/L are lower than the previous reporting period but reflective of fluctuating cycles.</li> </ul>		
	<ul> <li>NH<sub>3 (</sub>&lt; 0.1mg/L) continued to be not detected during this reporting period.</li> </ul>		
	<ul> <li>TOC (average 9.5 mg/L) which is lower than previous reporting periods;</li> </ul>		

### 5.2.2 IMF Air Quality Monitoring Results

Dust monitoring is undertaken monthly at 1 location at the IMF in accordance with the EPL. A summary of this reporting period is provided in **Table 5.2.2.1** and detailed in **Table 10** (refer **Appendix 4**).

The results at DG18 indicate an average level of total solid matter is 3.19 g/m<sup>2</sup>/month, which is generally consistent with overall historical trends as seen in the subsequent graph, **Figure 5.2.2.1**. The handling of waste and associated operational activities at the IMF are undertaken in a manner to ensure minimal emissions of dust. This includes no opening of containerised waste on unloading and operating on hardstand site.

## 5. IMF Environmental Monitoring

### Table 5.2.2: Dust Monitoring Results

Dust Gauge	Summary Total Solids (g/m2/month)			
	Minimum	Maximum	Average	
DG18	0.5	8.4	3.19	



Figure 5.2.2.1 – IMF Depositional Dust Levels – DG18

## 6. Bioreactor and IMF Environmental Performance

- Based on the results of monitoring undertaken at both the Bioreactor and IMF sites in accordance with the respective EPLs, the overall environmental performance of the Woodlawn Eco Project in this reporting period can be demonstrated to be well managed.
- Non conformances resulting from missed sampling periods at certain locations relate to the lack of flow recorded at these points during sampling sessions conducted by monitoring consultants. This has been documented in the Annual Return which has been submitted to the EPA.
- Veolia received a Penalty Infringement Notice (PIN) and official caution for an odour detected on the 16<sup>th</sup> of January 2015. Veolia submitted a response to the EPA in regards to the PIN and, as of the end of the reporting period, it is still being reviewed by the EPA.
- In this reporting period, Veolia have also implemented the recommendations for environmental and operational improvements identified in the 2013/2014 AEMR.
- Additional improvements proposed for the 2014/2015 reporting period at the Bioreactor and the IMF are as follows in **Table 6.1**:

ltem No.	Recommendation	2014-15 Action
1.	Implementing actions recommended from the most recent annual odour audit undertaken at the Bioreactor (report yet to be finalised);	All mandatory recommendations completed.
2.	Upgrades to the Leachate Treatment System at the Bioreactor, which currently comprises an Aeration Dam, Polymer Dosing System and a Settlement Tank to improve capacity to treat additional leachate from the void; This may include design and installation of additional settlement tanks.	A baffle has been installed in the leachate aeration dam and a new polymer dosing system has been installed in the treatment system. Performance of these upgrades is currently being monitored and will be reported in the 2015-16 AEMR.
3.	Consistent leachate treatment and operational monitoring is to be maintained to ensure leachate quality is kept at a level that does not produce offensive odour. The treated leachate is to be maintained at alkaline conditions in the lagoons for Evaporation Dam 3 North (ED3N-1, ED3N-2, and ED3N-3) to prevent reproduction of odour in stagnant condition.	Operational monitoring is conducted monthly and ED3-N dams have been maintained in an alkaline state ensuring odour is controlled from these storage ponds.
4.	Following up non conformances identified in the	Veolia employed an Environmental Officer

### Table 6.1: 2013/2014 Reporting Period Recommendations

### 6. Bioreactor and IMF Environmental Performance

ltem No	Recommendation	2014-15 Action
	reporting period and documented both in the Annual Return and this AEMR. Corrective actions will include ensuring that missing analytes, monitoring periods and/or locations are further minimised with the adoption of the following practices:	at Woodlawn during the 2014-15 reporting period and have subsequently developed a monitoring matrix as identified as an action from the previous reporting year. This has improved Veolia's capacity to monitor frequencies for all monitoring points and will help to ensure non-compliances are reduced moving forward.
5.	Effectively communicating and promoting the monitoring requirements template developed in the previous monitoring period to monitoring personnel and updating the monitoring calendar for the new reporting period;	As indicated above, employment of an Environmental Officer has improved Veolia's monitoring capacity and negated the need for communication with an external party. A detailed monitoring matrix has been developed to ensure monitoring is conducted at the required frequency.
6.	Effectively communicating sample analysis requirements and liaising with the laboratory to ensure any missed testing is corrected immediately, including retaining samples to provide adequate time for review of analysis results; Continuing to refine automate sampling proformas.	The Environmental Officer has developed Chain of Custody master templates ensuring all analytes are correctly tested as per their required frequency. This has ensured no analytes have been missed during this reporting period.
7.	Liaising with the EPA to review the existing conditions on EPLs that are not practically complied with and streamlining monitoring requirements to reduce non conformances.	Veolia has submitted a licence variation application and this is currently being reviewed by the EPA.

### Table 6.2: 2015/2016 Reporting Period Recommendations

Item No.	Recommendation
1.	Implementing actions recommended from the most recent annual odour audit undertaken at the Bioreactor (report yet to be finalised).
2.	Consistent leachate treatment and operational monitoring is to be maintained to ensure leachate quality is kept at a level that does not produce offensive odour. The treated leachate is to continue to be maintained at alkaline conditions in the lagoons for Evaporation Dam 3 North (ED3N-1, ED3N-2, ED3N-3 and ED3N-4) to prevent reproduction of odour in stagnant condition.

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### References

### References

- Earth2Water (2010) EPL Annual Assessment of Woodlawn Bioreactor and Intermodal Facility Monitoring Data, 30 November 2010;
- EPA (1996) Environmental Guidelines: Solid Waste Landfills, January 1996;
- **Veolia (2014)** Annual Environmental Monitoring Report Woodlawn Bioreactor and Crisps Creek Intermodal Facility, November 2014;

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## Appendices

Note: All documents appended to this Report are provided electronically.

# Appendices

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Appendix 1 Site Location Plan

# Appendices

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Appendix 2 EPL Boundary

# Appendices

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Appendix 3

Monitoring Locations Plan

# Appendices

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DATUM	N/A	CONTOUR INTERVAL	N/A	DATE	19/10/2015

16800-220

## Appendices

Appendix 4

### Tabulated Monitoring Results
# Appendices

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		Table 1 - Landfill Gas Extraction Booster Results													
EPL 11436	Date	Carbon Dioxide	Dry Gas Density	Moisture Content	Molecular weight of stack gases	Oxygen	Temperature	Volatile Organic Compounds	Volumetric Flow rate	Volumetric Flow rate	Methane				
		%	%	%	mg/m3	%	Deg C	mg/m3	m3/hour	m3/sec	%				
	1/06/2011	37.04			N/A	1.09	22.2		771.83	0.21					
	14/10/2011	34.8	11617	8.5	30.17	1.6	44.7	0.09	5380	1.49	48.6				
	6/05/2013	36.1			N/A	0.53	32.2		2124	0.59	61.4				
	29/05/2014	44.7	105	7.8	N/A	1.68	47.8		2520	0.7	48				
	5/08/2015	46.9	104.2	7.6	N/A	0.3	39.1		3010	0.84	50.4				
OVERALL	Minimum	34.8	104.2	7.6	30.17	0.3	22.2	0.09	771.83	0.21	48				
	Maximum	46.9	11617	8.5	30.17	1.68	47.8	0.09	5380	1.49	61.4				
	Average	39.91	3942.07	7.97	30.17	1.04	36.7	0.09	2761.17	0.77	52.10				
	StdDev	5.49	N/A	N/A	N/A	0.62	10.27	N/A	1683.88	0.47	6.28				
	Count	5	3	3	1	5	5	1	5	5	4				

Quarter 1 - Surface Gas Results												
•	•	1/12	/2014									
Transect	Time	No of measurements	Min Methane(%)	Max Methane (%)	Average Methane (%)							
1	11:30:00 PM	11	0.0003	0.0098	0.0033							
2		11	0.0003	0.0133	0.0044							
3		▲12	0.0004	0.0058	0.0028							
4		12	0.0002	0.0055	0.0021							
5		13	0.0006	0.0117	0.0043							
6		13	0.0003	0.0082	0.0023							
7		13	0.0024	0.0228	0.0095							
8		12	0.0017	0.0207	0.0076							
9		14	0.0008	0.0100	0.0050							
10		10	0.0010	0.0179	0.0042							
11		10	0.0008	0.0063	0.0037							
12	+	12	0.0009	0.0111	0.0037							
13	2:30:00 PM	10	0.0013	0.0330	0.0060							
Total Me	Total Measurements         153         0.000         0.023         0.005											

### Table 2 - Surface Gas Monitoring Results

	Quarter 2 - Surface Gas Results												
		5/03/2	2014										
Transect	Time	No of measurements	Min Methane (%)	Max Methane (%)	Average Methane (%)								
1	8:00:00 AM	11	0.0017	0.1970	0.0348								
2		11	0.0025	0.0067	0.0039								
3		11	0.0028	0.0162	0.0064								
4		13	0.0017	0.0067	0.0043								
5		12	0.0012	0.0100	0.0028								
6		11	0.0009	0.0032	0.0019								
7		11	0.0010	0.0032	0.0020								
8		10	0.0009	0.0097	0.0038								
9		10	0.0017	0.0076	0.0036								
10		15	0.0004	0.0093	0.0031								
11		15	0.0004	0.0037	0.0014								
12	+	16	0.0006	0.0076	0.0027								
13	12:00:00 PM	11	0.0007	0.0078	0.0027								
Total Meas	urements	157	0.000	0.197	0.006								

### Quarter 3 Surface Gas Results

		7/07	/2015		
Transect	Time	No of measurements	Min Methane (%)	Max Methane (%)	Average Methane (%)
1	8:30:00 AM	10	0.0062	0.0350	0.0225
2		11	0.0076	0.0288	0.0172
3		10	0.0040	0.0281	0.0150
4		19	0.0006	0.0227	0.0064
5		10	0.0009	0.0087	0.0035
6		11	0.0005	0.0022	0.0010
7		13	0.0004	0.0019	0.0011
8		12	0.0005	0.0085	0.0026
9		12	0.0003	0.0058	0.0017
10		15	0.0004	0.0083	0.0023
11		15	0.0011	0.0103	0.0037
12	+	16	0.0006	0.0097	0.0033
13	10:15:00 AM	10	0.0015	0.0087	0.0039
Total Me	asurements	164	0.000	0.035	0.006

	Quarter 4 - Surface Gas Results													
	1/09/2015													
Transect	Time	No of measurements	Min Methane (%)	Max Methane (%)	Average Methane (%)									
1	11:30:00 AM	7	0.0008	0.0038	0.0020									
2		11	0.0007	0.0181	0.0057									
3		10	0.0010	0.0222	0.0067									
4		14	0.0007	0.0153	0.0045									
5		15	0.0004	0.0237	0.0065									
6		15	0.0002	0.0166	0.0044									
7		13	0.0007	0.0078	0.0033									
8		13	0.0005	0.0056	0.0019									
9		13	0.0006	0.0055	0.0021									
10		13	0.0009	0.0053	0.0022									
11		12	0.0007	0.0082	0.0033									
12	+	11	0.0008	0.0063	0.0026									
13	13:15:00 AM	10	0.0015	0.0096	0.0043									
Total Mea	surements	157	0.000	0.024	0.004									

2014/2015 Surface Gas Results Summary										
	Minimum	Maximum	Average							
Methane (%)	0.000	0.197	0.005							

								EPL Limit		EPL Limit						EPL Limit
								450		100						5
EPL 11436		Date	Carbon Dioxide	Carbon Monoxide	Dry Gas Density	Moisture Content	Molcular Weight Of Stack Gases	Nitrogen Oxides	Oxygen	Sulfuric Acid Mist & Sulfur Trioxides S03	Sulphur Dioxide	Temperature	Velocity	Volatile Organic Compounds	Volumetric Flowrate	Hydrogen Sulphide
			%	mg/m3	kg/m3	%	gr/gr mole	mg/m3	%	mg/m3	mg/m3	Deg C	m/sec	mg/m3	m3/sec	mg/m3
		23/03/2015							Generator 6	was not available	e					
	N coloured															
coll indicat	too that the															
indicated																
THAN (<)	) indicated															

OVERALL	Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Average	#DIV/0!														
	StdDev	#DIV/0!														
	Count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

٦	Table 4.1 - Dust Deposition Results - DG22 East Void												
Site	ALS Batch	Date	Ash Residue	Combustibles	Calculated Rainfall	Soluble Matter	Insoluble Solids	Total Solids					
Name	Code		g/m2/mth	g/m2/mth	mm	g/m2/mth	g/m2/mth	g/m2/mth					
DG22	995053	Oct-14	1.4	0.4	33	0.2	1.8	1.8					
DG22	996818	Nov-14	1.5	0.7	92	0.9	2.2	3.1					
DG22	998680	Dec-14	0.9	0.3	34	0.2	1.2	1.2					
DG22	1001148	Jan-15	1.1	0.5	110	2.3	1.6	3.9					
DG22	1005718	Feb-15	0.21	0.17	9	0.2	0.4	0.4					
DG22	1006172	Mar-15	0.72	0.25	18	0.2	1	1					
DG22	1008524	Apr-15	0.67	0.19	100	0.2	0.9	0.9					
DG22	02162-001	May-15	0.58	0.22	10	0.2	0.8	0.8					
DG22	02637-001	Jun-15	2.5	1	49	0.2	3.5	3.5					
DG22	03064-001	Jul-15	0.85	0.2	40	0.2	1	1					
DG22	03297-003	Aug-15	0.8	0.2	12	0.2	1	1					
DG22	03563-002	Aug-15	0.52	0.38	32	0.2	0.9	1.1					
		Min	0.21	0.17	9	0.2	0.4	0.4					
		Avg	0.98	0.38	44.92	0.43	1.36	1.64					
		Max	2.5	1	110	2.3	3.5	3.9					
		stDev	0.60	0.25	36.02	0.62	0.83	1.18					

## Table 4.2 - Dust Deposition Results - DG24 West Void

Site Name	ALS Batch Code	Date	Ash Residue	Combustibles	Calculated Rainfall	Soluble Matter	Insoluble Solids	Total Solids
			g/m2/mth	g/m2/mth	mm	g/m2/mth	g/m2/mth	g/m2/mth
DG24	995054	Oct-14	3	2	44	0.7	5	5.7
DG24	996819	Nov-14	2.7	1.8	110	0.2	4.5	4.5
DG24	998681	Dec-14	2.4	2.2	64	3.8	4.6	8.4
DG24	1001149	Jan-15	2.4	1	110	3.7	3.4	7.1
DG24	1005719	Feb-15	3	1.4	12	1	4.4	5.4
DG24	1006173	Mar-15	2.2	0.7	27	5.2	2.9	8.1
DG24	1008525	Apr-15	2.4	1.8	110	13.1	4.2	17
DG24	CA150216	May-15	0.77	0.33	16	0.4	1.1	1.5
DG24	CA150263	Jun-15	6.62	1.48	63	0.2	8.1	8.1
DG24	CA150306	Jul-15	0.45	0.25	39	0.3	0.7	1
DG24	CA150329	Aug-15	0.11	0.2	16	0.2	0.2	0.2
DG24	CA150356	Aug-15	1.48	0.72	30	1.2	2.2	3.4
		Min	0.11	0.2	12	0.2	0.2	0.2
		Avg	2.29	1.16	53.42	2.50	3.44	5.87
		Max	6.62	2.2	110	13.1	8.1	17
		stDev	1.68	0.72	37.98	3.75	2.20	4.52

	Table	4.3 - D	ust De	position R	esults -	DG28	Pylara	
Site	ALS Batch	Date	Ash Residue	Combustibles	Calculated Rainfall	Soluble Matter	Insoluble Solids	Total Solids
Name	Code		g/m2/mth	g/m2/mth	mm	g/m2/mth	g/m2/mth	g/m2/mth
DG28	995055	Oct-14	0.44	0.76	38	0.2	1.2	1.2
DG28	996819	Nov-14	2.2	2.4	110	1.1	4.7	5.8
DG28	998682	Dec-14	1.9	1	52	1.1	2.9	4
DG28	1001150	Jan-15	1.2	0.7	100	0.2	1.9	1.9
DG28	1005720	Feb-15	5.4	8.5	13	1.9	13.9	16
DG28	1006174	Mar-15	1.8	2.3	22	0.4	4.1	4.5
DG28	1008526	Apr-15	6.1	1.6	110	3.8	7.7	12
DG28	CA150216	May-15	2.42	0.98	22	0.2	3.4	3.4
DG28	CA150263	Jun-15	4.06	2.74	55	0.2	6.8	6.8
DG28	CA150306	Jul-15	4.7	1.1	57	0.5	5.8	6.3
DG28	CA150329	Aug-15	1.35	0.95	24	0.6	2.3	2.9
DG28	CA150356	Aug-15	0.66	0.74	42	0.2	1.4	1.4
		Min	0.44	0.7	13	0.2	1.2	1.2
		Avg	2.69	1.98	53.75	0.87	4.68	5.52
		Max	6.1	8.5	110	3.8	13.9	16
		stDev	1.90	2.17	34.94	1.06	3.58	4.45

	Summ (g	ary Total S /m2/month	olids )
Dust Gauge	Minimum	Maximum	Average
DG22	0.4	3.9	1.6
DG24	0.2	17	5.87
DG28	1.2	16	5.5

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	Statistics	Field Information										Analytical Information	1	<b>D</b> : 1 · 1					
EPL 11436		Date	Site Code	Time	Sampler	рН	Conductivity	Temperature	Dissovled Oxygen	Redox	Flow	Laboratory Sample Code	Nitrogen (ammonia)	Biochemical Oxygen	Conductivity	pН	Total Dissolved Solids	Total Organic Carbon	Total Potassium
				AM/PM	Initials	pН	µS/cm	°C	mg/L	mV			mg/L	mg/L	μS/cm	рН	mg/L	mg/L	mg/L
		18/06/2015	Site 115	11:30am	JE	7.74	2225.2	10.64	9.07		rain for 2 days, DO sat=90%	CA1502402-006	0.1	2	2970	8.16	2170	13	2
		25/08/2015	Site 115	14:15	JE	8	1820	8.7	9.34		fast flow, ran for last day, EC not recorded	CA1503057-003	0.1	4	805	i 8.03	527	14	3.4
2013/14	Minimum					7 74	1820.00	8 70	9.07	0.00			0.10	2.00	805.00	8.03	527.00	13.00	1 70
2013/14	Maximum					8.00	2225.20	11.44	10.10	0.00			0.10	4.00	2970.00	8.27	2170.00	15.00	3.40
	Average StdDev					7.83 0.14	2022.60 286.52	10.26 1.41	9.50 0.53	#DIV/0! #DIV/0!			0.10 0.00	2.67 1.15	2058.33 1122.21	8.15 0.12	1469.00 847.60	14.00 1.00	2.37 0.91
	Count					3.00	2.00	3.00	3.00	0.00			3.00	3.00	3.00	3.00	3.00	3.00	3.00
									Т	able 5.2 ·	- Surface Water Results -	- Spring 2							
	Statistics	Field Information										Analytical Information		Biochemical					
EPL 11436		Date	Site Code	Time	Sampler	рН	Conductivity	Temperature	Dissovled Oxygen	Redox	Flow	Laboratory Sample Code	(ammonia)	Oxygen Demand	Conductivity	рН	Total Dissolved Solids	Total Organic Carbon	Potassium
				AM/PM	Initials	pН	µS/cm	°C	mg/L	mV			mg/L	mg/L	µS/cm	pН	mg/L	mg/L	mg/L
		8/12/2014	Spring 2 Spring 2	11:10am 12:50pm	TB	3.66	598 490	29.4	9.14 10.88	170.6	clear sample clear	CA1402913-001 CA1403980-001	0.4	3	488	4.85	452 398	11	7.6 9.2
		9/12/2014	Spring 2	10:30	TB	7.04	271 4	10.45	9.65		dear DO cat-82%	CA1404012-006	0.2	3	1890	3.07	1690	11	14.5
		2/08/2015	Spring 2	13:15	JE	5.09	639	11.24	10.58		low flow, clear	CA1503057-002	0.2	2	851	3.97	656	10	9.7
2013/14	Minimum					3.40	371.40	10.45	8.65	170.60			0.20	2.00	488.00	3.07	296.00	9.00	7.60
	Maximum					7.04	639.00	29.40	10.88	189.60			0.70	3.00	1890.00	6.85	1690.00	11.00	14.50
	Average StdDev					4.80 1.67	524.60 119.92	17.07 8.75	9.81 1.09	180.10 13.44			0.38	2.60 0.55	869.60 588.30	4.63 1.40	698.40 569.64	10.40 0.89	10.25 2.97
	Count					4.00	4.00	4.00	4.00	2.00			5.00	5.00	5.00	5.00	5.00	5.00	4.00
					1				Т	able 5.3	- Surface Water Results	- Site 105		1			1		
EPL	Statistics	Field Information	Site Code	Time	Complet		Conductivity	Tomporatura	Dissovled	Baday	Flow	Analytical Information	Nitrogen	Biochemical	Conductivity		Total Dissolved	Total Organic	Total
11436		Date	Site Code	Time	Sampler	рн	Conductivity	remperature	Oxygen	Redox	FIOW	Laboratory Sample Code	(ammonia)	Demand	Conductivity	рн	Solids	Carbon	Potassium
		17/06/2015	Site 105	AM/PM 11:45am	Initials JE	pH 7.24	<u>µS/cm</u> 2416	°C 9.45	mg/L 8.31	mV	clear, running after 12 hrs of rain, DO sat=	CA1502375-001	mg/L 0.1	mg/L 2	µS/cm 3310	pH 7.73	mg/L 1820	mg/L 14	<u>ma/L</u> 4.8
		2/08/2015	Site 105	13:00	JE	8.61	2345.9	9.56	9.45		clear fast flowing	CA1503057-001	0.1	2	3230	7.95	2230	16	2
		25/08/2015	Sile 105	13:30	JE	7.09		0.2	9.63		very last now, EC not recorded due to rad	CA1503445-001	0.1	3	2470	8.03	1600		3.5
2013/14	Minimum Maximum					7.24 8.61	2345.90 2416.00	8.20 9.56	8.31 9.83	0.00			0.10	2.00	2470.00 3310.00	7.73 8.03	1600.00 2230.00	14.00 22.00	2.00 4.80
	Average					7.91	2380.95	9.07	9.20	#DIV/0!			0.10	2.33	3003.33	7.90	1883.33	17.33	3.43
	StdDev Count					0.69 3.00	49.57 2.00	0.76 3.00	0.79 3.00	#DIV/0! 0.00			0.00 3.00	0.58 3.00	463.61 3.00	0.16 3.00	319.74 3.00	4.16 3.00	1.40 3.00
								т	able 5.4	- Surface	Water Results - Raw Wa	ater Dam (WM20	))						
	Statistics	Field Information						•		oundoe			Analytical	Informatio	n				
SML20		Date	Site Code	Time	Sampler	pН	Conductivity	Temperature	Dissovled	Redox	Flow	Laboratory Sample Code	Nitrogen	Biochemical Oxygen	Conductivity	pН	Total Dissolved	Total Organic	Total
EDI									Oxygen				(ammonia)	Demand			Solids	Carbon	Potassium
11436				AM/PM	Initials	рН	µS/cm	°C	mg/L	mV			mg/L	mg/L	µS/cm	рН	mg/L	mg/L	mg/L
		22/09/2014 8/12/2014	WM200 WM200	09:10am 10:52am	TB TB	4.98 3.98	1441 1444	14 22.3	10.32 9.18	94.5 156.3		CA1402913-002 CA1403980-002	0.1	2	1510 1420	7.51 7.19	1100 1150	19 20	3.9 4.3
		15/05/2015	WM200	14:00	JE	7.5	1102.9	11.12	10.1			CA1501852-002	0.1	2	1550	7.88	1150	21	3.7
		18/08/2015	VVIVI200	13.30	JE	0.13	1027.3	10.45	5.77			CA1502402-001	0.1	2	1370	7.09	342	15	5.2
2013/14	Minimum					3.98	1027.30	10.45	9.18	94.50			0.10	2.00	1370.00	7.19	942.00	15.00	3.20
	Maximum					7.50	1444.00	22.30	10.32	156.30			0.10	2.00	1550.00	7.89	1150.00	21.00	4.30
	Average StdDev					5.65 1.52	1253.80 220.07	14.47 5.44	9.84 0.50	125.40 43.70			0.10	0.00	1462.50 82.21	7.62 0.34	1085.50 98.53	18.75 2.63	3.78 0.46
	Count					4.00	4.00	4.00	4.00	2.00			4.00	4.00	4.00	4.00	4.00	4.00	4.00
	<b>0</b>	Field Information			-	1		Table	e 5.5 - Su	rface Wa	ater Results - Entrance R	oad Culvert (WN	1201)		1				
EPL	Statistics	Field Information	O'to Oo do	Time	Ormalas	-11	On a durativity	Tonorotan	Dissovled	Destau	El		Nitrogen	Biochemical	Orandurativity	11	Total Dissolved	Total Organic	Total
11436		Date	Site Code	Time	Sampler	рн	Conductivity	Temperature	Oxygen	Redox	Flow	Laboratory Sample Code	(ammonia)	Demand	Conductivity	рн	Solids	Carbon	Potassium
		22/09/2014	WM201	AM/PM 08:00am	Initials TB	pН	µS/cm	°C	mg/L	mV	Not Flowing		mg/L	mg/L	µS/cm	pH	mg/L	mg/L	mg/L
		8/12/2014	WM201		TB						Not Flowing								
		30/04/2015 18/06/2015	WM201 WM201	9:00	JE JE	6.94	123.2	11.38	9.61		Not Flowing flowing, little turbid DO Sat=96.5%	CA1502402-002	0.1	2	163	6.27	98	8	2.2
		2/08/2015	WM201 WM201	13:20	JE						No flow No flow after more rain					'			
		25/08/2015	WM201	13:50	JE	7.12		8.3	10.22	medium flow,	rain for last day, EC not recorded due to fa	CA1503445-002	0.1	3	176	6.86	140	10	3.4
2013/14	Minimum Maximum					6.94 6.94	123.20 123.20	11.38 11.38	9.61 9.61	0.00			0.10 0.10	2.00	163.00 163.00	6.27 6.27	98.00 98.00	8.00 8.00	2.20
	Average					6.94	123.20	11.38	9.61	#DIV/0!			0.10	2.00	163.00	6.27 #DIV/01	98.00	8.00	2.20
	Count					1.00	1.00	1.00	1.00	0.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00
								Table	5.6 - Sur	face Wat	er Results - Evaporation	Dam 3 South (W	/M202)						
	Statistics	Field Information										Analytical Information		Biochemical					
EPL 11436		Date	Site Code	Time	Sampler	рН	Conductivity	Temperature	Dissovled Oxygen	Redox	Flow	Laboratory Sample Code	(ammonia)	Oxygen Demand	Conductivity	pН	Total Dissolved Solids	Total Organic Carbon	Potassium
		22/00/2014	W/M202	AM/PM	Initials	pH	µS/cm	°C	mg/L	mV	water groop with algoe	CA1402012-002	mg/L	mg/L	µS/cm	pH	mg/L	mg/L	mg/L
		8/12/2014	WM202	11:05am	TB	3.15	7920	21.7	7.03	203.4	browny green sample	CA1402913-003 CA1403980-003	72.5	2	8220	2.96	10800	5	13.1
		15/05/2015 18/06/2015	WM202 WM202	13:45 13:15	JE	3.8 2.9	6648.4 6256.2	13.18 10.38	10.27 10.12		Water clear clear, DO sat=102%	CA1501852-001 CA1502402-003	72.7	4	8620	2.87	11600	7 6	20.3
																<u> </u>			
2013/14	Minimum	ı	•		i	2.80	6256.20	10.38	7.03	203.40	1	<b>I</b>	71.70	2.00	8200.00	2.78	10800.00	5.00	7.70
	Maximum Average					3.80 3.16	8140.00 7241.15	21.70 15.07	10.53 9.49	217.90 210.65			76.80 73.43	5.00 3.50	8620.00 8387.50	3.01 2.91	11600.00 11175.00	11.00 7,25	20.30 14.58
	StdDev					0.45	929.20	4.81	1.65	10.25			2.29	1.29	209.98	0.10	350.00	2.63	5.45
	Count					4.00	4.00	4.00	4.00	2.00			4.00	4.00	4.00	4.00	4.00	4.00	4.00
	Statistics	Field Information			1			Table	5.7 - Sur	face Wat	er Results - Evaporation	Dam 3 North (W	M203)		T	<del></del>			
EPL	Gratistics	Date	Site Code	Time	Sampler	рH	Conductivity	Temperature	Dissovled	Redox	Flow	Laboratory Sample Code	Nitrogen	Biochemical	Conductivity	рH	Total Dissolved	Total Organic	Total
11436			0.000		Initiala	nH	uS/om	°C	Oxygen	m\/		sample odde	(ammonia)	Demand	HS/cm	nH	Solids	Carbon	Potassium
		22/09/2014	WM203	9:40am	TB	4.15	20720	15	9.35	142.1	water clear, green tinge	CA1402913-004	771	2	22100	5.8	22100	8	736
		8/12/2014 22/05/2015	WM203 WM203	11:15am 14:15pm	TB JE+Rbe	4.46 8.23	22800 20294	21.6 12.3	3.5	124.6	brown/purple	CA1403980-004 CA1501936-001	854 936	6	23900 27800	6.94 7.38	20600 22000	400 982	1100 1420

		18/06/2015	WM203	13:35	JE	8.33	19376	9.67	7.74		leachate, brown, constant rain	CA1502402-004	860	5	25900	7.44	19500	842	1270
2013/14	Minimum					4.15	19376.00	9.67	3.50	124.60			771.00	2.00	22100.00	5.80	19500.00	8.00	736.00
	Maximum					8.33	22800.00	21.60	9.35	142.10			936.00	6.00	27800.00	7.44	22100.00	982.00	1420.00
	Average					6.29	20797.50	14.64	6.99	133.35			855.25	3.75	24925.00	6.89	21050.00	558.00	1131.50
	StdDev					2.30	1448.01	5.12	2.48	12.37			67.44	2.06	2466.27	0.76	1239.62	442.68	294.29
	Count					4.00	4.00	4.00	4.00	2.00			4.00	4.00	4.00	4.00	4.00	4.00	4.00
											0 ( ))( ( D ))	<b>B</b>							
							_			able 5.8	- Surface Water Results	- Pond 3							
	Statistics	Field Information										Analytical Information							
EPL 11436		Date	Site Code	Time	Sampler	рН	Conductivity	Temperature	Dissovled Oxygen	Redox	Flow	Laboratory Sample Code	Nitrogen (ammonia)	Biochemical Oxygen Demand	Conductivity	pН	Total Dissolved Solids	Total Organic Carbon	Total Potassium
				AM/PM	Initials	pН	µS/cm	°C	mg/L	mV	water, siltry brown, stinks		mg/L	mg/L	µS/cm	pН	mg/L	mg/L	mg/L
		22/09/2014	Pond 3	10:00am	TB	2.82	3310	16.8	9.93	218.4		CA1402913-005	19.6	4	3450	2.77	3830	8	3.4
		9/12/2014	Pond 3	12:40	TB				7		water clear, no turbidity	CA1404012-005	12.3	3	2470	3.02	2610	10	
		1/05/2015	Pond 3	1:45pm	JE/Rbe	4.08	3152	16.85	8.65		turbid, flowing after 12 hrs rain, DO sat=9	CA1501637-001	14.7	2	3770	3.21	4350	6	4.1
		17/06/2015	Pond 3	14:40	JE	3.63	995.5	11.43	9.64		drillers operating on ramp leading to pond	CA1502375-002	6.7	2	1330	3.56	1090	2	1.8
		5/08/2015	Pond 3	13:45	JE	5.86	1932	9.88	9.99			CA1503140-001							6
2013/14	Minimum					2.82	995.50	11.43	7.00	218.40			6.70	2.00	1330.00	2.77	1090.00	2.00	1.80
	Maximum					4.08	3310.00	16.85	9.93	218.40			19.60	4.00	3770.00	3.56	4350.00	10.00	4.10
	Average					3.51	2485.83	15.03	8.81	218.40			13.33	2.75	2755.00	3.14	2970.00	6.50	3.10
	StdDev					0.64	1293.08	3.11	1.32	#DIV/0!			5.36	0.96	1099.26	0.33	1450.06	3.42	1.18
	Count					3.00	3.00	3.00	4.00	1.00			4.00	4.00	4.00	4.00	4.00	4.00	3.00

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																									Table 6.1 - Lea	achate Re	esults - Lea	achate Da	m																							
atistics	Field Information	on						Analytical Information																																												-
	Date	Site Code	Time Sa	ampler pl	H Cond.	Temp C	DRP DO	Laboratory Sample Cod	e Bicarb	oonate Ca	rbonate A	Alkalinity (as CaCO3)	Nitrogen (ammonia)	Chloride	Chromium (Hex)	Conductivity	Fluoride	Nitrate	e Nitrite	Organo- chlorine pesticides	Organo- phosphate pesticides	Polycycl Aromati Hydrocarb	c TPH C	-C9 TPI	H C10- C14 TPH C1: C28	15- TPH C: C36	29- Benzene	e Toluene	e Ethyl Benzene	Xylene	pH S	Sulphate S	Total uspended D Solids	Total O solids C	Total Organic Carbon	otal Phosphorous	Total Aluminium	Total Arsen	nic Total Bariur	I Total m Cadmiu	I Total um Calcium	Total Chromi	I Tota um Coba	al Total alt Coppe	Total r Lead	Total Magnesiu	Total Im Mangane	Total Mercury	Total Phenols	Total Potassium	Total Sodium T	otal Zł
			AM/PM	nitials p	H uS/cm	"C	mV ma/	L	ma	JL I	ma/L	ma/L	ma/L	ma/L	ma/L	uS/cm	mo/L	ma/L	ma/L	uo/L	uo/L	uo/L	40		IOL UOL	ugit	. ua/L	uoʻL	ua/L	uo/L	рH	ma/L	ma/L	mo/L	ma/L	ma/L	mo/L	ma/L	ma/L	ma/L	. ma/L	ma/L	. ma/l	L ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L
	17/03/2011	LD	10.28	тн 7.	94 30700	17.5 -	25.6 0.23	3 829336	63	190	0.1	6390	1900	3500	0.024	31000	2	1.6	0.01	0.0001	2	0.001	110	3	7000 29000	3900	40	48	40	100	7.6	5900	2000	26000 1	10400	5	12	0.18	0.045	5 0.16	730	0.35	0.36	6 0.38	0.06	1100	0.82	0.0003	2.4	2100	3100	60
	30/03/2012	ID	10.37	TH 7	8 34300	16.8	0 0 19	9 882567	97	10	0.1	9710	1800	5400	01	35000	0.26	69	0.23	25	25	10	19	34	8000 21200	0 50	1	5	2	2	7.9	5100	3400	31000 1	13000	75	17	0.188	0.067	7 0.055	5 660	0.41	0.15	5 0.32	0.17	1400	0.91	0.0012	1.57	2900	4400	52
Ī	22/05/2013	ID	2:30pm	CC 8	8 23000	N/A	N/A N/A	940239	51	70 3	2230	7400	270	4700	0.1	23000	9	5	1												8.8	1600	2400	18000	2900	26	0.1	0.011	0.016	5 0.000	4 36	0.62	0.1	0.19	0.0069	800	0.25	0.0011	<0.05	2000	3000	0.79
ſ	29/05/2013	ID	9:05:00 AM	CC N	(A N/A	N/A	N/A N/A	941057												2	2	0.5	20		360 4420	630	1	2	2	2																						
ľ	29/05/2014	ID	12:00pm	CC 7	5 27100	1 16	3	CA1401648-0	01 65	53	0.1	653	690	3550	0.1	24400	7.8	70	1660	2	2	1	10		390 6370	810	5	5	5	5	7.09	910	848	13400	1500	29.3	23	0.268	0.145	0.010	7 266	0.55	0.10	0.267	0.0591	0.332	0.96	0.001	0.51	1610	2910	3 56
	22/05/2015	LD	12:00pm	JE 9:	39 19897	12.5	6.3	CA1501937-0	01 55	510	834	6340	1780	3450	2	26900	5.1	58.9	887	2	2	1	40		100 2930	) 130		2	2	2	8.47	738	491	12300	2410	11.6	3.54	0.212	0.148	2 0.183	3 79.1	0.526	6 0.16	6 1.37	0.0969	161	3.18	0.0009	0.3	1310	2490	33.1



Total Cadmium	Total Calcium	Total Chromium	Total Cobalt	Total Copper	Total Iron	Total Lead	Total Magnesium	Total Manganese	Total Mercury	Total Phenols	Total Sodium
ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L
0.016	370	2.9	0.4	0.46	140	0.25	930	3.7	0.0092	0.88	11400
0.016	110	0.41	0.061	0.25	31	0.063	360	1	0.001	2.34	2300
0.0028	41	0.1	0.043	0.033	N/A	0.0044	490	0.075	0.0005	2.71	2300
0.00246	87.1	0.604	0.0826	0.099	N/A	0.0354	172	0.461	0.0024	1.44	2720
0.00000		0.477	0.0500	0.474		0.0000	445	0.004	0.0000	2	2050



	The late of a second seco											_						Table 7.1 -	Groundwa	ater Results - M	B 1																
EPL 11436	Date Site Cod	e Time Samp	sker pH	Conductivity Tempera	ature Dissolved Oxygen	d Oxidation- Reduction Potential	Depth to Water	r RL Water Level	Laboratory Sampi Code	le Bicarbon Carbo	nate Alkalinity CaCOS	(as Ntrogen (ammonia)	Chioride Con	y Dissolve y Calciur	ed Dissolv Magnesi	ed Dissolved Potassium	Dissolved Sodium	pH Sulphate	Total Dissolved Solids	Chromium Dissolved (Hex) Dissolved	Dissolved Arsenic	Dissolved Dissolved Dis Cadmium Cobalt C	solved Dissolved Lead	Dissolved Manganes e Dissolved Mercury	Dissolved Zinc Flu	oride Nitrate	Nitrite	Organo- chibrine Organo-ph pestici	osphate Polyo ides H	ydrocarbons	TPH C6- C9 C14	TPH C15- C28 C3	6 Benzene Tok	eene Ethyl Xy Benzene Xy	ene Total Phenois	Total Organic Carbon	Total Barium Total Chro
	26/09/2014 MB1 15/12/2014 MB1	AMPM Inba 11:10am TB 12:05am TB	IS DH 6.39 1 5.86	1430 15 1454 20.3	5.28 3 5.23	00V 3.9 46	m 24.7 24.6	772.81 0 772.91 0	CA1403004-001 CA1404140	361 365	0.1 0.1	MgL 61 0.1	135 134	1490 MOIL 1500	133 7 148 5	MoL 15.2 5.2 12.3 6.8	41.4 51.1	0H MOL 7.29 279 7.32 294	1110 1050	not not	0.001 0.001	0.00248 0 0.0106 0	008 0.0004 034 0.0094	not not	0.286 1.4	oL noL	noL	moi, moi		UOL	UOL UOL	UQL UQ	L VOL V	rt vot v	PL MOL	mat	TOL MOL
2014/15 Minimum	1/05/2015 MB1 24/06/2015 MB1	10:30am JE/R 12:45 JE	te 7.85 7 5.86	1199.1 15.1 1269 14.4 1199.1 14.4	11 3.65 49 4.29 49 3.65	0	22.4 22.13 22.13	775.11 ( 775.38 ( 772.81	CA1501636-005 CA1502474-006	359 361 359 0	0.1 1 359	61 0.1 0.1	143 166 134 1	1520 1560 490 133	143 147 7 75.2	77 62 7.7 63 52	45.5 46 41.4	7.23 262 7.24 309 7.23 262	1150 1160 1050	0.01 0.009	0.001 0.001 0.001	0.00122 0.0003 0 0.00423 0 0.00122 0.0003 0	005 0.0004 009 0.0016 005 0.0004	0.0044 0.0001	0.143 0.696 0.143	0.3 0.2	0.01	0.002 0.00	12	1	20 50 20 50	100 5		2 2	2 0.05	4	0.0849 0.01
Maximum Average StdDov			7.85 6.775 0.954731027	1454 20.3 1338.025 16.22 133.70212 2.7300	3 5.28 25 4.6125 061 0.79692379	46 16.63333333 84 25.50602716	24.7 23.4575	775.38 774.0525		365 0. 361.5 0.	1 365 1 361.5	0.1	166 1 144.5 15	560 148 17.5 142.75	82.3 5 78.0	6.8 5 6.125	51.1 46 3.075750995	7.32 309 7.27 286	1160 1117.5	0.01 0.009 0.01 0.009	0.001	0.0106 0.0003 0 0.004633 0.0003 0 0.004155 #DVIDI 0.0	0.0094 0.00295	0.0044 0.0001 0.0044 0.0001	1.4 0.63125	0.3 0.2 0.3 0.2	0.01	0.002 0.00 0.002 0.00	12 12	1	20 50 20 50	100 5 100 5	0 1 0 1	2 2 2 2 NIDI #DIVIDI #D	2 0.05 2 0.05	4 4 #DM/01	1.0849 0.0 2.0849 0.0
Count			4	4 4	4	3	4	4		4	4	4	4	4 4	4	4	4	4 4 Table 7.2 -	Groundwa	ater Results - M	4 B 2	4 1	4 4	1 1	4	1 1	1	1 1		1	1 1	1 1	1	1 1	1 1	1	1 1
Statistics	Field Information				Directured	Oxidation-			Analytical Infor	mation	Malah	Minness	000	tertial Director	nd Directo	of Decolution	Decelord		Total	Chamien Directed	Directured	Directured Directured Dir	column Direction	Dissolved Dissolved	Discoluted			Organo-	contrato. Bola	cucio homotica 1	TRUCE TRUCE	TRUCIE, TRU	~20.	Ethul	Total	Total Oranoia	Total
120	Date Site Cod	a Time Samp	iler pH	Conductivity Tempera	ature Oxygen	Potential	Depth to Water	r RL Water Level	Code	ate Carbo	CaCO3	) (ammonia)	Chloride	y Calciur	n Magnesi	ium Potassium	Sodium	pH Sulphate	Dissolved Solids	(Hex) Aluminium	Arsenic	Cadmium Cobalt C	opper Lead	e Mercury	Zinc Flu	oride Nitrate	Ntrite	chibrine pestici esticides pestici	ides H	lydrocarbons	C9 C14	C28 C3	6 Benzene Tok	Benzene Xy	ene Phenois	Catton	sarium Total Chr
36	22/09/2014 ME	AM/PM Initia 2 11:40am	ils pH TB 5.66	µS/cm °C 6350 1	mgL 16.2 3	mV	m 4 3.09	m RL 9 778.77	CA1402912-0	mg/L mg	L mg/L 1 193	0.1	mgL μ1	50 mg/L 650 494	691	17	mg/L 260	pH mg/L 6.84 3610	mgL 7260	ngt ngt	mgL 0.004	mgL mgL /	ngL mgL 008 0.0003	mgi mgi	mg1. n 0.095	gt ngt	ngt	mgiL mgi	L	μgt	hðr hðr	µ9°. µ9	L HÖL H	γL μgL μ	/L mg/L	mg'L	ngt mg
	29/04/2015 ME 26/06/2015 ME	2 11:30am JE /F 2 10:55	IB 5.74 Rbs 7.24 JE 6.35	5372.2 15 5786 15	15.28 1 15.21 1.	2.1 52.2 1.5 24	2 3.17 3.38 3.39	7 778.48 9 778.47	CA1501601-0 CA1502548-0	003 200 0. 002 202 0.	1 200	0.1	626 6 702 6	850 540 860 509	819	1.8	254 263	6.85 4000 6.33 3990 6.81 4560	7150	0.01 0.024	0.003	0.0294 0.0016 0	008 0.0002	0.0578 0.0001	0.193	0.3 0.05	0.01	0.002 0.00	12	1	20 50	100 5	0 1	2 2	2 0.05	3	0.02 0.0
014/15 Minimum	-II		5.66	5372.2 15.2 e250 16.2	21 1.24	52.2	3.09	778.47		192 0.	1 192	0.1	580 6	650 494 960 540	691	1.4	254	6.33 3610	7060	0.01 0.024	0.003	0.0261 0.0016 0	004 0.0002	0.0578 0.0001	0.076	0.3 0.05	0.01	0.002 0.00	12	1	20 50	100 5		2 2	2 0.05	3	0.02 0.0
Average StdDev			6.2475 0.729902962	5964.55 15.62 476.06093 0.466	225 2.0275 536 0.90323031	54.3 14 2.969848481	3.2575 0.150858653	778.6025 0.150858653		196.75 0. 4.99166 0	1 196.7	6 0.1 171 0	626.25 6 53.95291157 97.	780 513.5 53879 19.22671	752 61.665	1.675 766 0.1892969	258.5 3.872983346 (	6.66 4040 233666 391.3225	7152.5 82.209083	0.01 0.024 #DIVIOI #DIVIOI	0.0035 0.00057735	0.028975 0.0016 0. 0.001996 #DIVIDI 0.0	00625 0.000225 120616 0.00005	0.0578 0.0001 #DIVI01 #DIVI01	0.111 0.055275 #E	0.3 0.05 NV/01 #DIV/01	0.01 #DIV/01	0.002 0.00 #DIV/0! #DIV	12 (/D1	1 #DIVI0!	20 50 #DIV/0/ #DIV/0/	100 5 #DIV/0! #DI	0 1 //01 #DIV/01 #D	2 2 VIOI #DIVIOI #D	2 0.05 N/0! #DIV/0!	3 #DIV/0/	0.02 0.0 #DIV/01 #DI
Count			4	4 4	4	2	4	4		4 4	4	4	4	4 4	4	4	4	4 4 Table 7.3 -	4 Groundwa	1 1 vater Results - M	4 B 3	4 1	4 4	1 1	4	1 1	1	1 1		1	1 1	1 1	1	1 1	1 1	1	1 1
Statistics	Field Information	Time Sam	iler oH	Conductivity Tempera	Dissolved	Oxidation- Beduction	Denth to Water	r RI Water Level	Analytical Infor	Bicarbon Carbo	Alkalinity	as Nitrogen	Chinride Con	tuctivit Dissolve	ed Dissolv	ed Dissolved	Dissolved	nH Suinhate	Total Dissolved	Chromium Dissolved	Dissolved	Dissolved Dissolved Dis	solved Dissolved	Dissolved Mannanes Dissolved	Dissolved Flu	oride Nitrate	Nitrito	Organo- chilorine Organo-ph	osphate Poly	cyclic Aromatic 1	TPH C6- TPH C10-	TPH C15- TPH (	C29- Benzene Tok	ene Ethyl Xv	Total	Total Organic	Total Total C
EPL		AMPM Initia	is oH	uSion "C	- mol	Potential		m.81	Code	ate	d mol	) (ammonia)	mol ut	y Cacur	n Magnes	um Potassium	mol	oH mol	Solids	(Hox) Aumnum	Asenc	cadmun Cobat C	opper Lead	e Mercury	znc mal m	in ni	Int	esticides pestici	as H	ydrocarbons up1	UD UD	L28 C3	1 101 11	Benzene /	Phenos	cation	anum mol m
11436	22/09/2014 ME 9/12/2014 ME	3 11:40am 3 10:15am	TB 4.86 TB 5.58	1886 1	15.2 4. 16.4 3.5	12 102 195 61	2 0.46	5 792.74 4 790.96	CA1402912-0 CA1404016-0	002 236	0.1	136 0.1 142 0.1	477 473	2010	129	100 1.6 105 1.6	71.8	6.86 34 6.84 33.1	1550		0.002	0.00044 0	004 0.0002	-99-	0.058		-4-		-	14-	rg- rg-	10- 10	- 19- 1	r- 19- 1			-9
	29/04/2015 ME 26/06/2015 ME	3 12:15pm JE/F 3 11:20	RBe 7.36 JE 6.54	1596.5 15 1688 1	15.48 2. 15.3 3.	193 1.42	2.46 2.52	6 790.74 2 790.68	CA1501601-0 CA1502546-0	004 253 003 253	0.1	63 0.1 63 0.1	499 535	2050 2010	135 135	101 1.6 102 1.6	68.8 69.2	6.73 31 6.97 37.5	1360 1400	0.01 0.009	0.001	0.00035 0.0003 0	002 0.0002	0.0024 0.0001	0.056	0.1 0.62	0.01	0.002 0.00	12	1	20 50	100 5	0 1	2 2	2 0.05	4	.0325 0.0
2014/15 Minimum Maximum	1 1	1 1	4.86 7.36	1596.5 15.2 1910 16.4	2 2.93 4 4.12	61 102	0.46	790.68 792.74		236 0. 253 0.	1 236 1 253	0.1	473 2 535 2	000 129 050 135	100 105	1.6 1.6	68.8 71.8	6.73 31 6.97 37.5	1360 1550	0.01 0.009 0.01 0.009	0.001 0.003	0.00008 0.0003 0	001 0.0002	0.0024 0.0001 0.0024 0.0001	0.019 0.058	0.1 0.62	0.01	0.002 0.00	12 12	1	20 50 20 50	100 5 100 5	D 1	2 2 2 2 2	2 0.05 2 0.05	4	1.0325 0.0 0.0325 0.0
Average StdDev Count			1.093663568 4	1770.125 15.59 152.62393 0.54903 4 4	45 3.605 1294 0.53978390 4	81.5 07 28.99137803 2	1.92 3 0.980748014 4	0.980748014 4		246 0. 8.44591 0 4 4	1 246 8.44590 4 4	0.1 i31 0 4	496 21 28.40187787 22. 4	17.5 132 17356 3.464101 4 4	102 615 2.1602 4	1.5 469 0 4	70.15 1.398809017 ( 4	6.85 33.9 1.098319 2.709243 4 4	1465 99.498744 4	#DIVICI #DIVICI 1 1	0.000957427	0.00017 #DIVIDI 0.0 4 1	00225 0.0002 012583 0 4 4	#DIVIO! #DIVIO! 1 1	0.020139 #E	0.1 0.62 XV/0! #DIV/0! 1 1	#DIV/01 1	#DIV/0: #DIV 1 1	(10)	#DIVI0!	20 50 #DIV/0! #DIV/0! 1 1	#DIV/0: #DI 1 1	0 1 //0:#DIV/0:#D	2 2 N/0! #DIV/0! #D 1 1	2 0.05 N/0! #DIV/0! 1 1	4 #DIV/0/ 1	0325 0.0 DIV/01 #DI 1 1
Statistics	Field Information		-	I I					Analytical Infor	mation	-	-			-			Table 7.4 -	Groundwa	ater Results - M	B 4																
EPL 11436	Date Site Cod	e Time Samp	iler pH	Conductivity Tempera	ature Dissolved Oxygen	d Oxidation- Reduction	Depth to Water	r RL Water Level	Laboratory Sampl Code	le Bicarbon Carbo	nate Alkalinity CaCO3	(as Ntrogen ) (ammonia)	Chloride Con	uctivit Dissolv y Calciur	ed Dissolv Magnesi	ed Dissolved ium Potassium	Dissolved Sodium	pH Sulphate	Total Dissolved	Chromium Dissolved (Hex) Aluminium	Dissolved Arsenic	Dissolved Dissolved Dis Cadmium Cobalt C	solved Dissolved	Dissolved Manganes Dissolved Mercury	Dissolved Flu	oride Nitrate	Ntrite	Organo- chibrine Organo-ph pestici	osphate Poly ides H	cyclic Aromatic T lydrocarbons	TPH C6- C9 C14	TPH C15- C28 C3	C29- 8 Benzene Tok	ene Ethyl Xy Berzene	ene Total Phenois	Total Organic Carbon	Total Barium Total Ch
	23/09/2014 MB4	AM/PM Initia 08:30am TB	ils oH 6.37	uS/om *C 1595 15.4	4 3.63	mV 5	m 12.41	m RL 774.09	CA1402938-001	14.6 0	L molL 1 15	0.1	mot. ut 389 1	Som molL 630 7.06	mol. 83.3	mol. 1.7	molL 154	oH molL 5.24 206	mgL 1020	nol nol	mol_ 0.002	mgL mgL (	ngL mgL .061 0.004	. Jon Jon	mgL n 0.756	ol mol	noL	mol. mol	L .	Jou	uot uot	uot uo	L vol v	rt vot v	nal mai	mail	mat ma
	11/12/2014 MB4 30/04/2015 MB4	8:45am TB 10:50am JE/R	6.78 be 5.88	1560 16.4 1297.7 15.5	4 <u>3.6</u> 51 <u>2.59</u>	-7.2	12.16 12.24	774.34 774.26	CA1404096-001 CA1501602-002	13.6 0. 2 14.4 0.	1 14	0.1	362 1	610 6.92 680 7.13	79.7 80	1.6	157 151	5.35 198 5.32 197	1030	0.01 0.135	0.001 0.003	0.0016 0.024 0	043 0.005 0.0049	0.025 0.0001	0.714 0.904 0.	0002 0.28	0.01	0.002 0.00	12	1	20 50	100 5	n 1	o o	2 0.05	1	0.025 0.0
014/15 Minimum Maximum	26/06/2015 MB4	113000 PM1 JE	5 6.78	1382 15.9 1297.7 15.4 1595 16.4	4 2.2 4 3.63	-7.2 5	12.36 12.16 12.41	774.09 774.34	CA1502546-006	13.6 0. 15.4 0.	1 15 1 14 1 15	0.1 0.1	405 1 362 1 405 1	600 6.74 600 6.74 680 7.13	77 83.3	1.6 1.7	152 151 157	5.45 218 5.24 197 5.45 218	1020 1020 1140	0.01 0.135 0.01 0.135	0.003	0.00142 0.024 0 0.00168 0.024 0	005 0.0052 043 0.004 061 0.0052	0.025 0.0001 0.025 0.0001	0.707 0. 0.904 0.	0002 0.28	0.01	0.002 0.00	12 12	1	20 50 20 50	100 S 100 S	0 1 0 1	2 2 2 2	2 0.05 2 0.05	1	0.025 0.0
Average StdDev Count			6.0075 0.765827439 4	1453.675 15.80 146.07106 0.4539 4 4	075 3.005 0732 0.7222418 4	-1.1 88 8.62670273 2	12.2925 0.113541476 4	774.2075 0.113541476 4		14.5 0. 0.73937 0 4 4	1 14.5 0.57735 4	0.1 127 0 4	387.25 1 18.15443013 35. 4	630 6.962 59026 0.172119 4 4	5 80 1145 2.58061 4	1.625 976 0.05 4	153.5 2.645751311 ( 4	5.34 204.75 1.086795 9.708244 4 4	1052.5 58.5235 4	0.01 0.135 #DIVIO! #DIVIO! 1 1	0.00225 0.000957427 4	0.001585 0.024 0 0.000115 #DIVIOI 0.0 4 1	0525 0.004775 077675 0.0005315 4 4	0.025 0.0001 #DIVI01 #DIVI01 1 1	0.77025 0. 0.091755 #E 4	0002 0.28 XV/01 #DIV/01 1 1	0.01 #DIV/01 1	0.002 0.00 #DIV/0! #DIV 1 1	12 //01	1 #DIV/0!	20 50 #DIV/0/ #DIV/0/ 1 1	100 5 #DIV/01 #D7 1 1	0 1 //0/#DIV/0/#D	2 2 N/0! #DIV/0! #D 1 1	2 0.05 N/0! #DIV/0! 1 1	1 #DIV/0/ 1	1025 0.00 DIV/01 #DIV 1 1
Statistics	Field Information		-		-				Analytical Infor	mation				-				Table 7.5 -	Groundwa	ater Results - M	B 5																
SML20	Date Site Cod	a Time Samp	iler pH	Conductivity Tempera	ature Dissolved Oxygen	d Oxidation- Reduction	Depth to Water	r RL Water Level	Laboratory Sampl Code	le Bicarbon Carbo	nate Alkalinity CaCO3	(as Ntrogen ) (ammonia)	Chloride Con	juctivit Dissolve y Calciur	ed Dissolv Magnesi	ed Dissolved ium Potassium	Dissolved Sodium	pH Sulphate	Total Dissolved	Chromium Dissolved (Hex) Aluminium	Dissolved Arsenic	Dissolved Dissolved Dis Cadmium Cobalt C	solved Dissolved	Dissolved Manganes Dissolved Mercury	Dissolved Zinc Flu	oride Nitrate	Ntrite	Organo- chibrine Organo-ph pestici	osphate Poly ides H	cyclic Aromatic 1 lydrocarbons	TPH C6- C9 C14	TPH C15- C28 C3	C29- 6 Benzene Tok	ene Ethyl Xy Berzene	ene Total Phenois	Total Organic Carbon	Total Barium Total CP
EPL 1436		AM/PM Initia	ils pH	µS/om °C	- mgiL	mV	m	m RL		mg1L mg	L mg/L	mgL	mg1L µi	Sicm mg/L	mgL	ngL	mgiL	pH mgL	mgL	ngL ngL	ngL	mgL mgL i	ngL mgL	mgL mgL	ngL n	gL mgL	mgL	mgL mg1	L	μgL	µgL µgL	µ91. µ9	L µ9L µ	μL μgL μ	JL mgL	mgL	mg"L mg
	23/09/2014 ME 11/12/2014 ME	5 10:55am 5 9:30am	TB 4.67 TB 7.4	7660 1 9680	15.4 2 15 3.0	2.1 112.9 L01 -40.2	9 6.20 2 5.03	0 827.78 3 828.95	CA1402938-0 CA1404096-0	002 0.1 0.		0.2	532 7 513 8	340 156 800 178	628 843	6.5 5.2	391 417	4.05 5740 7.62 5710	9530 9300		0.016	0.159 0	0.0047		224 188				~			400					
5 Minimum	26/06/2015 ME	5 10:20:00 AM	JE 4.14 4.14	6869 15 6674.8 15	0.99	-40.2	6.35 5.03	5 <u>827.63</u> 827.63	CA1502546-0	001 0.1 0	1 1	0.2	568 8 513 7	120 143 340 143	757	5.9 5.2	378 356	4.28 6160 4.05 5330	9570 9000	0.01 26.9	0.024 0.006	0.178 0	009 0.0013	34.6 0.0001	118 118	6.8 0.05	0.01	0.002 0.00	12	1	20 50	100 5	0 1	2 2	2 0.05	5	a.0034 0.
Maximum Average StdDev			7.4 5.285 1.447814445	9680 17.1 7720.95 15.67 1373.7832 0.9623	1 3.51 775 2.4025 3019 1.10789214	112.9 36.35 43 108.2580482	6.35 5.945 2 0.614084685	828.95 828.035 0.614084685		0.1 0.	1 1 1 1	0.2 0.2 0	568 8 539.25 8 23.02715788 597	800 178 100 155.7 1041 15.84034	843 5 743 1932 88.359	6.5 5.85 116 0.5322906 :	417 385.5 25.48855953	7.62 6160 5.035 5735 1.72593 339.2639	9570 9350 261.91602	0.01 26.9 0.01 26.9 #DIV/01 #DIV/01	0.024 0.014 0.00783156	0.178 1.15 0 0.16275 1.15 0 0.01072 #DIVIO! 0.0	0225 0.0047 0225 0.0019325 124766 0.00189	34.6 0.0001 34.6 0.0001 #DIV/01 #DIV/01	226 189 50.4513 #E	6.8 0.05 6.8 0.05 XV/0! #DIV/0!	0.01 0.01 #DIV/01	0.002 0.00 0.002 0.00 #DIV/0! #DIV	12 12 //01	1 #DIV/0!	20 50 20 50 #DIV/0/ #DIV/0/	100 5 100 5 #DIV/0! #DI	0 1 0 1 //0/#DIV/0/#D	2 2 2 2 NOI #DIVIOI #D	2 0.05 2 0.05 W0! #DIV/0!	5 5 #DIV/0!	.0034 0. J.0034 0. #DIV/0! #D
Count			4	4 4	4	2	4	4		4 4	4	4	4	4 4	4	4	4	4 4 Table 7.6 -	4 Groundwa	1 1 vater Results - M	4 B6	4 1	4 4	1 1	4	1 1	1	1 1		1	1 1	1 1	1	1 1	1 1	1	1
Statistics	Field Information				Dissolved	Oxidation-		4	Analytical Infor	mation	Akainity	as Nitrogen	Con	tuctivit Dissolve	ed Dissolv	ed Dissolved	Dissolved		Total	Chromium Dissolved	Dissolved	Dissolved Dissolved Dis	solved Dissolved	Dissolved Dissolved	Dissolved _			Organo- Organo-ch	osphate Poly	cyclic Aromatic	TPH C6- TPH C10-	TPH C15- TPH	229-	Ethyl	Total	Total Organic	Total
11436	Date Site Cod	AMIRt*	ner pH	Conductivity Tempera	oxygen	Potential	Depth to Water	mC water Level	Code	ate Carbo	CaCOS	) (ammonia)	chiende built	y Calcium	n Magnes	ium Potassium	Sodium	pH Sulphate	Solids	(Hex) Aluminium	Arsenic	Cadmium Cobalt C	opper Lead	e Mercury	Zinc Flu	onde Nitrate	Netribe	esticides pestici	ides H	lydrocarbons	C9 C14	C28 C3	6 Benzene Tok	Benzene Xy	Phenois	Catton	arium Total Ch
	23/09/2014 MB6	10:25am TB	на рн 6.27 6.4	4860 16.2	2 3.07	mv 22.1 15.7	6.3	789.91 700.27	CA1402938-0	mgr. mg 003 34.9 0	nu mg/L 1 1	0.8	1300 5	110 33.4	294	13.5	423 402	5.6 817	mgL 3650	ngi ngi	giL 0.004	-rgit mgit i 0.0224	-y- mgr. 0.01 0.0018	ngı mgı.	12.7 ft. 4	ar ugr	gL	yr- mgi	-	19°	Mar Mar	HBr HB	- нуг н	r- 191 H	r- mgiL	mgL	-9° m
	29/04/2015 MB6 25/06/2015 MB6	2:15pm JE/R 12:20:00 PM JE	Be 6.07 5.3	4288.8 15.6 4690 15.5	52 1.59 51 2.98	1007	5.74 5.69	790.47 790.52	CA1501601-0 CA1502527-0	006 34.5 0. 005 34.2 0.	1 34 1 34	0.1	1400 5	520 35.1 450 32.8	351 331	13.5	472 490	5.53 838 5.69 862	3940 3840	0.01 0.172	0.004	0.0254 0.0083 0 0.0239 0	017 0.0007	1.4 0.0001	13.1 9.79	0.8 0.12	0.01	0.002 0.00	12	1	20 50	100 5	D 1	2 2	2 0.05	4	1.0276 0.1
2014/15 Minimum Maximum Average			5.3 6.4 6.01	4288.8 15.51 5300 16.2 4784.7 15.807	1 1.59 2 4.88 175 3.13	15.7 22.1 18.9	5.69 6.3 5.9175	789.91 790.52 790.2925		34.1 0. 34.9 0. 34.425 0.	1 1 1 34 1 25.75	0.1 0.8 0.3	1300 5 1490 5 1405 54	110 32.8 570 35.1 12.5 33.7	294 351 317.5	13.2 13.5 13.4	423 492 469.25	5.53 817 5.69 862 5.61 841.25	3650 4140 3892.5	0.01 0.172 0.01 0.172 0.01 0.172	0.004 0.008 0.005	0.0224 0.0083 0 0.0274 0.0083 0 0.024775 0.0083 0	0.01 0.00011 022 0.0018 01675 0.0008025	1.4 0.0001 1.4 0.0001 1.4 0.0001	9.79 ( 13.1 ( 11.4975 (	1.8 0.12 1.8 0.12 1.8 0.12	0.01 0.01 0.01	0.002 0.00 0.002 0.00 0.002 0.00	12 12 12	1	20 50 20 50 20 50	100 50 100 50 100 50		2 2 2 2 2 2 2	2 0.05 2 0.05 2 0.05	4 4 4	.0276 0.0 /.0276 0.0 0.0276 0.0
StdDev Count			0.492409044 4	418.76369 0.30890	1.34909846 4	64 4.5254834 2	0.276932603	0.276932603		0.3594 0	16.5 4	0.3366502	79.37253933 207 4	5853 0.983192 4 4	208 28.3372 4	55 0.1414214 4	32.11827102 0 4	065828 18.92749 4 4	204.18537 4	#DIVIO: #DIVIO: 1 1	0.002	0.002136 #DIVIOI 0.0 4 1	49917 0.0007132	#DIVI0! #DIVI0! 1 1	1.64662 #D 4	NO: #DNO: 1 1	#DIVIO! 1	#DIVIO: #DIV 1 1	101	#DIV/0!	#DIV/01 #DIV/01 1 1	#DIV/0! #DI/ 1 1	//0! #DIV/0! #DI 1	VIO! #DIVIO! #D	V/0! #DIV/0!	#DIV/01	DIVIOI #DI 1 7
Statistics	Field Information								Analytical Infor	mation								Table 7.7 -	Groundwa	ater Results - M	B7															1 1	
SML20	Date Site Cod	a Time Samp	iler pH	Conductivity Tempera	ature Dissolved Oxygen	d Oxidation- Reduction Potential	Depth to Water	r RL Water Level	Laboratory Sampl Code	le Bicarbon Carbo	nate Alkalinity CaCOS	(as Ntrogen ) (ammonia)	Chloride Con	y Dissolve y Calcium	ed Dissolv Magnesi	ed Dissolved ium Potassium	Dissolved Sodium	pH Sulphate	Total Dissolved Solids	Chromium Dissolved (Hex) Aluminium	Dissolved Arsenic	Dissolved Dissolved Dis Cadmium Cobalt C	solved Dissolved Lead	Dissolved Manganes e Mercury	Dissolved Flu	oride Ntrate	Ntrite	Organo- chibrine Organo-ph pestici	osphate Poly ides H	cyclic Aromatic 1 lydrocarbons	TPH C6- C9 C14	TPH C15- C28 C3	6 Benzene Tok	ene Ethyl Xy Berzene Xy	ene Total Phenois	Total Organic Catton	Total Sarium Total Ch
EPL 11436	23/09/2014 MP	AM/PM Initia	is pH	µS/cm °C 7850	mg/L	mV	m 8 3.16	m RL 785.04	C41402939.4	mg/L mg	L mg/L	mgL 0.1	mg1L μ1	Siom mg/L	mgL 546	mgL	mg/L 528	pH mg1L	mgL 5840	ngL ngL	mg/L	ngL ngL n	ngL ngL	mgL mgL	mgL m	gL ngL	ngL	mg1L mg1	L	μgiL	µgL µgL	н9 <sup>1</sup> н9	L µgL µ	րե բցե բ	jiL mgiL	mgʻL	mgL mg
	11/12/2014 ME 30/04/2015 ME	7 11:10am 7 9:15am JE/	TB 6.90 Rbe 7.30	8090 1 7476.8 19	14.8 5. 5.75 0.1	134 14.1	1 3.30	0 785.77 9 785.58	CA1404096-0 CA1501602-0	004 644 0.	1 644	0.1	2570 8 3240 9	530 302 880 373	482	11 11.3	547 589	7.19 167 6.77 154	6710 6380	0.01 0.009	0.015	0.00737 0 0.00099 0.0034 0	078 0.0002	0.422 0.0001	0.905	0.46	0.01	0.002 0.00	2	1	20 50	100 50	0 1	2 2	2 0.05	11	0.111 0.00
2014/15 Minimum Maximum	25/06/2015 ME	11:15	JE 6.37 6.24 7.30	8161 1 7476.80 14.80 8161.00 15.75	10.4 2.1 10 0.91 15 5.81	14.10 23.80	3.39 3.16 3.49	785.68 785.58 785.91	CA1502527-0	665 0. 633.00 0.1 697.00 0.1	0 665 0 633.00 0 697.00	0.1	3160 9 2540.00 81 3240.00 98	500 337 80.00 291.00 80.00 373.00	658 0 482.0 0 686.0	11.9 0 11.00 0 11.90	610 528.00 610.00	6.89 270 6.77 154.00 7.19 270.00	6700 5840.00 6710.00	0.01 0.01	0.015 0.01 0.02	0.00 0.	312 0.0009 0.01 0.00 0.31 0.00	0.42 0.00 0.42 0.00	10.4 0.11 0 10.40 0	.60 0.46 .60 0.46	0.01	0.00 0.0	0	1.00	20.00 50.00 20.00 50.00	100.00 50. 100.00 50.	00 1.00 2. 00 1.00 2.	00 2.00 2 00 2.00 2	00 0.05	11.00 11.00	0.11 0.0
Average StdDev Count			6.70 0.657609307 4	7894.45 15.36 483.80246 0.24748 4 4	16 3.54 1874 0.83438600 4	18.95 02 #DIV/0! 2	3.34 0.070710678 4	785.74 0.070710678 4		659.75 0.1 22.6274 0 4 4	0 659.75 22.6274 4	0.10 17 0 4	2877.50 90 56.56854249 197 4	17.50 325.75 9899 25.45584 4 4	5 593.0 412 19.798 4	0 11.38 99 0.4242641 4	568.50 14.8492424 0 4	7.00 190.25 084853 82.02439 4 4	6407.50 226.27417 4	0.01 0.01 #DIVIOI #DIVIOI 1 1	0.01 0.001414214 4	0.02 0.00 0.047878 #DIVIO 0.2 4 1	0.13 0.00 170818 0.000495 4 4	0.42 0.00 #DIVIO! #DIVIO! 1 1	3.18 0 7.278957 #D 4	60 0.46 NOI #DIVIOI 1 1	0.01 #DIVIO! 1	0.00 0.0 #DIVIO! #DIV 1 1	0	1.00 #DIV/0!	20.00 50.00 #DIV/01 #DIV/01 1 1	100.00 50. #DIV/0! #DIV 1 1	00 1.00 2. //0/ #DIV/0! #DI 1	00 2.00 2 VIDI #DIVIDI #D	00 0.05 V/0! #DIV/0! 1 1	11.00 #DW/0	0.11 0.0 OIV0/ #DIV 1 1
	The second second					-			1		,	-						Table 7.8 -	Groundwa	ater Results - M	B 8		-														
SML20	Date Site Cod	e Time Samp	iler pH	Conductivity Tempera	ature Dissolved	d Oxidation- Reduction	Depth to Water	r RL Water Level	Laboratory Sampi	le Bicarbon Carbo	nate Alkalinity	as Nitrogen	Chloride Con	tuctivit Dissolve	ed Dissolv	ed Dissolved	Dissolved	pH Sulphate	Total Dissolved	Chromium Dissolved	Dissolved Arsenic	Dissolved Dissolved Dis Cadmium Cobalt	solved Dissolved	Dissolved Marganes Merceri	Dissolved Flu	oride Ntrate	Ntrite	Organo- chibrine Organo-ph	osphate Poly	cyclic Aromatic 1	TPH C6- TPH C10-	TPH C15- TPH (	C29- Benzene Tok	ene Ethyl Xy	ene Total Phaseire	Total Organic Cathon	Total Barium Total C
EPL 11436		AM/PM Initia	its pH	µS/cm °C	mgiL	Potential mV	m	m RL		mgL mg	L mg/L	mgL	mg1L µ1	Sion mg/L	mgL	ngL	mgiL	pH mg1L	Solids mg/L	ngL ngL	ngL	mgL mgL r	ngL mgL	mgL mgL	ngL n	gL mgL	ngL	rigiL rigi	L 1	μgL	µgL µgL	μg1_ μg	L µ9L µ	μL μgL μ	pL mgL	mgL	mgL mg
	22/09/2014 ME 9/12/2014 ME	8 11:40am 8 10:00am	TB 6.24 TB 5.55	3340 1 3320 1	15.1 <u>3.</u> 16.3 2.	L19 23.8 174 61.8	8 3.23 8 4.04	3 749.34 4 748.53	CA1402912-0 CA1404016-0	003 578 0. 003 573 0	1 578 1 573	0.1	738 3 756 3	490 89.8 510 90.7	129 132	2	413 435	7.28 111 7.32 112	2130 2190		0.004	0.00026 0	008 0.0003		0.021			0.000	~		~	400					0.0050
	1/05/2015 ME 25/06/2015 ME	e 11:00am JE/F 8 1:30:00 PM	JE 6.83	28899.9 15 3041 15	15.24 1.	.12	4.11 3.9	748.46 748.67	CA1501636-0 CA1502527-0	uvo 588 0 006 579 0	588 1 579	0.1	835 3 832 3	ຄວນ 98.6 600 98.6	135 138	2.1 2.2	390 426	7.22 101 7.22 122	2130 2160	0.021	0.004	0.00052 0	0.0004	0.0001	0.21	5.62	0.01	0.002	w.	1	20 50	100 5			0.05	2	.uobi 0.0
2014/15 Minimum Maximum Average			5.55 7.68 6.575	2889.9 15.1 3340 16.3 3147.725 15.497	1 1.13 3 3.19 175 2.0625	23.8 61.8 42.8	3.23 4.11 3.82	748.46 749.34 748.75		573 0. 588 0. 579.5 0.	1 573 1 588 1 579.5	0.1 0.1 0.1	738 3 835 3 790.25 3	490 89.8 620 98.6 555 94.425	129 138 5 133.5	2 2.2 2.1	390 435 416	7.2 101 7.32 122 7.255 111.5	2130 2190 2152.5	0.01 0.021 0.01 0.021 0.01 0.021	0.003 0.004 0.00375	0.00005 0.0004 0 0.00052 0.0004 0 0.000243 0.0004 0	002 0.0002 008 0.0004 0055 0.000275	0.0046 0.0001 0.0046 0.0001 0.0046 0.0001	0.005 0.21 0.0975	1.1 5.62 1.1 5.62 1.1 5.62	0.01 0.01 0.01	0.002 0.00 0.002 0.00 0.002 0.00	12 12 12	1 1	20 50 20 50 20 50	100 50 100 50 100 50		2 2 2 2 2 2 2 2	2 0.05 2 0.05 2 0.05	2 2 2	.0956 0.002 .0956 0.002 3.0956 0.00
StdDev			0.903493221	219.4784 0.54469	941 1.05846980	07 26.87005769	0.40290611	0.40290611		6.245 0	6.24495	в 0	50.49339891 64.	54972 4.834856	082 3.87298	33 0.0816497	19.54482029 0	055076 8.582929	28.722813	#DIVIO# 101/10#	0.0005	0.000204 #DIV/0/ 0	003 9.574E-05	#DIVIO: #DIVIO!	0.100427 #D	N/0! #DIV/0!	#DIV/01	#DIVI01 #DIV	101	#D(V/0! :	#DIV/01 #DIV/01	#D(V/0! #D1	//0! #DIV/0! #DI	VI0! #DIVI0! #D	10/VIC# 10/V	#DIV/0	OIVI0 #DIVI0

	and the second																	Table 7.9	Groundwa	ater Results - I	MB 10															· · · · · · · · · · · · · · · · · · ·
Stat	stics Field	Information				Dissoluted	Oxidation-		Analy	vtical Information		kalobu (ac Mitmano		notesticit Directi	and Director	Directured	Directord		Total	Changing Directly	and Direction	Dissolved Dissolv	Discoluted Disc	Dissolved	Direction Direct	104		Organo-	Oranao aboratorio	Polycyclic America	TRUCE TO			Ethul T	tal Total Oraccia	Total
SML20	D	late Site Cod	de Time 3	Sampler pH	Conductivity Temps	erature Oxygen	Reduction D Potential	Depth to Water RL	Water Level	Code ate	Carbonate	CaCO3) (ammonia)	Chloride	y Calciu	um Magnesik	um Potassium	Sodium	pH Sulphan	Dissolved Solids	(Hex) Alumini	ium Arsenic	Cadmium Cobal	Copper L	ad Manganes	Mercury Zir	rc Fluoride	Ntrate Ntrite	chibrine pesticides	pesticides	Hydrocarbons	C9	C14 C28 C36	Benzene Toluene	Benzene Xylene Ph	nois Carbon	Barium Total Chromium
EPL	23/0	9/2014 MB10	AM/PM 0 09:50am	TB DH	uS/om * 5.99 7050	C malL 15.5 4.3	mV 38 37.9	m 1.73	m RL 782.07 C	maiL CA1402938-005 242	0.1	242 0.1	939	uS/cm mo/L 7360 512	e 676	1.4	457	6.99 3750	7300	nol nol	0.003	0.00057 mol	0.015 0.0	ol. mol. 1002		IL mol. 91	nol nol	Jon	nol	Jou	uol	uol uol uol	uol uol	n Jau Jau	fL molL	moi moi
	9/12 29/0	2/2014 MB10 4/2015 MB10	0 10:10am 0 11:00am	TB JE/RBe	5.9 7060 7.41 6026.4	16.2 3.3 15.3 0.8	38 43.1 13	1.64	782.16 C	CA1404016-004 234 CA1501601-002 252	0.1	234 0.1 252 0.1	966 990	7540 514 7630 519	655	1.2	480 470	6.98 3700 6.84 3480	7950	0.01 0.03	0.004	0.00014	0.008 01	002 0.101	0.0001 0.0	18	0.05 0.01	0.002	0.002	1	20	50 100 50	1 2	2 2 0	5 5	0.0054 0.003
2014/15 Mir	26/0	6/2015 MB10	12:00PM	JE 5.9	6.56 6368	15.21 1.4	37.9	3.23	780.57 C	CA1502546-004 253 234	0.1	253 0.1	1040	7490 502	2 714	1.2	483	7.03 3960	7080	0.01 0.03	0.002	0.00005 0.002	0.007 0.0	005 0 101	0.0001 0.0	01 03	0.05 0.01	0.002	0.002		20	50 100 50	1 2	2 2 0	6 5	0.0054 0.003
Ma	imum			7.41	7060 16	6.2 4.38	43.1	3.23	782.16	253	0.1	253 0.1	1040	7630 519	732	1.4	483	7.03 3960	7950	0.01 0.03	1 0.004	0.00127 0.002	0.015 0.0	005 0.101	0.0001 0.2	1 0.3	0.05 0.01	0.002	0.002	1	20	50 100 50 50 100 50	1 2	2 2 0	15 5 16 5	0.0054 0.003
Sh	Dev			0.6944782	21 514.52765 0.448	83581 1.661906536	6 3.676955262 (	0.892762566 0.	892762566	8.9953	57 <u>0</u> 8.	99536918 0	42.89813516 1	12.6943 7.13559	1543 35.0654	15 0.1 1	1.73314394	0.082865 197.040	6 374.74436	#DIVIO1 #DIVI	0.000816497	0.000557 #DIV/	0.0038622 0.0	0015 #DIVIO!	#DIV/01 0.092	1637 #DIV/01	#DIVIO #DIVIO	#DIV/01	#DIV/01	#DIV/0!	#DIV/0! #	DIVIO: #DIVIO: #DIVIO	#DIV/0! #DIV/0!	#DIV/01 #DIV/01 #D	//0! #DIV/0	#DIVIO: #DIVIO
c	sunt			4	4	4 4	2	4	4	4	4	4 4	4	4 4	4	4	4	4 4	4	1 1	4	4 1	4	4 1	1 4	. 1	1 1	1	1	1	1	1 1 1	1 1	1 1	1	1 1
																		Table 7.10	- Groundw	ater Results -	MB 11															
Stat	stics Field	Information					Oxidation.		Analy	ytical Information							_		Total					Dissolved				00000							_	
SML20	D	late Site Cod	de Time S	Sampler pH	Conductivity Temps	erature Dissolved Oxygen	Reduction D	Depth to Water RL	Water Level	Code Bicarbo	on Carbonate A	CaCO3) (ammonia)	Chloride C	y Calciu	ved Dissolve am Magnesik	ad Dissolved um Potassium	Dissolved Sodium	pH Sulphan	Dissolved	(Hex) Dissolution	ved Dissolved ium Arsenic	Cadmium Cobal	d Dissolved Diss	olved Manganes	Dissolved Disso Mercury Zir	ived Fluoride	Ntrate Ntrite	chiprine	Organo-phosphate pesticides	Polycyclic Aromatic Hydrocarbons	C9	C14 C28 C36	Benzene Toluene	Ethyl Xylene T Benzene Ph	tal Total Organis nois Carbon	Total Barium Total Chromium
EPL			AMPM	Initials pH	uS/cm *	C mal	mV	m	mRL	mol	mail	mgL mgL	mal	uS/cm mail	mal	mal	mal	oH mol.	mal	noL noL	L moL	mai mai	meL m	oL moL	meL me	L mal	ngL ngL	mal	mel	uo L	ugL	ual ual ual	upl upl	uoL uoL m	íL maíL	moL moL
11436	24/0	9/2014 MB11	10:25am	TB	4.33 34600	13.7 3.8	131.2	1.55	782.25 CA140	02965-001 0.1	0.2	1 0.2	1810	37000 435	6670	6	1750	3.82 48600	77300	ů ů	0.116	34.3	159 0.1	238	61	40			,		10	10 10 10	10 10	10 10		· ·
	15/1:	2/2014 MB11 4/2015 MB11	10:20am	TB JE +Rbs	3.85 35200 4.46 32781.6	17.9 2.7 17.85 3.0	71 160.7	1.43	782.37 CA1404 782.12 CA1501	04138-001 0.1 01232-001 0.1	0.1	1 0.3	2190 1840	36600 476 39800 418	6560 7110	6	1870	3.8 46600 3.6 54200	75900	0.01 344	0.032	25.8 35.3 10.9	176 0.1	202 236	0.0001 48	40 90 170	0.05 0.01	0.002	0.002	0.001	20	50 400 180	1 2	2 2 0	14	0.0371 0.01
2014/15 Mir	25/0	6/2015 MB11	10:40	JE 3.85	4 26458 26458 13	14.76 5. 3.7 2.71	131.2	1.52	782.28 CA1500 782.12	02527-001 0.1	0.1	1 0.3	1880	31900 396 31900 396	4980	3.2	1370	4.01 39200 3.6 39200	59000	0.01 344	0.032	23.6 10.9	122 0.0	131 538	0.0001 39	70 170	0.05 0.01	0.002	0.002	0.001	20	50 400 180	1 2	2 2 0	16 14	0.0371 0.01
Ma	imum			4.46	35200 17	7.9 5.1	160.7	1.68	782.37	0.1	0.2	1 0.3	2190	39800 476	7110	6	1870	4.01 54200	87600	0.01 344	0.116	35.3 10.9	176 0.0	252 538	0.0001 61-	40 170	0.05 0.01	0.002	0.002	0.001	20	50 400 180 50 400 180	1 2	2 2 0	16 14	0.0371 0.01
Sh	Dev			0.2831960	45 4002.269 2.148	85712 1.062367635	9 20.85965005 (	0.103440804 0.	103440804	0	0.05	0 0.05	175.6891194 3	275.541 33.8366	1725 930.841	91 1.3266499 2	23.8116768	0.167606 6199.73	1 11844.127	#DIVIO: #DIVIO	01 0.043920383	5.914107 #DIV/0	31.267662 0.00	54101 #DIVIO!	#DIV/01 1005	.866 #DN/0!	#DIVIO #DIVIO	#DIV/01	#DIV/0!	#DIV/0!	#DIV/01 #	DIVIO: #DIVIO: #DIVIO	#DIVI0: #DIVI0:	#DIVID: #DIVID: #D	//0! #DIV/0	#DI//0/ #DI//0/
c	sunt			4	4	4 4	2	4	4	4	4	4 4	4	4 4	4	4	4	4 4	4	1 1	4	4 1	4	4 1	1 4	. 1	1 1	1	1	1	1	1 1 1	1 1	1 1	1	1 1
																		Table 7.11	- Groundw	ater Results -	MB 12															· · · · · · · · · · · · · · · · · · ·
Stat	stics Field	Information				Dissoluted	Oxidation-		Analy	ytical Information		kaloitu (ac Mitmano	0	notesticit Directi	and Director	Directured	Directured		Total	Changing Directo	nd Directured	Dissoluted Dissolu	Discoluted Disc	okent Dissolved	Direction Direct	104		Organo-	Oranao aboratana	Polycyclic America	TRUCE TO			Ethul T	Total Orangi	Total
SML20	D	late Site Cod	de Time S	Sampler pH	Conductivity Temps	erature Oxygen	Reduction D	Depth to Water RL	Water Level	Code ate	Carbonate A	CaCO3) (ammonia)	Chloride	y Calciu	um Magnesik	um Potassium	Sodium	pH Sulphan	Dissolved Solids	(Hex) Alumini	ium Assenic	Cadmium Cobal	Copper L	ad Manganes	Mercury Zir	ne Fluoride	Ntrate Ntrite	chibrine	pesticides	Hydrocarbons	C9	C14 C28 C36	Benzene Toluene	Benzene Xylene Ph	nois Carbon	Barium Total Chromium
EPL			AM/PM	Initials pH	µS/cm *	'C mgiL	mV	m	m RL	mgL	mgL	mg/L mg/L	mgL	µS/cm mg/L	. mgL	mgL	mgiL	pH mg1L	mgL	mgt. mgt	L mgL	mgL mgL	ngL n	gL mgL	mg1. mg	rL mgL	mgi. mgi.	mg1_	mg/L.	μgt	µgL	µցև µցև µցև	µgL µgL	µgL µgL m	/L mgL	mgL mgL
/1436	24/0	9/2014 MB	12 10:30am	тв	4.12 38200	15 4.0	06 144.1	1.4	778.55 C	CA1402955-002 0.1	0.1	1 0.6	1900	40800 466	7440	10.8	2210	3.62 56000	91000		0.157	40.7	233 0	511	72	50		-	-							
	15/1 2/04	2/2014 MB 4/2015 MB	12 10:30am 12 11:50am	TB JE +Rbe	3.91 37600 4.44 32026.4	16.1 2.4 15.84 0.6	41 156	2.16	779.05 C	CA1404138-002 1 CA1501232-002 0.1	0.1	1 0.6	2360	40500 460 40200 279	2 7580 6420	8.1	2280 1990	3.57 57100 3.49 56000	92300	0.01 0.27	0.045	29.6 35.5 12.5	254 0. 128 1	13 567	0.0001 48	90 60 162	0.05 0.01	0.002	0.002	1	20	50 100 50	1 2	2 2 0	16 14	0.024 0.022
2014/15 14/	25/0	6/2015 MB	12 10:50	JE 3.67	3.67 <u>33267</u> 32026.4 14	14.85 1.9	144.1	2.18	77.77 C	CA1502527-002 0.1	0.1	1 0.7	2180	40200 442 40200 279	6740 6420	7.4	2030 1990	3.65 57500 3.49 56000	89000	0.01 0.27	9 0.045	34.7 29.6 12.5	234 1 128 0	05	0.0001 49	50 162	0.05 0.01	0.002	0.002	1	20	50 100 50	1 2	2 2 0	15 14	0.024 0.022
Ma	imum			4.44	38200 16	6.1 4.06	156	2.18	779.05	1	0.1	1 0.7	2360	40800 466	7580	11.8	2280	3.65 57500	92300	0.01 0.271	9 0.157	40.7 12.5	254 1	13 567	0.0001 72	50 162	0.05 0.01	0.002	0.002	1	20	50 100 50 50 100 50	1 2	2 2 0	15 14	0.024 0.022
Auto	nagé Dev			4.035 0.3266496	352/3.35 15.4 159 3084.7315 0.619	++/5 2.2825 56501 1.397792903	150.05 3 8.414570696 (	1.65 0.623324421 0.	1/623324421	0.325 0.45	0	0 0.05	20/5 237.416652 2	40425 411.7 87.2281 89.0856	-5 /045 3296 555.547	9.525 78 2.1093048 1	2127.5 139.6125591	3.5625 56650 0.06994 768.114	90675 6 1369.6107	#DIVIO #DIVI	9 0.0%225 01 0.0506055	30.125 12.5 4.543402 #DIV/0	212.25 0.3	000 567 54154 #DIVIO	#DIV/01 1113	2.5 162 .564 #DN/0!	#DIVIO #DIVIO	#DIV/0!	#DIV/01	#DIV/01	#DIV/0/ #	50 100 50 EDIVIO! #DIVIO! #DIVIO!	#DIV/0! #DIV/0!	#DIVI0 #DIVI0 #D	/0 14 //0! #DIV/0!	#DIV/0 #DIV/0
c	sunt			4	4	4 4	2	4	4	4	4	4 4	4	4 4	4	4	4	4 4	4	1 1	4	4 1	4	4 1	1 4	1	1 1	1	1	1	1	1 1 1	1 1	1 1	1	1 1
					· · ·													Table 7.12	- Groundw	ater Results -	MB 13													· · · · ·		
Stat	stics Field	1 Information					Oxidation.		Analy	ytical Information		and all a loss		-			Street, it		Total			Transfer 1		Discoluted	Course of Co			Oppose.	0	Delawards in	779167			-		Test
SML20	D	late Site Cod	de Time S	Sampler pH	Conductivity Temps	erature Oxygen	Reduction D	Depth to Water RL	Water Level	Code ate	Carbonate A	CaCO3) (ammonia)	Chloride C	y Calciu	um Magnesik	um Potassium	Sodium	pH Sulphan	Dissolved	(Hex) Alumini	ium Arsenic	Cadmium Cobal	Copper L	ad Manganes	Mercury Zir	re Fluorida	Ntrate Ntrite	chibrine	pesticides	Hydrocarbons	C9	C14 C28 C36	Benzene Toluene	Benzene Xylene Ph	nois Carbon	Barium Total Chromium
EPL			AMPM	Initials pH	uS/cm *	C mall	mV	m	mRL	mol	mail	mgL mgL	mal	uS/cm mail	mal	mat	mal	oH mol.	mal	noL noL	L mol	mai mai	meL m	oL moL	meL me	L mal	ngL ngL	mail	mel	uoL	ugL	ual ual ual	upl upl	uoL uoL m	íL maíL	moL moL
11436	24/0	09/2014 MB	13 9:15am	тв	6.33 3320	15.8 3.9	18.4	2.18	746.48 C	CA1402955-004 616	0.1	616 0.1	747	3430 137	175	3.1	282	7.17 62.1	2020	-gg-	0.004	0.0093	0.06 0.0	91 - 91 004		87					-9-	N- N- N-	10- 10-	P9- P9		9292
	15/1	12/2014 MB	13 9:00am	TB JF #RBo	6.6 3290 7.68 2713.9	19.3 3.2	22 32	2.3	746.36 C	CA1404138-003 623 CA1501232-003 611	0.1	623 0.1	766	3420 138 3310 130	8 166	3.1	297	7.22 55.9	1990	0.01 0.33	0.003	0.00606	0.022 0.1	003	0.6	38 k7 0.7	0.68 0.01	0.002	0.002	1	20	50 100 50	1 2	2 2 6	16 8	0.0241 0.002
-	25/0	06/2015 MB	13 11:40	JE	6.9 2841.5	15.42 3.0	16	2.32	746.34 C	CA1502527-004 600	0.1	600 0.1	711	3350 134	166	3	285	7.3 85.2	2100		0.004	0.00092	0.011 01	002	0.2	31			0.000		~	CO 400 CO				0.0044 0.000
2014/15 Mir Ma:	imum			7.68	3320 15	9.3 3.94	32	2.68	746.48	623	0.1	623 0.1	773	3430 138	175	3.1	297	7.3 100	2350	0.01 0.33	4 0.006	0.0134 0.008	0.092 0.0	002 0.252	0.0001 0.8	1 0.7 17 0.7	0.68 0.01	0.002	0.002	1	20	50 100 50	1 2	2 2 0	15 8	0.0241 0.002
Aut	rage Dev			6.8775 0.583459	3041.35 16.6 51 309.10417 1.80	6125 2.715 24686 1.435304846	25.2 8 9.616652224 (	2.37 0.215715862 0.	746.29	612.5 9.6781	5 0.1 15 0 9.	612.5 0.1 67815409 0	749.25 27.76538612 5	3377.5 134.7 7.37305 3.59397	15 168 6442 4.690419	3.05 58 0.057735 6	286.75 1.946221995	7.22 75.8 0.057155 20.4751	2115 9 163.40135	0.01 0.334 #DIVI0/ #DIVI	4 0.00425 0/ 0.001258306	0.00742 0.008 0.005272 #DV/0	0.04625 0.0	004 0.252 0216 #DIV/0/	0.0001 0.65 #DIV/01 0.301	225 0.7 1377 #DN/0!	0.68 0.01 #DIV/0 #DIV/0	0.002 #DIV/01	0.002 #DIV/0!	1 #DIV/0!	20 #DIV/0/ #	50 100 50 EDIV/0! #DIV/0! #DIV/0!	1 2 #DIV/0! #DIV/0!	2 2 0 #D(V/0! #D(V/0! #D	15 8 //0! #DIV/0!	0.0241 0.002 #DIV/0/ #DIV/0/
c	sunt			4	4 .	4 4	2	4	4	4	4	4 4	4	4 4	4	4	4	4 4	4	1 1	4	4 1	4	4 1	1 4	1	1 1	1	1	1	1	1 1 1	1 1	1 1	1	1 1
· · · · · ·																		Table 7.13	- Groundw	ater Results -	MB 14															· · · · · · · · · · · · · · · · · · ·
Stat	stics Field	Information					Oxidation-		Analy	ytical Information									Total					Dissolved				Organo-								
SML20	D	late Site Cod	de Time S	Sampler pH	Conductivity Temps	erature Oxygen	Reduction D	Depth to Water RL	Water Level	Code ate	Carbonate A	CaCO3) (ammonia)	Chloride	y Calciu	um Magnesik	um Potassium	Sodium	pH Sulphan	Dissolved	(Hex) Alumini	ium Arsenic	Cadmium Cobal	Copper L	ad Manganes	Mercury Zir	rved Fluoride	Ntrate Ntrite	chiprine	pesticides	Hydrocarbons	C9	C14 C28 C36	Benzene Toluene	Benzene Xylene Ph	nois Carbon	Barium Total Chromium
EPL			AMPM	Initials pH	uS/cm *	C mall	mV	m	mRL	mol	mail	mgL mgL	mal	uS/cm mail	mal	mal	mal	oH mol.	mal	noL noL	L moL	mai mai	meL m	oL moL	meL me	L mal	ngL ngL	mail	mel	uoL	ugL	ual ual ual	upl upl	uoL uoL m	íL maíL	moL moL
11435	24/0	09/2014 MB14	09:35am	тв	6.71 3080	16.1 5.9	18 -3.1	9.25	783.12 C	CA1402955-004 283	0.1	283 0.1	129	3200 226	3 240	2	167	7.24 1540	2870		0.001	0.00163	0.012 0.0	002	0.1	18	÷ ;		,			10 10	10 10	10 10		
	15/1	12/2014 MB14 04/2015 MB14	9:35am 10:25am	TB JE/Rbs	6.86 3150 7.77 2590.2	16.9 3.2 14.76 2.3	27 -11.8	9.2	783.17 C 783.23 C	CA1404138-004 286 CA1501601-001 269	0.1	286 0.1 269 0.1	126	3310 249 3590 275	250	2.1	186	7.23 1720 7.38 1840	2990	0.01 0.05	0.001	0.00266	0.01 0.1	002 0.0436	0.0001 0.4	76 33 1	8.27 0.01	0.002	0.002	1	20	50 100 50	1 2	2 2 0	15 4	0.0049 0.002
2014/15	26/0	06/2015 MB14	12:30	JE 6.71	8.92 2952 3590.2 14	15.03 1.8	.41.0	9.11	783.26 C	CA1502548-005 273	0.1	273 0.1	128	3490 262	2 302	2.1	179	7.37 2120	3250	0.01 0.05	0.001	0.00015	0.003 01	002 0.0/26	0.00001 0.0	22 1	8.27 0.01	0.002	0.002		20	E0 100 E0		2 2 0	s 4	0.0049 0.002
Ma	imum			7.77	3150 16	6.9 5.98	-3.1	9.25	783.26	286	0.1	286 0.1	129	3590 275	309	2.1	186	7.38 2120	3250	0.01 0.05	5 0.002	0.00266 0.002	0.016 0.0	002 0.0436	0.0001 0.4	33 1	8.27 0.01	0.002	0.002	1	20	50 100 50	1 2	2 2 0	15 4	0.0049 0.002
Aur Sh	rage Dev			7.065 0.4782258	2943.05 15.6 188 249.10963 0.988	6975 3.37 86818 1.834139217	-7.45 7 6.151828996	9.175 0.06244998 0	783.195 0.06244998	277.75 8.0570	5 0.1 19 0 8.	277.75 0.1 .05708798 0	124.25 6.946221995 1	3397.5 253 75.3805 20.8965	275.25	2.075 77 0.05 8	176.5 3.020806277	7.305 1805 0.081035 243.515	3090 9 191.13695	0.01 0.05 #DIV/01 #DIV/	5 0.00125 01 0.0005	0.00171 0.002 0.001128 #DIV/0	0.01025 0.0	002 0.0436 0 #DIVI0!	0.0001 0.16 #DIV/01 0.184	225 1 1728 #DN/01	8.27 0.01 #DIV/0/ #DIV/0	0.002 #DIV/01	0.002 #DIV/0!	1 #DIV/0!	20 #DIV/0/ #	50 100 50 EDIV/0! #DIV/0! #DIV/0!	1 2 #DIV/0! #DIV/0!	2 2 0 #DIV/01 #DIV/01 #D	15 4 //01 #DIV/01	0.0049 0.002 #DIV/0/ #DIV/0/
c	sunt			4	4 .	4 4	2	4	4	4	4	4 4	4	4 4	4	4	4	4 4	4	1 1	4	4 1	4	4 1	1 4	1	1 1	1	1	1	1	1 1 1	1 1	1 1	1	1 1
																		Table 7.14	- Groundw	ater Results -	MB 15															· · · · · · · · · · · · · · · · · · ·
Stat	stics Field	Information				Reading	Oxidation-		Analy	ytical Information		terfalle (an Miles and		and the second	and Disaster	a manage	Developed		Total	Charles Charles	ad Danishad	Distant Distant		Dissolved	Distant Distant			Organo-	Courses advandants	Delayer to taxante	779100 77			794		Test
SML20	D	late Site Cod	de Time S	Sampler pH	Conductivity Temps	erature Oxygen	Reduction D Potential	Depth to Water RL	. Water Level	Code ate	Carbonate	CaCO3) (ammonia)	Chloride	y Calciu	m Magnesia	um Potassium	Sodium	pH Sulphan	Dissolved Solids	(Hex) Alumini	ium Arsenic	Cadmium Cobal	Copper Li	ad Manganes	Mercury Zir	Fluoride	Nitrate Nitrite	chiprine	pesticides	Hydrocarbons	C9	C14 C28 C36	Benzene Toluene	Benzene Xylene Ph	nois Carbon	Barium Total Chromium
EPL			AM/PM	Initials pH	µS/cm *	Jam D'	mV	m	m RL	ngL	. mgL	mgL mgL	mg1_	µS/cm mg/L	ngL	mgL	mgL	pH mg/L	mgL	ngL ngL	L mgL	mgL mgL	mgL m	gL mgL	mgL mg	L mgL	ngL ngL	mgL	mgL	μgL	μgL	µgL µgL µgL	Hor Hor	µgL µgL m	/L mg/L	mgL mgL
. 1430	24/0	09/2014 MB15	11:00am	TB 5.29	7340 1	14 3.13	77	0	764.86 C	CA1402955-005 493	0.1	493 0.1	460	7720 461	960	17.8	290	6.75 5440	8480		0.005	0.0624	0.183 0.1	002	10			-	-							
	11/1	14/2015 MB15	2:00pm .	ud 6.56 JE+Rbe 7.33	6575 16	5.78 2.64	8.2	0	764.86 C	CA1501210-001 502	0.1	+045 0.1 502 0.1	449 460	8000 483	3 1020	13.2 18.4	308 322	e.98 5240 6.74 5380	9000	0.01 0.00	0.004	0.00221 0.004	0.012 0.0	002 4.29	0.0001 0.0	87 0.4	0.05 0.01	0.002	0.002	1	20	50 100 50	1 2	2 2 0	9	0.0175 0.002
2014/15 Mir	24/0 mum	06/2015 MB15	12:30	JE 6.93 5.29	6344 13 6344 13	3.49 <u>6.56</u> 3.49 2.64	6.2	0	764.86 C	CA1502474-005 485 485	0.1	485 0.1 485 0.1	479 449	7770 470 7720 461	960	17.8	307 290	7.06 5990 6.74 5240	8590	0.01 0.00	9 0.002	0.00122 0.004	0.009 01 8 0.004 0.1	002 4.29	0.0001 0.0	31 87 0.4	0.05 0.01	0.002	0.002	1	20	50 100 50	1 2	2 2 0	15 9	0.0175 0.002
Ma	imum rane			7.33	7470 16	8.78 6.56 8925 4.0925	77	0	764.86	502	0.1	502 0.1	479	8000 483	5 1120	18.4	322 306.75	7.06 5990	9230 8815	0.01 0.00	9 0.005	0.0624 0.004	8 0.183 0.1	002 4.29	0.0001 10	1 0.4	0.05 0.01	0.002	0.002	1	20	50 100 50	1 2	2 2 0	15 9 15 9	0.0175 0.002
Au	Dev			0.882888	253 556.50719 1.47	10852 1.744789863	3 50.06316011	0	0	493.25	22 0 6	194622199 0	12.4632794	25.5654 10.0166	528 66.5206	73 2.4166092 1	13.09898215	0.162147 329.178	3 350.66603	101 0.00 k	0.001290994	0.028696 #DIVI	0.0873957	10VIC1 0	#DIVI01 4.89	2517 #DIVIO!	#DIVID #DIVID	#DIVI0!	#DIV/0	#DIVID!	#DIV/0	10/10a 10/10a 10/10a	#DIVIO: #DIVIO:	#DIV/01 #DIV/01 #D	10/VICI# 10/V	#DIV/01 #DIV/01
c	sans.			4	4		2	4	4	4	4	- 4	4	• 4	4	4	4	4 4	4	1 1	4	4 1	4	• 1	1 4	. 1	1 1	1	1	1	1	. 1 1	1 1	. 1	1	. 1
										dia di bata anda								Table 7.15	- Groundw	ater Results -	MB 16															
Stat	stics Field	information				Dissolution	Oxidation-		Analy	ytical Information		kolohu (ne Miter ana		notestial Direct	and Discussion	Directured	Directord		Total	Changing Direct	and Dissoluted	Distant Direct	Directured Pro-	Dissolved	Distant Dist	and .		Organo-	Orango, about hard	Robustic America	TRUCE. T	TRUCIO, TRUCIS, TRUCOS		Ethul -	tal Total Oreact	Total
SML20	D	late Site Cod	de Time S	Sampler pH	Conductivity Temps	erature Oxygen	Reduction D Potential	Depth to Water RL	. Water Level	Code ate	Carbonate	CaCO3) (ammonia)	Chloride	y Calciu	m Magnesia	um Potassium	Sodium	pH Sulphan	Dissolved Solids	(Hex) Alumini	ium Arsenic	Cadmium Cobal	Copper Li	ad Manganes	Mercury Zir	Fluoride	Nitrate Nitrite	chiprine	pesticides	Hydrocarbons	C9	C14 C28 C36	Benzene Toluene	Benzene Xylene Ph	nois Carbon	Barium Total Chromium
EPL			AM/PM	Initials pH	µS/cm *	Jigm D'	mV	m	m RL	mgiL	mgL	mg/L mg/L	mgL	µS/cm mg/L		ngL	mg/L	pH mgL	mgL	ngL ngL	L mgL	mgL mgL	ngL n	gL mgL	mg1_ mg	rL mgL	ngL ngL	mgL	mgiL	μgL	μgt	µgL µgL µgL	µgL µgL	µgL µgL m	/L mg/L	ngL ngL
. 1430	24/0	9/2014 MB16	11:40am	TB 3.63	33600 1-	4.6 3.6	171.6	2.39	769.00 C	CA1402955-006 0.1	0.1	1 8.1	254	35900 267	7 506	4.8	160	3.2 57200	95900		0.152	29.6	174 0	447	77	30		-	-							
	11/1	2/2014 MB16 4/2015 MB16	s 10:20am s 11:40am .	15 3.68 JE +Rbe 3.99	33200 1 30414 18	5.5 2.9 8.35 4.38	169	2.4	768.99 C	CA1404096-006 0.1 CA1501210-002 0.1	0.1	1 8.3	253 260	35600 461 35900 429	7060	3.6	236 214	3.17 60600 3.01 60100	94000 94600	0.02 673	0.247 0.079	33.8 23.1 11.8	186 0. 86.8 0.	497 587 488	0.0001 53	90 60 228	1.02 0.01	0.002	0.002	1	20	50 100 50	1 2	2 2 0	24 32	0.0152 0.051
2014/15 Mir	24/0 mum	6/2015 MB16	10:55:00 AM	JE 3.19 3.19	31033 15 30414 1-	5.76 2.27 4.6 2.27	169	2.41 2.39	768.98 C	CA1502474-003 0.1 0.1	0.1	1 8.6 1 8.1	290 253	36100 471 35600 267	6540 506	3.2	208 160	3.21 76500 3.01 57200	94800	0.02 673	0.048	23.7 23.1 11.8	167 ( 86.8 0.	447 488	0.0001 53	50 60 228	1.02 0.01	0.002	0.002	T	20	50 100 50	1 2	2 2 0	24 32	0.0152 0.051
Ma	imum rane			3.99	33600 18	8.35 4.38	171.6	2.41	769 768 9875	0.1	0.1	1 8.6	290 264 25	36100 471	7060	4.8	236 204 5	3.21 76500	95900	0.02 673	0.247	33.8 11.8	186 0.	587 488 1775 499	0.0001 77	30 228 7.5 229	1.02 0.01	0.002	0.002	1	20	50 100 50	1 2	2 2 0	24 32	0.0152 0.051
Au	Dev			0.329380	732 1574,297 1.61	02872 0.908602407	7 1.838477631	0.009574271 0.	0.009574271	0.1	0	0 0.2217356	17.44276354	106.1553 95.0368	3496 3110.39	48 0.7804913 3	32.01562119	0.093229 8729.64	3 793.20027	#DIVIO: #DIVI	0.088485404	5.095423 #DIVI	45.12069 0.05	81571 #DIVIO	#DIVIOI 109	8.92 #DIVIO!	#DIVID #DIVID	#DIVI0!	#DIV/0	#DIVID!	#DIV/0	10/10a 10/10a 10/10a	#DIVIO: #DIVIO:	#DIV/01 #DIV/01 #D	VID: #DIV/0	#DIV/01 #DIV/01
C	unt			4	4	4 4	2	4	4	4	4	4 4	4	4 4	4	4	4	4 4	<b>6</b>	1 1	4	4 1	4	4 1	1 4	1	1 1	1	1	1	1	1 1 1	1 1	1 1	1	1 1
o	ation Field	Information			1		1 1		Analis	utical Informatic=	· · ·							1 able 7.16	- Groundw	ater Kesults -	MB1/		1													
Stat	suds rield	ormation				Dissolved	Oxidation-		J abor	pratory Sample Binarto		kalinity (as Nitroneo		onductivit Dissolu	red Dissolve	d Dissolved	Dissolved		Total	Chromium Discolu	ved Dissolved	Dissolved Dissolv	d Dissolved Diss	olved Dissolved	Dissolved Disso	hed a		Organo-	Organo-phosphate	Polycyclic Aromatic	TPH C6- TF	PHC10- TPHC15- TPHC20-		Ethyl T	tal Total Ornaria	Total
SML20	D	sate Site Coo	oe Time 3	Sampler pH	Conductivity Temps	erature Oxygen	Reduction D Potential	Depth to Water RL	water Level	Code ate	Carbonate	CaCO3) (ammonia)	Chloride	y Calciu	um Magnesik	um Potassium	Sodium	pH Sulphan	Dissolved Solids	(Hex) Alumini	ium Arsenic	Cadmium Cobal	Copper L	ad Manganes	Mercury Zir	ic Fluoride	Ntrite Ntrite	chibrine pesticides	pesticides	Hydrocarbons	C9	C14 C28 C36	Benzene Toluene	Benzene Xylene Ph	nois Carbon	Barium Total Chromium
EPL 11436			AM/PM	Initials pH	µS/cm *	-C mgiL	mV	m	m RL	mgiL	mg1_	mgL mgL	mg1_	µS/cm mg/L	ngL	mg1_	mg/L.	pH mg1L	mg1_	mgL mgL	. mgt.	mgL mgL	mgL m	gL mgL	mg1_ mg	rL mgL	ngL ngL	mg1L	mg/L	μgL	µg1.	µgL µgL µgL	µgL µgL	µgL µgL m	/L mg/L	ngL ngL
	240	9/2014 MB17	11:15am	TB 5.75	11210 1	16 3.98	51.7	3.4	767.67 C	CA1402955-007 507	0.1	507 0.1	535	11700 442	1880	19.9	538	6.47 9490	14400		0.008	0.0174	0.094 0	001	6	69 41										
	1/04	4/2015 MB17	12:15pm	JE +Rbe 6.88	10110 16	5.92 3.07	49.5	3.42	767.65 C	CA1501210-003 505	0.1	505 0.1	555	12300 441	1950	19.3	619	6.44 9290	15800	0.01 0.03	9 0.005	0.00686 0.061	2 0.018 0.0	22.3	0.0001 8	4 0.5	0.05 0.01	0.002	0.002	1	20	50 100 50	1 2	2 2 0	10	0.0193 0.003
2014/15 Mir	24/0 mum	6/2015 MB17	11:20	<u>.st 6.14</u> 5.75	1 10866 I 16 10110 19	5.38 <u>3.88</u> 5.3 3.07	29.5	3.33 3.06	767.65 C	CA1502474-004 481 481	0.1	481 0.1 481 0.1	540 530	12800 424 11500 424	1780	28.7 18.4	635 538	6.44 9200	16000	0.01 0.03	9 0.003	0.00686 0.061	2 0.018 0.0	002 22.3	0.0001 5.	41 0.5	0.05 0.01	0.002	0.002	1	20	50 100 50	1 2	2 2 0	15 10	0.0193 0.003
Ma: Ave	imum rage			6.88 6.225	11210 16 10789 16	5.92 4.44 5.15 3.8425	51.7 40.6	3.42 3.3025	768.01 767.7675	514 501 78	0.1	514 0.1 501.75 0.1	555 540	12600 442 12025 434 3	2 2130 25 1995	28.7 21.575	635 593	6.63 12700 6.52 10170	16000 15100	0.01 0.03	9 0.008 19 0.006	0.0184 0.061 0.012893 0.061	2 0.094 0. 2 0.057 n.n	001 22.3 0475 22.3	0.0001 10 0.0001 7	1 0.5 6 0.5	0.05 0.01	0.002	0.002	1	20 20	50 100 50 50 100 50	1 2 1 2	2 2 0	05 10 05 10	0.0193 0.003 0.0193 0.003
Sh	Dev			0.472898	362 475.03403 0.68	08818 0.569817222	2 15.69777054	0.166207701 0.	4	14.361	14 0 1	4.3614066 0	10.8012345	12.3475 8.73212	4598 147.535	31 4.789833 4	43.33589736	0.084459 1691.01	5 930.94934	#DIVIO #DIVI	0.00244949	0.005857 #DIVI	0.0376121 0.00	03594 #DIV/0	#DIVIO 2.07	5106 #DIV/0!	#DIVIO #DIVIO	#DIVI0!	#D(V/0)	#DIVID!	#DIV/01 4		#DIV/01 #DIV/01	#DIVIOI #DIVIOI #D	101/101 #DIV/01	NV/ICH NV/ICH
0				•	-		-	-		•	-		-		-	-	-		-		-		-													

																Table	7.17 - Gr	oundwater R	Results - E	ED3B															
EPL 11436	Date Site Co	de Time Sampler	рн С	Conductivity Temperature	Dissolved Oxidat Oxidat	tion- ction Depth to V	Water RL Water Level	Analytical Informatio	carbon Carbonate	Alkalinity (as	Nitrogen Chiori	ide Conductiv	it Dissolved	Dissolved Diss	alved Dissolver	в рн	Suphate Dis	fotal solved (Heat	an Dissolve	ed Dissolved	Dissolved Dissolved	d Dissolved Disso	Aved Dissolved Dissolved Manganes More	olved Dissolved	Fluoride N	trate Nitrite	Organo- chibrine	Organo-phosphate	Polycyclic Aromatic	TPH C6- TF	PH C10- TPH C15-	TPH C29- Berzene To	Luene Ethyl Xylene	Total Total C	Arganic Total Total Chromium
11430		AM/PM Initials	рН	µS/om °C	mg/L m/	ntial V m	m RL		ngiL mgiL	mg/L	mgL mgl	L µS/om	mg/L	mgL m	pL mg/L	рн	ngt, n	ngL ngL	ngL	mgL	ngL ngL	mgL mg	L mgL mg	pL mgL	ngL r	gL mgL	pesticides mg/L	ngL	µg1_	µgL	µgL µgL	µgL µgL	gL µgL µgL	mg1_ mg	yL mgL mgL
	23/09/2014 ED38 15/12/2014 ED38 30/04/2015 ED38	11:55am Ti 9:35am Ti 13:20pm JE/Rh	6.05 5.4 7.57	7180 13.1 7430 19.2 6168.8 14.44	5.95 4.42 4.34	34.9 72.2	0.7 786.10 0.9 785.90 2.56 784.24	CA1402938-006 CA1404138-005 CA1501602-004	485 0.1 538 0.1 522 16	485 538 538	0.1 192 0.1 189 0.1 181	0 7620 0 7850 0 7970	76.7 86.8 90.8	354 0 336 0 367 0	8 962 8 1010 9 996	6.95 6.94 7.52	953 4 1190 5 1130 5	4980 5300 5130 0.01	0.009	0.009	0.00165 0.0592 0.0053 0.0037	0.013 0.0	002 003 002 0.634 0.0	0.117 9.38 001 0.299	0.5	05 0.01	0.002	0.002	1	20	50 100	50 1	2 2 2 2	0.05	8 0.0408 0.005
	29/05/2015 D3B RE 24/06/2015 ED3E	TES 12:10:00 PM JE 3 10:15:00 AM JE	6.67	6200 13	7.09	2.6	784.20	CA1502025-001 CA1502474-001	497 0.1 467 0.1	497 467	0.1 235	0 7790	69.1	353 0	6 1110	7.32	1080 4	4960		0.008	0.0145	0.005 0.0	002	0.041											
2014/15 Minin Maxir Aven	um ium ige		5.4 7.57 6.4225	6168.8 13 7430 19.2 6744.7 14.935	4.34 34. 7.09 72. 5.45 53.5	19 0.7 12 2.6 55 1.69	784.2 786.1 9 785.11		467 0.1 538 16 501.8 3.28	467 538 505	0.1 181 0.1 235 0.1 1992	0 7620 0 7970 2.5 7807.5	69.1 90.8 80.85	336 0 367 0 352.5 0.3	.6 962 .9 1110 775 1019.5	6.94 7.52 7.1825	953 4 1190 5 1088.25 50	4960 0.01 5300 0.01 092.5 0.01	0.009 0.009 0.009	9 0.006 9 0.009 9 0.008	0.00165 0.0037 0.0592 0.0037 0.020163 0.0037	0.005 0.0 0.158 0.0 0.04675 0.00	002 0.634 0.0 003 0.634 0.0 1225 0.634 0.0	001 0.041 001 9.38 001 2.45925	0.5	105 0.01 105 0.01 105 0.01	0.002 0.002 0.002	0.002 0.002 0.002	1	20 20 20	50 100 50 100 50 100	50 1 50 1 50 1	2 2 2 2 2 2 2 2 2	0.05	8 0.0408 0.006 8 0.0408 0.006 8 0.0408 0.006
StdE Cou	ev nt		0.9241708 4	655.10332 2.9181444 1. 4 4	320681642 26.3750 4 2	08294 1.03105 2 4	1243 1.031051243 4	28	8.4377 7.1106962 5 5	31.9609136 5	0 242.813 4 4	33714 145.688 4	8 9.826664405 4	12.714821 0.129 4	8306 63.610795 4 4	573 0.286167 4	100.7584 157 4	7.77093 #DIV/0 4 1	0 #DIV/0 1	0/ 0.001414214 4	0.026581 #DIV/0/ 4 1	0.0742445 0.00	005 #DIVIOI #DI 1 1	1 4.615103 1 4	#DIV/01 #0	1 1	#DIV/01 1	#D(V/0) 1	#DIVI0! 1	#DIV/0! # 1	DIV/01 #DIV/01 1 1	#DIV/0! #DIV/0! #0 1 1	NV0: #DIV0: #DIV0: 1 1 1 1	#DIV/0! #DI	M01 #DIV/01 #DIV/01 1 1 1
								the state of the formation								Table	7.18 - Gr	oundwater R	Results - I	WM1															
EPL 11436	Date Site Co	de Time Sampler	рн с	Conductivity Reduction	Dissolved Oxygen Temper	rature Depth to V	Water RL Water Level	Laboratory Sample Bi Code	carbon ate Carbonate	Alkalinity (as CaCO3) (	Nitrogen (ammonia) Chlori	ide Conductiv	it Dissolved Calcium	Dissolved Disso Magnesium Pote:	olved Dissolver	d pH	Sulphate Dis	Total solved (Hex)	an Dissolve Aluminia	ed Dissolved un Arsenic	Dissolved Dissolved Cadmium Cobalt	d Dissolved Disso Copper Le	Aved Manganes Men	olved Dissolved	Fluoride N	rate Nitrite	Organo- chibrine	Organo-phosphate pesticides	Polycyclic Aromatic Hydrocarbons	TPH C6- C9	PH C10- C14 C28	TPH C29- C36 Benzene To	uene Ethyl Xylene	Total Total C Phenois Car	Arganic Total Total Chromium
	26/09/2014 WI	AMIPM Initials M1 11:35am Ti	0H 6.55	Potential uS/cm mV 2046 6.3	maiL "C	2 m 16.3	m.RL 43.7 737.57	CA1403004-002	mol. mol. 219 0.1	mgL 219	0.1 mol	L uS/cm 175 221	molL 10 24	2 108	aL maiL	0H 66.1 7.38	mol n 847	nol. mol. 1740	mal	mol. 0.002	mail mail. 0.038	mol. mo 0.02 0.0	L mol mo	aL mol. 3.82	mai. r	al mai	molL.	lan	uol	uol	ual ual	ual ual	ot uot uot	mail. ma	al mol mol
	18/12/2014 WI 15/05/2015 WI 25/05/2015 WI	M1 10:05am Ti M1 11:15am Ji M1 14:05 II	4.75 7.89	2210 108.3 2187 1505 6	5.3 4.22	19.4 16 16 57	43.47 737.80 43.4 737.87 43.4 737.87	CA1404204-001 CA1501851-002 CA1502522-002	200 0.1 192 0.1	200 192	0.1	158 240 148 255 91.3 177	0 29 0 31	0 124	6.1 6.3 4.6	77.3 7.26 82.6 7.5 47.5 7.42	1080 1310	2020 2440 0.01	0.009	0.002	0.0601 0.0683 0.0028	0.029 0.0	205	4.07 001 4.91	0.5	0.01	0.002	0.002	1	20	50 100	50 1	2 2 2	0.05	5 0.0248 0.005
2014/15 Minin Maxir	um hum	19.00 S	4.75 7.89	1505.6 6.3 2210 108.3	4.22 15.5 7.41 19.	57 43.4 14 43.7	4 737.57 7 737.87	CHINESE	121 0.1 219 0.1	121 219	0.1 91. 0.1 17	3 1770 5 2550	202 319	88.6 4 169 6	.6 47.5 3 82.6	7.12	809 1 1310 2	1460 0.01 2440 0.01	0.009	9 0.001 9 0.002	0.038 0.0028 0.0683 0.0028	0.02 0.0 0.029 0.0	0.192 0.0 205 0.192 0.0	001 3.82 001 4.91	0.5	163 0.01 163 0.01	0.002	0.002	1	20 20	50 100 50 100	50 1 50 1	2 2 2 2 2 2	0.05	5 0.0248 0.005 5 0.0248 0.005
Aven StdE Cou	ige ev nt		6.515 1.308064728 4	1987.15 57.3 329.11795 72.124892 1 4 2	5.4425 16.81 .38430187 1.74753 4 4	175 43.49 38745 0.14221 4 4	25 737.7775 4627 0.142214627 4	4	183 0.1 2.8563 0 4 4	183 42.8563492 4	0.1 143.0 0 36.2715 4 4	075 2232.5 51086 338.267 4	263.25 6 51.72604115 4	122.4 5.5 34.273021 0.780 4 -	575 68.375 04913 15.523611 4 4	7.315 105 0.162788 : 4	1011.5 1 232.2793 418 4	1915 0.01 8.05103 #DIV/0 4 1	0.009 HDIV/0 1	9 0.00175 01 0.0005 4	0.05855 0.0028 0.014205 #DIVIO 4 1	0.02325 0.01 0.0040311 0.006 4 4	1525 0.192 0.0 5678 #DIVI0I #DI 4 1 :	001 4.29 IVI0I 0.468544 1 4	0.5 0 #DIV/01 #0 1	163 0.01 NVIDI #DIVIDI 1 1	0.002 #DIV/01 1	0.002 #DIV/01 1	#D(VI0) 1	20 #DIV/0/ # 1	50 100 EDIV/01 #DIV/01 1 1	50 1 #DIV/0! #DIV/0! #1 1 1	2 2 2 2 NV0! #DIV0! #DIV0! 1 1 1 1	0.05 #DIV/0! #DI 1	5 0.0248 0.005 M/0/ #DIV/0/ #DIV/0/ 1 1 1 1
<u> </u>																Table	7.19 - Gr	oundwater F	Results - I	WM4															
EPL	Date Site Co	de Time Sampler	рН С	Conductivity Reduction	Dissolved Temper	rature Depth to V	Water RL Water Level	Laboratory Sample Bi	carbon Carbonate	Alkalinity (as	Ntrogen Chlor	ide Conductiv	it Dissolved	Dissolved Diss	olved Dissolve	d pH	Sulphate Dis	fotal solved Chromiur	um Dissolve	ed Dissolved	Dissolved Dissolved	d Dissolved Disso	wed Dissolved Disso	olved Dissolved	Fuorida N	trate Ntrite	Organo- chibrine	Organo-phosphate	Polycyclic Aromatic	TPH C6- TP	PH C10- TPH C15-	TPH C29- Benzene To	Lene Ethyl Xviene	Total Total C	Arganic Total Total Chromium
11436	2/10/2014	AMPM Initials	pH	Potential µS/cm mV	mgL "C	19.5 m	mRL are are	C008	mgL mgL	cacd3) ( mgL	Ign Jgn	y L µSion	Calcium mg/L	Magnesium Pota:	anum Sodium	рН 6.74	mgL n	iolids (Hex) ngL mgL	Aluminiur mgl.	am Adsenic mgL	mgL mgL	mgL mg	L mgL mg	al mgl	mgL r	gl mgl	pesticides mg/L	pestoides mg1.	Hydrocarbons µgL	ug L	μgL μgL	ust pgl	gL µgL µgL	mg1. mg	al mgL mgL
	18/12/2014 WI 15/05/2015 WI	M4 10:32am Ti M4 12:10pm Ji	5.86 7.75	1900 -20.8 1900 45.8 1653	4.55	20 16.52	67.2 666.72 43.48 690.44	CA1403067-001 CA1404204-002 CA1501851-001	41.3 0.1 41.6 0.1	41 42	0.1 47.	4 2020 5 2010	188 193	30.0 2 32.1 2 30.8	1 230 2 219	7.1 7.07	998 1 1000 1	1580 1540 0.01	0.009	0.001	0.0053 0.00334 0.0032	0.003 0.0	014 004 0.481 0.0	1.11 001 0.409	0.7	0.01	0.002	0.002	1	20	50 100	50 1	2 2 2	0.05	3 0.0165 0.002
2014/15 Minin Maxin	um 125/06/2015 WI	M4   2:30:00 PM   Ji	5.86 7.75	1626 1626.00 -20.80 1906.00 45.80	3.43 15.8 4.55 20.0	15.89 89 43.41 00 81.15	43.48 690.44 8 652.77 5 690.44	CA1502527-008	42.5 0.1 41.30 0.10 47.10 0.10	42 41.00 47.00	0.7 46. 0.10 44.5 0.70 50.8	3 1890 50 1890.00 80 2070.00	180 0 180.00 0 193.00	31.3 2 30.80 2 35.80 2	.1 192 00 192.00 80 230.00	6.74 6.74 7.10	958 1 958.00 14 1010.00 16	1480 180.00 0.01 540.00 0.01	0.01	0.001	0.0165	0.006 0.00	00 0.48 0. 00 0.48 0.	2.41 00 0.00 00 2.41	0.70	05 0.01	0.00	0.00	1.00	20.00 20.00	50.00 100.00 50.00 100.00	50.00 1.00 50.00 1.00	2.00 2.00 2.00 2.00 2.00 2.00	0.05 3.	00 0.02 0.00 00 0.02 0.00
Aven StdE Cou	ige ev		7.02 0.78 4.00	1906.00 -20.80 152.55 47.09 4.00 2.00	4.10 18.5 0.48 1.8 4.00 4.0	50 81.15 88 18.6 10 4.00	5 652.77 1 18.61		47.10 0.10 2.70 0.00 4.00 4.00	47.00 2.71 4.00	0.10 50.8 0.30 2.6 4.00 4.0	80 2070.00 5 76.32 0 4.00	0 188.00 5.38 4.00	35.80 2. 2.26 0. 4.00 4	80 222.00 37 16.50 00 4.00	0 6.74 0.20 4.00	1010.00 16 22.94 6 4.00 4	540.00 #DIV/0 57.33 #DIV/0 4.00 1.00	2 #DIV/0 2 #DIV/0 1.00	01 0.00 01 0.00 4.00	0.00 #DIV/0/ 0.01 #DIV/0/ 4.00 1.00	0.00 0: 0.00 0: 4.00 4	0 #DIVI0 #DI 0 #DIVI0 #DI 0 1.00 1	V/01 0.00 V/01 1.06 00 4.00	#DIV/01 #0 #DIV/01 #0 1.00	N/0 #DN/0 N/0 #DN/0 00 1.00	#DIV/01 #DIV/01 1.00	#D(V/0) #D(V/0) 1.00	#D(VI0) #D(VI0) 1.00	#DIV/01 # #DIV/01 #	DIV/01 #DIV/01 DIV/01 #DIV/01 1.00 1.00	#DIV/0! #DIV/0! #0 #DIV/0! #DIV/0! #0 1.00 1.00	NV01 #DIV/01 #DIV/01 NV01 #DIV/01 #DIV/01 L00 1.00 1.00	#DIV/0! #DI #DIV/0! #DI 1.00 1	M01 #DIV/01 #DIV/01 M01 #DIV/01 #DIV/01 00 1.00 1.00
	-															Table	7.20 - Gr	oundwater R	Results -	WM5															
Statis	tics Field Information	to Tax County		Oxidation-	Dissolved Tomoro	antona Departs to 1	Nature Di Mintere Laurel	Analytical Informatio	n carbon Casharata	Aikalinity (as	Ntrogen Child	Conductiv	it Dissolved	Dissolved Diss	olved Dissolve	d at	-	Total Chromiur	um Dissolve	ed Dissolved	Dissolved Dissolves	d Dissolved Disso	hved Dissolved Disso	olved Dissolved	Darie N	Market Market	Organo-	Organo-phosphate	Polycyclic Aromatic	TPH C6- TP	PH C10- TPH C15-	TPH C29- Durante T	Ethyl Volume	Total Total C	Inganic Total Total Obumburg
11436	Date Offer	AMIPM Initials	рн с	uS/cm mV	Oxygen ***	c m	m RL	Code	ate Carbonate	CaCO3) ( molL	(ammonia) (ammonia)	L uS/cm	Calcium molL	Magnesium Potas mol. m	sium Sodium	oH	mol n	solved (Hex) solids mail.	Aluminiur	um Arsenic mol.	Cadmium Cobalt mol. mol.	Copper Le mail ma	ad Manganes Men L mol. mo	cury Zinc al. mal.	mal. n	ol mol	chonne pesticides molL	pesticides molL	Hydrocarbons up1.	C9 uol	C14 C28	C36 Bertaine 10	Benzene Ayarne	Phenois Car molL mo	bon Barium Total Chomon
	23/09/2014 WM5 11/12/2014 WM5 1/05/2015 WM5	11:30am TB 10:55am TB 9:20am JE/RBa	6.35 7.01 7.8	5410 17 7480 -20.2 5402.5	3.44 12 2.66 14 0.68 16.1	19 1.1 16 1.5 11 2.08	785.63 785.23 3 784.65	CA1402938-007 CA1404096-008 CA1501636-003	699 0.1 710 0.1 810 0.1	699 710 810	0.1 0.1	1470 567 1940 690 1780 666	0 72 0 9 0 88	2 224 9 263 1 256	2.2 2.4 2.5	743 7.37 834 7.31 844 7.33	130 209 121	3500 4500 4050 0	0.01 0.0	0.007	0.00013 0.00127 0.0003 0.001	0.009 0 3 0.004 0	0002 0002 0002 1.12 0	0.139 0.251 0.03	1.1	0.05 0	01 0.002	0.002	1	20	50 100	50 1	2 2 2	0.05	10 0.248 0.005
2014/15 Minin Mavin	24/06/2015 WM5	10:35 JE	7.01 6.35 7.8	6084 5402.5 -20.2 7480 17	1.73 14.1 0.68 12 3.44 16.1	18 1.97 19 1.1 11 2.08	7 784.76 784.65 3 785.63	CA1502474-002	840 0.1 699 0.1 840 0.1	840 699 840	0.1 147 0.1 235	2350 738 10 5670 10 7380	10 10 72.2 103	3 308 224 2 308 2	2.6 1 2 743 6 1000	7.49 7.31 7.49	180 121 3 209 4	4170 3500 0.01 4500 0.01	0.009	0.008 9 0.007 9 0.01	0.00005 0.0013 0.00127 0.0013	0.002 0.0	0002 02 1.12 0.0 02 1.12 0.0	0.005	1.1	05 0.01	0.002	0.002	1	20 20	50 100 50 100	50 1 50 1	2 2 2 2 2 2 2	0.05 1	0 0.248 0.005
Aven StdD	ige ev		7.0425 0.593148379	6094.125 -1.6 977.60322 26.304372 1.	2.1275 14.44 191564098 1.32331	475 1.662 13392 0.45154	25 785.0675 3649 0.451543649	7	164.75 0.1 0.7831 0	764.75 70.7831195	0.1 188 0 366.287	15 6652.5 76829 720.156	90.575 2 13.77349508	262.75 2.4 34.615748 0.170	125 855.25 17825 106.66263	7.375 301 0.080623	160 4 41.7213 416	4055 0.01 3.05288 #DIV/0	0.009 0/VIC# 10	9 0.0085 01 0.001290994	0.000438 0.0013 0.000565 #DIV/0/	0.00525 0.0	002 1.12 0.0 #DIVIOI #DI	001 0.10625 W01 0.112681	1.1 #DIV/01 #0	0.05 0.01	0.002 #DIV/01	0.002 #D(V/01	1 #D(VID)	20 #DIV/01 #	50 100 EDIV/01 #DIV/01	50 1 #DIV/0! #DIV/0! #I	2 2 2 2 NV0: #DIV0: #DIV0:	0.05 1 #DIV/01 #DI	0 0.248 0.005 M0I #DIV/0I #DIV/0I
COL			•	* 2	• •				• •	•	• •		•	-		Table	- 7.21 - Gr	oundwater R	Results - ۱	WM6		•													
EPL Statis	tics Field Information			Oxidation-	Dissolved _			Analytical Informatio	n carbon /	Akalinity (as	Nirogen	Conductiv	it Dissolved	Dissolved Diss	aved Dissolver	d	Т	Total Chromiur	m Dissolve	ed Dissolved	Dissolved Dissolves	d Dissolved Disso	Aved Dissolved Disso	olved Dissolved			Organo-	Organo-choschate	Polycyclic Aromatic	TPH C6- TF	HC10- TPHC15-	TPH C29-	Ethyl	Total Total C	Anganic Total
11436	Date She Co	AMPM Initials	рн с	Potential uS/cm mV	Oxygen Temper molL *C	c m	m RL	Code	ate Carbonate	CaCO3) ( molL	(ammonia) (ammonia)	L uS/cm	Calcium	Magnesium Potas mol. mo	sium Sodium	eH	mol n	Solids (Hex)	Aluminium	um Arsenic mol.	Cadmium Cobalt molL molL	Copper Le mol mo	ad stanganes Men e Men	cury Zinc	mol. r	ol nol	pesticides molL	pesticides molL	Hydrocarbons	C9 UOL	C14 C28	C36 Bertaine IC	Benzene Ayarne	Phenois Car molL mo	bin Barium Total Chomuni
	23/09/2014 WI 11/12/2014 WI	M6 12:35pm TB M6 10:30am TB	6.28 6.87	12830 21.3 12740 12	7.41	18.3	4.65 785.69 4.45 785.89	CA1402940-001 CA1404096-009	34.5 0.1 32.1 0.1	34.5 32	0.1	4550 1360 4770 1360	10 12 10 11	3 449 4 415	1.9 2 1.6 2	2150 5.76	335 337	7900 9340		0.02	0.00315	0.022 0	0056	0.356											
2014/15 Minin	1/05/2015 WI 3/07/2015 WI	M6 9:00am JE/RBe M6 12:00:00 PM JE	6.25 5.48 5.48	10931.7 11849 10931.7 12	6.04 7.55 6.04 15.	16.37 15.6 1 4.45	4.5 785.84 4.58 785.76 5 785.69	CA1501636-002 CA1502635-003	37.2 0.1 36.1 0.1 32.1 0.1	37 36 32	0.1 0.1 443	4430 1340 4600 1370 10 13400	0 97. 0 12 97.5	5 502 0 427 415 1	2.3 1 1.7 2 6 1660	1660 5.81 1030 6 5.76	312 358 312 7	8730 0 9680 7900 0.01	0.01 0.0	021 0.019 0.023 1 0.019	0.00284 0.044 0.00177 0.0443	3 0.018 0 0.011 0 0.011 0.0	0065 0.174 0 0062 0.174 0.0	0003 0.281 0.148 003 0.148	0.3	20.6 0.01	0.002	0.002	1	20	50 100	50 1	2 2 2	0.05	5 0.0451 0.01
Maxir Aven	ige Ige		6.87 6.22	12830 21.3 12087.675 16.65	8.55 18. 7.3875 16.34	L3 4.65 1425 4.54	5 785.89 5 785.795	3	37.2 0.1 14.975 0.1	37 34.875	0.1 477 0.1 4587	10 13700 7.5 13575	123 113.625	502 2 448.25 1.3	3 2150 875 1977.5	6 5.855	358 9 335.5 8	9680 0.01 912.5 0.01	0.021	1 0.041 1 0.02575	0.00315 0.0443 0.00258 0.0443	0.022 0.0 0.018 0.00	067 0.174 0.0 625 0.174 0.0	003 0.356 003 0.26925	0.3	0.6 0.01	0.002	0.002 0.002	1	20 20	50 100 50 100	50 1 50 1	2 2 2 2 2 2	0.05	5 0.0451 0.01 5 0.0451 0.01
Cou	nt		4	4 2	4 4	4	4	-	4 4	4	4 4	4	4	4	4 4	4	4	4 1	1	4	4 1	4	1 1	1 4	1	1 1	1	1	1	1	1 1	1 1	1 1 1	1	1 1 1
Statis	tics Field Information							Analytical Informatio	n							Table	7.22 - Gro	bundwater R	Cesuits - N	MW85															
EPL 11436	Date Site Co	de Time Sampler	рН С	Conductivity Reduction Potential	Dissolved Oxygen Temper	rature Depth to V	Water RL Water Level	Laboratory Sample Bi Code	ate Carbonate	Alkalinity (as CaCO3) (	Ntrogen (ammonia) Chlori	ide Conductiv	it Dissolved Calcium	Dissolved Disso Magnesium Potas	sived Dissolver sium Sodium	d pH	Sulphate Dis	solved (Hex)	um Dissolve Aluminium	ed Dissolved um Arsenic	Dissolved Dissolved Cadmium Cobalt	d Dissolved Disso Copper Le	Aved Manganes Man	olved Dissolved cury Zinc	Fluoride N	trate Nitrite	chibrine restinides	Organo-phosphate pesticides	Polycyclic Aromatic Hydrocarbons	C9 TPH C6- TP	C14 TPH C15- C14 C28	TPH C29- C36 Benzene To	uene Ethyl Xylene Benzene	Total Total C Phenois Car	Arganic Total Barium Total Chromium
	26/09/2014 MW8S	AMIPM Initials 10:40AM TB	0H 6.4	uS/om mV 11220 30.9	maiL °C 7.3 16.	2 m 1.2 5.06	m RL 3 785.59	CA1403002-001	556 0.1	malL 556	0.1 mol	L uS/om 3540 1210	mgL 10 23	mol. m 3 738	aL maiL 4.4	982 6.95	1460 n	8690 mol.	mal		mol. mol. 0.154	0.144	L mol mo 0.6	aL mal. 3.5	nol. i	ol nol	Jon	rol	Jou	ual	uol uol	ual ual	ot uot uot	mal. ma	al mai mai
	15/12/2014 MW8S 1/05/2015 MW8S	8:35am JE/RBe	7.17	9265	5.82 15.	4.7 1.5 5.77	7 784.88	CA1404139 CA1501636-001	466 0.1	466	0.1	3340 1150	10 24	5 826	4.6 1	1020 6.77	1460	8600 0	0.01 0.0	0.015	0.262 0.002	9 0.031 0	0004 0.45 0	.0012 7.4	1	0.48 0	01 0.002	0.002	1	20	50 100	50 1	2 2 2	0.05	11 0.0458 0.009
2014/15 Minin	3/07/2015 MW8S 5/08/2015 MW8S	11:30 JE 2:15 JE	6.46 7.32 6.4	9287 9448 9265 30.9	6.08 13.0 5.51 13.5 5.51 13.0	04 5.55 54 5.3 04 4.7	785.35	CA1502635-001 CA1503139-001	499 0.1 519 0.1 466 0.1	499 519 466	0.1 0.1 316	3160 1150 3400 1150 0 11500	0 22 0 23 228	8 769 6 802 738 4	4.7 1 4.6 1 A 982	1040 <u>6.94</u> 1050 <u>6.74</u> 6.74	1300 1400 1300 7	8710 7980 7980 0.01	0.009	0.018	0.204 0.194 0.154 0.0029	0.022 0	0008	4.66 4.37 012 3.5	1	48 0.01	0.002	0.002	1	20	50 100	50 1	2 2 2	0.05 1	1 0.0458 0.009
Maxir Aven Svill	ium ige		7.32 6.8375 0.47514022	11220 30.9 9805 30.9	7.3 16. 6.1775 14.5 79276761 1.51016	12 5.77 57 5.270 66.429 0.41776	7 785.945 6 785.369 7879 0.417767879		556 0.1 510 0.1 7.6562 0	556 510	0.1 354 0.1 336	0 12100 0 11650	245 235.5 7 141429420	826 4 783.75 4.5 28.421000 0.120	7 1050 575 1023	6.95 6.85	1460 8 1405 8 75 40824 246	8710 0.01 8495 0.01	0.009 0.009	9 0.018 9 0.0165	0.262 0.0029 0.2035 0.0029	0.144 0 0.05525 0.19	6 0.45 0.0 055 0.45 0.0 6234 #DM/0 #D	012 7.4 012 4.9825	1 0	.48 0.01 .48 0.01	0.002	0.002	1	20 20	50 100 50 100	50 1 50 1	2 2 2 2 2 2 2 2	0.05 1	1 0.0458 0.009 1 0.0458 0.009
Cou	nt		4	4 1	4 4	5	5	-	4 4	4	4 4	4	4	4	4 4	4	4	4 1	1	4	4 1	4	1	1 4	1	1 1	1	1	1	1	1 1	1 1	1 1 1	1	1 1 1
Statie	tics Field Information		, , , , , , , , , , , , , , , , , , ,					Analytical Informatio	0	-			1	1		Table	7.23 - Gro	oundwater R	Results - N	MW8D							1 1								
EPL 11436	Date Site Co	de Time Sampler	рН С	Conductivity Reduction	Dissolved Oxygen Temper	rature Depth to V	Water RL Water Level	Laboratory Sample Bir Code	carbon ate Carbonate	Alkalinity (as CaCO3) (	Ntrogen (ammonia) Chlori	ide Conductiv	it Dissolved Calcium	Dissolved Disso Magnesium Potat	olved Dissolver Isium Sodium	d pH	Sulphate Dis	Fotal solved (Hex)	um Dissolve Aluminium	ed Dissolved un Arsenic	Dissolved Dissolved Cadmium Cobalt	d Dissolved Disso Copper Le	Aved Dissolved Dissolved Aved Manganes Men	olved Dissolved cury Zinc	Fluoride N	trate Nitrite	Organo- chibrine	Organo-phosphate pesticides	Polycyclic Aromatic Hydrocarbons	TPH C6- C9	H C10- TPH C15- C14 C28	TPH C29- C36 Benzene To	Luene Ethyl Xylene Xylene	Total Total C Phenois Car	organic Total Total Chromium
	26/09/2014 MW	AM/PM Initials 8D 10:30am Ti	oH 6.04	uS/cm mV 9860 35.2	maiL °C 4.8	0 m 16	m RL 4.55 786.00	CA1403002-002	maiL maiL 124 0.1	maiL 124	maiL mail 0.1 189	L uS/cm 10 10500	mail. 339	maL ma 917 5	aL maiL .6 685	оН 6.31	maiL n 4550 S	naL maL 1880	mal	mol. 0.012	mal. mal. 0.326	maiL mai	L mai ma	L mail. 19.5	mal. r	al mal	mail		uat	ual	ual ual	ual ual i	ol vol vol	mail ma	Jon Jon Jon
	15/12/2014 MW 30/04/2015 MW 3/07/2015 MW	8D 11:40AM T 8D 11:55am JE/Rb 8D 11:40:00 AM J	4.64 6.8 6.01	9740 115.5 8482.9 3 9019	5.94 3.17 6.5	18.5 15.8 15.7	4.2 786.35 4.86 785.69 4.78 785.77	CA1404139-002 CA1501602-003 CA1502635-002	129 0.1 133 0.1 146 0.1	129 133 146	0.1 176 0.1 149 0.1 180	0 10600 0 10700 0 10400	401 418 340	1020 6 1200 7 1020	8 769 2 755 6 781	7.68 6.3 6.49	4940 1 4840 1 4480 1	0200 0.01	0.009	0.01 9 0.009 0.011	0.279 0.231 0.0372 0.239	0.03 0.0 0.012 0.0 0.022 0.0	002 2.17 0.0 005	20 003 16.1 16	0.5	0.3 0.04	0.002	0.002	1	20	50 100	50 1	2 2 2	0.05	4 0.0133 0.11
2014/15 Minin Maxir	um num		4.64 6.8 5.8725	8482.9 3 9860 115.5 9275.475 51.233329	3.17 15. 6.5 183 5.1025 16	7 4.2 5 4.86 5 4.507	785.688 786.348 75 785.9505		124 0.1 146 0.1 133 0.1	124 146 133	0.1 149 0.1 189 0.1 172	0 10700	339 418 374.5	917 5. 1200 7. 1039.25 6	6 685 2 781 4 7475	6.3 7.68 6.695	4480 9 4940 11 4702.5 44	880 0.01 1000 0.01 0320 0.04	0.009	0.009	0.231 0.0372 0.326 0.0372 0.26875 0.0972	0.012 0.0 0.084 0.0 0.037 0.00	02 2.17 0.0 02 2.17 0.0 1725 2.17 0.0	003 16 003 20 003 17.9	0.5	0.04	0.002 0.002 0.002	0.002 0.002 0.002	1	20 20 20	50 100 50 100 50 100	50 1 50 1 50 1	2 2 2 2 2 2 2 2 3	0.05	0.0133 0.11 0.0133 0.11 0.0133 0.11
StdD Cou	ev nt		0.899309921	645.86054 57.938444 1. 4 3	469747711 1.33915 4 4	53962 0.295789 4 4	9903 0.295789903 4	9	4163 0 4 4	9.41629793 4	0 172.143 4 4	13511 129.099 4	4 41.00812928 4	117.65309 0.730 4	2967 43 4 4	0.662445	222.1674 477 4	.77261 #DIVIO 4 1	#DIVIO	0.001290994	0.043561 #DIV/0/ 4 1	0.032187 0.000	8617 #DIVIO! #DI 1 1	VIDI 2.146315 1 4	#DN/01 #0	1 1	#DIV0!	#DIV/D!	#DIV/01	#DIV/0/ #	DIVIO! #DIVIO!	#DIVIO: #DIVIO: #0	1 1 1 1	#DIV/0! #DI	VIOI #DIVIOI #DIVIOI 1 1 1 1
Statie	tics Field Information		1 1					Analytical Informatio	0			-			-	Table	7.24 - Gro	oundwater R	tesults - N	MW9S															
EPL 11436	Date Site Co	de Time Sampler	рН С	Conductivity Reduction	Dissolved Oxygen Temper	rature Depth to V	Water RL Water Level	Laboratory Sample Bir Code	carbon Carbonate	Alkalinity (as CaCO3)	Ntrogen (ammonia) Chiori	ide Conductiv	it Dissolved Calcium	Dissolved Disso Magnesium Protect	olved Dissolver	d рн	Sulphate Dis	fotal solved (Hev)	um Dissolve Alumini-e	ed Dissolved un Arsenic	Dissolved Dissolved Cadmium Cobalt	d Dissolved Disso Copper Le	ad Dissolved Dissolved Manganes Men	olved Dissolved cury Zinc	Fluoride N	trate Nitrite	Organo- chibrine	Organo-phosphate pesticides	Polycyclic Aromatic Hydrocarbons	TPH C6- C9	PH C10- C14 C28	TPH C29- C36 Benzene To	uene Ethyl Xylene	Total Total C Phenois Car	Arganic Total bon Barium Total Chromium
	26/09/2014	AMPM Initials	oH c ~~	US/cm mV	maiL °C	2 m	mRL 21 TPC 44	CA1403002-002	Jan Jan	mail.	mai mai	L uS/on	mail.	molm	aL mail	Ho Provide	mol n	nal mal	mai	mol. 0.012	mal. mal. 0.0248	mol mo	L moL mo	al mail	mai. r	ol mol	molL.	nol	ual	uot	ual ual	ual ual	ot ust ust	mol. mo	lon lon l
	15/12/2014 MW 16/05/2015 MW	9S 11:15am Ti 9S 10:10am Ji	9.76 4.92 7.45	10270 99.2 9053	4.54 6.85	19.6 15.8	2.4 787.14 3.22 786.32	CA1404139-003 CA1501851-003	244 0.1 232 0.1	244 232	0.1	1720 1110 1770 1120	36 30 39 30 37	6 909 4 954	2.9 1 3 1	0.60 1110 6.65 1220 7.18	5250 5110	10700 10200 0.01	0.009	0.011	0.00566 0.012	0.032 0.0 4 0.016 0.0	004 002 0.0073 0.0	0.895	1	.47 0.01	0.002	0.002	1	20	50 100	50 1	2 2 2	0.05	6 0.0136 0.007
2014/15 Minin Maxin	um um	201 12:201 J	4.92 7.45	8958 50.3 10600 99.2	4.54 12: 7.06 19.0	8 2.4 6 3.22	3.1 786.44 786.324 2 787.144	CA1502635-004	232 0.1 229 0.1 244 0.1	232 229 244	0.1 172 0.1 219	21901 1100 0 11000 0 11200	362 396	879 2 954 3	21 1 2 1030 3 1220	6.65 7.18	4630 10 5250 10	0200 0.01 0700 0.01	0.009	0.0011	0.00035 0.0124 0.0248 0.0124	0.016 0.0 0.124 0.0	02 0.0073 0.0 04 0.0073 0.0	003 0.016 003 4.77	1 0	47 0.01 47 0.01	0.002	0.002 0.002	1	20 20	50 100 50 100	50 1 50 1	2 2 2 2 2 2	0.05 6	8 0.0136 0.007 8 0.0136 0.007
Aven StdD Cou	ige ev nt		6.0725 1.053735419 4	9720.25 74.75 837.1445 34.577522 1. 4 2	5.9125 15.45 236537504 3.03752 4 4	575 2.955 25034 0.374295 4 4	5 786.589 9345 0.374299345 4	2	34.25 0.1 65207 0 0 4 4	234.25 6.65206735 4	0.1 1852 0 226.034 4 4	2.5 11100 16581 81.64966 4	378.5 6 14.27118309 4	907.25 2 33.648923 0.469 4	7 1137.5 0416 85.391256 4 4	6.8375 838 0.247975 2 4	5042.5 10 280.8766 244 4	0400 0.01 1.94897 #DIVIO 4 1	0.009 #DIVIO 1	0 0.008275 0 0.004943261 4	0.007823 0.0124 0.011585 #DIVIO 4 1	0.047 0.0 0.0518845 0.000 4	03 0.0073 0.0 1155 #DIVIO! #DI 4 1 3	003 1.428 VIDI 2.265569 1 4	1 0 #DN/01 #0 1	.47 0.01 NOI #DNOI 1 1	0.002 #DIV/01 1	0.002 #DIV/01 1	1 #DIV/DI 1	20 #DIV/0/ # 1	50 100 DIVI0! #DIVI0! 1 1	50 1 #DIVIOI #DIVIOI #0 1 1	2 2 2 2 (VI0! #D(VI0! #D(VI0! 1 1 1	0.05 6 #DIV/0! #DI 1	8 0.0136 0.007 V/0 #DI/V0 #DI/V0 1 1 1

EPL	Statistics	Date	Site	Depth to Water	RL water	Sampler			EPL	Statistics	Date	Site	Depth to Water	RL water	Sampler
11436		23/02/2015	P44A	m 12.8	718.25	JE/HG	1		11436		23/02/2015	P44B	m 8.60	722 45	JE/HG
		29/05/2015	P44A	13.36	717.69	JE					29/05/2015	P44B	9.20	721.85	JE
		29/07/2015 21/08/2015	P44A P44A	12.13	718.92	JE					29/07/2015 21/08/2015	P44B P44B	8.23	722.82	JE
2014/15	Minimum			12.06	717 69				2014/15	Minimum			7 98	721.85	
2014/13	Maximum			13.36	718.99				2014/13	Maximum			9.20	723.07	
	Average StdDev			12.59 0.613589	718.46 0.613589					Average StdDev			8.50 0.530181	722.55 0.530181	
	Count			4	4					Count			4	4	
				Table	8.2 - Pi	ezomete	r Water I	Level F	Results ·	- P45A &	P45B				
EPL 11436	Statistics	Date	Site Code	Depth to Water	RL water level	Sampler			EPL 11436	Statistics	Date	Site Code	Depth to Water	RL water level	Sampler
		23/02/2015	P45A	4.94	726.22	JE/HG					23/02/2015	P45B	5.68	725.43	JE/HG
		29/05/2015	P45A P45A	6.50 5.77	724.66	JE					29/05/2015	P45B P45B	6.80 5.28	724.31 725.83	JE
		21/08/2015	P45A	5.47	725.69	JE					21/08/2015	P45B	5.20	725.91	JE
2014/15	Minimum			4.94	724.66				2014/15	Minimum			5.20	724.31	
	Maximum Average			6.50 5.67	726.22 725.49					Average			6.80 5.74	725.91 725.37	
	StdDev			0.651102	0.651102					StdDev			0.737202	0.737202	
	ooun												-	-	
			1	Table	8.3 - Pi	ezomete	r Water I	Level F	Results ·	- P58A &	P58B		Donth to		
EPL 11436	Statistics	Date	Site Code	Water	RL water level	Sampler	Comments		EPL 11436	Statistics	Date	Site Code	Water	RL water level	Sampler
		23/02/2015 29/05/2015	P58A P58A	42.4	763.85	JE/HG JE					23/02/2015 29/05/2015	P58B P58B	51.35 51.39	754.90 754.86	JE/HG JE
		29/07/2015	P58A	37.87	768.38	JE					29/07/2015	P58B	50.32	755.93	JE
		21/00/2013	1 304	72.2	704.00	52					21/00/2013	1 305	50.10	750.15	5L
2014/15	Minimum Maximum			37.87 42.4	763.85 768.38				2014/15	Minimum Maximum			50.10 51.39	754.86 756.15	
	Average			41.1525	765.0975					Average			50.79	755.46	
	Count			4	4					Count			4	4	
				Table	8.4 - Pi	ezomete	r Water I	Level F	Results ·	- P59A &	P59B				
EPL 11436	Statistics	Date	Site Code	Depth to Water	RL water level	Sampler			EPL 11436	Statistics	Date	Site Code	Depth to Water	RL water level	Sampler
		23/02/2015	P59A	17.13	787.57	JE/HG					23/02/2015	P59B	17.59	787.11	JE/HG
		29/05/2015 29/07/2015	P59A P59A	17.37	787.33	JE					29/05/2015 29/07/2015	P59B P59B	17.92	786.78	JE
		21/08/2015	P59A	17.1	787.60	JE					21/08/2015	P59B	17.35	787.35	JE
2014/15	Minimum			17.1	787.33				2014/15	Minimum			16.7	786.78	
	Maximum Average			17.37 17.2	787.6 787.5					Maximum Average			17.92 17.39	788 787.31	
	StdDev			0.12083	0.12083					StdDev			0.515946	0.515946	
	Count			Table 8	- 8.5 - Pie	zometer	Water Lo	evel Re	esults -	P100A &	P100B		4	4	
501			014-	Depth to	DI sustan		1		501			0.14	Depth to	DI sustan	
EPL 11436	Statistics	Date	Code	Water	RL water level	Sampler			EPL 11436	Statistics	Date	Code	Water	RL water level	Sampler
		23/02/2015	P100A	m 36.38	740.05	JE/HG					23/02/2015	P100B	69.15	707.28	JE/HG
		29/05/2015	P100A P100A	37.55	738.88	JE .IF					29/05/2015 29/07/2015	P100B P100B	62.75 58.94	713.68	JE .JF
		21/08/2015	P100A	36.57	739.86	JE					21/08/2015	P100B	57.38	719.05	JE
2014/15	Minimum			36.38	738.88				2014/15	Minimum			57.38	707.28	
	Maximum Average			37.55 36,8525	740.05 739.5775					Maximum Average			69.15 62.06	719.05 714.38	
	StdDev			0.514093	0.514093					StdDev			5.24	5.24	
	Count			4	4					Count			4	4	

Table 8.1 - Piezometer Water Level Results - P44A & P44B

#### Table 9.1 - IMF Surface Water Results - Site 110

	Statistics	Field Information									An	alytical Informat	ion														
EPL 11455		Date	Site Code	Time	Sampler	рН	Conductivity	Temperature	Dissolved Oxygen	Oxidation- Reduction Potential	Flow	Laboratory Sample Code	Nitrogen (ammonia)	Biochemical Oxygen Demand	Conductivity	pН	Sulphate	Total Suspended Solids	Total Dissolved Solids	Total Kjeldahl Nitrogen	Total Organic Carbon	Oil & Grease	Phosphorous	Total Copper	Total Iron	Total Lead	Total Zinc
				AM/PM	Initials	pН	µS/cm	°C	mg/L	mV			mg/L	mg/L	µS/cm	pH	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		9/12/2014	Site 110		TB						Not Flowing																1
		17/06/2015	Site 110	12:00	JE	7.37	304.4	10.16	8.64		turbid, running DO sat=84%, rain for 12 hrs	CA1502373-001	0.2	2	410	7.51	44.5	55	211	0.41	6	1	0.05	0.027	2.79	0.0712	0.287
		2/08/2015	Site 110	11:45	JE	7.93	13.91	8.57	8.99		water running, clear	CA1503063-003	0.1	2	2000	7.71	227	2	1300	0.53	11	1	0.01	0.004	0.1	0.0003	0.121
		25/08/2015	Site 110	12:15	JE	7.01		8.9	9.5		very fast flow, EC not recorded due to faulty equipment	CA1503442-001	0.1	2	1430	7.63	142	12	1080	1.01	16	1	0.06	0.006	0.44	0.0017	0.179
		27/08/2015	Site 110	11:30	JE	7.55		11.9	9.17		medium/fast flow, clear. EC not recorded due to faulty equipment	CA1503477-001	0.1	2	1800	7.92	190	4	1140	0.75	15	1	0.03	0.008	0.21	0.0005	0.194
		3/09/2015	Site 110	10:10	IE	7 59		10	0.18		clear, yabbies and tadpoles present, medium flow, rain for last 8 hours	CA1503570-001	0.1	2	1600	7.89	148	2	1040	0.57	11	1	0.01	0.004	0.09	0.0002	0.15
		0/00/2010	One TTO	10.10	ŰL.	1.00		10	0.10																		
2014/15	Minimum					7.01	13.91	8.57	8.64	0			0.1	2	410	7.51	44.5	2	211	0.41	6	1	0.01	0.004	0.09	0.0002	0.121
	Maximum					7.93	304.4	11.9	9.5	0			0.2	2	2000	7.92	227	55	1300	1.01	16	1	0.06	0.027	2.79	0.0712	0.287
	Average					7.49	159.155	9.906	9.096	#DIV/0!			0.12	2	1448	7.732	150.3	15	954.2	0.654	11.8	1	0.032	0.0098	0.726	0.01478	0.1862
	StdDev					0.33615	205.407449	1.30827367	0.31421	#DIV/0!			0.04472136	0	618.3607361	0.173551	68.42295	22.737634	427.093	0.23341	3.96232255	0	0.022803509	0.009757049	1.162381	0.031545	0.062918
	Count					5	2	5	5	0			5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

Table 9.2 - IMF Surface Water Results - Site 130

	Statistics	Field Information									An	alytical Informa	tion														
EPL 11455		Date	Site Code	Time	Sampler	рН	Conductivity	Temperature	Dissolved Oxygen	Oxidation- Reduction Potential	Flow	Laboratory Sample Code	Nitrogen (ammonia)	Biochemical Oxygen Demand	Conductivity	рН	Sulphate	Total Suspended Solids	Total Dissolved Solids	Total Kjeldahl Nitrogen	Total Organic Carbon	Oil & Grease	Phosphorous	Total Copper	Total Iron	Total Lead	Total Zinc
				AM/PM	Initials	DН	uS/cm	°C	ma/L	mV			ma/L	ma/L	uS/cm	DН	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L	ma/L
		9/12/2014	Site 130	9:15am	TB	4.01	45045	20	5.9	148.6	5	CA1404012-002	0.1	2	463	7.73	26.3	2	342	0.6	10	1	0.02	0.004	0.53	0.0005	0.057
		17/06/2015	Site 130	13:10	JE	7.44	367.	9.8	8.1		clear, running DO Sat=78.2, 12hrs of rain	CA1502373-004	0.1	2	505	7.79	26.8	2	269	0.33	7	1	0.01	0.001	0.1	0.0002	0.006
		2/08/2015	Site 130	12:15	JE	7.85	487.5	10.03	9.55		fast flowing	CA1503063-003	0.1	2	670	7.88	38.3	2	370	0.48	9	1	0.01	0.001	0.16	0.0002	0.005
		25/08/2015	Site 130	12:45	JE	7.61		8.6	10.17		very fast flow, EC not recorded due to faulty equipment	CA1503442-003	0.1	2	734	7.8	45.6	7	437	0.61	11	1	0.02	0.001	0.62	0.0004	0.008
		27/08/2015	Site 130	11:45	JE	7.81		11.8	9.79		fast flow, EC not recorded due to faulty equipment	CA1503477-002	0.1	2	562	7.65	9.4	8	388	0.74	6	1	0.05	0.007	0.81	0.0087	0.044
		3/09/2015	Site 130	10:30	JE	7.59		11	10.01		Fast flow, clear	CA1503570-002	0.1	2	570	7.83	30.7	2	346	0.76	13	1	0.01	0.002	0.41	0.0002	0.005
2014/15	Minimum					4.01	367.7	8.6	5.9	148.6			0.1	2	463	7.65	9.4	2	269	0.33	6	1	0.01	0.001	0.1	0.0002	0.005
	Maximum					7.85	45045	20	10.17	148.6			0.1	2	734	7.88	45.6	8	437	0.76	13	1	0.05	0.007	0.81	0.0087	0.057
	Average					7.05167	15300.0667	11.8716667	8.92	148.6			0.1	2	584	7.78	29.51667	3.833333333	358.667	0.586667	9.33333333	1	0.02	0.002666667	0.438333	0.0017	0.020833
	StdDev					1.49776	25759.9375	4.12848842	1.65513	#DIV/0!			1.5202E-17	0	101.4475234	0.080498	12.32581	2.857738033	55.8629	0.162193	2.5819889	0	0.015491933	0.00242212	0.272867	0.003432	0.02337
	Count					6	3	6	6	1			6	6	6	6	6	6	6	6	6	6	6	6	6	6	6

#### Table 9.3 - IMF Surface Water Results - Site 150

	Statistics	Field Information		Analytical Information																							
EPL 11455		Date	Site Code	Time	Sampler	pН	Conductivity	Temperature	Dissolved Oxygen	Oxidation- Reduction Potential	Juidation- Reduction Flow L Potential		Nitrogen (ammonia)	Biochemical Oxygen Demand	Conductivity	pН	Sulphate	Total Suspended Solids	Total Dissolved Solids	Total Kjeldahl Nitrogen	Total Organic Carbon	Oil & Grease	Phosphorous	Total Copper	Total Iron	Total Lead	Total Zinc
				AM/PM	Initials	pH	µS/cm	°C	mg/L	mV			mg/L	mg/L	µS/cm	pH	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		9/12/2014	Site 150	8:45am	TB	3.9	846	19.9	4.91	158.8	8	CA1404012-001	0.1	2	861	7.68	132	3	618	0.82	13	1	0.03	0.013	0.3	0.0006	0.132
		17/06/2015	Site 150	12:30	JE	7.72	540.4	10.36	9.23		medium flow, clear, DO Sat=90%, rain for 12 hrs	CA1502373-002	0.1	2	723	8.05	55.6	2	428	0.3	5	1	0.01	0.002	0.08	0.0003	0.014
		2/08/2015	Site 150	12:30	JE	7.56	1058.3	12.12	9.22		medium flow, clear	CA1503063-004	0.1	2	1450	7.86	144	2	943	0.47	9	1	0.01	0.002	0.11	0.0002	0.024
		25/08/2015	Site 150	13:30	JE	7.78		8.8	8.78		very fast flow, EC not recorded due to faulty wquipment	CA1503442-004	0.1	2	1330	7.92	124	2	776	0.42	8	1	0.01	0.002	0.14	0.0002	0.031
		27/08/2015	Site 150	11:55	JE	7.72		11.8	9.18		very fast, 1 foot from top of bank, EC not recorded due to faulty	CA1503477-003	0.1	2	1050	7.77	92.2	8	655	1.1	18	1	0.04	0.005	0.67	0.0006	0.065
		3/09/2015	Site 150	10:50	JE	7.73		11.9	8.96		Medium flow, clear	CA1503570-003	0.1	2	1000	7.82	81.2	2	597	0.68	12	1	0.01	0.003	0.18	0.0002	0.037
2014/15	Minimum					3.9	540.4	8.8	4.91	158.8			0.1	2	723	7.68	55.6	2	428	0.3	5	1	0.01	0.002	0.08	0.0002	0.014
	Maximum					7.78	1058.3	19.9	9.23	158.8			0.1	2	1450	8.05	144	8	943	1.1	18	1	0.04	0.013	0.67	0.0006	0.132
	Average					7.06833	814.9	12.48	8.38	158.8			0.1	2	1069	7.85	104.8333	3.166666667	669.5	0.631667	10.8333333	1	0.018333333	0.0045	0.246667	0.00035	0.0505
	StdDev					1.55394	260.346903	3.84763824	1.70912	#DIV/0!			1.5202E-17	0	276.1825483	0.127436	34.00433	2.401388487	174.691	0.296001	4.5350487	0	0.013291601	0.00432435	0.221058	0.000197	0.043473
	Count					6	3	6	6	1			6	6	6	6	6	6	6	6	6	6	6	6	6	6	6

#### Table 9.4 - IMF Surface Water Results - First Flush System

	Statistics	Field Information	Analytical Information																								
EPL 11455		Date	Site Code	Time	Sampler	рН	Conductivity	Temperature	Dissolved Oxygen	Oxidation- Reduction Potential	Flow	Laboratory Sample Code	Nitrogen (ammonia)	Biochemical Oxygen Demand	Conductivity	pН	Sulphate	Total Suspended Solids	Total Dissolved Solids	Total Kjeldahl Nitrogen	Total Organic Carbon	Oil & Grease	Phosphorous	Total Copper	Total Iron	Total Lead	Total Zinc
				AM/PM	Initials	pH	µS/cm	*C	mg/L	mV			mg/L	mg/L	µS/cm	pH	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	1	9/12/2014	First Flush	9:27am	TB	4.98	897	19.9	4.93	96.1		CA1404012-003	0.1	2	927	7.61	143	5	652	0.74	12	. 1	0.02	0.01	0.24	0.0007	0.177
		17/06/2015	First Flush	12:50	JE	7.85	67.4	10.96	9.04		turbid, DO sat=89.5%, rain for 12 hrs	CA1502373-003	0.1	2	100	7.48	4.9	36	34	0.51	4	. 1	0.08	0.017	1.36	0.0268	0.132
		2/08/2015	First Flush	12:00	JE	8.22	113.2	9.7	9.77		running, turbid	CA1503063-002	0.1	3	159	7.59	10.9	13	98	0.7	7	1	0.05	0.006	0.76	0.0075	0.043
	[	25/08/2015	First Flush	12:30	JE	7.67		9.5	8.85		Low flow, EC not recorded due to malfuntioning equipment.	CA1503442-002	0.1	3	139	7.55	8.9	17	96	0.6	7	1	0.04	0.007	0.87	0.0011	0.051
		27/08/2015	First Flush	12:15	JE	7.79	1	12.2	9.44		Low flow, EC not recorded due to malfuntioning equipment.	CA1503477-004	0.1	4	145	7.5	26	16	80	1.35	20	/ 1	0.06	0.003	1.07	0.0008	0.008
		3/09/2015	First Flush	10:20	JE	7.83	1	10.8	8.49		low flow, turbid, pumped after low rfe	CA1503570-004	0.1	4	136	7.52	8.8	25	78	0.69	7	1	0.05	0.008	1.14	0.0121	0.06
2014/15	Minimum					4.98	67.4	9.5	4.93	96.1			0.1	2	100	7.48	4.9	5	34	0.51	4	1	0.02	0.003	0.24	0.0007	0.008
	Maximum					8.22	897	19.9	9.77	96.1			0.1	4	927	7.61	143	36	652	1.35	20	1	0.08	0.017	1.36	0.0268	0.177
	Average					7.39	359.2	12.1766667	8.42	96.1			0.1	3	267.6666667	7.541667	33.75	18.66666667	173	0.765	9.5	1	0.05	0.0085	0.906667	0.008167	0.0785
	StdDev					1.19504	466.311098	3.90702786	1.76733	#DIV/0!			1.5202E-17	0.894427191	323.5983107	0.051153	54.01869	10.67083252	235.792	0.298312	5.75325995	. 0	0.02	0.004764452	0.388313	0.010228	0.063077
	Count					6	3	6	6	1			6	6	6	6	6	6	6	6	6	6	6	6	6	6	6

## Table 10 - Dust Deposition Results - DG18

Site Name	Date	ALS Batch	Ash Residue	Combust ibles	Calculated Rainfall	Soluble Matter	Insoluble Solids	Total Solids		
		Code	g/m2/mth	g/m2/mth	mm	g/m2/mth	g/m2/mth	g/m2/mth		
DG18	Oct-14	995056	1	0.8	47	0.2	1.8	1.8		
DG18	Nov-14	996821	1.4	0.7	86	0.6	2.1	2.7		
DG18	Dec-14	998683	1.1	0.6	52	1.4	1.7	3.1		
DG18	Jan-15	1001151	0.62	0.58	110	1.6	1.2	2.8		
DG18	Feb-15	1005721	2.2	4.4	4	1.8	6.6	8.4		
DG18	Mar-15	1006175	0.86	0.44	19	0.9	1.3	2.2		
DG18	Apr-15	1008527	0.64	0.46	93	1.9	1.1	3		
DG18	May-15	CA1502162-0	0.36	0.24	10	0.2	0.6	0.6		
DG18	Jun-15	CA1502637-0	1.16	1.44	40	0.5	2.6	3.1		
DG18	Jul-15	CA1503064-0	2.52	1.28	48	1.4	3.8	5.2		
DG18	Aug-15	CA1503297-0	0.86	2.44	12	1.6	3.3	4.9		
DG18	Aug-15	CA1503563-0	0.25	0.25	46	0.2	0.5	0.5		

2014/2015	Min	0.25	0.24	4	0.2	0.5	0.5	
	Max	2.52	4.4	110	1.9	6.6	8.4	
	Avg	1.08	1.14	47.25	1.03	2.22	3.19	
	stDev	0.68	1.20	34.26	0.66	1.71	2.16	



Appendix 5

Monitoring Trend Graphs

# Appendices

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Figure 5.1 - Surface Water Trends - Site 115

Figure 5.2 - Surface Water Trends - Spring 2



Figure 5.3 - Surface Water Trends - Site 105





Figure 5.4 - Surface Water Trends - WM200

1000 10000 100 pH & Analyte Concentration (mg/L) 1000 Conductivity (µS/cm) 10 100 1 10 0.1 жж **₩** \* 0.01 1 Mar-06 -Jun-06 -Sep-06 -Dec-06 -Mar-08 -Jun-08 -Sep-08 -Dec-08 -Mar-04 -Mar-09 -Jun-09 -Sep-09 -Dec-09 -Mar-10 -Jun-10 <u></u> Sep-10 -Dec-10 -Jun-13 -Dec-14 -Mar-15 -Jun-15 -Jun-04 Sep-04 Dec-04 Mar-05 -Jun-05 Sep-05 Jun-07 Sep-07 Dec-07 Mar-11 Jun-11 Sep-11 Dec-11 Mar-12 Jun-12 -Sep-12 Dec-12 Mar-13 -Sep-13 Dec-13 Mar-14 Jun-14 Sep-14 Mar-07 Sample Date → pH → Sulfate → Iron → Ammonia → Zinc → Total Organic Carbon - Conductivity  $\rightarrow$ 

Figure 5.5 - Surface Water Trends - WM201



Figure 5.6 - Surface Water Trends - WM202

Figure 5.7 - Surface Water Trends - WM203



Figure 5.8 - Surface Water Trends - Pond 3





Figure 3.2.5A - Groundwater Levels - MB1 to MB17 and ED3B

Figure 3.2.5.1 - Groundwater Trends - MB1



Figure 3.2.5.2 - Groundwater Trends - MB2



Figure 3.2.5.3 - Groundwater Trends - MB3



1000 10000 100 1000 pH & Analyte Concentration (mg/L) 10 Conductivity (µS/cm) 1 100 0.1 0.01 10 0.001 0.0001 1 Nov-10 Aug-15 May-12 Aug-12 Nov-12 May-13 Aug-13 Nov-13 Feb-14 Feb-15 May-15 May-11 Feb-12 Feb-13 May-14 Aug-14 Nov-14 Feb-11 Aug-11 Nov-11 Sample Date - Dissolved Lead ——— Ammonia ——— Zinc ——— Total Organic Carbon → pH → Sulfate ----- Conductivity

Figure 3.2.5.5 - Groundwater Trends - MB5





Figure 3.2.5.6 - Groundwater Trends - MB6

Figure 3.2.5.7 - Groundwater Trends - MB7



Figure 3.2.5.8 - Groundwater Trends - MB8



Figure 3.2.5B - Groundwater Levels - WM1 to WM6



Feb-08 Aug-08 Feb-09 Aug-09 Feb-10 Aug-10 Feb-11 Aug-11 Feb-12 Aug-12 Feb-13 Aug-13 Feb-14 Aug-14 Feb-15 Aug-15 Sample Date

Figure 3.2.5C - Groundwater Levels - MW8S to MW10S



Figure 3.2.5.18 - Groundwater Trends - WM1


Figure 3.2.5.19 - Groundwater Trends - WM4



Figure 3.2.5.20 - Groundwater Trends - WM5



Figure 3.2.5.21 - Groundwater Trends - WM6



Figure 3.2.5.22 - Groundwater Trends - MW8S



Figure 3.2.5.23 - Groundwater Trends - MW8D



100000 100000 10000 10000 1000 pH & Analyte Concentration (mg/L) 100 Conductivity (µS/cm) 1000 10 1 100 0.1 0.01 10 0.001 0.0001 1 May-08 Aug-08 Nov-08 Feb-09 \_ 60-6nY Feb-10 May-10 Aug-10 <sup>-</sup> Nov-10 Feb-13<sup>-</sup> May-13 Aug-13 Nov-13 Feb-15 May-15 <sup>-</sup> Aug-15 <sup>-</sup> May-09 Nov-09 Feb-12 May-12 Aug-12 Nov-12 Feb-14 May-14 Aug-14 Nov-14 Feb-11 May-11 Aug-11 Nov-11 Sample Date → pH → Sulfate 

Figure 3.2.5.24 - Groundwater Trends - MW9S



Figure 5.2.1.1 - IMF Surface Water Trends - Site 110

Figure 5.2.1.2 - IMF Surface Water Trends - Site 130





Figure 5.2.1.3 - IMF Surface Water Trends - Site 150



Figure 5.2.1.4 - IMF Surface Water Trends - First Flush

Appendix 6 MB19 and MB20 Monitoring Results

## Appendices

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## Appendix 6 - MB19 & MB20

## Table 11.1 - Groundwater Results - Monitoring Bore 19

Date Site Code Time Sample pH Conductivity Temperature Dissolved Cathor of the conductivity Character Character Character Character Character Dissolved <th>ate Total Dissolved Solids</th>	ate Total Dissolved Solids
AM/PM Initials pH μS/cm °C mg/L mV m mRL mg/L mg/L mg/L mg/L mg/L μS/cm mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/	L mg/L
24/09/2014 MB19 10:00am TB 6.57 6160 13.6 3.73 4.5 1.3 776.22 CA1402959-001 554 0.1 554 0.1 906 6430 614 454 1.9 250 6.86 7	J 5620
15/12/2014 MB19 9:55am TB 6.8 6300 16.9 3.08 31.8 1.5 776.02 CA1404137-002 559 0.1 559 0.1 1250 6710 689 455 1.9 260 6.8 5	J 6540
4/06/2015 MB19 10:20am JE/Rbe 7.26 6210.4 15.12 2.06 1.91 775.61 CA1502141-001 581 0.1 581 0.1 1400 7400 781 512 1.6 245 6.73 7	J 6930
23/06/2015 MB19 ####### JE 6.31 6214 15 2.03 1.64 775.88 CA1502458-001 584 0.1 584 0.1 1560 7380 753 520 1.8 252 6.82 2	J 6920

## Table 11.2 - Groundwater Results - Monitoring Bore 20

Statistics	Field Information	Analytical Information																							
	Date	Site Code	Time	Sampler	рН	Conductiv ity	Temperat ure	Dissolved Oxygen	Oxidation- Reduction Potential	Depth to Water	RL Water Level	Laboratory Sample Code	Bicarbona te	Carbonat e	Alkalinity (as CaCO3)	Nitrogen (ammonia )	Chloride	Conductivity	Dissolved Calcium	Dissolved Magnesium	Dissolved Potassium	Dissolved Sodium	рН	Sulphate	Total Dissolved Solids
			AM/PM	Initials	pН	µS/cm	°C	mg/L	mV	m	m RL		mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	pН	mg/L	mg/L
	24/09/2014	MB20	10:15am	TB	6.55	5210	14	3.85	5.6	1.87	776.15	CA1402956-002	405	0.1	405	0.1	588	5420	580	370	1.2	188	6.72	2500	4980
	15/12/2014	MB20	10:05am	TB	6.55	5930	15.3	3.21	6.2	2.2	775.82	CA1404137-002	462	0.1	462	0.1	662	5690	617	395	1.3	226	8.84	2610	5980
	4/06/2015	MB20	10:40am	JE/Rbe	7.21	5517.4	14.83	1.52		2.57	775.45	CA1502141-002	521	0.1	521	0.1	841	6600	689	504	1.3	266	6.83	2870	6170
	23/06/2015	MB20	14:40	JE	6.32	5267	14.81	1.04		2.44	775.58	CA1502458-002	510	0.1	510	0.1	906	6300	644	484	1.4	253	6.77	2930	5940