Envirowest Consulting *Pty Ltd* ABN 18 103 955 246
• 24 William Street, PO Box 8158, Orange NSW 2800 • Tel (02) 6361 4954 •
• Fax (02) 6360 3960 • Email ec@envirowest.net.au • Web www.envirowest.net.au •

Environmental
Geotechnical
Hygienist
Services

24 October 2011

Lew Bezzina
National Parks & Wildlife Service
High Street
Hill End NSW 2850

Ref: L11321

Dear Lew,

Kitty's Flat Sewage Treatment System- Soil and water microbiological investigation

1. Introduction

The Kitty's Flat Sewage Treatment System requires assessment of impact of microbiological contamination on the environment by soil and water sampling as recommended in a recent study of the site.

2. Objective

Undertake preliminary soil and water sampling to assess impaction of E. coli and coliforms from the Sewage System on the on the local environment.

3. Site location and description

The study area is the Kitty's Flat Sewage Treatment system consisting of a number of treatment ponds and located in the Village of Hill End. Sewage from the village of approximately 100 dwellings is pumped into a settling pond. The overflow flows into a series of reed bed ponds and an evaporation pond. The effluent is disposed primarily by evaporation from the ponds and infiltration into the soil. The evaporation pond has a spillway from which overflow discharges occur (discharge point 1).

The treatment system is located in an area of remnant bushland. A permanent stream (Insolvent Gully) is located 50m downslope of the spillway.

4. Investigation

The site was inspected on 26 September 2011 and soil and water samples collected. The water in the ponds was 10cm below the discharge point of the spillway. The soil along the spillway was moist on the inspection date. Approximately 15mm of rainfall occurred on the day prior to sampling.

Water samples were collected directly into laboratory prepared containers directly from the water source.

Soil samples were collected by excavation with a clean stainless steel spade and placing soil into laboratory prepared containers.

After collected the samples were placed in an insulated contained with ice for transport to the laboratory. The samples were analysed in the laboratory of ALS environmental for E. coli and total faecal coliforms. The laboratory is NATA accredited for the tests conducted.

Table 1. Soil and water samples were collected from the following locations:

Sample id	Substrate	Location	Rationale
HE1	Water	Evaporation pond discharge point 1	Determine the presence of coliforms in the evaporation pond and treatment effectiveness
HE2	Soil	Soil (30cm depth) from discharge spillway, soil moist	Determine the presence of coliforms in the soil at a location of coliforms at the initial discharge location
HE3	Soil	Soil from discharge seepage area 50m downslope of the discharge point at the 5-10cm depth. HE3 is 5 metres from Insolvent Gully. Moist soil.	Determine the presence of coliforms in the soil at a discharge location downslope of the evaporation pond and near Insolvent Gully.
HE4	Water	Subsoil water seepage into an excavation at sampling location HE3.	Determine the presence of coliforms in the shallow surface seepages at a discharge location downslope of the evaporation pond and near Insolvent Gully.
HE5	Soil	Soil from the 5-10cm depth 10 metres downslope of the settlement pond at a seepage area.	Determine the presence of coliforms in the soil at a discharge location downslope of the settlement pond.

5. Quality assurance/quality control

The work was undertaken in accordance with Envirowest standard quality assurance and quality control guidelines. Assessment of data quality indicators indicate the results are suitable for the purposes of the investigation.

6. Assessment criteria

The site located in a national park and the main receptors are environmental. The most sensitive receptor is the stream located 50 metres downslope of the evaporation ponds. The park is also utilised by recreation users traversing the site. The expected water use is secondary contact activities including fishing, boating. Primary contact activities such are swimming will not occur in the stream due to the minimal water flows in the stream. Water quality guidelines for recreation users are presented in Table 2.

No OEH guidelines for *E. coli* or faecal coliforms are endorsed for soil. The proposed guidelines are for residential land-use based on biosolids criteria. High levels of *E.coli* and faecal coliforms are likely to be a symptom of discharge from the dam and potential entry to the stream. The proposed guidelines are applied for unrestricted Grade A4 in Use and Disposal of Bio solids Products (EPA 2000) and presented in Table 2.

Background coliforms will occur from wild goats, kangaroos and other animals that inhabit the site. The animals are likely to contribute to coliforms in the soil and surface water.

Table 2. Adopted criteria

Analyte	Primary contact (MPN/100mL) (ANZECC 2000)	Secondary contact (MPN/100mL) (ANZECC 2000)	Biosolids Unrestircted Grade A4 (MPN/g) (EPA(2000)
Substrate	Water	Water	Soil
E. coli	35	230	<100
Faecal coliforms	150	1,000	<1,000

MPN – most probable number

7. Results

7.1 Soil (Table 3)

The soil samples collected from the discharge spillway (HE2), seepage 50m downslope near stream (HE3) and seepage downslope of settling pond (HE5) contained *E.coli* and coliforms at low levels or not detected and less than the less than the biosolids unrestricted grade.

7.2 Water (Table 4)

The discharge evaporation pond sampled water (HE1) contained *E. coli* less than the primary and secondary contact thresholds and total coliforms. The discharge evaporation pond contained level of total coliforms greater than the primary and secondary contact thresholds. Water overflowing the pond contains levels of coliforms slightly exceeding the secondary contact coliform threshold.

Subsurface water collected from a small an excavation near the Insolvent Gully (HE5) contained levels of *E. coli* exceeding the primary contact but not the secondary contact thresholds. Water in sample HE4 contained very high level of total coliforms exceeding the primary and secondary contact thresholds. It is possible the high levels of total coliforms in the soil in sample HE4 are from animal sources.

Table 3. Results for soil samples 26/9/11 (MPN/100mL)

Sample id	**Substrate**	**Location**	***E. coli***	**Coliforms**
HE2	Soil	Discharge spillway	<3	<3
HE3	Soil	50m downslope of the discharge point	<3	11
HE5	Soil	10 m downslope of the settlement pond	<3	<3
Biosolids Unrestircted Grade A4 (MPN/g)	(EPA 2000)		<100	<1,000

Table 4. Results for water samples 26/9/11 (MPN/100mL)

Sample id	**Substrate**	**Location**	***E. coli***	**Coliforms**
HE1	Water	Evaporation pond	33	**1,100**
HE4	Water	50m downslope of the discharge point.	130	**>18,000**
Primary contact	(ANZECC 2000)		35	150
Secondary contact	(ANZECC 2000)		230	1,000

8. Conclusions

All soil samples contained low level of *E.coli* and total coliforms below the bio solids unrestricted levels.

Discharge water contained levels of total coliform greater than the secondary contact thresholds.

Shallow sub surface water downslope of the evaporation pond and near the stream contained very high levels of total coliforms exceeding the secondary contact threshold.

9. Recommendations

The following sampling program is recommended to enable assessment and monitoring of the Kitty's flat Sewage Treatment Works for impacts on the environment:

- Additional sampling should be undertaken of the evaporation pond at 3 monthly intervals to monitor the treatment process.

- A shallow groundwater well should be installed in the groundwater discharge location of sampling HE4. The well will enable characterisation of subsurface groundwater for *E. coli* and coliforms. Groundwater sampling should be undertaken at 3 monthly intervals.

- The stream water in Insolvent Gully should be sampled above and below the effluent treatment system at 3 monthly intervals.

10. References

ANZECC (2000) *Australian Water Quality Guidelines for Fresh and Marine Waters* (Australian and New Zealand Environmental and Conservation Council, Canberra)

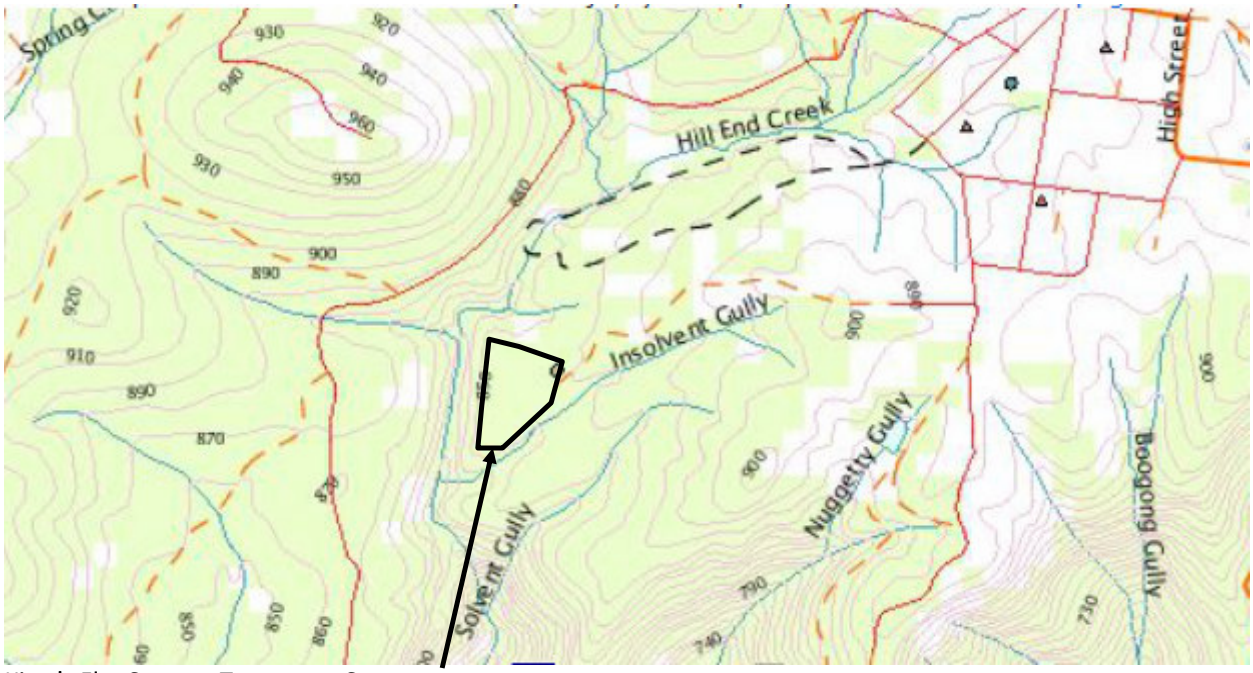
EPA(2000) Use and Disposal of Biosolids Products (NSW Environment Protection Authority: Sydney)

Regards

Greg Madafiglio
Senior soil scientist

Attachments

Figure 1. Locality plan
Figure 2. Aerial photo and sampling locations
Appendix 1.Sampling log
Appendix 2. ALS laboratory report ES1120939



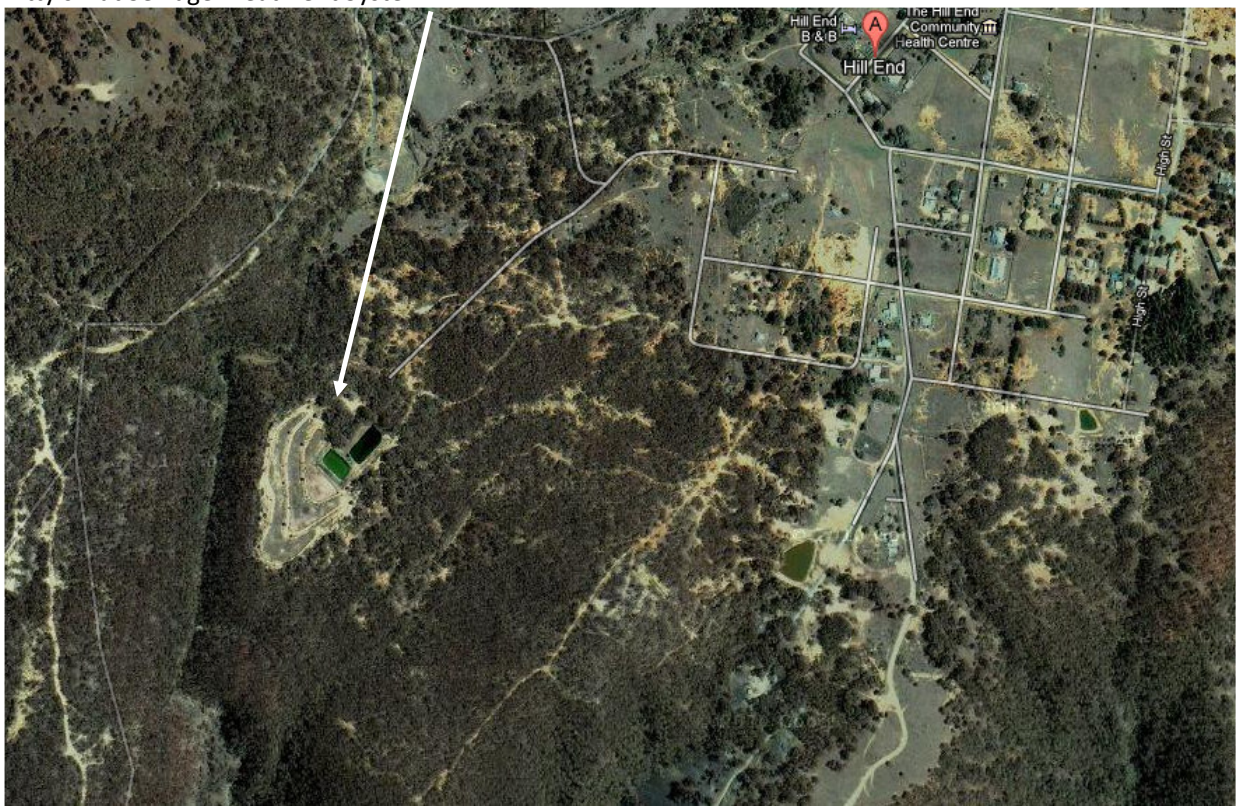


Figure 1. Locality map and aerial photograph of the site		
Kitty's Flat Sewage Treatment System Hill End, NSW		
	Envirowest Consulting Pty Ltd	
Job: R11321	Drawn by: GM	Date: 22/10/2011

Approximate scale

0 50 100m

Legend

⊗ Sampling Location

Slope

Figure 2. Site plan and sampling locations		
Kitty's Flat Sewage Treatment System Hill End, NSW		
	Envirowest Consulting Pty Ltd	
Job: R11321	Drawn by: GM	Date: 22/10/2011

Appendix 1.Sampling log

Sampling log

Client	National Parks and Wildlife Service
Contact	Lew Bezzina
Job number	11321
Location	Kitty's Flat Sewage Treatment System, Hill End
Date	26 September 2011
Investigator(s)	Greg Madafiglio
Weather conditions	Cool and sunny

Sample id	Matrix	Time	Analysis required	Observations/comments
HE1	Water	12.10pm	E. coli, Total coliforms	Evaporation pond, very low turbidity
HE2	Soil	12.20pm	E. coli, Total coliforms	Red brown silty clay, moist
HE3	Soil	12.30pm	E. coli, Total coliforms	Brown silty sand, moist
HE4	Soil	12.40pm	E. coli, Total coliforms	High turbidity
HE5	Soil	12.50pm	E. coli, Total coliforms	Brown silty sand, moist

Appendix 2. ALS laboratory report ES1120939

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1120939**	Page	: 1 of 4
Client	: **ENVIROWEST CONSULTING**	Laboratory	: Environmental Division Sydney
Contact	: THE RESULTS ADDRESS	Contact	: Client Services
Address	: PO BOX 9158 ORANGE NSW, AUSTRALIA 2800	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: ec@envirowest.net.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 63614954	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 63603960	Facsimile	: +61-2-8784 8500
Project	: 11321	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 11321		
C-O-C number	: 11321	Date Samples Received	: 27-SEP-2011
Sampler	: GM	Issue Date	: 06-OCT-2011
Site	: 11321		
		No. of samples received	: 5
Quote number	: SY/287/10	No. of samples analysed	: 5

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Jennifer Matthews	Microbiology Team Leader	Microbiology
Sarah Axisa	Microbiologist	Sydney Microbiology

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **ALS is not NATA accredited for the analysis of E. coli and Coliforms in soil.**
- **MW008 is ALS's internal code and is equivalent to AS4276.6.**
- **MW009 is ALS's internal code and is equivalent to AS4276.6.**
- **No standard reference exists for the Holding Time of Microbiological testing in soils. ALS is of the opinion that Microbiological testing should be conducted as soon as possible after sample collection. Therefore, ALS sets a 48 hour Holding Time for Microbiological testing of soils to facilitate the setting of internal task priorities and endeavours to commence analysis as soon as practicable after receipt**
- **Where MPN = Most Probable Number.**

Analytical Results

Sub-Matrix: SOIL			Client sample ID	HE2	HE3	HE5	----	----
			Client sampling date / time	26-SEP-2011 15:00	26-SEP-2011 15:00	26-SEP-2011 15:00	----	----
Compound	CAS Number	LOR	Unit	ES1120939-002	ES1120939-003	ES1120939-005	----	----
MW008: Faecal Coliforms & E.coli by MPN								
Escherichia coli	----	-	MPN/g	<3	<3	<3	----	----
MW009: Coliforms by MPN								
Coliforms	----	-	MPN/g	<3	**11**	<3	----	----

Analytical Results

Sub-Matrix: WATER			Client sample ID	HE1	HE4	----	----	----
			Client sampling date / time	26-SEP-2011 15:00	26-SEP-2011 15:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1120939-001	ES1120939-004	----	----	----
MW008: Faecal Coliforms & E.coli by MPN								
Escherichia coli	Ecoli	2	MPN/100 mL	**33**	**1100**	----	----	----
MW009: Coliforms by MPN								
Coliforms	----	2	MPN/100 mL	**130**	**>18000**	----	----	----

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **ES1120939**	Page	: 1 of 5
Client	: **ENVIROWEST CONSULTING**	Laboratory	: Environmental Division Sydney
Contact	: THE RESULTS ADDRESS	Contact	: Client Services
Address	: PO BOX 9158 ORANGE NSW, AUSTRALIA 2800	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: ec@envirowest.net.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 63614954	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 63603960	Facsimile	: +61-2-8784 8500
Project	: 11321	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: 11321		
C-O-C number	: 11321	Date Samples Received	: 27-SEP-2011
Sampler	: GM	Issue Date	: 06-OCT-2011
Order number	: 11321		
		No. of samples received	: 5
Quote number	: SY/287/10	No. of samples analysed	: 5

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Jennifer Matthews	Microbiology Team Leader	Microbiology
Sarah Axisa	Microbiologist	Sydney Microbiology

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (SCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) Results are required to be reported.**

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES1120939**	Page	: 1 of 6
Client	: ENVIROWEST CONSULTING	Laboratory	: Environmental Division Sydney
Contact	: THE RESULTS ADDRESS	Contact	: Client Services
Address	: PO BOX 9158 ORANGE NSW, AUSTRALIA 2800	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: ec@envirowest.net.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 63614954	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 63603960	Facsimile	: +61-2-8784 8500
Project	: 11321	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: 11321		
C-O-C number	: 11321	Date Samples Received	: 27-SEP-2011
Sampler	: GM	Issue Date	: 06-OCT-2011
Order number	: 11321		
		No. of samples received	: 5
Quote number	: SY/287/10	No. of samples analysed	: 5

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers

Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
MW008: Faecal Coliforms & E.coli by MPN								
Sterile Plastic Jar								
HE2, HE5	HE3,	**26-SEP-2011**	**----**	----	----	**29-SEP-2011**	28-SEP-2011	✘
MW009: Coliforms by MPN								
Sterile Plastic Jar								
HE2, HE5	HE3,	**26-SEP-2011**	**----**	----	----	**29-SEP-2011**	28-SEP-2011	✘

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
MW008: Faecal Coliforms & E.coli by MPN								
Sterile Plastic Jar								
HE1,	HE4	**26-SEP-2011**	**---**	27-SEP-2011	----	**27-SEP-2011**	27-SEP-2011	✘
MW009: Coliforms by MPN								
Sterile Plastic Jar								
HE1,	HE4	**26-SEP-2011**	**---**	27-SEP-2011	----	**27-SEP-2011**	27-SEP-2011	✘

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix:

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Thermotolerant Coliforms & E.coli by MPN	* MW008S	SOIL	AS 4276.6 - 1995
Coliforms by MPN	MW009S	SOIL	AS 4276.4 - 1995
Thermotolerant Coliforms & E.coli by MPN	MW008	WATER	AS 4276.6 - 2007
Coliforms by MPN	MW009	WATER	AS 4276.6 - 2007

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**
- **For all matrices, no Laboratory Control outliers occur.**
- **For all matrices, no Matrix Spike outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
MW008: Faecal Coliforms & E.coli by MPN						
Sterile Plastic Jar						
HE2, HE3, HE5	----	----	----	29-SEP-2011	28-SEP-2011	**0**
MW009: Coliforms by MPN						
Sterile Plastic Jar						
HE2, HE3, HE5	----	----	----	29-SEP-2011	28-SEP-2011	**0**

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
MW008: Faecal Coliforms & E.coli by MPN						
Sterile Plastic Jar						
HE1, HE4	----	----	----	27-SEP-2011	27-SEP-2011	**0**
MW009: Coliforms by MPN						
Sterile Plastic Jar						
HE1, HE4	----	----	----	27-SEP-2011	27-SEP-2011	**0**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

Subcon / Forward Lab / Split WO
Lab / Analysis: Melb. Food & Pharm
Organised By / Date: Soil - micro
Relinquished By / Date:
Connote / Courier:
WO No:
Attach By: EC / Internal Sheet:

Environmental Division Sydney
Work Order
ES1120939

Chain of Custody Form – Ref 11321

Sh

Ana

Telephone : +61-2-8784 8555

Ref:	**11321**
Investigator:	Envirowest Consulting 24 William Street PO Box 8158 (postal address) ORANGE NSW 2800
Telephone:	(02) 6361 4954
Facsimile:	(02) 6360 3960
Email:	**ec@envirowest.net.au**
Contact Person:	Joashim Mahon
Laboratory:	Australian Laboratory Services 277 Woodpark Road SMITHFIELD NSW 2164
Quotation #:	
Courier/CN:	SY/287/10 OCS #

			Sample matrix			Sample preservation			Analytical Group Code or ALS Method Code			
									MW008-S	MW008-W	MW009-S	MW009-W
Sample ID	**Container**	**Sampling Date**	Water	Soil	Sludge	Cool	HNO3/ HCl/ NO3	Un-preserved	E. coli (MPN)	E. coli (MPN)	Total Coliforms (MPN)	Total Coliforms (MPN)
1 HE1	E	26/9/11	X			X		X		X		X
2 HE2	E	26/9/11		X		X		X	X		X	
3 HE3	E	26/9/11		X		X		X	X		X	
4 HE4	E	26/9/11	X			X		X		X		X
5 HE5	E	26/9/11		X		X		X	X		X	

HT

Investigator: I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler name: Greg Madafiglio
Date: 26/9/11

Relinquished by: (print and signature)	Joashim Mahon	Date 26/9/11	Time 17:00	Received by: (print and signature)	Date 27/9/11 Time 8:50

Please return completed form to Envirowest Consulting, A = 200mL solvent rinsed glass jar with Teflon lined lid, B = 2x40mL vials solvent rinsed this Teflon lined septum caps, C 1x250mL glass bottles, D= 60mL plastic bottle with nitric acid, E = 1 x 120mL sterile plastic jar