

19<sup>th</sup> December, 2023



**Harvest Scientific Services**  
Environmental and Earth Science Consultants

Mr M Collins  
Collins Construction Materials Pty Ltd  
214 MacArthur Road  
Elderslie NSW 2570

Dear Matt,

**Re: Environmental Monitoring – Spring Farm: Report 2023-12**

**Our Ref: 201019**

This is to confirm that groundwater sampling and dust monitoring at Spring Farm (see Appendix 1 for sample locations) has been carried out with the results summarised in Tables 1 and 2 respectively below.

**(a) GROUNDWATER MONITORING**

TABLE 1: SUMMARY OF GROUNDWATER MONITORING RESULTS.					
ANALYTE	VALUE	TARGET	DATE	TIME	TEMP
EC (uS/cm)	190 ( <i>Non-Saline</i> )	< 800 uS/cm	6-12-2023	10.00	24°C
pH	7.26 ( <i>Moderately alkaline</i> )	4 – 6.50			
Depth to Water Table (m) <sup>1</sup>	11.4	> 10 m			

**Notes:** 1. This value represents the depth to groundwater from the TOP OF THE STAND PIPE (670 mm above ground level); 2. Refer to **Appendix 2** for laboratory analysis results and monthly summary data 3 Refer to **Appendix 3** for quality control documentation.

The results indicate that groundwater is:

- *Non-saline* and is well below the nominated target of < 800uS/cm;
- *Moderately alkaline* falling marginally outside the nominated pH range of 4 – 6.50;
- Met the limit of the target depth of > 10 m.

**(b) DUST MONITORING**

TABLE 2: SUMMARY OF DUST DEPOSITION MONITORING RESULTS.					
SAMPLING PERIOD	LOCATION	TOTAL INSOLUBLE MATTER <sup>1</sup> (g/m2/month)	Ash or Mineral Content (g/m2/month)	COMMENT	EMP targets (Ash or Mineral Content)
November 2023	1	0.10	NTA	Pass	≤ 4g / m2 per month
	2	0.60	NTA	Pass	
	3	1.70	NTA	Pass	

**Notes:** 1. Refer to **Appendix 1** for monitoring locations. 2. Refer to **Appendix 2** for laboratory analysis results and monthly summary data. Refer to **Appendix 3** for quality control documentation.

The EMP target values were met at all Monitoring Stations.

Yours faithfully,

Mart Rampe BSc (Applied Geology)  
Principal Consultant

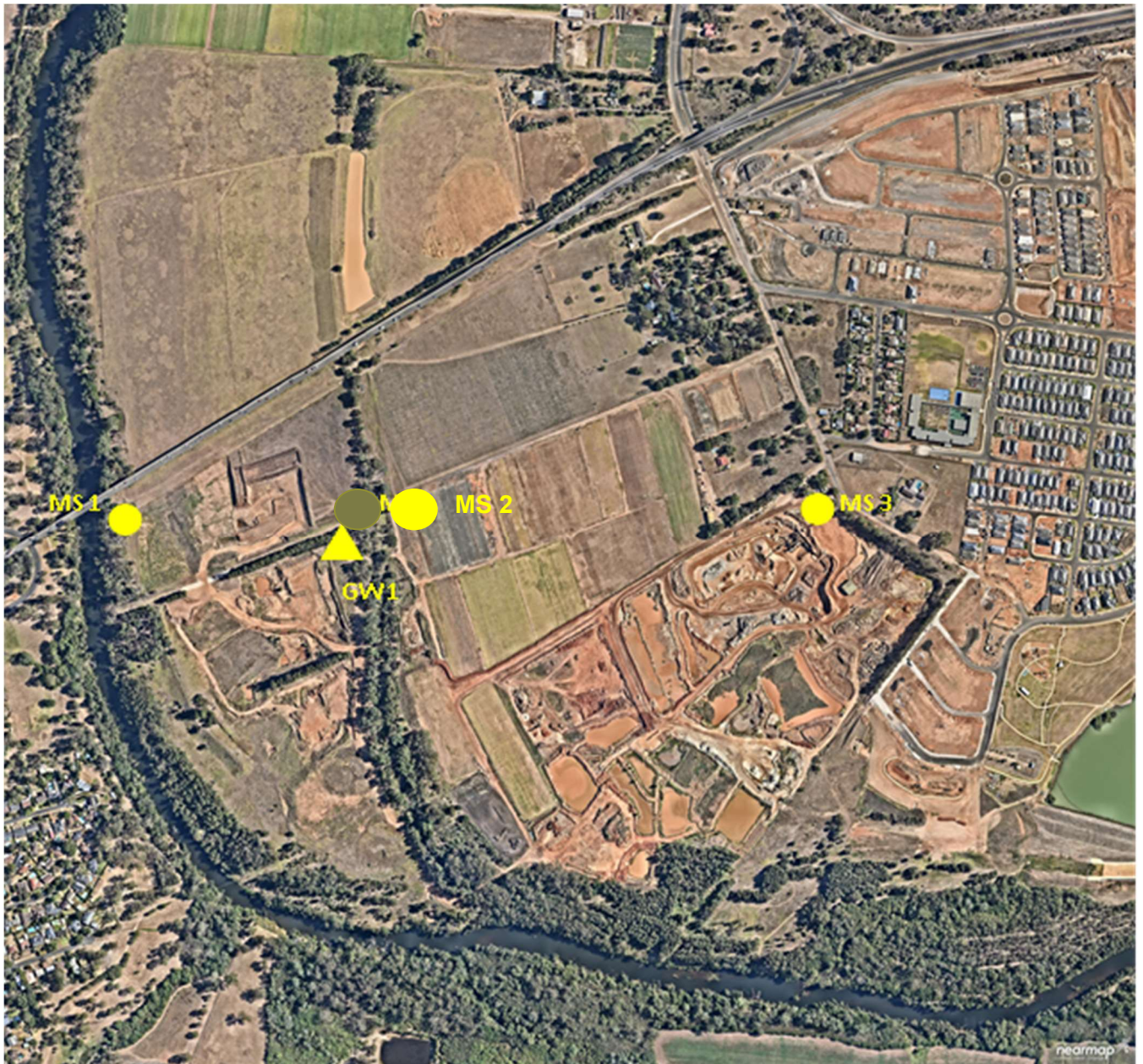
All Correspondence to: PO Box 427 Narellan NSW 2567  
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www.harvestservices.com.au  
Email: office@harvestservices.com.au  
Tel: 02 4647 6177 • Mobile: 0408 677 709



## APPENDIX 1: Collins Spring Farm Monitoring Locations

MS 1: Dust      MS 2: Dust      MS 3: Dust

GW-1: Groundwater



## **APPENDIX 2: Laboratory Analytical Results and Monthly Summary Data**



## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2342304**  
**Client** : **HARVEST SCIENTIFIC SERVICES**  
**Contact** : MART RAMPE  
**Address** : PO BOX 427  
NARELLAN NSW, AUSTRALIA 2567  
**Telephone** : ----  
**Project** : COLLINS SPRING FARM  
**Order number** : 2023-12  
**C-O-C number** : ----  
**Sampler** : MART RAMPE  
**Site** : ----  
**Quote number** : EN/333  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 2  
**Laboratory** : Environmental Division Sydney  
**Contact** : Customer Services ES  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
**Telephone** : +61-2-8784 8555  
**Date Samples Received** : 06-Dec-2023 14:26  
**Date Analysis Commenced** : 06-Dec-2023  
**Issue Date** : 07-Dec-2023 14:57



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

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

*Signatories*

*Position*

*Accreditation Category*

Dian Dao

Senior Chemist - Inorganics

Sydney Inorganics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 insufficient 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

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  
 ø = ALS is not NATA accredited for these tests.  
 ~ = Indicates an estimated value.

## Analytical Results

Sub-Matrix: WATER  
 (Matrix: WATER)

				Sample ID	COLLINS GW 1	----	----	----	----
				Sampling date / time	06-Dec-2023 10:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2342304-001	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	<b>7.26</b>	----	----	----	----	----
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	<b>190</b>	----	----	----	----	----

# Groundwater Results

GROUNDWATER MONITORING STATION GW-1: COLLINS SITE 2016 - 2023						
Date	Time	Temp. (°C)	EC (µS/cm)	pH	Depth to Water Table (m) from top of stand pipe	Comments
4/01/2016	11:00	20	409	5.00	11.50	
5/02/2016	10:45	22	410	5.61	11.60	
3/03/2016	9:00	23	399	5.23	11.60	
6/04/2016	9:00	23	359	5.03	11.40	
5/05/2016	12:30	22	363	5.77	11.50	
3/06/2016	2:00	18	377	5.47	11.60	
4/07/2016	12:30	13	372	5.32	10.70	
3/08/2016	10:00	12	261	6.84	10.70	
5/09/2016	10:00	12	250	5.62	10.40	
1/10/2016	10:00	12	252	6.16	10.50	
1/11/2016	8:00	11	296	5.93	10.70	
1/12/2016	8:00	12	352	5.63	10.70	
6/01/2017	11:00	21	363	5.45	10.70	
3/02/2017	8:30	22	334	5.53	11.10	
3/03/2017	8:30	23	361	5.25	11.10	
4/04/2017	8:30	16	392	5.46	10.80	
1/05/2017	10:30	16	294	6.09	10.70	
1/06/2017	8:00	8	373	5.12	11.00	
3/07/2017	8:00	2	356	5.63	10.90	
1/08/2017	9:00	12	346	6.00	11.00	
4/09/2017	9:00	12	352	5.63	11.00	
10/10/2017	8:00	16	349	5.57	11.10	
6/11/2017	9:00	16	326	5.06	11.00	
5/12/2017	9:00	18	304	5.42	11.20	
11/01/2018	9:00	22	305	5.72	11.10	
7/02/2018	10:00	25	303	4.94	11.40	
7/03/2018	9:00	20	302	4.86	11.40	
6/04/2018	10:00	22	318	5.43	11.40	
3/05/2018	10:00	12	307	5.37	11.50	
5/06/2018	10:00	14	304	5.60	11.60	
6/07/2018	10:00	20	306	5.61	11.50	
2/08/2018	9:00	15	303	5.95	11.50	
3/09/2018	10:00	6	311	5.57	11.60	
3/10/2018	10:00	14	338	6.24	11.60	
5/11/2018	10:00	20	324	6.25	11.60	
3/12/2018	8:30	20	324	6.09	11.60	
11/01/2019	10:00	23	291	6.07	11.50	
4/02/2019	8:00	22	264	5.72	11.50	
5/03/2019	10:00	25	262	5.60	11.60	
1/04/2019	10:00	18	273	5.62	11.60	
1/05/2019	10:00	17	221	5.81	11.60	
31/05/2019	10:00	9	293	5.28	11.70	
27/06/2019	9:00	10	288	5.85	11.70	
2/08/2019	9:00	5	318	7.48	11.80	
2/09/2019	10:00	13	318	5.37	11.80	
3/10/2019	10:00	21	310	6.57	11.80	
5/11/2019	10:00	23	318	5.78	11.80	
4/12/2019	10:00	21	307	6.15	11.80	
2/01/2020	10:00	23	302	5.66	11.80	
4/02/2020	10:00	19	344	5.57	11.90	
3/03/2020	2:00	23	298	5.83	10.96	
1/04/2020	11:00	22	304	5.65	11.10	
4/05/2020	11:00	21	299	5.55	11.10	
1/06/2020	11:00	19	272	6.14	11.40	
2/07/2020	8:00	3	243	6.79	11.50	
3/08/2020	10:00	5	267	6.02	11.50	
2/09/2020	8:00	6	285	5.57	11.30	
1/10/2020	8:00	15	255	6.45	11.30	
3/11/2020	10:00	15	274	6.01	11.30	
11/12/2020	10:00	19	259	5.94	11.30	
11/01/2021	10:00	21	272	5.57	11.40	
9/02/2021	10:00	21	291	5.76	11.40	
8/03/2021	11:00	27	293	5.73	11.45	
6/04/2021	10:00	23	288	5.78	11.00	
5/05/2021	10:00	15	291	5.59	10.40	
3/06/2021	10:00	10	258	5.41	10.30	
5/07/2021	10:00	6	154	5.77	10.70	
4/08/2021	10:00	15	153	6.63	10.90	
1/09/2021	10:00	14	168	6.74	11.00	
5/10/2021	10:00	18	156	7.36	11.10	
2/11/2021	10:00	20	163	6.07	11.10	
3/12/2021	10:00	21	174	5.65	11.10	
10/01/2022	10:00	25	178	6.83	11.00	
2/02/2022	10:00	21	214	5.52	11.00	
1/04/2022	10:00	16	264	5.49	7.00	
2/05/2022	10:00	15	92	7.67	7.40	
6/06/2022	10:00	11	100	6.14	8.40	
1/07/2022	10:00	10	95	6.36	9.10	
4/08/2022	11:00	20	202	7.39	7.70	
2/09/2022	10:00	14	223	5.85	8.90	
4/10/2022	10:00	15	235	5.60	9.40	
4/11/2022	10:00	18	188	5.83	8.60	
13/12/2022	10:00	22	169	5.81	9.70	
10/01/2023	10:00	23	176	5.95	9.90	
6/02/2023	10:00	24	186	6.20	10.20	
9/03/2023	10:00	18	181	6.17	10.50	
3/04/2023	10:00	19	180	6.41	10.70	
3/05/2023	10:00	12	182	6.24	10.80	
6/06/2023	10:00	8	185	7.55	11.10	
5/07/2023	10:00	15	181	7.51	11.10	
4/08/2023	10:00	13	190	6.91	11.30	
5/09/2023	10:00	20	184	6.68	11.40	
4/10/2023	10:00	21	182	6.42	11.50	
7/11/2023	10:00	23	187	6.56	11.40	
6/12/2023	10:00	24	190	7.26	11.40	





## CERTIFICATE OF ANALYSIS

**Work Order** : **EN2312334**  
**Client** : **HARVEST SCIENTIFIC SERVICES**  
**Contact** : MART RAMPE  
**Address** : PO BOX 427  
NARELLAN NSW, AUSTRALIA 2567  
**Telephone** : ----  
**Project** : Collins Spring Farm  
**Order number** : 2023-12  
**C-O-C number** : ----  
**Sampler** : MART RAMPE  
**Site** : ----  
**Quote number** : ----  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 2  
**Laboratory** : Environmental Division Newcastle  
**Contact** :  
**Address** : 5/585 Maitland Road Mayfield West NSW Australia 2304  
**Telephone** : +61 2 4014 2500  
**Date Samples Received** : 07-Dec-2023 17:00  
**Date Analysis Commenced** : 11-Dec-2023  
**Issue Date** : 18-Dec-2023 16:45



Accreditation No. 825  
Accredited for compliance with  
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This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Thomas Regan	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW



## General Comments

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

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 LOR = Limit of reporting  
 ^ = This result is computed from individual analyte detections at or above the level of reporting  
 ø = ALS is not NATA accredited for these tests.  
 ~ = Indicates an estimated value.

- Dust analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in deposition units e.g., g/m<sup>2</sup>.mth where the sampling procedure is not NATA accredited. ALS Mudgee laboratory is NATA accredited for dust sampling, therefore ALS Mudgee reported deposition units are accredited.
- Analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in g/m<sup>2</sup>.mth as sampling data was provided by the client.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.

## Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST**  
 (Matrix: AIR)

Sample ID

				COLLINS 1	COLLINS 2	COLLINS 3	----	----
				07/11/23 - 06/12/23	07/11/23 - 06/12/23	07/11/23 - 06/12/23	----	----
				06-Dec-2023 10:00	06-Dec-2023 10:00	06-Dec-2023 10:00	----	----
Compound	CAS Number	LOR	Unit	EN2312334-001	EN2312334-002	EN2312334-003	-----	-----
				Result	Result	Result	----	----
<b>EA141: Total Insoluble Matter</b>								
Total Insoluble Matter	----	0.1	g/m <sup>2</sup> .month	<b>0.1</b>	<b>0.6</b>	<b>1.7</b>	----	----
Total Insoluble Matter (mg)	----	2	mg	<b>2</b>	<b>10</b>	<b>29</b>	----	----



# Dust Deposition Results

Period	TIM (g/m2/month)			Notes	Controls Implemented
	MS 1	MS 2	MS 3		
Jan-18	1.3	2.0	2.8		
Feb-18	0.5	1.9	5.6	Very hot and dry month	
Mar-18	0.6	0.7	7.2	Very hot and dry month and at times windy	
Apr-18	6.7	1.1	2.6	MS-1 sample polluted - bird droppings?	
May-18	0.4	0.6	2.5		
Jun-18	0.5	0.5	34.1	MS-1 sample highly polluted - anomalous result	
Jul-18	0.4	0.8	0.7		
Aug-18	0.6	0.9	0.7		
Sep-18	1.0	0.8	1.5		
Oct-18	0.7	1.2	1.4		
Nov-18	0.5	1.0	1.8		
Dec-18	2.4	0.7	2.0		
Jan-19	1.6	3.5	4.7	Very hot and dry month and at times windy	
Feb-19	1.0	2.5	3.6		
Mar-19	2.0	4.3	1.6	No significant activities noted	
Apr-19	0.7	3.2	1.2		
May-19	0.5	1.9	1.4	Fresh road works around Stations 2 and 3	
Jun-19	0.7	1.3	1.1		
Jul-19	0.2	0.4	0.6		
Aug-19	0.4	0.8	1.4		
Sep-19	1.0	0.3	1.1		
Oct-19	1.5	2.3	3.8		
Nov-19	2.4	1.2	4.6	Month of high winds and smoke from bushfires	
Jan-20	1.2	2.8	2.2		
Feb-20	6.3	6.5	6.0	Month of high winds, bushfire smoke and drought conditions	
Mar-20	0.5	11.1	1.2	Earthmoving activities near Station 2 contribute to exceedance	
Apr-20	0.9	1.2	0.8		
May-20	1.4	0.8	1.4		
Jun-20	0.2	0.8	0.8		
Jul-20	0.3	1.4	0.4		
Aug-20	0.6	2.4	1.1		
Sep-20	0.8	7.7	0.9	Earthmoving activities near Station 2 contribute to exceedance	
Oct-20	1.6	28.3	1.6	Earthmoving activities near Station 2 contribute to exceedance	
Nov-20	10.4	22.4	2.2	Earthmoving activities near Station 2 contribute to exceedance	
Dec-20	0.8	6.7	3.4	Earthmoving activities near Station 2 contribute to exceedance	
Jan-21	0.3	4.7	0.8		
Feb-21	1.8	6.7	1.3	Station 2 moved east to other side of drainage line	
Mar-21	0.8	0.9	1.2		
Apr-21	0.1	3.1	0.7		
May-21	0.8	0.8	2.3		
Jun-21	0.8	4.0	0.8		
Jul-21	0.4	8.5	0.3		
Aug-21	0.2	1.8	0.2		
Sep-21	1.5	4.2	0.7		
Oct-21	1.7	0.3	1.4		
Nov-21	0.5	0.7	1.1		
Dec-21	3.5	0.6	0.6		
Jan-22	0.8	1.2	0.8		
Feb-22	0.6	7.00	0.6		
Mar-22	0	2.2	0.7	Station 1 lost due to flooding event	
Apr-22	0	2.2	0.7	Station 1 lost due to flooding event	
May-22	0	3.7	0.6	Station 1 lost due to flooding event	
Jun-22	0.7	10.00	1.1		
Jul-22	0.2	0.6	0.6		
Aug-22	0	5.3	0.1	Station 1 lost due to flooding event	
Sep-22	0.7	7.4	1.7		
Oct-22	0.8	3.6	1.0		
Nov-22	0.8	5.1	1.6		
Dec-22	2.8	5.4	1.7		
Jan-23	0.1	0.4	0.5		
Feb-23	0.8	0.3	0.7		
Mar-23	1.3	0.2	0.7		
Apr-23	1.3	0.3	0.7		
May-23	0.5	0.5	0.6		
Jun-23	0.4	2.7	0.5		
Jul-23	2.0	2.4	0.2		
Aug-23	0.3	4.4	1.5	Significant earthworks around Station 2	
Sep-23	1.3	0.5	0.5		
Oct-23	0.8	0.8	0.9		
Nov-23	0.5	28.5	0.9	Significant earthworks near Station 2 and high winds	
Dec-23	0.1	0.6	1.7		

## **APPENDIX 3: Laboratory Quality Control**



## QUALITY CONTROL REPORT

Work Order	: <b>ES2342304</b>	Page	: 1 of 3
Client	: <b>HARVEST SCIENTIFIC SERVICES</b>	Laboratory	: Environmental Division Sydney
Contact	: MART RAMPE	Contact	: Customer Services ES
Address	: PO BOX 427 NARELLAN NSW, AUSTRALIA 2567	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: COLLINS SPRING FARM	Date Samples Received	: 06-Dec-2023
Order number	: 2023-12	Date Analysis Commenced	: 06-Dec-2023
C-O-C number	: ----	Issue Date	: 07-Dec-2023
Sampler	: MART RAMPE		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

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

### Signatories

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

Signatories	Position	Accreditation Category
Dian Dao	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW



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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA005P: pH by PC Titrator (QC Lot: 5473658)</b>									
ES2342219-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.96	7.28	4.5	0% - 20%
ES2341984-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.82	7.84	0.3	0% - 20%
<b>EA010P: Conductivity by PC Titrator (QC Lot: 5473657)</b>									
ES2342219-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1150	1140	0.4	0% - 20%
ES2342349-006	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	3950	3970	0.4	0% - 20%
ES2341984-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	2580	2650	2.5	0% - 20%



### Method Blank (MB) and Laboratory Control Sample (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.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EA005P: pH by PC Titrator (QCLot: 5473658)</b>								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	99.5	98.8	101
				----	7 pH Unit	99.7	99.2	101
<b>EA010P: Conductivity by PC Titrator (QCLot: 5473657)</b>								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	99.6	89.9	110
				<1	2100 µS/cm	102	90.2	111

### 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) or Matrix Spike Duplicate (MSD) Results are required to be reported.**





## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2342304	Page	: 1 of 4
Client	: HARVEST SCIENTIFIC SERVICES	Laboratory	: Environmental Division Sydney
Contact	: MART RAMPE	Telephone	: +61-2-8784 8555
Project	: COLLINS SPRING FARM	Date Samples Received	: 06-Dec-2023
Site	: ----	Issue Date	: 07-Dec-2023
Sampler	: MART RAMPE	No. of samples received	: 1
Order number	: 2023-12	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

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



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

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
<b>EA005P: pH by PC Titrator</b>							
Clear Plastic Bottle - Natural (EA005-P) COLLINS GW 1	06-Dec-2023	----	----	----	06-Dec-2023	06-Dec-2023	✓
<b>EA010P: Conductivity by PC Titrator</b>							
Clear Plastic Bottle - Natural (EA010-P) COLLINS GW 1	06-Dec-2023	----	----	----	06-Dec-2023	03-Jan-2024	✓



## 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(were) 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: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Conductivity by Auto Titrator	EA010-P	3	25	12.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Conductivity by Auto Titrator	EA010-P	3	25	12.00	8.33	✔	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Conductivity by Auto Titrator	EA010-P	2	25	8.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## 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.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)



## QUALITY CONTROL REPORT

Work Order	: EN2312334	Page	: 1 of 3
Client	: HARVEST SCIENTIFIC SERVICES	Laboratory	: Environmental Division Newcastle
Contact	: MART RAMPE	Contact	:
Address	: PO BOX 427 NARELLAN NSW, AUSTRALIA 2567	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
Telephone	: ----	Telephone	: +61 2 4014 2500
Project	: Collins Spring Farm	Date Samples Received	: 07-Dec-2023
Order number	: 2023-12	Date Analysis Commenced	: 11-Dec-2023
C-O-C number	: ----	Issue Date	: 18-Dec-2023
Sampler	: MART RAMPE		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

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

### Signatories

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

Signatories	Position	Accreditation Category
Thomas Regan	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW





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## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 insufficient 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.**



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### ***Method Blank (MB) and Laboratory Control Sample (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 (LCS) 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) or Matrix Spike Duplicate (MSD) Results are required to be reported.**
-



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EN2312334	Page	: 1 of 4
Client	: HARVEST SCIENTIFIC SERVICES	Laboratory	: Environmental Division Newcastle
Contact	: MART RAMPE	Telephone	: +61 2 4014 2500
Project	: Collins Spring Farm	Date Samples Received	: 07-Dec-2023
Site	: ----	Issue Date	: 18-Dec-2023
Sampler	: MART RAMPE	No. of samples received	: 3
Order number	: 2023-12	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

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### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

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



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

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Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: AIR

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	
<b>EA141: Total Insoluble Matter</b>								
<b>Dust Gauge (Bottle) - Copper Sulfate (EA141)</b> COLLINS 1 - 07/11/23 - 06/12/23, COLLINS 3 - 07/11/23 - 06/12/23	COLLINS 2 - 07/11/23 - 06/12/23,	06-Dec-2023	----	----	----	11-Dec-2023	05-Jan-2024	✔



## ***Quality Control Parameter Frequency Compliance***

- No Quality Control data available for this section.





## **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.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Insoluble Matter (TIM)	EA141	AIR	In house: Referenced to AS 3580.10.1. A gravimetric procedure reporting Total Insoluble solids in deposited dust.