CHAIN OF CUSTODY FORMS AND LABORATORY CERTIFICATES FOR THE REPORT ON SAMPLING AND ANALYSIS UNDERTAKEN IN MAGELLAN SHIPPING CONTAINERS STORAGE AREA, FREMANTLE PORT

18 January 2011

Department of
Environment and Conservation
Our environment, our future

Department of Environment and Conservation
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January 2011

Questions regarding this report should be directed to:

Pollution Response Unit

Environmental Regulation Division

Department of Environment and Conservation
Locked Bag 104
Bentley Delivery Centre
Western Australia 6983

Phone: 1300 784 782

Contents

Section 1

Chain of Custody Forms

Department of Environment and Conservation

CHAIN OF CUSTODY

POLLUTION RESPONSE UNIT

1054

JOB TITLE:	Magellan Lead Investigation
JOB LOCATION:	Intermodal Raillink Rousthead, Fremantle
LABORATORY NAME:	Chemistry Centre of WA.
LABORATORY ADDRESS:	South Pitaway Road, Curtin University, Bentley.
LEAD OFFICER:	Grant Hymus
CONTACT PH:	
SAMPLER:	Mark Brand
SAMPLER MOBILE:	0408907537
COC emailed to Lab? (YES / NO)	NO (circled)
EDD FORMAT (or default):	
Email Reports to:	grant.hymus @dec.wa.gov.au & ken.raine@dec.wa.gov.au
Email Invoice to:	" @dec.wa.gov.au

TURNAROUND TIME (TAT) :

☐ Standard TAT **(List due date):**

(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)

☐ Non Standard or urgent TAT **(List due date):**

Lab quote number:

COC SEQUENCE NUMBER (Circle)

COC:	(1)	2	3	4	5	6	7
OF:	(1)	2	3	4	5	6	7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes (circled)	No	N/A
Samples chilled upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comment:			

RELINQUISHED BY: (Signature)	**RECEIVED BY: (Signature)**	**RELINQUISHED BY: (Signature)**	**RECEIVED BY: (Signature)**
[signature]	[signature]		
DATE/TIME: 7/1/2011 13:31	DATE/TIME: 7/1/2011 13:3	DATE/TIME:	DATE/TIME:
NAME: Mark Brand	NAME: H. Govinnage	NAME:	NAME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

LAB USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W) Gas (G)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	Lead Concentration	Isotopic Analysis							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
BGW1	BGW1	7/1/2011	W	P		✓	✓							COC 02091
BGW2	BGW2	"	W	"		✓	✓							" 02093
BGV1	BGV1	"	Swab	"		✓	✓							" 02094
BGV2	BGV2	"	"	"		✓	✓							" 02095
BGV3	BGV3	"	"	"		✓	✓							" 02096
S34	S34	"	"	"		✓	✓							" 02097
QC3	QC3	"	"	"		✓	✓							" 02098
				Total										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOC Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Department of Environment and Conservation

CHAIN OF CUSTODY

2056

JOB TITLE: Magellan Lead Investigation	**TURNAROUND TIME (TAT) :** ☐ Standard TAT **(List due date):**		**FOR LABORATORY USE ONLY (Circle)**
JOB LOCATION: Rouse Head Fremantle.	(Standard TAT may be longer for some tests e.g, Ultra Trace Organics) ☐ Non Standard or urgent TAT **(List due date):**		Custody Seal Intact? Yes No N/A
LABORATORY NAME: Chemistry Centre of WA.	**Lab quote number:**	**COC SEQUENCE NUMBER (Circle)**	Samples chilled upon receipt? Yes No N/A
LABORATORY ADDRESS: South Wing Building 500, South Entrance Drive Curtin University, Bentley WA		COC: (1) 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
LEAD OFFICER: Grant Hymus **CONTACT PH:**		OF: 1 2 (3) 4 5 6 7	Other comment: Samples Intact

SAMPLER: Mark Bernard **SAMPLER MOBILE:** 0409907537	**RELINQUISHED BY: (Signature)**	**RECEIVED BY: (Signature)**	**RELINQUISHED BY: (Signature)**	**RECEIVED BY: (Signature)**
COC emailed to Lab? (YES / NO) **EDD FORMAT (or default):**				
Email Reports to: grant.hymus @dec.wa.gov.au & kendra.inefalter.wa.gov.au	DATE/TIME: 4/1/2011 1900	DATE/TIME: 4/1/2011 1900	DATE/TIME: 5/1/2011 1:00	DATE/TIME: 5/1/2011 11:00
Email Invoice to: " @dec.wa.gov.au	NAME: Mark Bernard	NAME: G Hymus	NAME: G Hymus	NAME: Michael North

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Sample Receipt Notification Required; including comment on COC Bag Security Seal Being Intact - For All samples

LAB USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W) Gas (G)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL CONTAINERS	Lead (Pb) Concentration	Isotopic Analysis							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
10E1350/1	S1	4/1/2011	Swab			✓	✓							
4 2	S2	"	"			✓	✓							
4 3	S3	"	"			✓	✓							
4 4	S4	"	"			✓	✓							
4 5	S5	"	"			✓	✓							
4 6	S6	"	"			✓	✓							
4 7	S7	"	"			✓	✓							
4 8	S8	"	"			✓	✓							
4 9	S9	"	"			✓	✓							
4 10	S10	"	"			✓	✓							
4 11	S11	"	"			✓	✓							
4 12	S12	"	"			✓	✓							

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOC Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Department of Environment and Conservation

CHAIN OF CUSTODY

2057

JOB TITLE: Magellan Lead Investigation	TURNAROUND TIME (TAT): ☐ Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)
JOB LOCATION: Rouse Head Fremantle	(Standard TAT may be longer for some tests e.g, Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):		Custody Seal Intact? Yes No N/A
LABORATORY NAME: Chemistry Centre of WA	Lab quote number:	COC SEQUENCE NUMBER (Circle) COC: 1 (2) 3 4 5 6 7	Samples chilled upon receipt? Yes No (N/A)
LABORATORY ADDRESS: South Wing Building 500 South Entrance Drive Curtin University Bentley WA		OF: 1 2 (3) 4 5 6 7	Random Sample Temperature on Receipt: °C
LEAD OFFICER: Grant Hymus	CONTACT PH:		Other comment:
SAMPLER: MARK BEAMD	SAMPLER MOBILE: 0409907537	RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)
COC emailed to Lab? (YES / NO)	EDD FORMAT (or default):	DATE/TIME: 4/1/2011 1900	DATE/TIME: 4/1/2011 1900
Email Reports to: grant.hymus @dec.wa.gov.au, ken.raine@dec.wa.gov.au		NAME: MARK BEAMD	NAME: G Hymus
Email Invoice to: " @dec.wa.gov.au		RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: As per COC # 2056		DATE/TIME: 5/1/2011 1400	DATE/TIME: 5/1/2011
		NAME: G Hymus	NAME: Michael

LAB USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W) Gas (G)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	Lead Concentration	Isotopic Analysis							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
10E1350/13	S13	4/1/2011	Sand			✓	✓							
" 14	S14	"	"			✓	✓							
" 15	S15	"	"			✓	✓							
" 16	S16	"	"			✓	✓							
" 17	S17	"	"			✓	✓							
" 18	S18	"	"			✓	✓							
" 19	S19	"	"			✓	✓							
" 20	S20	"	"			✓	✓							
" 21	B1	"	"			✓	✓							
" 22	B2	"	"			✓	✓							
" 23	V1	"	"			✓	✓							
" 24	V2	"	"			✓	✓							

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOC Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Government of Western Australia

Department of Environment and Conservation

CHAIN OF CUSTODY

2058

JOB TITLE: Macallan Lead Investigation	**TURNAROUND TIME (TAT) :** ☐ Standard TAT **(List due date):**		**FOR LABORATORY USE ONLY (Circle)**
JOB LOCATION: Rous Head Fremantle	(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☐ Non Standard or urgent TAT **(List due date):**		Custody Seal Intact? Yes / No / N/A
LABORATORY NAME: Chemistry Centre of WA	**Lab quote number:**	**COC SEQUENCE NUMBER (Circle)**	Samples chilled upon receipt? Yes / No / N/A
LABORATORY ADDRESS: South Wing Building 500 South Entrance Drive Curtin University Bentley WA		COC: 1 2 (3) 4 5 6 7	Random Sample Temperature on Receipt: °C
LEAD OFFICER: Grant Hymus	**CONTACT PH:**	OF: 1 2 (3) 4 5 6 7	Other comment:
SAMPLER: Mark Beamish	**SAMPLER MOBILE:** 0408907537	**RELINQUISHED BY: (Signature)**	**RECEIVED BY: (Signature)**
COC emailed to Lab? (YES / NO)	**EDD FORMAT (or default):**	DATE/TIME: 4/1/2011 1900	DATE/TIME: 4/1/2011 1900
Email Reports to: grant.hymus @dec.wa.gov.au ; kenwaine@dec.wa.gov.au		NAME: Mark Beamish	NAME: Grant Hymus
Email Invoice to: " @dec.wa.gov.au		**RELINQUISHED BY: (Signature)**	**RECEIVED BY: (Signature)**
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: As per COC # 2056		DATE/TIME: 5/1/2011 1100	DATE/TIME: 5/1/2011 11.00
		NAME: G Hymus	NAME: Michael Norman

LAB USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W) Gas (G)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL CONTAINERS	Lead Concentration	Isotopic Analysis							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
10E1350/25	V3	4/1/2011	Swab			✓	✓							
10E1350/26	V4	"	"			✓	✓							
27	V5	"	"			✓	✓							
28	C1	"	"			✓	✓							
29	C2	"	"			✓	✓							
30	C3	"	"			✓	✓							
31	C4	"	"			✓	✓							
32	C5	"	"			✓	✓							
33	QC1	"	"			✓	✓							

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOC Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Department of Environment and Conservation

CHAIN OF CUSTODY

2059

JOB TITLE: Magellan Lead Investigation	TURNAROUND TIME (TAT): ☐ Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)
JOB LOCATION: Rous Head Fremantle	(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):		Custody Seal Intact? Yes No N/A
LABORATORY NAME: Chemistry Centre of WA	Lab quote number:	COC SEQUENCE NUMBER (Circle)	Samples chilled upon receipt? Yes No N/A
LABORATORY ADDRESS: South Wing Building 500		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
LEAD OFFICER: Grant Hymus	CONTACT PH: 93337565	OF: 1 2 3 4 5 6 7	Other comment:
SAMPLER: Marc Brand	SAMPLER MOBILE: 0402907537	RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)
COC emailed to Lab? (YES / NO)	EDD FORMAT (or default):	DATE/TIME: 5/1/11 17:15	DATE/TIME: 5/1/11 17:15
Email Reports to: grant.hymus @dec.wa.gov.au	#ken.raine@dec.wa.gov.au	NAME: Marc Brand	NAME: Grant Hymus
Email Invoice to: " @dec.wa.gov.au		RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: * Please speak to Grant Hymus before commencing isotopic analysis		DATE/TIME: 6/1/2011 12:00	DATE/TIME: 6/1/2011 12:30
		NAME: Grant Hymus	NAME:

LAB USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W) Gas (G)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	Lead Concentration	Isotopic Analysis							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	S21	5/1/11	swab	P - unpreserved plastic	1	✓	✓							
	S22	5/1/11	swab	P	1	✓	✓							CoC bag #02424
	S23	5/1/11	swab	P	1	✓	✓							CoC bag #02425
	S24	5/1/11	swab	P	1	✓	✓							CoC bag #02426
	S25	5/1/11	swab	P	1	✓	✓							CoC bag #02427
	S26	5/1/11	swab	P	1	✓	✓							CoC bag #02428
	S27	5/1/11	swab	P	1	✓	✓							CoC bag #02429
	S28	5/1/11	swab	P	1	✓	✓							CoC #2430 CoC bag #02430
	S29	5/1/11	swab	P	1	✓	✓							CoC bag #02431
	S30	5/1/11	swab	P	1	✓	✓							CoC bag #02432
	S31	5/1/11	swab	P	1	✓	✓							CoC bag #02433
	S32	5/1/11	swab	P	1	✓	✓							CoC Bag #02434
														CoC Bag #02435

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOC Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Department of Environment and Conservation

CHAIN OF CUSTODY

2060

Details As Per COC No. #2059

JOB TITLE:	TURNAROUND TIME (TAT): ☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date): (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		FOR LABORATORY USE ONLY (Circle)
JOB LOCATION:	Lab quote number:		Custody Seal Intact? Yes (circled) / No / N/A
LABORATORY NAME:	COC SEQUENCE NUMBER (Circle) COC: 1 (2) 3 4 5 6 7 OF: 1 2 (3) 4 5 6 7		Samples chilled upon receipt? Yes / No / (N/A)
LABORATORY ADDRESS:			Random Sample Temperature on Receipt: °C
LEAD OFFICER:	CONTACT PH:		Other comment:
SAMPLER:	SAMPLER MOBILE:		
COC emailed to Lab? (YES / NO)	EDD FORMAT (or default):		
Email Reports to: @dec.wa.gov.au			
Email Invoice to: @dec.wa.gov.au			
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:			

RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)
[signature]	G Hymus	G Hymus	[signature]
DATE/TIME: 5/1/11 17:15	DATE/TIME: 5/1/2011 17:15	DATE/TIME: 6/1/2011 12:40	DATE/TIME: 6/1/2011 12:30pm
NAME: Mark Brown	NAME: Grant Hymus	NAME: Grant Hymus	NAME: Michael North

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	Lead Concentration	Isotopic Analysis						Additional Information (Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.)
	S33	5/1/11	Swab	P=unpreserved plastic	1	✓	✓						
	VS-1	5/1/11	Swab	G-unpreserved glass	1	✓	✓						COC# 02436
	VS-2	5/1/11	Swab	G	1	✓	✓						COC# 02139
	WS FB-1	5/1/11	W	P	1	✓	✓						COC# 02140
	WS-1	5/1/11	W	P	1	✓	✓						COC# 07267
	WS-2	5/1/11	W	P	1	✓	✓						COC# 02136
	WS-3	5/1/11	W	P	1	✓	✓						COC# 02137
	WS-4	5/1/11	W	P	1	✓	✓						COC# 02138
	WS-5	5/1/11	W	P	1	✓	✓						COC# 07276
	DS-1	5/1/11	S	G	1	✓	✓						COC# 7277
	SS-1	5/1/11	S	G	1	✓	✓						COC# 7270
	SS-2	5/1/11	S	G	1	✓	✓						COC# 7269
													COC# 7271
				TOTAL									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOC Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Department of Environment and Conservation

As Per Details #2059
COC No.

CHAIN OF CUSTODY

2061

JOB TITLE: Magellan Lead Investigation	TURNAROUND TIME (TAT) : ☐ Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)
JOB LOCATION:	(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):		Custody Seal Intact? Yes No N/A
LABORATORY NAME:	Lab quote number:	COC SEQUENCE NUMBER (Circle)	Samples chilled upon receipt? Yes No N/A
LABORATORY ADDRESS:		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
LEAD OFFICER: CONTACT PH:		OF: 1 2 3 4 5 6 7	Other comment: Initial
SAMPLER: SAMPLER MOBILE:	RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature) / RECEIVED BY: (Signature)
COC emailed to Lab? (YES / NO) EDD FORMAT (or default):	DATE/TIME: 5/1/2011 17:15	DATE/TIME: 5/1/2011	DATE/TIME: 6/1/2011 17:15 / DATE/TIME: 6/1/2011
Email Reports to: @dec.wa.gov.au	NAME: MARK BRAND	NAME: Grant Hyams	NAME: Grant Hyams / NAME: Michael North
Email Invoice to: @dec.wa.gov.au			
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:			

LAB USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W) Gas (G)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL CONTAINERS	Lead Concentration	Isotopic Analysis							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	SS-3	5/1/11	S	G-unpreserved glass	1	✓	✓							CoC# 07272
	SS-4	5/1/11	S	G	1	✓	✓							CoC# 07273
	SS-5	5/1/11	S	G	1	✓	✓							CoC# 07274
	SS-6	5/1/11	S	G	1	✓	✓							CoC# 7275
	BGS-1	5/1/11	S	G	1	✓	✓							CoC# 7251
	BGS-2	5/1/11	S	G	1	✓	✓							CoC # 7283
	Drain Sample 1	3/1/11	S	G	1	✓	✓							CoC # 7268
	QC7	5/1/11	Swab	P	1	✓	✓							CoC # 02451

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOC Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Section 2

Laboratory Certificates

ChemCentre

Environmental Chemistry Section

Report of Examination

PO Box 1250, Bentley Delivery Centre
WA 6983
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ABN 40 991 885 705

Purchase Order: None
ChemCentre Reference: 10E1350

Dept of Environment and Conservation
Pollution Response Unit
4/168 St Georges Tce
Perth WA 6000

Attention: Grant Hymus

Report on: 33 samples received on 05/01/2011

LAB ID	Material	Client ID and Description
10E1350 / 001	swab	S1 7278 Intermodal Rail Link Rouse Head
10E1350 / 002	swab	S2 7280 Intermodal Rail Link Rouse Head
10E1350 / 003	swab	S3 7285 Intermodal Rail Link Rouse Head
10E1350 / 004	swab	S4 7287 Intermodal Rail Link Rouse Head
10E1350 / 005	swab	S5 7279 Intermodal Rail Link Rouse Head
10E1350 / 006	swab	S6 7290 Intermodal Rail Link Rouse Head
10E1350 / 007	swab	S7 7289 Intermodal Rail Link Rouse Head
10E1350 / 008	swab	S8 7286 Intermodal Rail Link Rouse Head
10E1350 / 009	swab	S9 7295 Intermodal Rail Link Rouse Head
10E1350 / 010	swab	S10 7296 Intermodal Rail Link Rouse Head
10E1350 / 011	swab	S11 7297 Intermodal Rail Link Rouse Head
10E1350 / 012	swab	S12 7298 Intermodal Rail Link Rouse Head
10E1350 / 013	swab	S13 7299 Intermodal Rail Link Rouse Head
10E1350 / 014	swab	S14 7254 Intermodal Rail Link Rouse Head
10E1350 / 015	swab	S15 7255 Intermodal Rail Link Rouse Head
10E1350 / 016	swab	S16 7256 Intermodal Rail Link Rouse Head
10E1350 / 017	swab	S17 7258 Intermodal Rail Link Rouse Head
10E1350 / 018	swab	S18 7257 Intermodal Rail Link Rouse Head
10E1350 / 019	swab	S19 7253 Intermodal Rail Link Rouse Head
10E1350 / 020	swab	S20 7259 Intermodal Rail Link Rouse Head
10E1350 / 021	swab	B1 7260 Background 1
10E1350 / 022	swab	B2 7261 Background 2
10E1350 / 023	swab	V1 7262 Vent Swab IRL Rouse Head
10E1350 / 024	swab	V2 7264 Vent Swab IRL Rouse Head
10E1350 / 025	swab	V3 7263 Vent Swab IRL Rouse Head
10E1350 / 026	swab	V4 7265 Vent Swab IRL Rouse Head
10E1350 / 027	swab	V5 7266 Vent Swab IRL Rouse Head
10E1350 / 028	swab	C1 7300 IRL Rouse Head
10E1350 / 029	swab	C2 7293 IRL Rouse Head
10E1350 / 030	swab	C3 7294 IRL Rouse Head
10E1350 / 031	swab	C4 7291 IRL Rouse Head
10E1350 / 032	swab	C5 7292 IRL Rouse Head
10E1350 / 033	swab	QC1 7252 IRL Rouse Head

LAB ID				001	002	003	004
Client ID				S1 7278	S2 7280	S3 7285	S4 7287
Sampled				04/01/2011	04/01/2011	04/01/2011	04/01/2011
Analyte	Method	LOR	Unit				
Area	iMET1FCICP	1	cm2	100	100	100	100
Lead	iMET1FCICP	0.5	ug	2.2	2.7	2.7	2.4
Lead	iMET1SBICP	0.005	ug/cm2	0.022	0.027	0.027	0.024

LAB ID				005	006	007	008
Client ID				S5 7279	S6 7290	S7 7289	S8 7286
Sampled				04/01/2011	04/01/2011	04/01/2011	04/01/2011
Analyte	**Method**	**LOR**	**Unit**				
Area	iMET1FCICP	1	cm2	100	100	100	100
Lead	iMET1FCICP	0.5	ug	1.7	1.6	1.4	1.9
Lead	iMET1SBICP	0.005	ug/cm2	0.017	0.016	0.014	0.019

LAB ID				009	010	011	012
Client ID				S9 7295	S10 7296	S11 7297	S12 7298
Sampled				04/01/2011	04/01/2011	04/01/2011	04/01/2011
Analyte	**Method**	**LOR**	**Unit**				
Area	iMET1FCICP	1	cm2	100	100	100	100
Lead	iMET1FCICP	0.5	ug	5.9	1.4	2.1	1.9
Lead	iMET1SBICP	0.005	ug/cm2	0.059	0.014	0.021	0.019
Lead isotopic by ICPMS	iMET1WCMS	1	Ratio	1			

LAB ID				013	014	015	016
Client ID				S13 7299	S14 7254	S15 7255	S16 7256
Sampled				04/01/2011	04/01/2011	04/01/2011	04/01/2011
Analyte	**Method**	**LOR**	**Unit**				
Area	iMET1FCICP	1	cm2	100	100	100	100
Lead	iMET1FCICP	0.5	ug	11	3.0	2.5	0.9
Lead	iMET1SBICP	0.005	ug/cm2	0.11	0.030	0.025	0.009
Lead isotopic by ICPMS	iMET1WCMS	1	Ratio	1			

LAB ID				017	018	019	020
Client ID				S17 7258	S18 7257	S19 7253	S20 7259
Sampled				04/01/2011	04/01/2011	04/01/2011	04/01/2011
Analyte	**Method**	**LOR**	**Unit**				
Area	iMET1FCICP	1	cm2	100	100	100	100
Lead	iMET1FCICP	0.5	ug	1.2	5.2	2.6	2.7
Lead	iMET1SBICP	0.005	ug/cm2	0.012	0.052	0.026	0.027
Lead isotopic by ICPMS	iMET1WCMS	1	Ratio		1		

LAB ID				021	022	023	024
Client ID				B1 7260	B2 7261	V1 7262	V2 7264
Sampled				04/01/2011	04/01/2011	04/01/2011	04/01/2011
Analyte	**Method**	**LOR**	**Unit**				
Area	iMET1FCICP	1	cm2	100	100		
Lead	iMET1FCICP	0.5	ug	8.0	3.6	12	18
Lead	iMET1SBICP	0.005	ug/cm2	0.080	0.036		
Lead isotopic by ICPMS	iMET1WCMS	1	Ratio	1	1	1	1
Lead isotopic by ICPMS	iMET1WCMS	1	Ratio	1	1	1	1

LAB ID				025	026	027	028
Client ID				V3 7263	V4 7265	V5 7266	C1 7300
Sampled				04/01/2011	04/01/2011	04/01/2011	04/01/2011
Analyte	**Method**	**LOR**	**Unit**				
Area	iMET1FCICP	1	cm2				100
Lead	iMET1FCICP	0.5	ug	13	16	2.5	1.4
Lead	iMET1SBICP	0.005	ug/cm2				0.014
Lead isotopic by ICPMS	iMET1WCMS	1	Ratio	1	1		

LAB ID				029	030	031	032
Client ID				C2 7293	C3 7294	C4 7291	C5 7292
Sampled				04/01/2011	04/01/2011	04/01/2011	04/01/2011
Analyte	**Method**	**LOR**	**Unit**				
Area	iMET1FCICP	1	cm2	100	100	100	
Lead	iMET1FCICP	0.5	ug	750	210	3.2	260
Lead	iMET1SBICP	0.005	ug/cm2	7.5	2.1	0.032	
Lead isotopic by ICPMS	iMET1WCMS	1	Ratio	1	1		1

LAB ID				033
Client ID				QC1 7252
Sampled				04/01/2011
Analyte	**Method**	**LOR**	**Unit**	
Area	iMET1FCICP	1	cm2	100
Lead	iMET1FCICP	0.5	ug	<0.5
Lead	iMET1SBICP	0.005	ug/cm2	<0.005

Method	Method Description
iMET1FCICP	Metals in filters by acid digestion and ICPAES (NIOSH 7303 modification).
iMET1SBICP	Metals in swabs by Nitric/Hydrochloric digestion and ICPAES.
iMET1WCMS	Total dissolved metals by ICPMS (APHA 3125).

Swabs and filters were digested using hot block mixed acid (Nitric/Hydrochloric) digestion, analysis of metals by ICPAES.

Lead isotopic ratio analysis by quadrupole ICPMS, refer attached spreadsheet for results.

These results apply only to the sample(s) as received. Unless arrangements are made to the contrary, these samples will be disposed of after 30 days of the issue of this report. This report may only be reproduced in full.

Dr Michael North
Senior Chemist and Research Officer
Environmental Chemistry Section
10-Jan-2011

ACCREDITED FOR TECHNICAL COMPETENCE
Accreditation No. 8

ChemCentre
Environmental Chemistry Section
Report of Examination

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Purchase Order: None
ChemCentre Reference: 10E1372

Dept of Environment and Conservation
Pollution Response Unit
4/168 St Georges Tce
Perth WA 6000
Attention: Grant Hymus

Report on: 7 samples received on 07/01/2011

LAB ID	Material	Client ID and Description
10E1372 / 001	water	BGW1 CoC bag# 02091
10E1372 / 002	water	BGW2 CoC bag# 02093
10E1372 / 003	swab	BGV1 CoC bag# 02094
10E1372 / 004	swab	BGV2 CoC bag# 02095
10E1372 / 005	swab	BGV3 CoC bag# 02096
10E1372 / 006	swab	S34 CoC bag# 02097
10E1372 / 007	swab	QC3 CoC bag# 02098

LAB ID				001	002	003	004
Client ID				BGW1	BGW2	BGV1	BGV2
Sampled				07/01/2011	07/01/2011	07/01/2011	07/01/2011
Analyte	**Method**	**LOR**	**Unit**				
Lead	iMET1FCICP	0.5	ug			6.6	2.9
Lead, total	iMET1WTICP	0.02	mg/L	0.11	0.08		
Lead isotopic by ICPMS*	iMET1WCMS	1	Ratio	1	1	1	1

LAB ID				005	006	007
Client ID				BGV3	S34	QC3
Sampled				07/01/2011	07/01/2011	07/01/2011
Analyte	**Method**	**LOR**	**Unit**			
Area*	iMET1FCICP	1	cm2		100	100
Lead	iMET1FCICP	0.5	ug	11	<0.5	<0.5
Lead	iMET1SBICP	0.005	ug/cm2		<0.005	<0.005
Lead isotopic by ICPMS*	iMET1WCMS	1	Ratio	1		

Method	Method Description
iMET1FCICP	Metals in filters by acid digestion and ICPAES (NIOSH 7303 modification).
iMET1SBICP	Metals in swabs by Nitric/Hydrochloric digestion and ICPAES.
iMET1WCMS	Total dissolved metals by ICPMS (APHA 3125).
iMET1WTICP	Total metals by digestion (USEPA 3015 modification) and ICPAES (APHA 3120).

Provided in this report are total ug of lead on the swabs and ug/cm2 based on an assumed area of 100 cm2.

Swabs and water samples were digested using hot block mixed acid (Nitric/Hydrochloric) digestion, analysis of metals by ICPAES.

Lead isotopic ratio analysis by quadrupole ICPMS, refer attached spreadsheet for results.

These results apply only to the sample(s) as received. Unless arrangements are made to the contrary, these samples will be disposed of after 30 days of the issue of this report. This report may only be reproduced in full.

*Analysis not covered by scope of NATA accreditation.

Dr Michael North
Senior Chemist and Research Officer
Environmental Chemistry Section
13-Jan-2011

ACCREDITED FOR TECHNICAL COMPETENCE
Accreditation No. 8

ChemCentre
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Report of Examination

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Purchase Order: None
ChemCentre Reference: 10E1358

Dept of Environment and Conservation
Pollution Response Unit
4/168 St Georges Tce
Perth WA 6000
Attention: Grant Hymus

Report on: 33 samples received on 06/01/2011

LAB ID	Material	Client ID and Description
10E1358 / 001	swab	S21 CoC bag #02424
10E1358 / 002	swab	S22 CoC bag #02425
10E1358 / 003	swab	S23 CoC bag #02426
10E1358 / 004	swab	S24 CoC bag #02427
10E1358 / 005	swab	S25 CoC bag #02428
10E1358 / 006	swab	S26 CoC bag #02429
10E1358 / 007	swab	S27 CoC bag #02430
10E1358 / 008	swab	S28 CoC bag #02431
10E1358 / 009	swab	S29 CoC bag #02432
10E1358 / 010	swab	S30 CoC bag #02433
10E1358 / 011	swab	S31 CoC bag #02434
10E1358 / 012	swab	S32 CoC bag #02435
10E1358 / 013	swab	S33 CoC bag #02436
10E1358 / 014	swab	VS-1 CoC bag #02139
10E1358 / 015	swab	VS-2 CoC bag #02140
10E1358 / 016	water	WS FB-1 CoC bag #07267
10E1358 / 017	water	WS-1 CoC bag #02136
10E1358 / 018	water	WS-2 CoC bag #02137
10E1358 / 019	water	WS-3 CoC bag #02138
10E1358 / 020	water	WS-4 CoC bag #07276
10E1358 / 021	water	WS-5 CoC bag #07277
10E1358 / 022	soil	DS-1 CoC bag #07270
10E1358 / 023	soil	SS-1 CoC bag #07269
10E1358 / 024	soil	SS-2 CoC bag #07271
10E1358 / 025	soil	SS-3 CoC bag #07272
10E1358 / 026	soil	SS-4 CoC bag #07273
10E1358 / 027	soil	SS-5 CoC bag #07274
10E1358 / 028	soil	SS-6 CoC bag #07275
10E1358 / 029	soil	BGS-1 CoC bag #07251
10E1358 / 030	soil	BGS-2 CoC bag #07283
10E1358 / 031	soil	Drain sample 1 CoC bag #07268
10E1358 / 032	swab	QC2 CoC bag #02451
10E1358 / 033	soil	DS-1 dup22 CoC bag #07270

LAB ID				001	002	003	004
Client ID				S21	S22	S23	S24
Sampled				05/01/2011	05/01/2011	05/01/2011	05/01/2011
Analyte	**Method**	**LOR**	**Unit**				
Area*	iMET1FCICP	1	cm2	100	100	100	100

LAB ID				001	002	003	004
Client ID				S21	S22	S23	S24
Sampled				05/01/2011	05/01/2011	05/01/2011	05/01/2011
Analyte	Method	LOR	Unit				
Lead	iMET1FCICP	0.5	ug	2.9	2.2	2.1	<0.5
Lead	iMET1SBICP	0.005	ug/cm2	0.029	0.022	0.021	<0.005

LAB ID				005	006	007	008
Client ID				S25	S26	S27	S28
Sampled				05/01/2011	05/01/2011	05/01/2011	05/01/2011
Analyte	Method	LOR	Unit				
Area*	iMET1FCICP	1	cm2	100	100	100	100
Lead	iMET1FCICP	0.5	ug	1.6	1.8	8.6	4.9
Lead	iMET1SBICP	0.005	ug/cm2	0.016	0.018	0.086	0.049
Lead isotopic by ICPMS*	iMET1WCMS	1	Ratio			1	1

LAB ID				009	010	011	012
Client ID				S29	S30	S31	S32
Sampled				05/01/2011	05/01/2011	05/01/2011	05/01/2011
Analyte	Method	LOR	Unit				
Area*	iMET1FCICP	1	cm2	100	100	100	100
Lead	iMET1FCICP	0.5	ug	2.1	1.3	7.0	11
Lead	iMET1SBICP	0.005	ug/cm2	0.021	0.013	0.070	0.11
Lead isotopic by ICPMS*	iMET1WCMS	1	Ratio				1

LAB ID				013	014	015	016
Client ID				S33	VS-1	VS-2	WS FB-1
Sampled				05/01/2011	05/01/2011	05/01/2011	05/01/2011
Analyte	Method	LOR	Unit				
Area*	iMET1FCICP	1	cm2	100			
Lead	iMET1FCICP	0.5	ug	<0.5	6.4	12	
Lead	iMET1SBICP	0.005	ug/cm2	<0.005			
Lead isotopic by ICPMS*	iMET1WCMS	1	Ratio		1	1	
Lead, total	iMET1WTICP	0.02	mg/L				<0.02

LAB ID				017	018	019	020
Client ID				WS-1	WS-2	WS-3	WS-4
Sampled				05/01/2011	05/01/2011	05/01/2011	05/01/2011
Analyte	Method	LOR	Unit				
Lead isotopic by ICPMS*	iMET1WCMS	1	Ratio	1	1	1	1
Lead, total	iMET1WTICP	0.02	mg/L	0.14	0.03	0.42	0.66

LAB ID				021	022	023	024
Client ID				WS-5	DS-1	SS-1	SS-2
Sampled				05/01/2011	05/01/2011	05/01/2011	05/01/2011
Analyte	Method	LOR	Unit				
Lead isotopic by ICPMS*	iMET1WCMS	1	Ratio	1	1	1	1
Lead, total	iMET1WTICP	0.02	mg/L	0.26			
Lead	iMET2SAICP	0.5	mg/kg		27	29	35
Lead isotopic by ICPMS*	iMET1WCMS	1	Ratio	1	1	1	1

LAB ID				025	026	027	028
Client ID				SS-3	SS-4	SS-5	SS-6
Sampled				05/01/2011	05/01/2011	05/01/2011	05/01/2011
Analyte	Method	LOR	Unit				
Lead	iMET2SAICP	0.5	mg/kg	36	51	52	39
Lead isotopic by ICPMS*	iMET1WCMS	1	Ratio	1	1	1	1

LAB ID				029	030	031	032
Client ID				BGS-1	BGS-2	Drain sample 1	QC2
Sampled				05/01/2011	05/01/2011	03/01/2011	05/01/2011
Analyte	Method	LOR	Unit				
Area*	iMET1FCICP	1	cm2				100
Lead	iMET1FCICP	0.5	ug				<0.5
Lead	iMET1SBICP	0.005	ug/cm2				<0.005
Lead	iMET2SAICP	0.5	mg/kg	23	13	44	
Lead isotopic by ICPMS*	iMET1WCMS	1	Ratio	1	1	1	

LAB ID				033
Client ID				DS-1 dup22
Sampled				05/01/2011
Analyte	Method	LOR	Unit	
Lead	iMET2SAICP	0.5	mg/kg	28

Method	Method Description
iMET1FCICP	Metals in filters by acid digestion and ICPAES (NIOSH 7303 modification).
iMET1SBICP	Metals in swabs by Nitric/Hydrochloric digestion and ICPAES.
iMET1WCMS	Total dissolved metals by ICPMS (APHA 3125).
iMET1WTICP	Total metals by digestion (USEPA 3015 modification) and ICPAES (APHA 3120).
iMET2SAICP	Acid digestable metals (dry wt basis) by digestion and ICPAES (USEPA 3051A modification).

Provided in this report are total ug of lead on the swabs and ug/cm2 based on the area swabbed as provided by DEC.

Swabs and water samples were digested using hot block mixed acid (Nitric/Hydrochloric) digestion, analysis of metals by ICPAES.

Soil samples were digested using mixed acid (Nitric/Hydrochloric) digestion, analysis of metals by ICPAES. Results are reported on a dry basis.

Lead isotopic ratio analysis by quadrupole ICPMS, refer attached spreadsheet for results.

These results apply only to the sample(s) as received. Unless arrangements are made to the contrary, these samples will be disposed of after 30 days of the issue of this report. This report may only be reproduced in full.

*Analysis not covered by scope of NATA accreditation.

Dr Michael North
Senior Chemist and Research Officer
Environmental Chemistry Section
13-Jan-2011

Section 3

Isotope ratios and plots

Lead concentration and Isotopic Ratio Analysis - ChemCentre data

Lab ID	Pb conc. ug/swab	Client ID	Plot Key	207Pb/206Pb	208Pb/206Pb	207Pb/204Pb	206Pb/204Pb
10E1350/9	5.9	S9 7295	A	0.9685	2.2220	15.51	16.02
10E1350/13	11	S13 7299	B	0.9499	2.1930	15.57	16.39
10E1350/13R	11	S13 7299	C	0.9489	2.1940	15.54	16.38
10E1350/18	5.2	S18 7257	D	0.9649	2.2120	15.62	16.19
10E1350/23	12	V1 7262	E	0.9404	2.1810	15.63	16.63
10E1350/24	18	V2 7264	F	0.9080	2.1510	15.57	17.15
10E1350/25	13	V3 7263	G	0.8931	2.1340	15.63	17.50
10E1350/26	16	V4 7265	H	0.9048	2.1500	15.56	17.20
10E1350/29	750	C2 7293	I	0.9644	2.2050	15.60	16.18
10E1350/30	210	C3 7294	J	0.9722	2.2310	15.54	15.98
10E1350/32	260	C5 7292	K	0.9577	2.2080	15.55	16.24
10E1350/21	8	B1 7260	L	0.8471	2.0830	15.59	18.40
10E1350/22	3.6	B2 7261	M	0.8701	2.1050	15.57	17.90

Reference Lead Sources

		207Pb/206Pb	208Pb/206Pb	207Pb/204Pb	206Pb/204Pb
Magellan Pb		0.9707	2.2110	15.57	16.04
Broken Hill (CSIRO data)		0.9617	2.2283	15.39	16.00
NIST SRM 981 (Mass Bias)	0.02474	0.91460	2.1680	15.4900	16.940
NIST SRM 981 Certified values		0.91464 +/- 0.00033	2.1681 +/- 0.0008	15.4916	16.937
NIST SRM 982 (QC)		0.4706	1.0070		36.570
NIST SRM 982 Certified values		0.4671	1.0002		36.734
Av. Earth Crustal		0.8360	2.0660		
Esperance Estimated Background		0.88	2.12	15.5	17.8

Lead Isotopic Ratio Analysis Most Probable Source Summary

Data analysis should primarily refer to plot position of ratios data as provided in relation to suitable reference points/sources, possibly over time to track changes.
Summary information below is an approximation based on references to hand at the time of reporting.

Lab ID	Pb Conc. ug/swab	Client ID	
10E1350/9	5.9	S9 7295	Lies within 2 sigma range of pure Magellan lead, Magellan likely primary source.
10E1350/13	11	S13 7299	Lies just outside 2 sigma range of pure Magellan lead but appears likely to contain Magellan lead as a mixture.
10E1350/13R	11	S13 7299	Lies just outside 2 sigma range of pure Magellan lead but appears likely to contain Magellan lead as a mixture.
10E1350/18	5	S18 7257	Lies within 2 sigma range of pure Magellan lead, Magellan likely primary source.
10E1350/23	12	V1 7262	Lies outside the 2 sigma range of pure Magellan lead but if corrected for an assumed background sample (B2 7261) and concentration then portion remaining is consistent with Magellan lead primary source.
10E1350/24	18	V2 7264	Point lies well away from Magellan lead, Magellan lead is not the primary source.
10E1350/25	13	V3 7263	Point lies well away from Magellan lead, Magellan lead is not the primary source.
10E1350/26	16	V4 7265	Point lies well away from Magellan lead, Magellan lead is not the primary source.
10E1350/29	750	C2 7293	Lies within 2 sigma range of pure Magellan lead, Magellan likely primary source.
10E1350/30	210	C3 7294	Lies close to Magellan lead and is likely Magellan lead primary source.
10E1350/32	260	C5 7292	Lies close to Magellan lead and is likely Magellan lead primary source (some mixing).
10E1350/21	8	B1 7260	Lies close to average earth crustal lead, well away from Magellan type.
10E1350/22	3.6	B2 7261	Lies well away from Magellan lead, Magellan is not a Major source.

Lead Isotopic Ratio Analysis - ChemCentre raw data

110106MS MJF

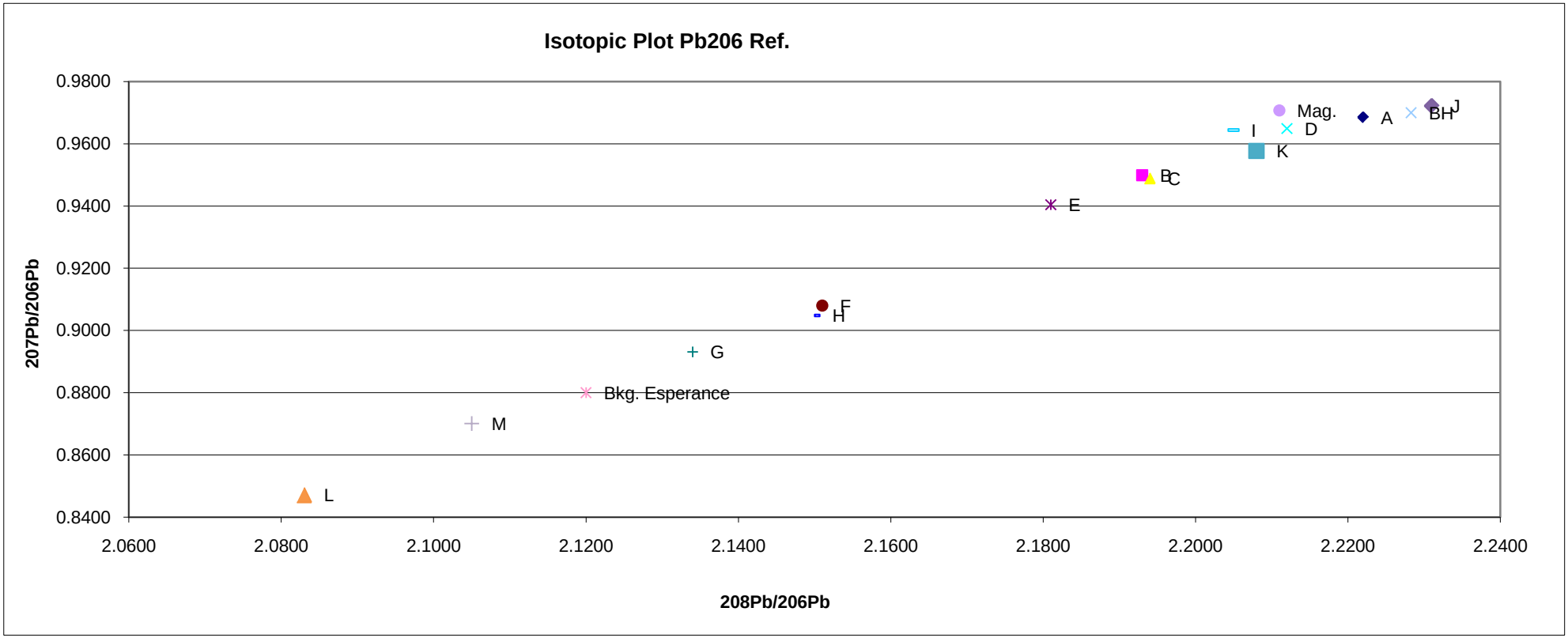
Each result is the average of seven replicate readings.

Lab ID	207Pb/206Pb	RSD%	2σ lower	2σ upper	208Pb/206Pb	RSD%	2σ lower	2σ upper
10E1350/9	0.9685	0.36	0.9615	0.9755	2.2220	0.45	2.2020	2.2420
10E1350/13	0.9499	0.37	0.9429	0.9569	2.1930	0.69	2.1627	2.2233
10E1350/13R	0.9489	0.38	0.9417	0.9561	2.1940	0.55	2.1699	2.2181
10E1350/18	0.9649	0.61	0.9531	0.9767	2.2120	0.52	2.1890	2.2350
10E1350/23	0.9404	0.21	0.9365	0.9443	2.1810	0.28	2.1688	2.1932
10E1350/24	0.9080	0.23	0.9038	0.9122	2.1510	0.44	2.1321	2.1699
10E1350/25	0.8931	0.59	0.8826	0.9036	2.1340	0.39	2.1174	2.1506
10E1350/26	0.9048	0.40	0.8976	0.9120	2.1500	0.39	2.1332	2.1668
10E1350/29	0.9644	0.39	0.9569	0.9719	2.2050	0.55	2.1807	2.2293
10E1350/30	0.9722	0.54	0.9617	0.9827	2.2310	0.30	2.2176	2.2444
10E1350/32	0.9577	0.48	0.9485	0.9669	2.2080	0.57	2.1828	2.2332
10E1350/21	0.8471	0.40	0.84	0.85	2.0830	0.46	2.06	2.10
10E1350/22	0.8701	0.71	0.86	0.88	2.1050	0.28	2.09	2.12

Lab ID	207Pb/204Pb	RSD%	2σ lower	2σ upper	206Pb/204Pb	RSD%	2σ lower	2σ upper
10E1350/9	15.51	0.44	15.3735	15.6465	16.02	0.56	15.8406	16.1994
10E1350/13	15.57	0.59	15.3863	15.7537	16.39	0.8	16.1278	16.6522
10E1350/13R	15.54	0.22	15.4716	15.6084	16.38	0.34	16.2686	16.4914
10E1350/18	15.62	0.31	15.5232	15.7168	16.19	0.41	16.0572	16.3228
10E1350/23	15.63	0.49	15.4768	15.7832	16.63	0.51	16.4604	16.7996
10E1350/24	15.57	0.56	15.3956	15.7444	17.15	0.47	16.9888	17.3112
10E1350/25	15.63	0.33	15.5268	15.7332	17.50	0.37	17.3705	17.6295
10E1350/26	15.56	0.46	15.4168	15.7032	17.20	0.2	17.1312	17.2688
10E1350/29	15.60	0.45	15.4596	15.7404	16.18	0.2	16.1153	16.2447
10E1350/30	15.54	0.46	15.3970	15.6830	15.98	0.51	15.8170	16.1430
10E1350/32	15.55	0.56	15.3758	15.7242	16.24	0.44	16.0971	16.3829
10E1350/21	15.59	0.52	15.4279	15.7521	18.40	0.47	18.2270	18.5730
10E1350/22	15.57	0.61	15.3800	15.7600	17.90	0.21	17.8248	17.9752

Isotope Ratio Plots

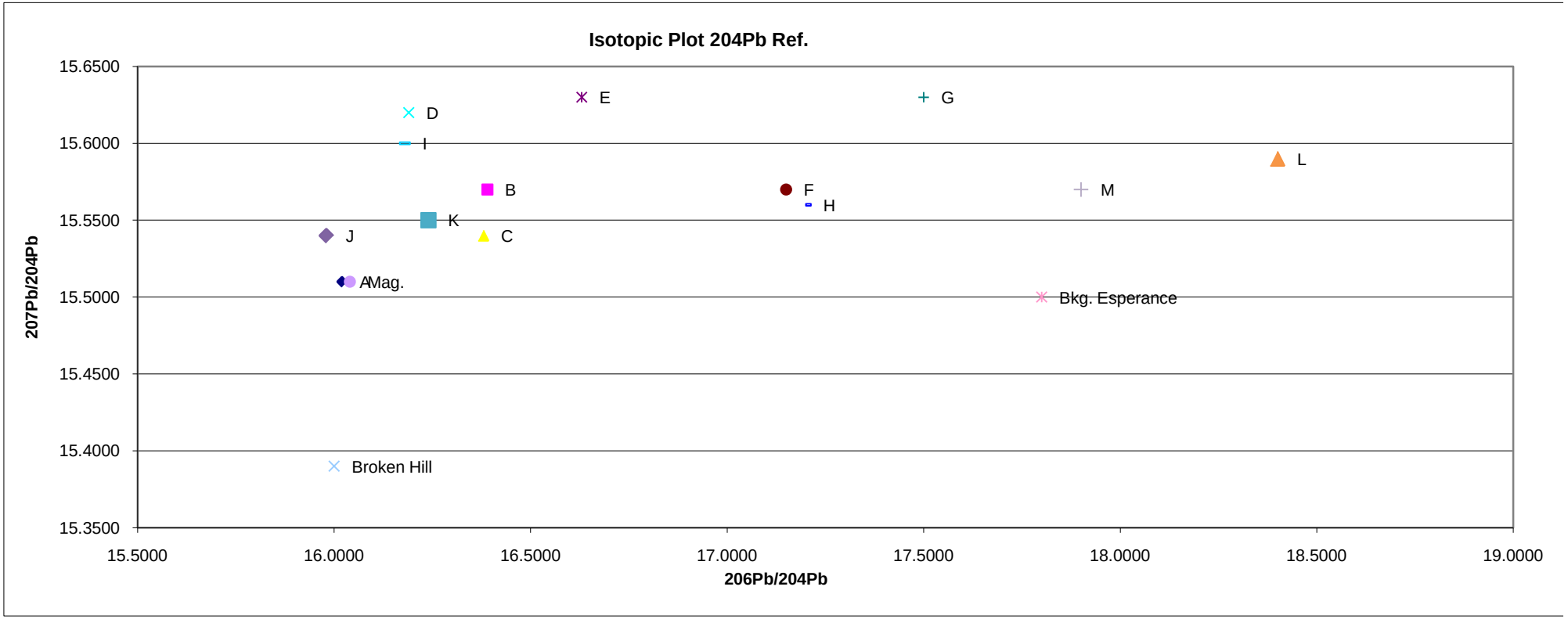
Ident	Plot Key	208Pb/206Pb	207Pb/206Pb
10E1350/9	A	2.2220	0.9685
10E1350/13	B	2.1930	0.9499
10E1350/13R	C	2.1940	0.9489
10E1350/18	D	2.2120	0.9649
10E1350/23	E	2.1810	0.9404
10E1350/24	F	2.1510	0.9080
10E1350/25	G	2.1340	0.8931
10E1350/26	H	2.1500	0.9048
10E1350/29	I	2.2050	0.9644
10E1350/30	J	2.2310	0.9722
10E1350/32	K	2.2080	0.9577
10E1350/21	L	2.0830	0.8471
10E1350/22	M	2.1050	0.8701
Magellan (Mag.)	Mag.	2.211	0.9707
Broken Hill (BH)	BH	2.2283	0.97
Bkg. Esperance	Bkg. Esperance	2.12	0.88



Isotope Ratio Plots

Ident	Plot Key	206Pb/204Pb	207Pb/204Pb
10E1350/9	A	16.0200	15.5100
10E1350/13	B	16.3900	15.5700
10E1350/13R	C	16.3800	15.5400
10E1350/18	D	16.1900	15.6200
10E1350/23	E	16.6300	15.6300
10E1350/24	F	17.1500	15.5700
10E1350/25	G	17.5000	15.6300
10E1350/26	H	17.2000	15.5600
10E1350/29	I	16.1800	15.6000
10E1350/30	J	15.9800	15.5400
10E1350/32	K	16.2400	15.5500
10E1350/21	L	18.4000	15.5900
10E1350/22	M	17.9000	15.5700
Magellan	Mag.	16.04	15.51
Broken Hill	BH	16	15.39
Bkg. Esperance	Bkg. Esperance	17.8	15.5

204 Ratio data has larger errors by ICPMS and is indicative only and should not be used for assignments of source.



Lead concentration and Isotopic Ratio Analysis - ChemCentre data

Lab ID	Pb conc.	Client ID	Plot Key	207Pb/206Pb	208Pb/206Pb	207Pb/204Pb	206Pb/204Pb
10E1372/3	6.6 ug	BGV1	A	0.8676	2.1080	15.73	18.13
10E1372/4	2.9 ug	BGV2	B	0.8632	2.1040	15.59	18.06
10E1372/5	11 ug	BGV3	C	0.8640	2.1070	15.60	18.06
10E1358/14	6.4 ug	VS-1	D	0.8989	2.1460	15.59	17.34
10E1358/15	12 ug	VS-2	E	0.8896	2.1260	15.65	17.59
10E1358/17	0.14 mg/L	WS-1	F	0.9216	2.1570	15.60	16.93
10E1358/18	0.03 mg/L	WS-2	G	0.9215	2.1670	15.56	16.89
10E1358/19	0.42 mg/L	WS-3	H	0.9399	2.1880	15.56	16.56
10E1358/20	0.66 mg/L	WS-4	I	0.9284	2.1680	15.51	16.71
10E1358/21	0.26 mg/L	WS-5	J	0.9101	2.1430	15.58	17.12
10E1372/1	0.11 mg/L	BGW1	K	0.8511	2.0660	15.78	18.54
10E1372/1R	0.11 mg/L	BGW1	L	0.8507	2.0840	15.74	18.50
10E1372/2	0.08 mg/L	BGW2	M	0.8497	2.0770	15.63	18.40

Reference Lead Sources

		207Pb/206Pb	208Pb/206Pb	207Pb/204Pb	206Pb/204Pb
Magellan Pb		0.9707	2.2110	15.57	16.04
Broken Hill (CSIRO data)		0.9617	2.2283	15.39	16.00
NIST SRM 981 (Mass Bias)	0.02474	0.91460	2.1680	15.4900	16.940
NIST SRM 981 Certified values		0.91464 +/- 0.00033	2.1681 +/- 0.0008	15.4916	16.937
NIST SRM 982 (QC)		0.4667	1.0020		36.570
NIST SRM 982 Certified values		0.4671	1.0002		36.734
Av. Earth Crustal		0.8360	2.0660		
Esperance Estimated Background		0.88	2.12	15.5	17.8

Lead Isotopic Ratio Analysis Most Probable Source Summary

Data analysis should primarily refer to plot position of ratios data as provided in relation to all suitable reference points/sources, possibly over time to track changes.
Summary information below is an approximation based on references to hand at the time of reporting.

Lab ID	Pb Conc.	Client ID	
10E1372/3	6.6 ug	BGV1	Reference vent swab sample
10E1372/4	2.9 ug	BGV2	Reference vent swab sample
10E1372/5	11 ug	BGV3	Reference vent swab sample
10E1358/14	6.4 ug	VS-1	VS 1 and VS 2 Possible slight contibution of lead swabbed is from Magellan type based on position versus BGV1-3 reference swabs. The overall lead content is similar/equal to this background - the vector for VS-1 and VS-2 may well be minesite lead dust strongly adhered to the surface not dust from the vents.
10E1358/15	12 ug	VS-2	
10E1358/17	0.14 mg/L	WS-1	All water samples (WS-1 to WS-5 and in particular WS3 and WS4) show indications of a possible shift in ratio versus assumed reference samples BGW1 and BGW2 towards the Magellan type ratio. However this possible shift would require confirmation by further analysis particularly for 204 ratio to confirm the direction of a possible array between Magellan and the two reference waters/sludges. Present analysis suggests such an array of results.
10E1358/18	0.03 mg/L	WS-2	
10E1358/19	0.42 mg/L	WS-3	
10E1358/20	0.66 mg/L	WS-4	
10E1358/21	0.26 mg/L	WS-5	
10E1372/1	0.11 mg/L	BGW1	Reference water/sludge sample approaching average earth crustal.
10E1372/1R	0.11 mg/L	BGW1	Reference water/sludge sample approaching average earth crustal.
10E1372/2	0.08 mg/L	BGW2	Reference water/sludge sample approaching average earth crustal.

Lead Isotopic Ratio Analysis - ChemCentre raw data

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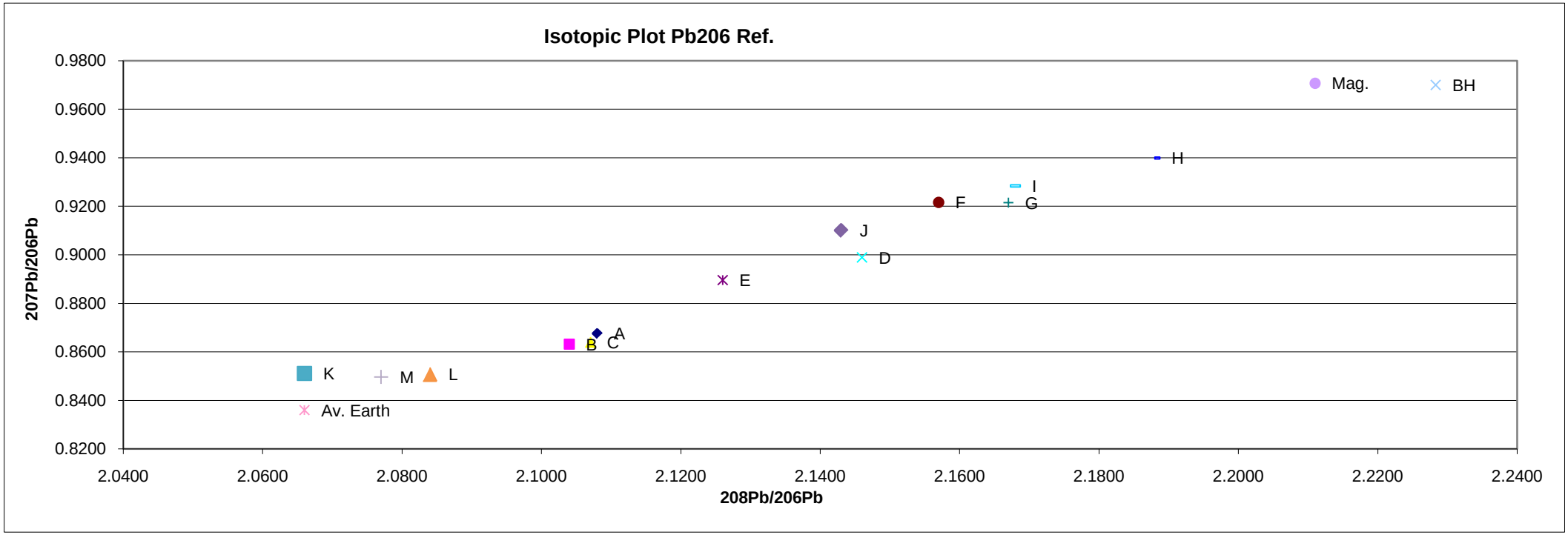
Each result is the average of seven replicate readings.

Lab ID	207Pb/206Pb	RSD%	2σ lower	2σ upper	208Pb/206Pb	RSD%	2σ lower	2σ upper
10E1372/3	0.8676	0.38	0.8610	0.8742	2.108	0.17	2.1008	2.1152
10E1372/4	0.8632	0.35	0.8572	0.8692	2.104	0.34	2.0897	2.1183
10E1372/5	0.864	0.49	0.8555	0.8725	2.107	0.5	2.0859	2.1281
10E1358/14	0.8989	0.47	0.8905	0.9073	2.1460	0.57	2.1215	2.1705
10E1358/15	0.8896	0.52	0.8803	0.8989	2.1260	0.66	2.0979	2.1541
10E1358/17	0.9216	0.20	0.9179	0.9253	2.1570	0.49	2.1359	2.1781
10E1358/18	0.9215	0.47	0.9128	0.9302	2.1670	0.47	2.1466	2.1874
10E1358/19	0.9399	0.38	0.9328	0.9470	2.1880	0.39	2.1709	2.2051
10E1358/20	0.9284	0.40	0.9210	0.9358	2.1680	0.32	2.1541	2.1819
10E1358/21	0.9101	0.30	0.9046	0.9156	2.1430	0.36	2.1276	2.1584
10E1372/1	0.8511	0.21	0.84753	0.85467	2.066	0.35	2.0515	2.0805
10E1372/1R	0.8507	0.33	0.84509	0.85631	2.084	0.28	2.0723	2.0957
10E1372/2	0.8497	0.18	0.84664	0.85276	2.077	0.37	2.0616	2.0924

Lab ID	207Pb/204Pb	RSD%	2σ lower	2σ upper	206Pb/204Pb	RSD%	2σ lower	2σ upper
10E1372/3	15.73	0.24	15.6545	15.8055	18.13	0.4	17.9850	18.2750
10E1372/4	15.59	0.48	15.4403	15.7397	18.06	0.48	17.8866	18.2334
10E1372/5	15.60	0.23	15.5282	15.6718	18.06	0.37	17.9264	18.1936
10E1358/14	15.59	0.28	15.5027	15.6773	17.34	0.4	17.2013	17.4787
10E1358/15	15.65	0.49	15.4966	15.8034	17.59	0.27	17.4950	17.6850
10E1358/17	15.60	0.33	15.4970	15.7030	16.93	0.49	16.7641	17.0959
10E1358/18	15.56	0.39	15.4386	15.6814	16.89	0.3	16.7887	16.9913
10E1358/19	15.56	0.37	15.4449	15.6751	16.56	0.47	16.4043	16.7157
10E1358/20	15.51	0.38	15.3921	15.6279	16.71	0.33	16.5997	16.8203
10E1358/21	15.58	0.55	15.4086	15.7514	17.12	0.33	17.0070	17.2330
10E1372/1	15.78	0.25	15.7011	15.8589	18.54	0.31	18.4251	18.6549
10E1372/1R	15.74	0.19	15.6802	15.7998	18.5	0.5	18.315	18.685
10E1372/2	15.63	0.16	15.5800	15.6800	18.4	0.24	18.3117	18.4883

Isotope Ratio Plots

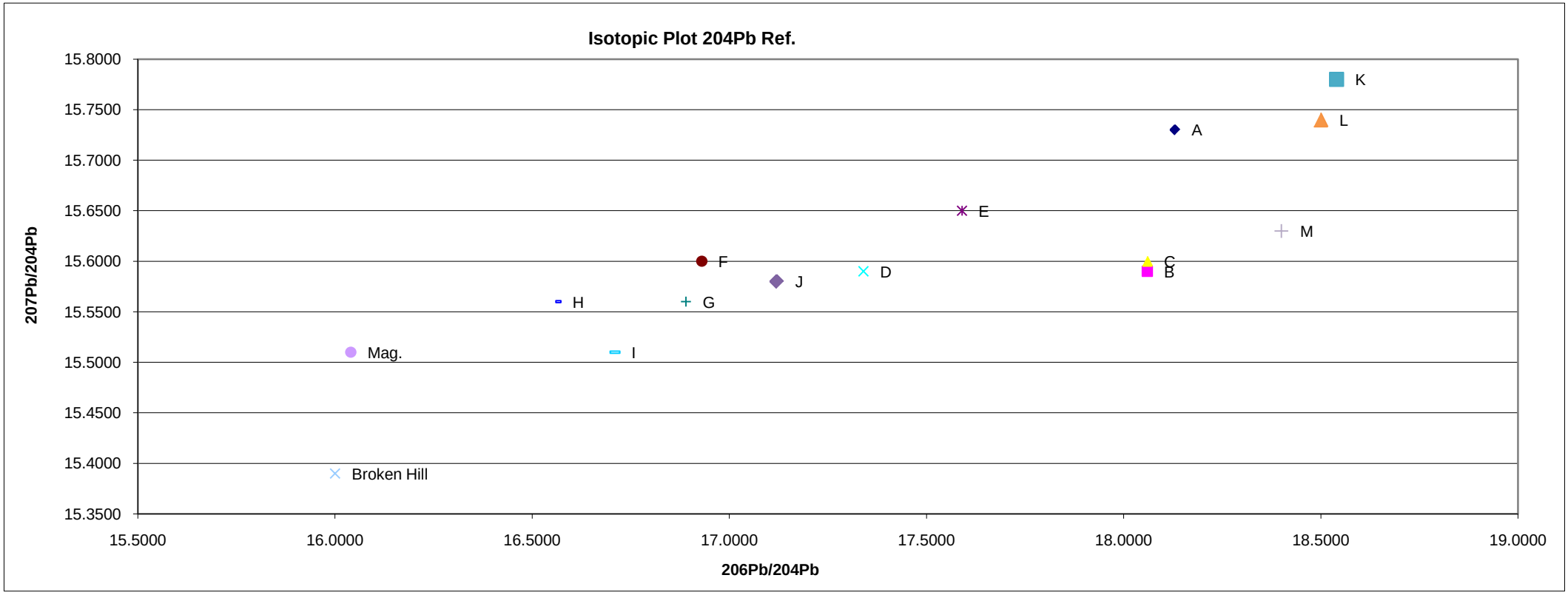
Ident	Plot Key	208Pb/206Pb	207Pb/206Pb
10E1372/3	A	2.1080	0.8676
10E1372/4	B	2.1040	0.8632
10E1372/5	C	2.1070	0.8640
10E1358/14	D	2.1460	0.8989
10E1358/15	E	2.1260	0.8896
10E1358/17	F	2.1570	0.9216
10E1358/18	G	2.1670	0.9215
10E1358/19	H	2.1880	0.9399
10E1358/20	I	2.1680	0.9284
10E1358/21	J	2.1430	0.9101
10E1372/1	K	2.0660	0.8511
10E1372/1R	L	2.0840	0.8507
10E1372/2	M	2.0770	0.8497
Magellan (Mag.)	Mag.	2.211	0.9707
Broken Hill (BH)	BH	2.2283	0.97
Av. Earth Crustal	Av. Earth Crustal	2.066	0.836



Isotope Ratio Plots

Ident	Plot Key	206Pb/204Pb	207Pb/204Pb
10E1372/3	A	18.1300	15.7300
10E1372/4	B	18.0600	15.5900
10E1372/5	C	18.0600	15.6000
10E1358/14	D	17.3400	15.5900
10E1358/15	E	17.5900	15.6500
10E1358/17	F	16.9300	15.6000
10E1358/18	G	16.8900	15.5600
10E1358/19	H	16.5600	15.5600
10E1358/20	I	16.7100	15.5100
10E1358/21	J	17.1200	15.5800
10E1372/1	K	18.5400	15.7800
10E1372/1R	L	18.5000	15.7400
10E1372/2	M	18.4000	15.6300
Magellan	Mag.	16.04	15.51
Broken Hill	BH	16	15.39

204 Ratio data has larger errors by ICPMS and is indicative only and should not be used for assignments of source.



Lead concentration and Isotopic Ratio Analysis - ChemCentre data

Lab ID	Pb conc.	Client ID	Plot Key	207Pb/206Pb	208Pb/206Pb	207Pb/204Pb	206Pb/204Pb
10E1358/25	36 mg/kg	SS-3	A	0.8825	2.1150	15.56	17.64
10E1358/26	51 mg/kg	SS-4	B	0.8653	2.0810	15.64	18.08
10E1358/27	52 mg/kg	SS-5	C	0.8873	2.1100	15.60	17.59
10E1358/28	39 mg/kg	SS-6	D	0.8625	2.0560	15.76	18.28
10E1358/29	23 mg/kg	BGS-1	E	0.8402	2.0600	15.75	18.74
10E1358/30	13 mg/kg	BGS-2	F	0.7584	1.9590	15.88	20.94
10E1358/31	44 mg/kg	Drain sample 1	G	0.8586	2.0820	15.66	18.24
10E1358/7	8.6 ug	S27	H	0.9679	2.2180	15.55	16.07
10E1358/8	4.9 ug	S28	I	0.9611	2.2180	15.51	16.14
10E1358/12	11 ug	S32	J	0.9661	2.2060	15.53	16.08
10E1358/22	27 mg/kg	DS-1	K	0.8592	2.0960	15.57	18.12
10E1358/23	29 mg/kg	SS-1	L	0.8581	2.0860	15.60	18.18
10E1358/24	35 mg/kg	SS-2	M	0.8712	2.1020	15.66	17.98

Reference Lead Sources

		207Pb/206Pb	208Pb/206Pb	207Pb/204Pb	206Pb/204Pb
Magellan Pb		0.9707	2.2110	15.57	16.04
Broken Hill (CSIRO data)		0.9617	2.2283	15.39	16.00
NIST SRM 981 (Mass Bias)	0.02474	0.91460	2.1680	15.4900	16.940
NIST SRM 981 Certified values		0.91464 +/- 0.00033	2.1681 +/- 0.0008	15.4916	16.937
NIST SRM 982 (QC)		0.4667	1.0020		36.570
NIST SRM 982 Certified values		0.4671	1.0002		36.734
Av. Earth Crustal		0.8360	2.0660		
Esperance Estimated Background		0.88	2.12	15.5	17.8

Lead Isotopic Ratio Analysis Most Probable Source Summary

Data analysis should primarily refer to plot position of ratios data as provided in relation to suitable reference points/sources, possibly over time to track changes.
Summary information below is an approximation based on references to hand at the time of reporting.

Lab ID	Pb Conc.	Client ID	
10E1358/25	36 mg/kg	SS-3	All soil samples (SS-1 to SS-6) show indications of a possible shift in ratio versus assumed reference sample BGS1 towards Magellan type lead ratio. However this possible shift would require confirmation by further analysis including more reference soil samples (BGS-2 was very different) and that the shift is towards Magellan lead and not another lead type such as Broken Hill type lead (determination of the array direction using 204 ratio analysis of multiple samples).
10E1358/26	51 mg/kg	SS-4	
10E1358/27	52 mg/kg	SS-5	
10E1358/28	39 mg/kg	SS-6	
10E1358/29	23 mg/kg	BGS-1	Background' reference sample v. similar to average earth crustal lead.
10E1358/30	13 mg/kg	BGS-2	Unique lead source lies well removed from all others and references.
10E1358/31	44 mg/kg	Drain sample 1	There is no evidence of Magellan contribution based on reference to BGS1.
10E1358/7	8.6 ug	S27	Sample lies within 2 sigma range of Magellan lead, Magellan likely primary source.
10E1358/8	4.9 ug	S28	Sample lies within 2 sigma range of Magellan lead, Magellan likely primary source.
10E1358/12	11 ug	S32	Sample lies within 2 sigma range of Magellan lead, Magellan likely primary source.
10E1358/22	27 mg/kg	DS-1	Uncertain if reference point BGS1 is valid for this sample, Magellan lead contribution is unknown.
10E1358/23	29 mg/kg	SS-1	
10E1358/24	35 mg/kg	SS-2	

Lead Isotopic Ratio Analysis - ChemCentre raw data

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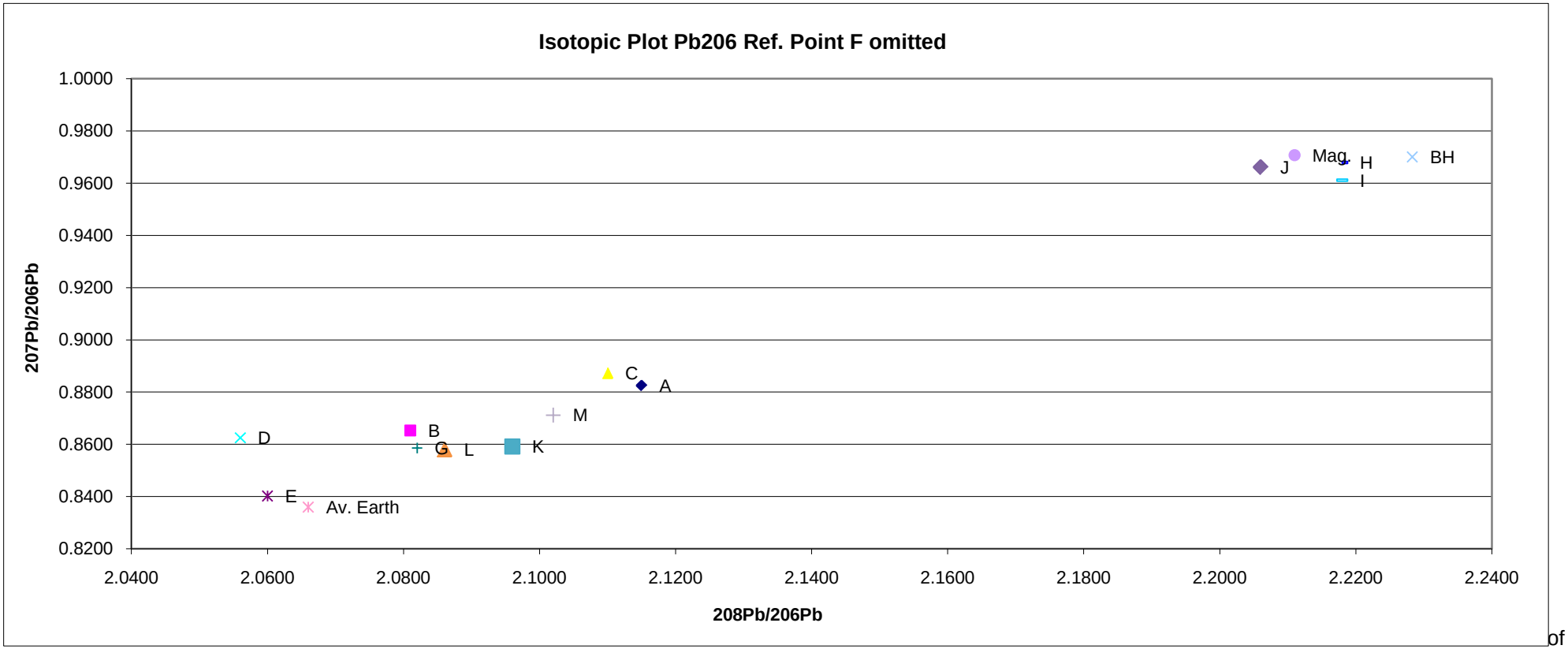
Each result is the average of seven replicate readings.

Lab ID	207Pb/206Pb	RSD%	2σ lower	2σ upper	208Pb/206Pb	RSD%	2σ lower	2σ upper
10E1358/25	0.8825	0.35	0.8763	0.8887	2.1150	0.57	2.0909	2.1391
10E1358/26	0.8653	0.48	0.8570	0.8736	2.0810	0.12	2.0760	2.0860
10E1358/27	0.8873	0.25	0.8829	0.8917	2.1100	0.42	2.0923	2.1277
10E1358/28	0.8625	0.47	0.8544	0.8706	2.0560	0.36	2.0412	2.0708
10E1358/29	0.8402	0.47	0.8323	0.8481	2.0600	0.24	2.0501	2.0699
10E1358/30	0.7584	0.35	0.7531	0.7637	1.9590	0.37	1.9445	1.9735
10E1358/31	0.8586	0.46	0.8507	0.8665	2.0820	0.22	2.0728	2.0912
10E1358/7	0.9679	0.46	0.9590	0.9768	2.2180	0.63	2.1901	2.2459
10E1358/8	0.9611	0.23	0.9567	0.9655	2.2180	0.25	2.2069	2.2291
10E1358/12	0.9661	0.42	0.9580	0.9742	2.2060	0.62	2.1786	2.2334
10E1358/22	0.8592	0.57	0.8494	0.8690	2.0960	0.22	2.0868	2.1052
10E1358/23	0.8581	0.4	0.8512	0.8650	2.0860	0.40	2.0693	2.1027
10E1358/24	0.8712	0.24	0.8670	0.8754	2.1020	0.31	2.0890	2.1150

Lab ID	207Pb/204Pb	RSD%	2σ lower	2σ upper	206Pb/204Pb	RSD%	2σ lower	2σ upper
10E1358/25	15.56	0.30	15.4666	15.6534	17.64	0.49	17.4671	17.8129
10E1358/26	15.64	0.37	15.5243	15.7557	18.08	0.28	17.9788	18.1812
10E1358/27	15.60	0.27	15.5158	15.6842	17.59	0.26	17.4985	17.6815
10E1358/28	15.76	0.35	15.6497	15.8703	18.28	0.3	18.1703	18.3897
10E1358/29	15.75	0.57	15.5705	15.9296	18.74	0.28	18.6351	18.8449
10E1358/30	15.88	0.53	15.7117	16.0483	20.94	0.36	20.7892	21.0908
10E1358/31	15.66	0.61	15.4689	15.8511	18.24	0.56	18.0357	18.4443
10E1358/7	15.55	0.22	15.4816	15.6184	16.07	0.39	15.9447	16.1953
10E1358/8	15.51	0.33	15.4076	15.6124	16.14	0.21	16.0722	16.2078
10E1358/12	15.53	0.39	15.4089	15.6511	16.08	0.34	15.9707	16.1893
10E1358/22	15.57	0.46	15.4268	15.7132	18.12	0.39	17.9787	18.2613
10E1358/23	15.6	0.22	15.5314	15.6686	18.18	0.53	17.9873	18.3727
10E1358/24	15.66	0.23	15.5880	15.7320	17.98	0.24	17.8937	18.0663

Isotope Ratio Plots

Ident	Plot Key	208Pb/206Pb	207Pb/206Pb
10E1358/25	A	2.1150	0.8825
10E1358/26	B	2.0810	0.8653
10E1358/27	C	2.1100	0.8873
10E1358/28	D	2.0560	0.8625
10E1358/29	E	2.0600	0.8402
10E1358/30	F		
10E1358/31	G	2.0820	0.8586
10E1358/7	H	2.2180	0.9679
10E1358/8	I	2.2180	0.9611
10E1358/12	J	2.2060	0.9661
10E1358/22	K	2.0960	0.8592
10E1358/23	L	2.0860	0.8581
10E1358/24	M	2.1020	0.8712
Magellan (Mag.)	Mag.	2.211	0.9707
Broken Hill (BH)	BH	2.2283	0.97
Av. Earth Crustal	Av. Earth Crustal	2.066	0.836



Isotope Rat

Ident	Plot Key	206Pb/204Pb	207Pb/204Pb
10E1358/25	A	17.6400	15.5600
10E1358/26	B	18.0800	15.6400
10E1358/27	C	17.5900	15.6000
10E1358/28	D	18.2800	15.7600
10E1358/29	E	18.7400	15.7500
10E1358/30	F		
10E1358/31	G	18.2400	15.6600
10E1358/7	H	16.0700	15.5500
10E1358/8	I	16.1400	15.5100
10E1358/12	J	16.0800	15.5300
10E1358/22	K	18.1200	15.5700
10E1358/23	L	18.1800	15.6000
10E1358/24	M	17.9800	15.6600
Magellan	Mag.	16.04	15.51
Broken Hill	BH	16	15.39

204 Ratio data has larger errors by ICPMS and is indicative only and should not be used for assignments of source.