



Douglas Partners

Geotechnics • Environment • Groundwater

Integrated Practical Solutions

**REPORT
ON
REMEDiation AND VALIDATION – CATTLE DIP**

**LOT 1 ON SL 5997
SPRINGFIELD ESTATE**

**prepared for
SPRINGFIELD LAND CORPORATION PTY LTD**

**Project 33065
April 2000**



Douglas Partners

Geotechnics • Environment • Groundwater

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ON
REMEDiation AND VALIDATION – CATTLE DIP**

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SPRINGFIELD ESTATE**

**prepared for
SPRINGFIELD LAND CORPORATION PTY LTD**

**Project 33065
April 2000**

Douglas Partners Pty Ltd
ACN 053 980 117
439 Montague Road
West End QLD 4101
Australia

Phone 61-7-3237 8900
Fax 61-7-3237 8999
e-mail dpbris@ozemail.com.au



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NK:gk(RD15)
Project 33065
April 2000

**REPORT ON
REMEDIATION AND VALIDATION – CATTLE DIP
LOT 1 ON SL 5997, SPRINGFIELD ESTATE**

1.0 INTRODUCTION

This report details the remediation and validation survey carried out on the proposed residential subdivision located at Lot 1 on SL 5997, Springfield Estate. Douglas Partners Pty Ltd (DP) was commissioned by the Springfield Land Corporation Pty Ltd to carry out the validation survey.

The site comprises part of Lot 1 on SL 5997 as shown on Drawing No. 1.

This report should be read in conjunction with the following report prepared by AGC Woodward-Clyde Pty Ltd:

- Stage 1 and 2 Site Contamination Assessment, Lot 1 on Plan SL 5997, Part of Springfield Estate. Report No. A32\00073\001 dated June 1995.

2.0 BACKGROUND

A Stage 1 and Stage 2 site investigation was carried out in the abovementioned Contaminated Land Investigation which identified elevated levels of arsenic exceeding both the Environmental Investigation Threshold (EIT) and the health-based soil criteria for 'standard' residential exposure setting A¹ (refer to Drawing No. 2).

¹ Department of Environment. Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland, May 1998. 80pp at p55.

2.1 Approval for Off-Site Disposal

An application was made pursuant to Section 118ZZF of the Environmental Protection Act 1994 for the off-site disposal of arsenic impacted soils from the site. The disposal permit is contained in Appendix A. Written authority was also obtained from the landfill administrator (Thiess Environmental Services) to the effect that they were willing to accept the materials and further that the acceptance was in accordance with their licence conditions. Appendix B contains the written agreement from the landfill administrator.

3.0 ARSENIC REMEDIATION

The objective of this report is to verify that after the completion of remedial work the area in the immediate vicinity of the cattle dip would be suitable for a 'standard' residential development.

Off-site disposal of the arsenic impacted soil to the Thiess Swanbank landfill was adopted as the remediation strategy of the site. Impacted material removed from site was documented by the use of a four disposal docket system whereby traceability of the material from site to the landfill is maintained. An example of a disposal docket is given in Appendix C. By using this system each load of impacted material transported from site to Swanbank landfill was given a unique manifest number. This manifest number corresponded to a unique weighbridge transaction. The Swanbank weighbridge tonnage summary of material received from site on a per vehicle registration basis is given in Appendix D which identifies the manifest number and corresponding transaction number.

The locations identified in the Contaminated Land Investigation as being the 100 ppm contour for arsenic were pegged out on-site by a Senior Environmental Consultant from DP (refer Drawing No. 2). The soil contained within this area was excavated on 22-23 March 2000 to a depth of approximately 250 mm and transported to the Swanbank landfill. Additional excavations were undertaken on 8 and 18 April respectively.

4.0 VALIDATION OF ARSENIC REMEDIATION

Validation sampling was initiated when the bulk of the arsenic impacted material was removed from site. To validate the remediation individual soil samples were collected with each soil sample being given an individual sample number. A 'V' prefix was given to samples collected from arsenic impacted areas.

Individual soil samples were collected at each sample location with the samples being placed in a sealable glass jar and kept in an esky until delivered to the laboratory for analyses. To prevent cross-contamination sampling implements were cleaned prior to collection of each soil sample.

Disposable gloves were worn during the sampling process and these were replaced once each sample had been collected.

The location and description of each soil sample was recorded during the sampling process. The sample locations are given on Drawing No. 3.

4.1 Arsenic Area Validation

The arsenic area validation was carried out between 23-27 March 2000, 8 April 2000 and 18 April 2000. Initially, a total of thirty three (33) validation samples were collected. Following receipt of the first round of laboratory test results a further twelve samples were collected. In addition to this a further two samples were collected.

Photographs 1-4 illustrate the remediation process.

The first two rounds of validation soil samples were submitted to Australian Water Technologies (AWT). The final round of validation soil samples were submitted to Australian Laboratory Services (ALS). Both AWT and ALS are NATA registered for arsenic analyses. A summary of the laboratory results is given in Table 1 while the laboratory reports and chain of custody documentation are given in Appendix E.

Table 1: Summary of Laboratory Results

Sample No.	Sample Type	Arsenic (mg/kg)	OC Pesticides (mg/kg)	Sample No.	Sample Type	Arsenic (mg/kg)	OC Pesticides (mg/kg)
V1	WS	26.5	-	V18	WS	327	-
V2	WS	5.62	-	V19	BS	221	-
V3	BS	9.59	-	V20	WS	24.9	<LOR
V4	BS	7.92	-	V21	BS	57.4	-
V5	BS	64.5	2.61	V22	WS	9.54	-
V6	WS	4.29	-	V23	WS	49.8	-
V7	BS	77.5	-	V24	BS	18.3	-
V8	BS	318	-	V25	WS	82.4	-
V9	WS	12.3	-	V26	WS	36.7	-
V10	BS	40.3	<LOR	V27	BS	10.6	-
V11	BS	38.3	<LOR	V28	WS	9.9	-
V12	BS	9.38	-	V29	WS	619	-
V13	WS	18.4	-	V30	BS	6.19	-
V14	BS	12.9	<LOR	V31	WS	14.5	-
V15	WS	6.96	-	V32	WS	60.9	-
V16	WS	17.9	-	V33	WS	7.29	-
V17	WS	42.2	-	V34	BS	210	-

Table 1: Summary of Laboratory Results (Cont'd)

Sample No.	Sample Type	Arsenic (mg/kg)	OC Pesticides (mg/kg)	Sample No.	Sample Type	Arsenic (mg/kg)	OC Pesticides (mg/kg)
V35	WS	200	-	V42	WS	6.7	-
V36	BS	12	-	V43	WS	10	-
V37	WS	1.4	-	V44	WS	6.8	-
V38	WS	6.5	-	V45	WS	4.0	-
V39	WS	8.7	-	V46	BS	<1.0	-
V40	WS	15	-	V47	WS	7.0	-
V41	BS	20	-	-	-	-	-

- Notes: (i) All results in mg/kg dry weight
 (ii) Shaded – exceeds health-based soil guidelines for exposure setting A 'standard' residential
 (iii) BS – Base sample
 (iv) WS – Wall sample

It should be noted the summary of results given in Table 1 is a total summary of the arsenic results for the validation samples collected from the areas being remediated for arsenic. Where validation samples exceeded the health-based soil guidelines (HBSG) for exposure setting A (i.e. 100 ppm dry weight), further excavation and removal of soil was carried out until the final validation sample results indicated that the area had been remediated.

The validation sample locations are shown in Drawing No. 3.

4.2 Discussion and Statistical Analyses of Arsenic Validation Results

A total of sixteen (16) base validation samples were collected. The observed levels of arsenic within the final base level of the excavation varied between 4.0 mg/kg and 77.5 mg/kg dry weight.

A total of twenty five (25) validation samples were collected from the final wall locations. The observed levels of arsenic within the final wall location of the excavation varied between <1 mg/kg and 82.4 mg/kg dry weight.

Statistical analyses of the final validation results were carried out on the base and walls of the excavation. A summary of the statistical analyses for the validation is given in Table 2 below:

Table 2: Summary of Arsenic Validation Results – Statistical Analyses

Statistical Variable	Arsenic (mg/kg)
Maximum	82.4
Minimum	<1.0
Median	12
Mean	21.5
Standard Deviation	21.4
Upper 90 Percentile	27.02
Upper 95 Percentile	28.08
N (number of variables)	41

5.0 VALIDATION QUALITY ASSURANCE/QUALITY CONTROL

5.1 Quality Assurance

Quality assurance was maintained by:

- compliance with a Project Quality Plan written for the objectives of the study;
- using a qualified environmental scientist to undertake the field investigation;
- following the DP operating procedures for soil sampling, field testing and decontamination;
- despatching samples using appropriate chain of custody procedures;
- using NATA registered laboratories for sample testing, which utilise standard laboratory methods of the US EPA and the APHA.

5.2 Quality Control

Quality control of the laboratory program was achieved by the following means:

- Laboratory duplicates – the laboratory split samples internally and conducted tests on separate extracts;
- Laboratory spikes – samples were spiked by the laboratory with a known concentration of contamination and subsequently tested for percent recovery;
- Equipment blanks – the laboratory ran reagent blanks to confirm the equipment and standards used were uncontaminated.

The results of all quality control testing undertaken by AWT are presented with the laboratory reports in Appendix E.

5.3 Quality Control Results

Laboratory Duplicates

AWT completed internal duplicate testing on duplicate pairs of samples. The relative percent difference (RPD), which is the measure of precision between duplicate pairs of results, was calculated for each of the three pairs of samples. The RPD results were in the range of 0% to 12%.

Laboratory Spikes

AWT spiked three samples with known concentration of contaminants. RPD results were reported by the laboratory in the range of 71% to 131%.

5.4 Quality Control Conclusion

Based upon the QA performed by the laboratory it is considered that the performance of the laboratory is acceptable with the results being reproducible.

6.0 CONCLUSIONS

With respect to the work carried out on-site, it is concluded that soil impacted with elevated levels of arsenic have been removed from the site. The level of arsenic which still remains on-site does not present an environmental or health risk and is considered suitable for standard residential development.

DOUGLAS PARTNERS PTY LTD

s78B(2) - Privacy

Nick Kennedy
Principal

s78B(2) - Privacy

Reviewed by:

s78B(2) - Privacy

Carl Deegan
Hydrogeologist



Photograph 1: General View of Excavation (viewed towards north east)



Photograph 2: General View of Excavation (viewed towards south west)

**REMEDIATION AND VALIDATION – CATTLE DIP
LOT 1 ON SL 5997, SPRINGFIELD ESTATE**

Project 33065

April 2000

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*Photograph 3: Excavation of Cattle Dip
(viewed towards south west)*



*Photograph 4: Excavation of Cattle Dip
(viewed towards north east)*

REMEDICATION AND VALIDATION – CATTLE DIP
LOT 1 ON SL 5997, SPRINGFIELD ESTATE

Project No. 33065

April 2000

dp Douglas Partners
Geotechnics • Environment • Groundwater



Douglas Partners

Geotechnics · Environment · Groundwater

Sydney, Newcastle,
Brisbane, Melbourne,
Perth, Darwin

Townsville, Cairns
Wyong, Campbelltown,
Wollongong

TITLE:

**REMEDIATION AND VALIDATION
LOT 1 ON SL5997 SPRINGFIELD ESTATE, SPRINGFIELD
LOCALITY PLAN**

CLIENT: **SPRINGFIELD LAND CORPORATION PTY LTD**

OFFICE: **BRISBANE**

DRAWN BY: **FD**

SCALE: **AS SHOWN**

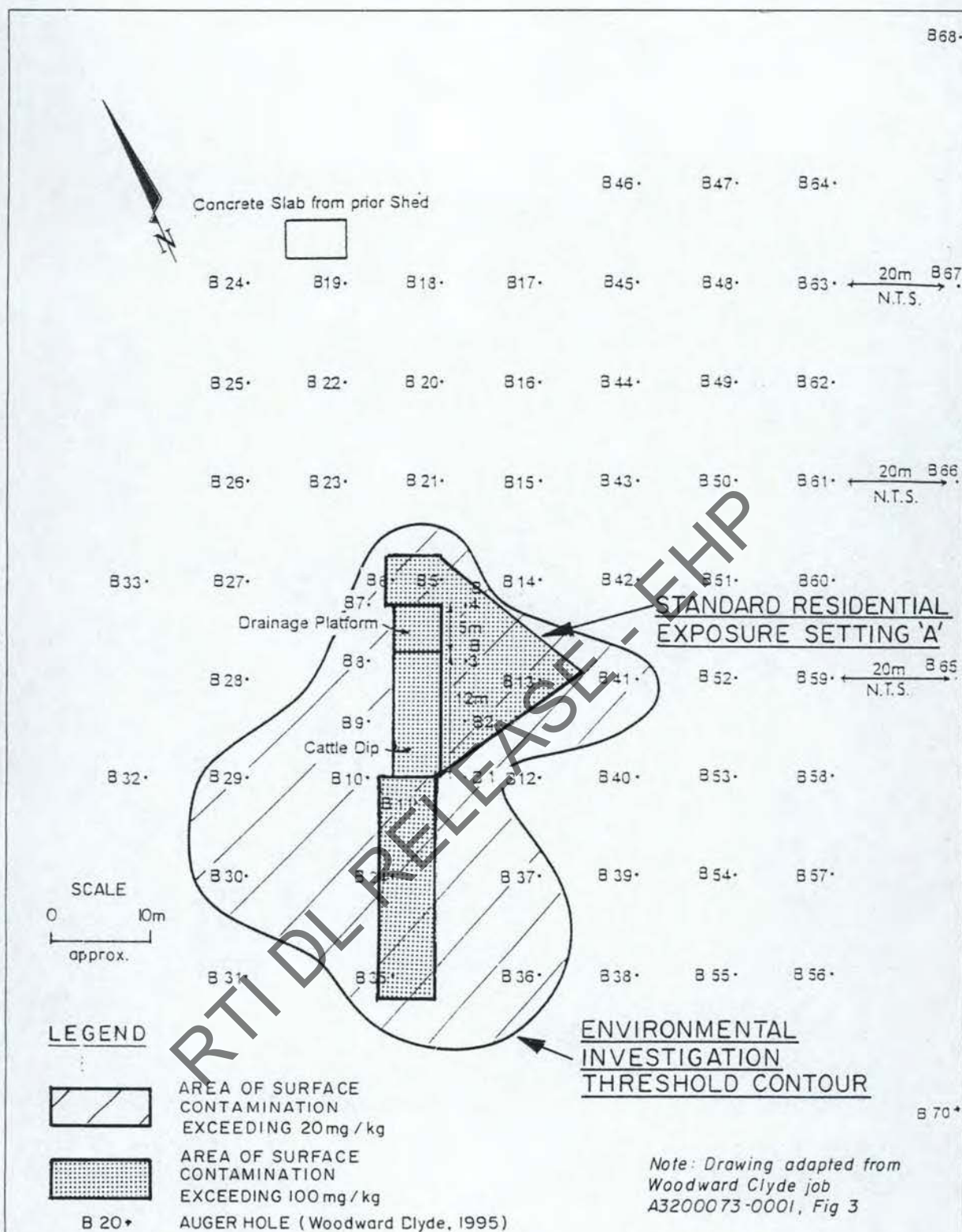
PROJECT No: **33065**

DRAWING No:

APPROVED BY: **s78B(2) - Privacy**

DATE: **APRIL 2000**

1



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Sydney, Newcastle,
Brisbane, Melbourne,
Perth, Darwin

Townsville, Cairns
Wyong, Campbelltown,
Wollongong

TITLE:

**REMEDATION AND VALIDATION
LOT 1 ON SL5997 SPRINGFIELD ESTATE, SPRINGFIELD
ARSENIC CONCENTRATION CONTOUR MAP SHOWING
REMEDATION AREAS**

CLIENT: **SPRINGFIELD LAND CORPORATION PTY LTD**

OFFICE: BRISBANE

DRAWN BY: FD

SCALE: AS SHOWN

PROJECT No: 33065

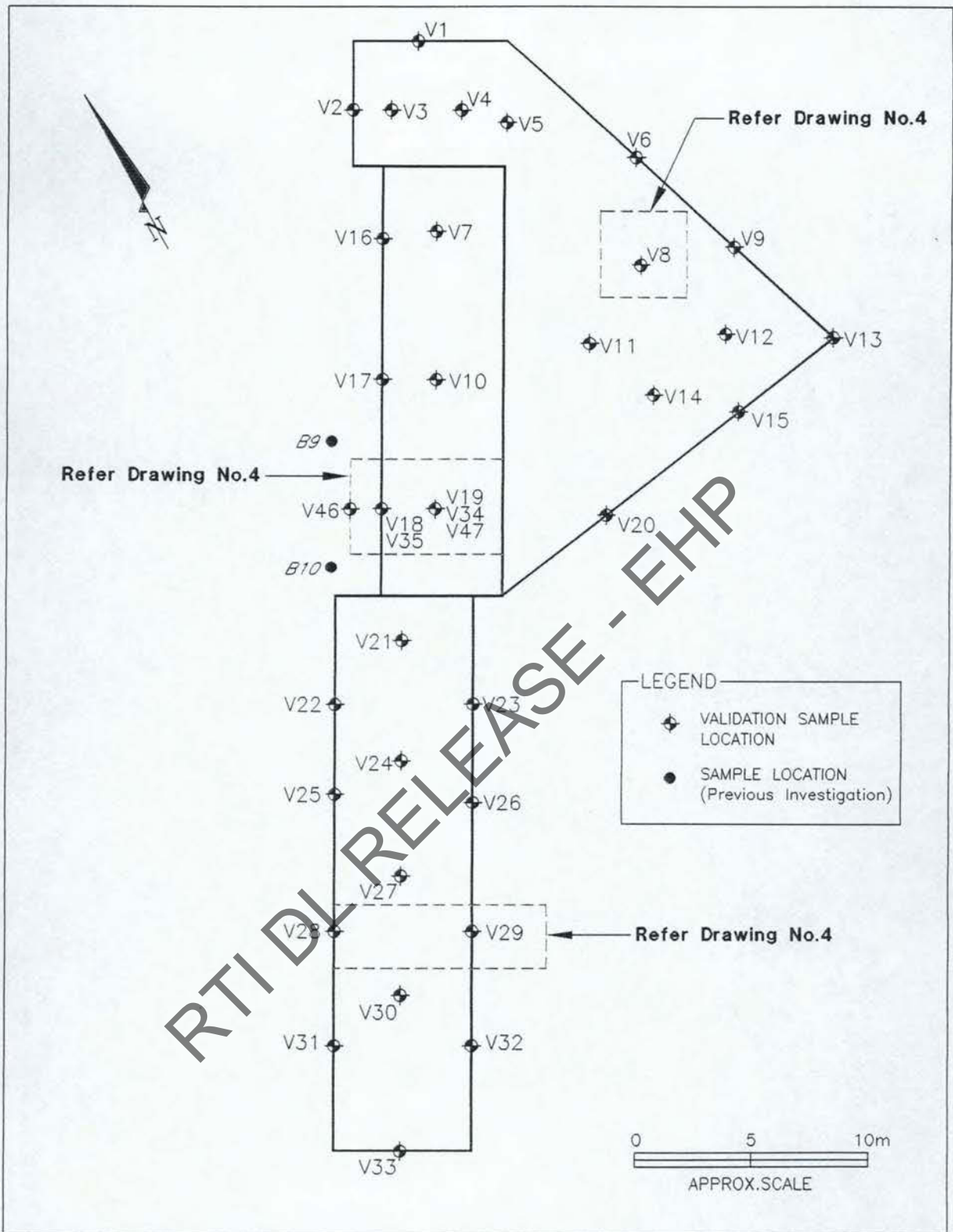
DRAWING No:

APPROVED BY:

DATE: APRIL 2000

2

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Perth, Darwin

Townsville, Cairns
Wyong, Campbelltown,
Wollongong

TITLE:

**REMEDATION AND VALIDATION
LOT 1 ON SL5997 SPRINGFIELD ESTATE, SPRINGFIELD
ARSENIC VALIDATION SAMPLING PLAN**

CLIENT: **SPRINGFIELD LAND CORPORATION PTY LTD**

OFFICE: **BRISBANE**

DRAWN BY: **FD**

SCALE: **AS SHOWN**

PROJECT No: **33065**

DRAWING No:

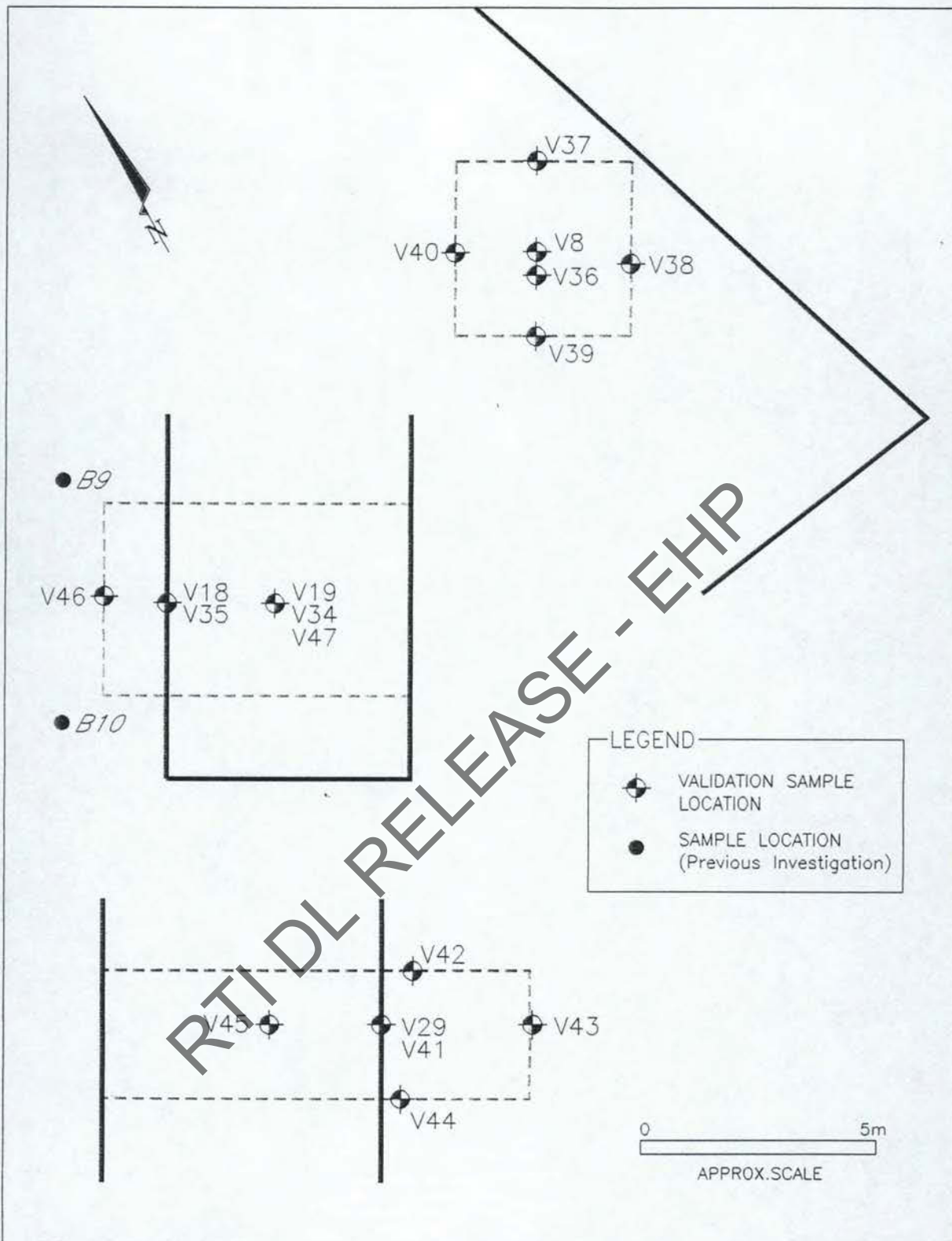
APPROVED BY:

DATE: **APRIL 2000**

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Brisbane, Melbourne,
Perth, Darwin

Townsville, Cairns
Wyong, Campbelltown,
Wollongong

TITLE:

**REMEDATION AND VALIDATION
LOT 1 ON SL5997 SPRINGFIELD ESTATE, SPRINGFIELD
ARSENIC RETEST VALIDATION SAMPLING PLAN**

CLIENT: **SPRINGFIELD LAND CORPORATION PTY LTD**

OFFICE: **BRISBANE**

DRAWN BY: **FD**

SCALE: **AS SHOWN**

PROJECT No: **33065**

DRAWING No:

APPROVED BY:

DATE: **APRIL 2000**

4

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codfile:a:\33065-4.dwg

APPENDIX A

Disposal Permit

RTI DL RELEASE - EHP



**Environmental
Protection
Agency**

RECEIVED
20 MAR 2000

160 Ann Street . Brisbane Queensland . PO Box 155 . BRISBANE ALBERT STREET QLD 4002
Telephone (07) 3227 6422 . Facsimile (07) 3227 7677

Enquiries to: K Barry
Telephone: 3227 8264 fax 3227 7677
Your reference: 33065
Our reference: 901552

Permit to Remove and Dispose of Contaminated Soil

Pursuant to Section 118ZZF of the *Environment Protection Act* 1994 (EP Act) permission is given to the applicant

Nick Kennedy

Douglas Partners Pty Ltd

439 Montague Road

West End QLD 4101

Telephone: 3237 8900

Fax: 3279 8999

to remove and dispose of soil contaminated with

Arsenic

from Old Logan Road, Swanbank

on Lot 1 on SL5997 and described in the following correspondence:

Application for Disposal Permit dated 16 March 2000 and EPA file 901552

The permit holder is responsible for ensuring that the specific and standard conditions in Schedules 1 and 2 of this permit are complied with by all personnel involved in the excavation, removal and disposal.

Signed

s78B(2) - Privacy

Mack Dreyer s78B(2) - Privacy

Chief Scientific Advisor (Contaminated Land Unit)

17/3/2000

cc S Region attn Murray Allan

cc TES attn David Solomon fax 3288 6795

Notice to Applicant

The conditions on this permit have been decided after consideration of the standard criteria (Schedule 4, EP Act) and for the purpose of preventing environmental harm. The applicant may apply for a review or appeal against the decision within 14 days of receipt of this notice (s118ZZF(5)(c)(ii)).

Schedule 1 of 2 – Specific Conditions

The volume or mass of the contaminated soil shall not exceed 150 cubic metres.

The soil is to be disposed in accordance with the disposal facility approval letter dated 14 February 2000 at Thiess Environmental Services Swanbank landfill.

The soil must be disposed between 18/03/2000 and 18/06/2000.

Other Conditions:

nil.

RTI DL RELEASE - EHP

Schedule 2 of 2 – Standard Conditions

1. Volume / mass of contaminated soil

This permit applies to the specified volume or mass only. Any increases to the specified quantity will require a new disposal permit.

2. Disposal time period

Disposal must occur within the dates specified or a new disposal permit must be sought.

3. Excavation and loading

The holder of this disposal permit must take all reasonable precautions necessary to prevent the spillage of contaminated soil during loading and prevent contaminated soil being transported from the site of origin on vehicle tyres and plant and equipment.

4. Transportation

(a) *Transporter to be advised of permit conditions*

Prior to the removal of contaminated soil, the permit holder must provide a copy of the permit and conditions to the transporter.

(b) *Load to be secured*

The contaminated soil must be covered in the transportation vehicle to ensure that the contaminated soil or offensive or noxious gases are not released during transport.

(c) *Cleaning of vehicles and plant equipment*

An effective system must be employed for cleaning of vehicles and plant and equipment which are used to transport or handle contaminated soil which prevents release of contaminants onto any roadway or to any waters or stormwater drainage system.

(d) *Spillage*

Any spillage of contaminants must be cleaned up as quickly as practicable. Spillages must not be cleaned up by hosing, sweeping or otherwise releasing such contaminants or material to any stormwater drainage system, roadside gutter or waters.

5. Receival and disposal

(a) *Licence conditions*

The acceptance and disposal of the contaminated soil must comply with the licence conditions and the specific requirements of the disposal facility.

(b) *Disposal receipts*

Copies of disposal acceptance receipts are to be submitted to the Administering Authority within 10 working days of the date of disposal.

6. Interim storage

Contaminated soil which is temporarily stored at the site of origin or approved for storage at a separate property must be stockpiled and securely covered and/or managed to ensure that:

- (a) rainwater is drained away from the stockpiles;
- (b) contaminated soil is not transported from the stockpile by wind or rainwater;
- (c) offensive odours or noxious gases are not release; and
- (d) soil underlying the stockpiles is not affected by contamination.

A report is to be provided to the Administering Authority within 28 days of final disposal that verifies that the storage area is fully cleared of contamination.

7. Treatment of soil

(a) Licensed facility

When treatment is to be undertaken at a licensed general waste disposal facility or regulated waste treatment and disposal facility, acceptance receipts must be provided to the Administering Authority within 10 days of contaminated soil delivery. The contamination level in the soil must be reduced to a level agreed by the Administering Authority. When contaminated soil is stored at such facility pending treatment, storage is to be undertaken according to condition 6.

(b) Other treatment sites

(i) Soil remediation and validation report.

The permit holder must provide a report of the soil remediation including chemical test results that validate that the contamination has been lowered to levels agreed with the Administering Authority. The report must provide evidence that the land underlying the treatment activity is not affected by contamination.

(ii) Environmental harm.

Treatment activities must be carried out to ensure that environmental harm is not caused and that contaminants including treatment agents are not released from the site by wind, stormwater or as offensive or noxious gases. The requirements of condition 6 also apply.

(c) Final disposal

When soil contamination has been reduced to levels acceptable to the Administering Authority, the soil may be disposed of as general fill unless otherwise specified in Schedule 1. The location of the final disposal site of the soil is to be identified after treatment by written advice to the Administering Authority.

****End of Document****



**Environmental
Protection
Agency**

RECEIVED
26 APR 2000

FAXED
19.04.00

160 Ann Street . Brisbane Queensland . PO Box 155 . BRISBANE ALBERT STREET QLD 4002
Telephone (07) 3227 6422 . Facsimile (07) 3227 7677

Enquiries to: L Gilshenan
Telephone: 3247 3278 fax 3227 7677
Your reference: 33065
Our reference: 901552

Permit to Remove and Dispose of Contaminated Soil

Pursuant to Section 118ZZF of the *Environment Protection Act* 1994 (EP Act) permission is given to the applicant

Nick Kennedy

Douglas Partners Pty Ltd

439 Montague Road

West End QLD 4101

Telephone: 3237 8900

Fax: 3279 8999

to remove and dispose of soil contaminated with Arsenic

from Old Logan Road, Swanbank

on Lot 1 on SL5997 and described in the following correspondence:

Application for Disposal Permit dated 19 April 2000

The permit holder is responsible for ensuring that the specific and standard conditions in Schedules 1 and 2 of this permit are complied with by all personnel involved in the excavation, removal and disposal.

Signed

s78B(2) - Privacy

Mack Dreyer s78B(2) - Privacy

Chief Scientific Advisor (Contaminated Land Unit)

19/4/2000

cc S Region attn Murray Allan

cc TES attn David Solomon fax 3288 6795

Notice to Applicant

The conditions on this permit have been decided after consideration of the standard criteria (Schedule 4, EP Act) and for the purpose of preventing environmental harm. The applicant may apply for a review or appeal against the decision within 14 days of receipt of this notice (s118ZZF(5)(c)(ii)).

Schedule 1 of 2 – Specific Conditions

The volume or mass of the contaminated soil shall not exceed 50 cubic metres.

The soil is to be disposed in accordance with the disposal facility approval letter dated 18 April 2000 at Thiess Environmental Services Swanbank landfill.

The soil must be disposed between 20/04/2000 and 20/07/2000.

Other Conditions:

This permit is issued in addition to the permit issued for the subject lot on 17 March 2000.

RTI DL RELEASE - EHP

Schedule 2 of 2 – Standard Conditions

1. Volume / mass of contaminated soil

This permit applies to the specified volume or mass only. Any increases to the specified quantity will require a new disposal permit.

2. Disposal time period

Disposal must occur within the dates specified or a new disposal permit must be sought.

3. Excavation and loading

The holder of this disposal permit must take all reasonable precautions necessary to prevent the spillage of contaminated soil during loading and prevent contaminated soil being transported from the site of origin on vehicle tyres and plant and equipment.

4. Transportation

(a) *Transporter to be advised of permit conditions*

Prior to the removal of contaminated soil, the permit holder must provide a copy of the permit and conditions to the transporter.

(b) *Load to be secured*

The contaminated soil must be covered in the transportation vehicle to ensure that the contaminated soil or offensive or noxious gases are not released during transport.

(c) *Cleaning of vehicles and plant equipment*

An effective system must be employed for cleaning of vehicles and plant and equipment which are used to transport or handle contaminated soil which prevents release of contaminants onto any roadway or to any waters or stormwater drainage system.

(d) *Spillage*

Any spillage of contaminants must be cleaned up as quickly as practicable. Spillages must not be cleaned up by hosing, sweeping or otherwise releasing such contaminants or material to any stormwater drainage system, roadside gutter or waters.

5. Receival and disposal

(a) *Licence conditions*

The acceptance and disposal of the contaminated soil must comply with the licence conditions and the specific requirements of the disposal facility.

(b) *Disposal receipts*

Copies of disposal acceptance receipts are to be submitted to the Administering Authority within 10 working days of the date of disposal.

6. Interim storage

Contaminated soil which is temporarily stored at the site of origin or approved for storage at a separate property must be stockpiled and securely covered and/or managed to ensure that:

- (a) rainwater is drained away from the stockpiles;
- (b) contaminated soil is not transported from the stockpile by wind or rainwater;
- (c) offensive odours or noxious gases are not released; and
- (d) soil underlying the stockpiles is not affected by contamination.

A report is to be provided to the Administering Authority within 28 days of final disposal that verifies that the storage area is fully cleared of contamination.

7. Treatment of soil

(a) Licensed facility

When treatment is to be undertaken at a licensed general waste disposal facility or regulated waste treatment and disposal facility, acceptance receipts must be provided to the Administering Authority within 10 days of contaminated soil delivery. The contamination level in the soil must be reduced to a level agreed by the Administering Authority. When contaminated soil is stored at such facility pending treatment, storage is to be undertaken according to condition 6.

(b) Other treatment sites

(i) Soil remediation and validation report.

The permit holder must provide a report of the soil remediation including chemical test results that validate that the contamination has been lowered to levels agreed with the Administering Authority. The report must provide evidence that the land underlying the treatment activity is not affected by contamination.

(ii) Environmental harm.

Treatment activities must be carried out to ensure that environmental harm is not caused and that contaminants including treatment agents are not released from the site by wind, stormwater or as offensive or noxious gases. The requirements of condition 6 also apply.

(c) Final disposal

When soil contamination has been reduced to levels acceptable to the Administering Authority, the soil may be disposed of as general fill unless otherwise specified in Schedule 1. The location of the final disposal site of the soil is to be identified after treatment by written advice to the Administering Authority.

****End of Document****

APPENDIX B

Written Agreement from Landfill Administrator

RTI DL RELEASE - EHP

**ENVIRONMENTAL
SERVICES**

**Thiess Environmental Services
Pty Limited**
A.C.N. 010 723 247

Swanbank Road
Swanbank QLD 4303
Australia
PO Box 1127
Archerfield QLD 4108
Telephone (07) 3288 7144
Facsimile (07) 3288 4793

14 February, 2000

Ref: DJS:ds012(00).doc
WEN108R(00)

Principle/Senior Environmental Consultant
Douglas Partners
439 Montague Road
WEST END QLD 4101

Attention: Nick Kennedy

Dear Nick,

**Re: Arsenic & Organo-Chlorine Pesticide Contaminated Soil (for Disposal
as Day Cover) from the Springfield Estate Development, Camira.**

Thiess Environmental Services (TES) is willing to accept approximately 150 m³ of Arsenic and Organo-Chlorine Pesticide contaminated soils from your clients site located on the Springfield Estate Development, Camira. The chemical analysis characterization of this material as presented in your facsimile dated 11 February 2000 does conform to our disposal licence conditions.

Swanbank Landfill's environmental authority details are as follows:

Lots 103 & 104, on Plan 839073
County of Stanley
Parish of Bundamba
Licence Number: SR772

Please advise the proposed disposal date/s and Waste Transport Certificate number/s at least 2 working days prior to the delivery of any load. Failure to advise proposed disposal dates and Transport Certificate number/s prior to delivery will incur an administration charge of \$100.00 per day on each day load/s are received or rejection of the loads at the gate. TES can supply Swanbank Landfill specific Waste Transport Certificates (five page manifest dockets) free of charge, if required. As well, for identification by the Qld EPA and TES, please ensure that on all transport/delivery documentation, that this material is clearly identified as:

Arsenic & Organo-Chlorine Pesticide Contaminated Soil (for Disposal as Day Cover).

Please contact David Solomon or Joe McLeod, on the above numbers, should you require any additional technical information or Sven Alder for pricing information.

s78B(2) - Privacy

David Solomon
Landfill Chemist

CC: Sven Alder (TES)

07 32886795

**ENVIRONMENTAL
SERVICES****Thiess Environmental Services
Pty Limited**

A.C.N. 010 725 247

Swanbank Road
Swanbank QLD 4305
Australia
PO Box 1127
Archerfield QLD 4108
Telephone (07) 3288 7344
Facsimile (07) 3288 6795

18 April, 2000

Ref: DJS:ds015(00).doc
WEN108R(00)Principle/Senior Environmental Consultant
Douglas Partners
439 Montague Road
WEST END QLD 4101**Attention: Nick Kennedy**

Dear Nick,

**Re: Arsenic & Organo-Chlorine Pesticide Contaminated Soil (for Disposal
as Day Cover) from the Springfield Estate Development, Camira.**

Thiess Environmental Services (TES) is willing to accept an additional 50 m³ of Arsenic and Organo-Chlorine Pesticide contaminated soils from your clients site located on the Springfield Estate Development, Camira. The chemical analysis characterization of this material as presented in your facsimile dated 11 February 2000 does conform to our disposal licence conditions.

Swanbank Landfill's environmental authority details are as follows:

Lots 103 & 104, on Plan 839073
County of Stanley
Parish of Bundamba
Licence Number: SR772

Please advise the proposed disposal date/s and Waste Transport Certificate number/s at least 2 working days prior to the delivery of any load. Failure to advise proposed disposal dates and Transport Certificate number/s prior to delivery will incur an administration charge of \$100.00 per day on each day load/s are received or rejection of the loads at the gate. TES can supply Swanbank Landfill specific Waste Transport Certificates (five page manifest dockets) free of charge, if required. As well, for identification by the *Qld EPA and TES*, please ensure that on all transport/delivery documentation, that this material is clearly identified as:

Arsenic & Organo-Chlorine Pesticide Contaminated Soil (for Disposal as Day Cover).

Please contact David Solomon or Joe McLeod, on the above numbers, should you require any additional technical information or Sven Alder for pricing information.

Yours sincerely,

s78B(2) - Privacy

David Solomon
Landfill Chemist

APPENDIX C

Example of Disposal Docket

RTI DL RELEASE - EHP

APPLICATION FOR SPECIAL WASTE DISPOSAL



**ENVIRONMENTAL
SERVICES**

Thiess Environmental Services
Pty Limited

A.C.N. 010 725 247

69 Grindle Road
Rocklea QLD 4106
Australia

PO Box 1127

Archerfield QLD 4108

Telephone (07) 3346 1550

Facsimile (07) 3346 1545

Manifest no.
SD 00326

1 Waste generator/owner details

Company name

.....
.....

Address

.....
.....
..... Postcode

Authorised person's name

.....

Phone no.

.....

Facsimile no.

.....

Title/Position

.....

2 Waste details

Description of waste

.....
.....
.....
.....

Location of waste/origin

.....
.....

Proposed
disposal date

Time approx

Amount of waste

.....		 m ³ l
-------	-------	---------------------------

3 Transporter details

Transporter name

.....
.....

Vehicle Rego

.....

Contact Person

.....

Phone no.

.....

Facsimile no.

.....

Approval no. (If applicable)

.....

Account no. (If applicable)

.....

4 Disposal Costs Directed To

- ☐ Waste Generator
☐ Waste Transporter
☐ Other

5 Disposal Approval

- ☐ Acceptable
☐ Acceptable (analysis provided)

6 Waste Disposal

Waste disposed of as:

- ☐ Special receipt at Swanbank Landfill
☐ Deep burial at Swanbank Landfill
☐ Excavated burial at Swanbank Landfill
☐ Burial at Hardfill site
☐ Other (given details)

Approving officer's name Please Print

Mr/Mrs

Miss/Ms

Signature

.....

APPENDIX D

Swanbank Weighbridge Tonnage Summary

RTI DL RELEASE - EHP

Springfield

PERIOD: March 2000

INV NO: 363

MATERIAL: Contaminated Soil

FROM: Springfield

TO: Swanbank

Date	Day	Cortek Docket No.	Client Docket No.	No. of Tonnes	No. of loads	Unit No.
22-Mar-00	Wednesday	739	1013450	19.62	4	115
			1013451	18.60		
			1013452	20.68		
			1013453	19.34		
22-Mar-00	Wednesday	922	1023051	19.78	4	111
			1023052	20.64		
			1023053	22.56		
			1023054	23.66		
24-Mar-00	Friday	740	1013454	21.28	3	115
			1013455	20.92		
			1013456	26.60		
24-Mar-00	Friday	926		25.90	2	111
				25.15		
				284.73		

APPENDIX E

Laboratory Reports and Chain of Custody Documentation

RTI DL RELEASE - EHP

RESULTS:

TPH/BTEX

Report No.
SheetBEL06
1 of 3PROJECT NAME:
PROJECT NUMBER:SPRINGFIELD
33065

Client Reference

AWT LIMS No.
Date Sampled

V1	V2	V3	V4	V5	V6	V7	V8
B0031233 27/03/00	B0031234 27/03/00	B0031235 27/03/00	B0031236 27/03/00	B0031237 27/03/00	B0031238 27/03/00	B0031239 27/03/00	B0031240 27/03/00

Analyte

Method

Unit

TPH C₆-C₉
TPH C₁₀-C₁₄
TPH C₁₅-C₂₈
TPH C₂₉-C₃₆TC008/SL
TC008/SL
TC008/SL
TC008/SLmg/kg
mg/kg
mg/kg
mg/kgBenzene
Toluene
Ethyl Benzene
m & p-Xylene
o-XyleneTC012/SL
TC012/SL
TC012/SL
TC012/SL
TC012/SLµg/kg
µg/kg
µg/kg
µg/kg
µg/kg

-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

All Samples analysed as received. Soil samples calculated dry weight basis.

Authorised

David Sheehan

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RESULTS:

TPH/BTEX

Report No.
SheetBEL06
1 of 3PROJECT NAME:
PROJECT NUMBER:SPRINGFIELD
33065

Client Reference

V9 V10 V11 V12 V13 V14 V15 V16

AWT LIMS No.
Date Sampled

B0031241	B0031242	B0031243	B0031244	B0031245	B0031246	B0031247	B0031248
27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00

Analyte

Method

Unit

TPH C₆-C₉
TPH C₁₀-C₁₄
TPH C₁₅-C₂₈
TPH C₂₉-C₃₆TC008/SL
TC008/SL
TC008/SL
TC008/SLmg/kg
mg/kg
mg/kg
mg/kg

-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Benzene
Toluene
Ethyl Benzene
m & p-Xylene
o-XyleneTC012/SL
TC012/SL
TC012/SL
TC012/SL
TC012/SLµg/kg
µg/kg
µg/kg
µg/kg
µg/kg

-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

All Samples analysed as received. Soil samples calculated dry weight basis.

Authorise

David Sheehan

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RESULTS:

TPH/BTEX

Report No.
SheetBEL06
1 of 3PROJECT NAME:
PROJECT NUMBER:SPRINGFIELD
33065

Client Reference

V17

V18

V19

V20

V21

V22

V23

V24

AWT LIMS No.
Date SampledB0031249
27/03/00B0031250
27/03/00B0031251
27/03/00B0031252
27/03/00B0031253
27/03/00B0031254
27/03/00B0031255
27/03/00B0031256
27/03/00

Analyte

Method

Unit

TPH C₆-C₉

TC008/SL

mg/kg

-

-

-

-

-

-

-

-

TPH C₁₀-C₁₄

TC008/SL

mg/kg

-

-

-

-

-

-

-

-

TPH C₁₅-C₂₈

TC008/SL

mg/kg

-

-

-

-

-

-

-

-

TPH C₂₉-C₃₆

TC008/SL

mg/kg

-

-

-

-

-

-

-

-

Benzene

TC012/SL

µg/kg

-

-

-

-

-

-

-

-

Toluene

TC012/SL

µg/kg

-

-

-

-

-

-

-

-

Ethyl Benzene

TC012/SL

µg/kg

-

-

-

-

-

-

-

-

m & p-Xylene

TC012/SL

µg/kg

-

-

-

-

-

-

-

-

o-Xylene

TC012/SL

µg/kg

-

-

-

-

-

-

-

-

All Samples analysed as received. Soil samples calculated dry weight basis.

Authorised

David Sheehan

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RESULTS:

TPH/BTEX

Report No.
SheetBEL06
1 of 3PROJECT NAME:
PROJECT NUMBER:SPRINGFIELD
33065

Client Reference

V25

V26

V27

V28

V29

V30

V31

V32

AWT LIMS No.
Date SampledB0031257
27/03/00B0031258
27/03/00B0031259
27/03/00B0031260
27/03/00B0031261
27/03/00B0031262
27/03/00B0031263
27/03/00B0031264
27/03/00

Analyte

Method

Unit

TPH C₆-C₉

TC008/SL

mg/kg

-

-

-

-

-

-

-

-

TPH C₁₀-C₁₄

TC008/SL

mg/kg

-

-

-

-

-

-

-

-

TPH C₁₅-C₂₈

TC008/SL

mg/kg

-

-

-

-

-

-

-

-

TPH C₂₉-C₃₆

TC008/SL

mg/kg

-

-

-

-

-

-

-

-

Benzene

TC012/SL

µg/kg

-

-

-

-

-

-

-

-

Toluene

TC012/SL

µg/kg

-

-

-

-

-

-

-

-

Ethyl Benzene

TC012/SL

µg/kg

-

-

-

-

-

-

-

-

m & p-Xylene

TC012/SL

µg/kg

-

-

-

-

-

-

-

-

o-Xylene

TC012/SL

µg/kg

-

-

-

-

-

-

-

-

All Samples analysed as received. Soil samples calculated dry weight basis.
Authorise

David Sheehan

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RESULTS:

TPH/BTEX

Report No.
SheetBEL06
1 of 3PROJECT NAME:
PROJECT NUMBER:SPRINGFIELD
33065

Client Reference

AWT LIMS No.
Date Sampled

V33	S1	S2	S3	S4	S5	S6	S7
B0031265 27/03/00	B0031266 27/03/00	B0031267 27/03/00	B0031268 27/03/00	B0031269 27/03/00	B0031270 27/03/00	B0031271 27/03/00	B0031272 27/03/00

Analyte

Method

Unit

TPH C ₆ -C ₉	TC008/SL	mg/kg	-	-	<20.0	-	<20.0	-	<20.0
TPH C ₁₀ -C ₁₄	TC008/SL	mg/kg	-	-	<20.0	-	<20.0	-	<20.0
TPH C ₁₅ -C ₂₈	TC008/SL	mg/kg	-	-	<50.0	-	<50.0	-	<50.0
TPH C ₂₉ -C ₃₆	TC008/SL	mg/kg	-	-	<100.0	-	<100.0	-	<100.0
Benzene	TC012/SL	µg/kg	-	-	<20	-	<20	-	<20
Toluene	TC012/SL	µg/kg	-	-	<20	-	<20	-	<20
Ethyl Benzene	TC012/SL	µg/kg	-	-	<20	-	<20	-	<20
m & p-Xylene	TC012/SL	µg/kg	-	-	<20	-	<20	-	<20
o-Xylene	TC012/SL	µg/kg	-	-	<20	-	<20	-	<20

All Samples analysed as received. Soil samples calculated dry weight basis.

Authoris

David Sheehan

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RESULTS:

TPH/BTEX

Report No.
SheetBEL06
1 of 3PROJECT NAME:
PROJECT NUMBER:SPRINGFIELD
33065

Client Reference

S8

S9

S10

S11

AWT LIMS No.
Date SampledB0031273
27/03/00B0031274
27/03/00B0031275
27/03/00B0031276
27/03/00

Analyte

Method

Unit

TPH C₆-C₉

TC008/SL

mg/kg

<20.0

<20.0

<20.0

-

TPH C₁₀-C₁₄

TC008/SL

mg/kg

<20.0

<20.0

<20.0

-

TPH C₁₅-C₂₈

TC008/SL

mg/kg

<50.0

<50.0

<50.0

-

TPH C₂₉-C₃₆

TC008/SL

mg/kg

<100.0

<100.0

<100.0

-

Benzene

TC012/SL

µg/kg

<20

<20

<20

-

Toluene

TC012/SL

µg/kg

<20

<20

<20

-

Ethyl Benzene

TC012/SL

µg/kg

<20

<20

<20

-

m & p-Xylene

TC012/SL

µg/kg

<20

<20

<20

-

o-Xylene

TC012/SL

µg/kg

<20

<20

<20

-

All Samples analysed as received. Soil samples calculated dry weight basis.
Authorised

David Sheehan

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RESULTS:

Metals

Report No.
SheetBEL06
2 of 3PROJECT NAME:
PROJECT NUMBER:SPRINGFIELD
33065

Client Reference

AWT LIMS No.
Date Sampled

V1	V2	V3	V4	V5	V6	V7	V8
B0031233 27/03/00	B0031234 27/03/00	B0031235 27/03/00	B0031236 27/03/00	B0031237 27/03/00	B0031238 27/03/00	B0031239 27/03/00	B0031240 27/03/00

Analyte

Method

Unit

Total Chromium
Total Copper
Total Zinc
Total Arsenic
Total Arsenic
Total Cadmium
Total Lead

TM17SL
TM17SL
TM17SL
TM17SL
TM11SL
TM17SL
TM17SL

mg/kg
mg/kg
mg/kg
mg/kg
mg/kg
mg/kg
mg/kg

-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
26.5	5.62	9.59	7.92	64.5	4.29	77.5	-
-	-	-	-	-	-	-	318
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

All Samples analysed as received. Soil samples calculated dry weight basis.

Authorise

David Sheehan

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RESULTS:

Metals

PROJECT NAME:
PROJECT NUMBER:SPRINGFIELD
33065Report No. BEL06
Sheet 2 of 3

Client Reference

V9 V10 V11 V12 V13 V14 V15 V16

AWT LIMS No.
Date Sampled

B0031241	B0031242	B0031243	B0031244	B0031245	B0031246	B0031247	B0031248
27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00

Analyte

Method

Unit

Total Chromium
Total Copper
Total Zinc
Total Arsenic
Total Arsenic
Total Cadmium
Total LeadTM17SL
TM11SLmg/kg
mg/kg

-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
12.3	40.3	38.3	9.38	18.4	12.9	6.96	17.9
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

All Samples analysed as received. Soil samples calculated dry weight basis.
Authorised David Sheehan

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RESULTS:

Metals

PROJECT NAME:
PROJECT NUMBER:SPRINGFIELD
33065Report No. BEL06
Sheet 2 of 3

Client Reference

AWT LIMS No.
Date Sampled

V17	V18	V19	V20	V21	V22	V23	V24
B0031249	B0031250	B0031251	B0031252	B0031253	B0031254	B0031255	B0031256
27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00

Analyte

Method

Unit

Total Chromium
Total Copper
Total Zinc
Total Arsenic
Total Arsenic
Total Cadmium
Total LeadTM17SL
TM11SLmg/kg
mg/kg

-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
42.2	-	-	24.9	57.4	9.54	49.8	18.3
-	327	221	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

All Samples analysed as received. Soil samples calculated dry weight basis.
Authorise David Sheehan

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RESULTS:

Metals

Report No.
SheetBEL06
2 of 3PROJECT NAME:
PROJECT NUMBER:SPRINGFIELD
33065

Client Reference			V25	V26	V27	V28	V29	V30	V31	V32
AWT LIMS No.			B0031257	B0031258	B0031259	B0031260	B0031261	B0031262	B0031263	B0031264
Date Sampled			27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00
Analyte	Method	Unit								
Total Chromium			-	-	-	-	-	-	-	-
Total Copper			-	-	-	-	-	-	-	-
Total Zinc			-	-	-	-	-	-	-	-
Total Arsenic	TM17SL	mg/kg	82.4	36.7	10.6	9.90	-	6.19	14.5	60.9
Total Arsenic	TM11SL	mg/kg	-	-	-	-	619	-	-	-
Total Cadmium			-	-	-	-	-	-	-	-
Total Lead			-	-	-	-	-	-	-	-

All Samples analysed as received. Soil samples calculated dry weight basis.
Authorised David Sheehan

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RESULTS:

PROJECT NAME:
PROJECT NUMBER:Metals
SPRINGFIELD
33065Report No.
Sheet
BEL06
2 of 3

Client Reference	V33	S1	S2	S3	S4	S5	S6	S7
AWT LIMS No.	B0031265	B0031266	B0031267	B0031268	B0031269	B0031270	B0031271	B0031272
Date Sampled	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00
Analyte	Method	Unit						
Total Chromium	-	-	5.76	4.60	7.38	4.73	5.88	5.12
Total Copper	-	-	4.79	3.80	0.80	3.79	0.94	5.92
Total Zinc	-	-	26.0	20.8	7.7	19.7	7.8	28.0
Total Arsenic	TM17SL	mg/kg	7.29	1.82	1.22	1.27	2.00	1.33
Total Arsenic	TM11SL	mg/kg	-	-	-	-	-	-
Total Cadmium	-	-	0.02	0.01	0.01	0.01	0.01	0.01
Total Lead	-	-	7.63	6.03	7.49	5.94	6.46	8.27

All Samples analysed as received. Soil samples calculated dry weight basis.

Author:

David Sheehan

s78B(2) - Privacy

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RESULTS:

Metals

Report No.
SheetBEL06
2 of 3PROJECT NAME:
PROJECT NUMBER:SPRINGFIELD
33065

Client Reference

S8

S9

S10

S11

AWT LIMS No.
Date SampledB0031273
27/03/00B0031274
27/03/00B0031275
27/03/00B0031276
27/03/00

Analyte

Method

Unit

Total Chromium
Total Copper
Total Zinc
Total Arsenic
Total Arsenic
Total Cadmium
Total LeadTM17SL
TM11SLmg/kg
mg/kg

3.01	7.54	4.89	7.30
1.43	3.27	1.95	2.23
10.7	26.6	11.5	13.3
1.01	1.22	1.63	2.15
-	-	-	-
0.01	0.03	0.01	0.01
3.42	11.7	6.05	7.91

All Samples analysed as received. Soil samples calculated dry weight basis.

Author:

David Sheehan

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RESULTS:

Organochlorine Pesticides

Report No. BEL06
Sheet 3 of 3PROJECT NAME:
PROJECT NUMBER:SPRINGFIELD
33065

Client Reference			V1	V2	V3	V4	V5	V6	V7	V8
AWT LIMS No.			B0031233	B0031234	B0031235	B0031236	B0031237	B0031238	B0031239	B0031240
Date Sampled			27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00
Analyte	Method	Unit								
Hexachlorobenzene	TC001/SL	µg/kg	-	-	-	-	<100	-	-	-
alpha BHC	TC001/SL	µg/kg	-	-	-	-	<100	-	-	-
Lindane (gBHC)	TC001/SL	µg/kg	-	-	-	-	<100	-	-	-
Heptachlor	TC001/SL	µg/kg	-	-	-	-	<100	-	-	-
Aldrin	TC001/SL	µg/kg	-	-	-	-	<100	-	-	-
beta BHC	TC001/SL	µg/kg	-	-	-	-	<100	-	-	-
delta BHC	TC001/SL	µg/kg	-	-	-	-	<100	-	-	-
Heptachlor epoxide	TC001/SL	µg/kg	-	-	-	-	<100	-	-	-
Endosulfan (alpha isomer)	TC001/SL	µg/kg	-	-	-	-	<100	-	-	-
g-Chlordane	TC001/SL	µg/kg	-	-	-	-	<100	-	-	-
a-chlordane	TC001/SL	µg/kg	-	-	-	-	<100	-	-	-
4,4-DDE	TC001/SL	µg/kg	-	-	-	-	102	-	-	-
Dieldrin	TC001/SL	µg/kg	-	-	-	-	<100	-	-	-
Endrin	TC001/SL	µg/kg	-	-	-	-	<100	-	-	-
4,4-DDD	TC001/SL	µg/kg	-	-	-	-	2330	-	-	-
beta Endosulfan	TC001/SL	µg/kg	-	-	-	-	<100	-	-	-
4,4-DDT	TC001/SL	µg/kg	-	-	-	-	182	-	-	-
Methoxychlor	TC001/SL	µg/kg	-	-	-	-	<100	-	-	-

All Samples analysed as received. Soil samples calculated dry weight basis.

Author

David Sheehan

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RESULTS:

Organochlorine Pesticides

PROJECT NAME:
PROJECT NUMBER:SPRINGFIELD
33065Report No.
SheetBEL06
3 of 3

Client Reference	V9	V10	V11	V12	V13	V14	V15	V16
AWT LIMS No.	B0031241	B0031242	B0031243	B0031244	B0031245	B0031246	B0031247	B0031248
Date Sampled	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00

Analyte	Method	Unit	V9	V10	V11	V12	V13	V14	V15	V16
Hexachlorobenzene	TC001/SL	µg/kg	-	<100	<100	-	-	<100	-	-
alpha BHC	TC001/SL	µg/kg	-	<100	<100	-	-	<100	-	-
Lindane (gBHC)	TC001/SL	µg/kg	-	<100	<100	-	-	<100	-	-
Heptachlor	TC001/SL	µg/kg	-	<100	<100	-	-	<100	-	-
Aldrin	TC001/SL	µg/kg	-	<100	<100	-	-	<100	-	-
beta BHC	TC001/SL	µg/kg	-	<100	<100	-	-	<100	-	-
delta BHC	TC001/SL	µg/kg	-	<100	<100	-	-	<100	-	-
Heptachlor epoxide	TC001/SL	µg/kg	-	<100	<100	-	-	<100	-	-
Endosulfan (alpha isomer)	TC001/SL	µg/kg	-	<100	<100	-	-	<100	-	-
g-Chlordane	TC001/SL	µg/kg	-	<100	<100	-	-	<100	-	-
a-chlordane	TC001/SL	µg/kg	-	<100	<100	-	-	<100	-	-
4,4-DDE	TC001/SL	µg/kg	-	<100	<100	-	-	<100	-	-
Dieldrin	TC001/SL	µg/kg	-	<100	<100	-	-	<100	-	-
Endrin	TC001/SL	µg/kg	-	<100	<100	-	-	<100	-	-
4,4-DDD	TC001/SL	µg/kg	-	<100	<100	-	-	<100	-	-
beta Endosulfan	TC001/SL	µg/kg	-	<100	<100	-	-	<100	-	-
4,4-DDT	TC001/SL	µg/kg	-	<100	<100	-	-	<100	-	-
Methoxychlor	TC001/SL	µg/kg	-	<100	<100	-	-	<100	-	-

Atrazine
Propazine
Simazine

All Samples analysed as received. Soil samples calculated dry weight basis.

Authorised

David Sheehan

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RESULTS:

Organochlorine Pesticides

Report No.
SheetBEL06
3 of 3PROJECT NAME:
PROJECT NUMBER:SPRINGFIELD
33065

Client Reference	V17	V18	V19	V20	V21	V22	V23	V24
AWT LIMS No.	B0031249	B0031250	B0031251	B0031252	B0031253	B0031254	B0031255	B0031256
Date Sampled	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00
Analyte	Method	Unit						
Hexachlorobenzene	TC001/SL	µg/kg	-	-	-	-	-	-
alpha BHC	TC001/SL	µg/kg	-	-	-	-	-	-
Lindane (gBHC)	TC001/SL	µg/kg	-	-	-	-	-	-
Heptachlor	TC001/SL	µg/kg	-	-	-	-	-	-
Aldrin	TC001/SL	µg/kg	-	-	-	-	-	-
beta BHC	TC001/SL	µg/kg	-	-	-	-	-	-
delta BHC	TC001/SL	µg/kg	-	-	-	-	-	-
Heptachlor epoxide	TC001/SL	µg/kg	-	-	-	-	-	-
Endosulfan (alpha isomer)	TC001/SL	µg/kg	-	-	-	-	-	-
g-Chlordane	TC001/SL	µg/kg	-	-	-	-	-	-
a-chlordane	TC001/SL	µg/kg	-	-	-	-	-	-
4,4-DDE	TC001/SL	µg/kg	-	-	-	-	-	-
Dieldrin	TC001/SL	µg/kg	-	-	-	-	-	-
Endrin	TC001/SL	µg/kg	-	-	-	-	-	-
4,4-DDD	TC001/SL	µg/kg	-	-	-	-	-	-
beta Endosulfan	TC001/SL	µg/kg	-	-	-	-	-	-
4,4-DDT	TC001/SL	µg/kg	-	-	-	-	-	-
Methoxychlor	TC001/SL	µg/kg	-	-	-	-	-	-

All Samples analysed as received. Soil samples calculated dry weight basis.

Authoris

David Sheehan

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RESULTS:

Organochlorine Pesticides

PROJECT NAME:
PROJECT NUMBER:SPRINGFIELD
33065Report No.
SheetBEL06
3 of 3

Client Reference	V25	V26	V27	V28	V29	V30	V31	V32
AWT LIMS No.	B0031257	B0031258	B0031259	B0031260	B0031261	B0031262	B0031263	B0031264
Date Sampled	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00
Analyte	Method	Unit						
Hexachlorobenzene	TC001/SL	µg/kg	-	-	-	-	-	-
alpha BHC	TC001/SL	µg/kg	-	-	-	-	-	-
Lindane (gBHC)	TC001/SL	µg/kg	-	-	-	-	-	-
Heptachlor	TC001/SL	µg/kg	-	-	-	-	-	-
Aldrin	TC001/SL	µg/kg	-	-	-	-	-	-
beta BHC	TC001/SL	µg/kg	-	-	-	-	-	-
delta BHC	TC001/SL	µg/kg	-	-	-	-	-	-
Heptachlor epoxide	TC001/SL	µg/kg	-	-	-	-	-	-
Endosulfan (alpha isomer)	TC001/SL	µg/kg	-	-	-	-	-	-
g-Chlordane	TC001/SL	µg/kg	-	-	-	-	-	-
a-chlordane	TC001/SL	µg/kg	-	-	-	-	-	-
4,4-DDE	TC001/SL	µg/kg	-	-	-	-	-	-
Dieldrin	TC001/SL	µg/kg	-	-	-	-	-	-
Endrin	TC001/SL	µg/kg	-	-	-	-	-	-
4,4-DDD	TC001/SL	µg/kg	-	-	-	-	-	-
beta Endosulfan	TC001/SL	µg/kg	-	-	-	-	-	-
4,4-DDT	TC001/SL	µg/kg	-	-	-	-	-	-
Methoxychlor	TC001/SL	µg/kg	-	-	-	-	-	-

All Samples analysed as received. Soil samples calculated dry weight basis.

Authoris

David Sheehan

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RESULTS:

Organochlorine Pesticides

Report No.
SheetBEL06
3 of 3PROJECT NAME:
PROJECT NUMBER:SPRINGFIELD
33065

Client Reference	V33	S1	S2	S3	S4	S5	S6	S7
AWT LIMS No.	B0031265	B0031266	B0031267	B0031268	B0031269	B0031270	B0031271	B0031272
Date Sampled	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00	27/03/00
Analyte	Method	Unit						
Hexachlorobenzene	TC001/SL	µg/kg	-	<100	-	<100	-	-
alpha BHC	TC001/SL	µg/kg	-	<100	-	<100	-	-
Lindane (gBHC)	TC001/SL	µg/kg	-	<100	-	<100	-	-
Heptachlor	TC001/SL	µg/kg	-	<100	-	<100	-	-
Aldrin	TC001/SL	µg/kg	-	<100	-	<100	-	-
beta BHC	TC001/SL	µg/kg	-	<100	-	<100	-	-
delta BHC	TC001/SL	µg/kg	-	<100	-	<100	-	-
Heptachlor epoxide	TC001/SL	µg/kg	-	<100	-	<100	-	-
Endosulfan (alpha isomer)	TC001/SL	µg/kg	-	<100	-	<100	-	-
g-Chlordane	TC001/SL	µg/kg	-	<100	-	<100	-	-
a-chlordane	TC001/SL	µg/kg	-	<100	-	<100	-	-
4,4-DDE	TC001/SL	µg/kg	-	<100	-	<100	-	-
Dieldrin	TC001/SL	µg/kg	-	<100	-	<100	-	-
Endrin	TC001/SL	µg/kg	-	<100	-	<100	-	-
4,4-DDD	TC001/SL	µg/kg	-	<100	-	<100	-	-
beta Endosulfan	TC001/SL	µg/kg	-	<100	-	<100	-	-
4,4-DDT	TC001/SL	µg/kg	-	<100	-	<100	-	-
Methoxychlor	TC001/SL	µg/kg	-	<100	-	<100	-	-

Atrazine
Propazine
Simazine

All Samples analysed as received. Soil samples calculated dry weight basis.

Authd

David Sheehan

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RESULTS:

Organochlorine Pesticides

Report No.
SheetBEL06
3 of 3PROJECT NAME:
PROJECT NUMBER:SPRINGFIELD
33065

Client Reference

S8

S9

S10

S11

AWT LIMS No.
Date SampledB0031273
27/03/00B0031274
27/03/00B0031275
27/03/00B0031276
27/03/00

Analyte

Method

Unit

Hexachlorobenzene
alpha BHC
Lindane (gBHC)
Heptachlor
Aldrin
beta BHC
delta BHC
Heptachlor epoxide
Endosulfan (alpha isomer)
g-Chlordane
a-chlordane
4,4-DDE
Dieldrin
Endrin
4,4-DDD
beta Endosulfan
4,4-DDT
Methoxychlor

TC001/SL
TC001/SL
TC001/SL
TC001/SL
TC001/SL
TC001/SL
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TC001/SL
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All Samples analysed as received. Soil samples calculated dry weight basis.

Author

David Sheehan

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Trace Chromatography Laboratory - QC Report

Report No.: 13764
 Client Details: DOUGLAS PARTNERS
 Sample ID: B0031233-B0031276



Sample Date : 31.03.00
 Contact Person: N/A
 Contact Phone Number: N/A

Ref: TAC# 1326 to 1334, 1457 to 1460

Form ID: ANWI142AF1

Analyte	Metrix Method	Unit	MDL	Blank	Check Std % rec	Check Std Acceptance Limits	Spike Recovery %	Spike Recovery Acceptance Limits	Duplicate: LIMS No. B0031273			
									Rep1 ug/kg	Rep2 ug/kg	Average ug/kg	%RPD
Lindane	TC001	ug/kg	100	<100	75	70%-130%	106	50%-130%	<100	<100	<100	N/A
pp-DDT	TC001	ug/kg	100	<100	89	70%-130%	115	50%-130%	<100	<10	<100	N/A
Analyte	Metrix Method	Unit	MDL	Blank	Check Std % rec	Check Std Acceptance Limits	Spike Recovery %	Spike Recovery Acceptance Limits	Duplicate: LIMS No. B0031273			
									Rep1 ug/kg	Rep2 ug/kg	Average ug/kg	%RPD
C6	TC008	mg/kg	20	<500	N/A	70%-130%	81	50%-130%	<20	<20	<20	N/A
C18	TC008	mg/kg	50	<500	N/A	70%-130%	131	50%-130%	<50	<50	<50	N/A

TO

[illegible]

Trace Metals Laboratory - QC Report



Report No.: 417
 Client Details: Douglas Partners
 Sample ID: B0031233-B0031276
 Req. No: 13764
 Ref: Apr0300.xls

Date Received: 29-Mar-00
 Contact Person: A. Botfield
 Contact Phone No.: 9334 0972

Analyte	Method	MDL	Blank	Check Std QCS4	Limits QCS4	Standard ERA243	Limits ERA243	Duplicate- B0031264			
		mg/kg	mg/kg	ug/L	ug/L	mg/kg	mg/kg	Rep1 mg/kg	Rep2 mg/kg	Average mg/kg	%RPD
Cr	TM17SL	0.03	<0.03	182	160-240	89.2	74.4-112	13.8	13.6	13.7	1
Cu	TM17SL	0.02	<0.02	191	160-240	65.1	49.9-69.9	11.5	11.6	11.6	1
Zn	TM17SL	0.5	<0.5	176	160-240	136	94.5-153	33.0	30.7	31.9	7
As	TM17SL	0.02	<0.02	183	160-240	60.0	36.5-69.5	60.9	53.9	57.4	12
Cd	TM17SL	0.01	<0.01	194	160-240	187	103-193	0.03	0.03	0.03	0
Pb	TM17SL	0.02	<0.02	191	160-240	98.5	60.7-134	12.6	12.5	12.6	1

Key:

MDL Method Detection Limit
 RPD Relative Percent Difference - Acceptable range 0 - 20%.
 # RPD greater than acceptance limit due to sample inhomogeneity - eg. rocky
 @ Duplicate analysis performed on another sample from the same run.

All Samples Analysed as Received

Checked by: R. Gonzalez

Date: 13/4/2000

Authorised by: G. Stonehouse

Date: 13/4/2000



Australian
Environmental
Laboratories

CHAIN OF CUSTODY & ANALYSIS REQUEST

Chain of Custody Number :

Version/Issue: 1/1
Date of Issue: 26/05/97

19 APR 2000

Page 1 of 2

31 Dover Street
ALBION QLD 4010
Telephone (61 7) 3262 1522
Facsimile (61 7) 3256 0568

Company Name: DOUGLAS PARTNERS P/L	Project Name: SPRINGFIELD
Address: 439 MONTAGUE ROAD WEST END QLD 4101	Project Number: 33065
Contact Name: NICK KENNEDY	Results Required By: 5 APRIL 2000
	Telephone: 3237 - 8900
	Facsimile: 3237 - 8999

INFORMATION ABOVE TO BE COMPLETED BY CLIENT

Laboratory Contact :

Laboratory quotation number:

Relinquished by: *K. Barry*

Date/time: 28/3/00

Received by:

Date/time:

Relinquished by:

Date/time:

Received by:

Date/time:

Samples intact: YES/NO*

Temperature : AMBIENT/CHILLED*

Sample Cooler sealed : YES/NO*

Client Sample ID	Lab Sample ID	Matrix	Preservative	Sampling Date	No. of Containers	TPH (GC/FID)	BTEX (H/S or P&T)	TPH/BTEX	PAH's	OC's/ GC/FID	Total Phenolics	Metals : As	As, Cd, Cr, Cu, Pb, Zn						
V1 - V33 B003	233 - B0031265	S		27/3/2000	33							✓							
V14, V20, V11, V5, V10	}	S		27/3/2000	5					✓									
S1	B0031266	S		27/3/2000	1				✓	✓			✓						
S2	B0031267	S		"	1								✓						
S3	B0031268	S		"	1				✓	✓			✓						
S4	B0031269	S		"	1								✓						
S5	B0031270	S		"	1								✓						
S6	B0031271	S		"	1								✓						

Australian Environmental
Laboratories - Brisbane

Received 28/3/00

Time am / pm

By: *Lisley*

* Cross out which ever is not applicable. Receiving lab to sign and date COC form and return fax to AEL. Original to be mailed with final report

Cool on receipt ☒ yes / no / n/a

Samples intact ☒ yes / no

Results due 31/4/00

Comments: EPR-BCOC 31

COMMENTS: V13A & V DUP also received. Spoke to Nick who said
to store sample as 28/3
AWT Reference - B0031233 - B0031278
Faxed on 30/3/00

PT.O 15-096

CHAIN OF CUSTODY & ANALYSIS REQUEST

Chain of Custody Number :

31 Dover Street
ALBION QLD 4010
Telephone (61 7) 3262 1522
Facsimile (61 7) 3256 0568

Company Name: DOUGLAS PARTNERS P/L	Project Name: SPRINGFIELD
Address: 439 MONTAGUE ROAD	Project Number: 33065
WEST END 4101	Results Required By: 5 APRIL 2000
Contact Name: NICK KENNEDY	Telephone: 3237 89006
	Facsimile: 3237 8999

INFORMATION ABOVE TO BE COMPLETED BY CLIENT

Laboratory Contact :

Laboratory quotation number:

Relinquished by: K. Barry

Date/time: 28/3/00

Received by:

Date/time:

Relinquished by:

Date/time:

Received by:

Date/time:

Samples intact: YES/NO*

Temperature : AMBIENT/CHILLED*

Sample Cooler sealed : YES/NO*

Client Sample ID	Lab Sample ID	Matrix	Preservative	Sampling Date	No. of Containers	TPH (GC/FID)	BTEX (H/S or P&T)	TPH/BTEX/MS	PAH's	OC's/ GC/FID	Total Phenolics	Metals :	As, Cd, Cr, Cu, Pb, Zn	14elcd
S7	B0031272	S		27/3/2000	1								✓	
S8	B0031273	S		"	1				✓	✓			✓	
S9	B0031274	S		"	1								✓	
S10	B0031275	S		"	1				✓	✓			✓	
S11	B0031276	S		"	1								✓	
V13A	B0031277													✓
VDUP	B0031278													✓

 Australian Environmental
Laboratories - Brisbane

Received/...../.....

Time am / pm

By:

* Cross out which ever is not applicable. Receiving lab to sign and date COC form and return fax to AEL. Original to be mailed with final report.

COMMENTS: Nick called 31/3/00 change four samples for PAH
to TPH/Btex. as 31/3

Cool on receipt yes / no / n/a

Samples intact yes / no

Results due/...../.....

Comments: EPR-BCOC 311



Douglas Partners
Geotechnics • Environment • Groundwater

Douglas Partners Pty Ltd
ACN 053 980 117

439 Montague Road
West End Qld 4101
Australia

Phone 07 3237 8900
Fax 07 3237 8999

FACSIMILE TRANSMISSION

Our Fax No. (07) 3237 8999

e-mail: dpbris@douglaspartners.com.au

TO: AWT	FAX No: 3 862 - 3588
ATTENTION: LESLEY SHARP	DATE: 5 APRIL 2000
CC:	FAX No:
FROM: NICK KENNEDY	PAGE 1 of

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Subject: SPRINGFIELD

Project No. 33065

Lesley,

As discussed yesterday could you please test the following samples
for TPH/BTEX:

B0031267 S2

B0031269 S4

B0031272 S7

B0031274 S9

Regards,

Nick

Integrated Practical Solutions

Offices: Sydney, Newcastle, Brisbane, Melbourne, Perth, Wyong, Campbelltown, Townsville, Cairns, Wollongong, Darwin
Principals: J C Braybrooke, A R Bulcock, G Eastwood, I W Hancock, J P Harvey, S R Jarvis, N J Kennedy, P McDonald, G W McIntosh, J M Nash,
P O'Flaherty, A J Taylor, M J Thom, C A Waterson, T J Wesner, A J Wilson

Senior Associates: N Baczynski, K A Boddie, M Y Broise, K R Chandler, D S Ford, B W G, J Kalopodis, J Lean, F MacGregor, R Timp, G R Wilson, G S Young
Associates: P Evans, G C Hawkins, M M Khan, R K Lloyd, C S Morris, N Narendranathan, G P Per, B Rippingale, C J Stewart, J Thn., p. M M Yesil



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Douglas Partners Pty Ltd
ACN 053 980 117
439 Montague Road
West End Qld 4101
Australia

Phone 07 3237 8900
Fax 07 3237 8999

FACSIMILE TRANSMISSION

Our Fax No. (07) 3237 8999

e-mail: dpbris@douglaspartners.com.au

TO: AWT	FAX No: 3862-3588
ATTENTION: Lesley Sharp	DATE: 31 MARCH 2000
CC:	FAX No:
FROM: Nick Kennedy	PAGE 1 of 1

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Subject: SPRINGFIELD	Project No: 33065
----------------------	-------------------

Lesley,

As discussed could you please arrange to test the following
samples for TPH/BTEX INSTEAD of PAHs:

B0031266

B0031268

B0031273

B0031275

Thanks and regards.

Nick

Integrated Practical Solutions



Offices: Sydney, Newcastle, Brisbane, Melbourne, Perth, Wyang, Campbelltown, Townsville, Cairns, Wollongong, Darwin
Principals: J C Braybrooke, A R Bulcock, G Eastwood, I W Hancock, J P Harvey, S R Jones, N J Kennedy, P McDonald, G W McIntosh, J M Nash,
P O Flaherty, A J Taylor, M J Thom, C A Waterson, T J Wiesner, A J Wilson
Senior Associates: N Baczynski, K A Boddie, M Y Drais, K R Chandler, C B Ford, B W Gims, T Kalopodi, J Leach, F MacGregor, R Tong, G R Wilson, G S Young
Associates: G C Hawkins, M M Khan, R K Lloyd, C S Marais, N Narendranathan, B Bjar, B Flippin, C J Stewart, J Thompson, M M Yessil

RESULTS:

METALS

PROJECT NAME:
PROJECT NUMBER:SPRINGFIELD
33065Report No. BEL09B
Sheet 1 of 1

Client Reference

V34 V35 V36 V37 V38 V39 V40 V41

AWT LIMS No.
Date Sampled

B0041493 08/04/00 B0041494 08/04/00 B0041495 08/04/00 B0041496 08/04/00 B0041497 08/04/00 B0041498 08/04/00 B0041499 08/04/00 B0041500 08/04/00

Analyte

Method

Unit

Arsenic, As

PEM-004

mg/kg

210 200 12 1.4 6.5 8.7 15 20

Client Reference

V42 V43 V44 V45 BLANK BATCH SPIKE BATCH SPIKE RPT BATCH DUPLICATE

AWT LIMS No.
Date Sampled

B0041501 08/04/00 B0041502 08/04/00 B0041503 08/04/00 B0041505 08/04/00

Analyte

Method

Unit

Arsenic, As

PEM-004

mg/kg

6.7 10 6.8 4.0 <0.5 86% 88% 0 %RPD

Comments:

Results analysed by AEL Perth. Report Supercedes BEL19A.

All samples analysed as received.

Authorised

David Sheehan

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ANALYSIS REQUEST AND CHAIN OF CUSTODY

Company Name:	DOUGLAS PARTNERS PTY LTD	Project Name/Number:	SPRINGFIELD/3005	Matrix Codes	Preservative Codes	Container Codes
Address:	439 MONTAGNE ROAD WEST END QLD 4101	Quotation Number:		CW - Clean Water	P1 - Chilled 4°C	C1 - 12L PET
Contact Name:	NICK KENNEDY	Telephone:	0837-8100	WW - Waste Water	P2 - Frozen	C2 - 500mL PET
		Facsimile:	0837-8109	GW - Ground Water	P3 - Filtered	C3 - 200mL PET
		Order Number:	27312	EF - Effluent	P4 - HNO ₃ PH<2	C4 - 100mL PET
				BS - Biosolid	P5 - H ₂ SO ₄ PH<2	C5 - 1L Glass
				SL - Soil	P6 - HCl PH<2	C6 - Amber Glass
				SD - Sediment	P7 - Lugol's Iodine	C7 - Sterile
				OT - *Other*	P8 - *Other*	C8 - *Other*

[illegible]

Date Due 14/4/00
Samples Received 10/4/00
AWT reference B0041493- B0041504

Form Title:
Form ID:

Analysis Request and Chain of Custody
SEQF001BF1

Sample Receipt Filed 11/4/00

Date: 29/6/1999
Page: 1 of 1



ENVIRONMENTAL GUARANTEED TESTING

TO: DOUGLAS PARTNERS PTY LTD

439 MONTAGUE ROAD
WEST END QLD 4101

ATTENTION: MR N KENNEDY

SUBJECT: Analytical results.

BATCH: EB28608-0

DATE: 19/04/00

RTI DL RELEASE - EHP

AUSTRALIAN LABORATORY SERVICES P/L
A.C.N. 009 936 029Sydney
Phone (07) 3243 7222
Fax (07) 3243 7219Sydney
Phone (02) 9841 9500
Fax (02) 9841 9530Melbourne
Phone (03) 9539 4444
Fax (03) 9539 4400Perth Laboratory
Phone (09) 9249 2999
Fax (09) 9249 2942



DOUGLAS PARTNERS PTY LTD

Attention: MR N KENNEDY

YourOrder: 27313

SampleType: SOIL

Project:

Page-no: 1

ENV BRISBANE

Batch-no: 28608

Sub-batch: 0

No-samples: 2

Received: 18/04/00

Checked:

Method	Analysis description	Units	LOR	546	547
EA-055	Moisture Content (dried @ 103' °		0.1	18/04/00	18/04/00
EG-005T	Arsenic - Total	mg/kg	1	16.3	17.5
				<1	7

RTI DL RELEASE - EHP

Samples as received digested by USEPA method 3051 prior to the determination of Arsenic. Results reported on a dry weight basis.

AUSTRALIAN LABORATORY SERVICES P/L

A.C.N. 009 936 029

icbane
one (07) 3243 7222
:(07) 3243 7219

Sydney
Phone (02)9841 9500
Fax (02)9841 9530

Melbourne
Phone (03)9538 4444
Fax (03)9538 4400

Perth Laboratory
Phone (08)9249 2988
Fax (08)9249 2942

DEPARTMENT OF ENVIRONMENT AND HERITAGE

WASTE MANAGEMENT BRANCH

Date: 5 JANUARY 1996

FAXED
5.1.96

Sender: A.M. WILSON

Our file no.: 901552 (Please quote in all correspondence)

Facsimile no: 07: 3227 8341

Telephone no: 07: 3225 1827

Receiver: PETER MCGURGAN, AGC WOODWARD CLYDE

Facsimile no.: 364 7477

Total pages including cover): ONE

**RE: LOT 1 PLAN SL 5997 - OLD LOGAN ROAD SWANBANK - SPRINGFIELD
ESTATE, IPSWICH**

Our records indicate that this Section is awaiting receipt of a formal application for a Site Contamination Report with respect to the above site.

Would you please advise if it is still intended that the matter proceed.

Yours sincerely

s78B(2) - Privacy

A.M. WILSON

Site Id: 085-000009

TIP & DIP - SPRINGFIELD ESTATE REZONING

Site Name:

~~REFUSE TIP OPOSSUM CREEK~~

Official Authorisation for CSR Site: Y

Local Government: MORETON S.C.

Category: PRO

Entry Date: 15/06/92

Last Altered: 11/10/1995

Location:

OLD LOGAN ROAD
OPOSSUM CREEK QLD
4306

Lot: 1 on Plan

SL5997

Tenure:

FH

Owner:

SPRINGFIELD LAND CORPORATION (NO.2) PTY LTD
76 BOWEN STREET
SPRING HILL
QLD

4000

Zoning:

Current Use:

920

Prescribed Purpose:

431

File: 901552

UXO region:

Contaminants:

UNK

Action Officer:

NIL

Vol:

Status:

P

Comments:

Folio:

0000

INFORMATION PROVIDED BY COUNCIL REFER COUNCIL'S
LETTER DATED 19 SEPT 1994.// SECTION 14 APPROVAL -
REMOVAL OF 750 CUBIC METRES OF SOIL CONTAMINATED
WITH ARSENIC AND ORGANOCHLORINE PESTICIDES FROM
THIS SITE TO IPSWICH CITY COUNCIL REFUSE TIP -
APPROVAL DATED 31.07.95.-02.08.95-DOH.// CORRECT
STREET LOCATION DETAILS FROM IVAS - PREVIOUSLY
UNNAMED ROAD.-11.10.95-DOH.

*says "moreton" since CSR can't
cope with amalgamation of Shires yet.*

*Since moreton + Ipswich now amalgamated, Ipswich is
correct.*

Joni

** END OF REPORT **

901552

Christopher Doig
(07) 227 7983

901552

31 July 1995

Mr Peter McGurgan
AGC Woodward Clyde Pty Limited
49 Park Road
MILTON QLD 4064

Dear Peter

APPROVAL FOR OFF-SITE DISPOSAL OF CONTAMINATED SOIL OR MATERIALS

**Re: Former Cattle Dip
Lot 1 on SL5997
Spring Mountain (Springfield), Queensland**

Under Section 14 of the Contaminated Land Act 1991 approval is given for removal of 750m³ of soil contaminated with arsenic and organochlorine (OC) pesticides from the above site as described in your correspondence of 27 July 1995. It is understood that the soil is to be removed to the Ipswich City Council Refuse Tip, Old Logan Road, Camira.

Yours sincerely

s78B(2) - Privacy

David N Miles
Director, Waste Management Branch
Division of Environment

c.c. Chief Executive Officer
Ipswich City Council
PO Box 191
IPSWICH QLD 4305
Attention: Mr Greg Morrissy

*Chris
Signed, but I believe
and S. 16's should state
definitively where the
waste is to go. There's
no chance not say "This
understood" ... ?*

f:\contam\doig\sect'n14\approvals\woodclyd\sprngfld.11

COMMENTS UPDATED
03/08/95 AEA

15 June 1995
Project No. A3200073\0001

Director
Contaminated Land Unit
Department of Environment and Heritage
160 Ann Street
BRISBANE QLD 4000

Attention: Mr Gary O'Connor

Dear Sir,

**RE: STAGE II SITE CONTAMINATION ASSESSMENT - LOT 1 ON PLAN
SL5997, SPRINGFIELD ESTATE, CAMIRA**

AGC Woodward-Clyde Pty. Ltd. (Woodward-Clyde) have recently undertaken a Stage 2 Site Contamination Assessment at a former cattle dip located at Lot 1 on Plan SL5997, Springfield Estate, Camira.

As part of the proposed redevelopment of the site it is proposed that arsenic and OC pesticide contaminated soil be removed from the site to an appropriate local landfill. A "section 14" approval is required from the Department of Environment and Heritage (DEH) for the transport of contaminated soils from the site to a local landfill.

Approximately 750m³ of soil at the property has been identified as contaminated with arsenic and OC pesticides at levels above DEH guidelines. A summary of soil samples collected is presented in Table 1. Reported laboratory analysis results for soil samples collected are summarised in Tables 2 and 3. A copy of all laboratory analysis reports is included in Attachment B. Figure 1 illustrates the location of the site. Figures 2 illustrates the distribution of arsenic and OC Pesticide concentrations.

Discussions with Mr Greg Morrissey, Environmental Health Officer at the Moreton Shire Council, indicate that the Council would accept the contaminated soil, subject to DEH approval. Mr. Morrissey advised that the DEH would need to specify whether contaminated soil could be disposed of to an unlined sanitary landfill.

A3200073L001-A.WP5\15 JUN 1995\AM:amb

Mr Gary O'Connor
Department of Environment and Heritage
15 June 1995
Page 2

1.0 DISCUSSION

The results from the TCLP tests indicate a low leachate potential for arsenic (Refer Table 3). The results from the TCLP tests for OC Pesticides indicate levels of leachate which exceed the OC Pesticide guideline value using the Guideline for the protection of aquatic ecosystems (Freshwater) as the acceptance criteria. It should be noted that the volume of OC Pesticide contaminated soils indicated by the laboratory testing is small in comparison to the total volume of arsenic contaminated soils. It is, therefore, submitted that excavation and mixing of all contaminated soils would result in a considerable dilution of the overall concentration of the OC Pesticides and a corresponding reduction in the potential leachability of these soils.

Please contact Nick Kennedy if you require more information.

Yours faithfully
WOODWARD-CLYDE

NICK KENNEDY **ALLAN BOASE**
Senior Environmental Consultant Principal - Waste Management Services

A3200073L001-A.WP5\15 JUN 1995\AM:amb

TABLE 1
DETAILS OF SOIL SAMPLES COLLECTED - DIP SITE

Site Identification Number	Depth (m)	Sampling Interval (m)	Lithology	Analytical Parameters
B1	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B2	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B3	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, Sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B4	0.0-0.5	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Not Analysed (currently in storage)
	0.5-1.2		Brown-orange brown, sandy CLAY, MP, trace gravel, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B5	0.0-0.5	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.5-1.2		Brown-orange brown, sandy CLAY, MP, trace gravel, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)

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TABLE 1 (CONT)
DETAILS OF SOIL SAMPLES COLLECTED - DIP SITE

Site Identification Number	Depth (m)	Sampling Interval (m)	Lithology	Analytical Parameters
B6	0.0-0.5	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.5-1.2		Brown - orange brown, sandy CLAY, MP, trace gravel, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B7	0.0-0.5	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.5-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B8	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B9	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B10	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Not Analysed (currently in storage)
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)

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TABLE 1 (CONT)
DETAILS OF SOIL SAMPLES COLLECTED - DIP SITE

Site Identification Number	Depth (m)	Sampling Interval (m)	Lithology	Analytical Parameters
B11	0.0-0.5	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.5-1.2		Brown - orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B12	0.0-0.3	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Not Analysed (currently in storage)
	0.3-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B13	0.0-0.3	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.3-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B14	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Not Analysed (currently in storage)
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B15	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, patches of decomposed sandstone, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)

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TABLE 1 (CONT)
DETAILS OF SOIL SAMPLES COLLECTED - DIP SITE

Site Identification Number	Depth (m)	Sampling Interval (m)	Lithology	Analytical Parameters
B16	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown - orange brown, sandy CLAY, MP, patches of decomposed sandstone, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B17	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, patches of decomposed sandstone, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B18	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, patches of decomposed sandstone, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B19	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, patches of decomposed sandstone, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)

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TABLE 1 (CONT)
DETAILS OF SOIL SAMPLES COLLECTED - DIP SITE

Site Identification Number	Depth (m)	Sampling Interval (m)	Lithology	Analytical Parameters
B20	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B21	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown - orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B22	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B23	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B24	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)

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TABLE 1 (CONT)
DETAILS OF SOIL SAMPLES COLLECTED - DIP SITE

Site Identification Number	Depth (m)	Sampling Interval (m)	Lithology	Analytical Parameters
B25	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B26	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown - orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B27	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B28	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)

A3200073L001-A.WP5\15 JUN 1995\AM:amb

TABLE 1 (CONT)
DETAILS OF SOIL SAMPLES COLLECTED - DIP SITE

Site Identification Number	Depth (m)	Sampling Interval (m)	Lithology	Analytical Parameters
B29	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B30	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B31	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown - orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B32	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)

A3200073L001-A.WP5\15 JUN 1995\AM:amb

TABLE 1 (CONT)
DETAILS OF SOIL SAMPLES COLLECTED - DIP SITE

Site Identification Number	Depth (m)	Sampling Interval (m)	Lithology	Analytical Parameters
B33	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B34	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B35	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B36	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown - orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)

A3200073L001-A.WP5\15 JUN 1995\AM:amb

TABLE 1 (CONT)
DETAILS OF SOIL SAMPLES COLLECTED - DIP SITE

Site Identification Number	Depth (m)	Sampling Interval (m)	Lithology	Analytical Parameters
B37	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B38	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B39	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B40	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)

A3200073L001-A.WP5\15 JUN 1995\AM:amb

TABLE 1 (CONT)
DETAILS OF SOIL SAMPLES COLLECTED - DIP SITE

Site Identification Number	Depth (m)	Sampling Interval (m)	Lithology	Analytical Parameters
B41	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown - orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B42	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B43	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B44	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)

A3200073L001-A.WP5\15 JUN 1995\AM:amb

TABLE 1 (CONT)
DETAILS OF SOIL SAMPLES COLLECTED - DIP SITE

Site Identification Number	Depth (m)	Sampling Interval (m)	Lithology	Analytical Parameters
B45	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B46	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown - orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B47	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B48	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)

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TABLE 1 (CONT)
DETAILS OF SOIL SAMPLES COLLECTED - DIP SITE

Site Identification Number	Depth (m)	Sampling Interval (m)	Lithology	Analytical Parameters
B49	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B50	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B51	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown - orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B52	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)

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TABLE 1 (CONT)
DETAILS OF SOIL SAMPLES COLLECTED - DIP SITE

Site Identification Number	Depth (m)	Sampling Interval (m)	Lithology	Analytical Parameters
B53	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B54	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B55	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B56	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown - orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)

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TABLE 1 (CONT)
DETAILS OF SOIL SAMPLES COLLECTED - DIP SITE

Site Identification Number	Depth (m)	Sampling Interval (m)	Lithology	Analytical Parameters
B57	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B58	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B59	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B60	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)

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TABLE 1 (CONT)
DETAILS OF SOIL SAMPLES COLLECTED - DIP SITE

Site Identification Number	Depth (m)	Sampling Interval (m)	Lithology	Analytical Parameters
B61	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown - orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B62	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B63	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B64	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)

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TABLE 1 (CONT)
DETAILS OF SOIL SAMPLES COLLECTED - DIP SITE

Site Identification Number	Depth (m)	Sampling Interval (m)	Lithology	Analytical Parameters
B65	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B66	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown - orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B67	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B68	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)

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TABLE 1 (CONT)
DETAILS OF SOIL SAMPLES COLLECTED - DIP SITE

Site Identification Number	Depth (m)	Sampling Interval (m)	Lithology	Analytical Parameters
B69	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)
B70	0.0-0.4	0.0-0.2	Brown - light brown, sandy CLAY, MP, slightly moist	Arsenic, OC Pesticides
		0.5-0.7		Arsenic, OC Pesticides
	0.4-1.2		Brown-orange brown, sandy CLAY, MP, slightly moist	
		1.0-1.2		Not Analysed (currently in storage)

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TABLE 2
SUMMARY OF LABORATORY ANALYTICAL RESULTS
(SOILS) - DIP SITE

Analysis	Moisture Content	Arsenic	OC Pesticides
Units	%	mg/kg	mg/kg
Detection Limit	0.1	1	0.05
DEH Guidelines			
Background Levels	-	0.2-30	<0.001-<0.05 (Aldrin) <0.005-<0.05 (Dieldrin) <0.001-0.97 (DDT)
Environmental Threshold	-	20	0.2 (Dieldrin)
Health Based Threshold	-	100	10'
Sample Locations			
B1 (0.0-0.2)	12.8	17	<LOR ²
B1 (0.5-0.7)	15.1	13	<LOR
B2 (0.0-0.2)	12.0	31	0.2
B2 (0.5-0.7)	14.1	33	<LOR
B3 (0.0-0.2)	7.8	265	0.44
B3 (0.5-0.7)	11.2	122	0.17
B4 (0.0-0.2)	10.5	11	<LOR
B5 (0.0-0.2)	6.2	223	0.28
B5 (0.5-0.7)	6.9	28	<LOR
B6 (0.0-0.2)	9.3	137	<LOR
B6 (0.5-0.7)	11.1	2	<LOR
B7 (0.0-0.2)	7.9	36	<LOR
B7 (0.5-0.7)	10.5	2	<LOR
B8 (0.0-0.2)	7.0	96	<LOR
B8(0.5-0.7)	12.6	13	<LOR
B9 (0.0-0.2)	7.0	64	<LOR
B9 (0.5-0.7)	11.3	13	<LOR
B10 (0.0-0.2)	6.6	18	<LOR
B11 (0.0-0.2)	8.2	70	<LOR
B11 (0.5-0.7)	15.3	35	<LOR

<0.05 (Dieldrin)
<0.05 (Dieldrin)
(DDE)
<0.05 Dieldrin

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TABLE 2 (CONTINUED)
SUMMARY OF LABORATORY ANALYTICAL RESULTS (SOILS) - DIP SITE

Analysis	Moisture Content	Arsenic	OC Pesticides
B12 (0.0-0.2)	8.3	8	<LOR
B13 (0.0-0.2)	7.8	20	0.08
B13 (0.5-0.7)	10.3	4	<LOR
B14 (0.0-0.2)	7.6	8	<LOR
B15 (0.0-0.2)	7.5	9	<LOR
B16 (0.0-0.2)	7.1	18	<LOR
B17 (0.0-0.2)	9.3	6	<LOR
B18 (0.0-0.2)	11.3	6	<LOR
B19 (0.0-0.2)	8.0	7	<LOR
B20 (0.0-0.2)	7.6	5	<LOR
B21 (0.0-0.2)	6.8	10	<LOR
B22 (0.0-0.2)	7.8	7	<LOR
B23 (0.0-0.2)	6.8	5	<LOR
B24 (0.0-0.2)	10.0	2	<LOR
B25 (0.0-0.2)	8.1	3	<LOR
B26 (0.0-0.2)	6.9	11	<LOR
B27 (0.0-0.2)	7.2	16	<LOR
B28 (0.0-0.2)	7.7	14	<LOR
B29 (0.0-0.2)	12.9	20	<LOR
B29 (0.5-0.7)	15.9	14	<LOR
B30 (0.0-0.2)	11.7	20	<LOR
B30 (0.5-0.7)	19.7	7	<LOR
B31 (0.0-0.2)	16.6	16	<LOR
B32 (0.0-0.2)	9.9	8	<LOR
B33 (0.0-0.2)	7.0	3	<LOR
B34 (0.0-0.2)	10.1	174	<LOR
B34 (0.5-0.7)	16.7	91	<LOR
B35 (0.0-0.2)	13.1	107	<LOR
B35 (0.5-0.7)	19.0	9	<LOR
B36 (0.0-0.2)	13.3	88	<LOR
B36 (0.5-0.7)	19.1	4	<LOR

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TABLE 2 (CONTINUED)
SUMMARY OF LABORATORY ANALYTICAL RESULTS (SOILS) - DIP SITE

Analysis	Moisture Content	Arsenic	OC, Pesticides B37 (0.0-0.2)
B37 (0.0-0.2)	9.9	47	<LOR
B37 (0.5-0.7)	12.4	7	<LOR
B38 (0.0-0.2)	8.0	12	<LOR
B39 (0.0-0.2)	5.7	8	<LOR
B40 (0.0-0.2)	4.6	6	<LOR
B41 (0.0-0.2)	9.5	33	<LOR
B41 (0.5-0.7)	10.7	6	<LOR
B42 (0.0-0.2)	4.5	5	<LOR
B43 (0.0-0.2)	4.8	4	<LOR
B44 (0.0-0.2)	9.7	16	<LOR
B45 (0.0-0.2)	9.8	6	<LOR
B46 (0.0-0.2)	5.3	3	<LOR
B47 (0.0-0.2)	7.1	1	<LOR
B48 (0.0-0.2)	7.7	7	<LOR
B49 (0.0-0.2)	8.1	7	<LOR
B50 (0.0-0.2)	6.7	8	<LOR
B51 (0.0-0.2)	5.1	6	<LOR
B52 (0.0-0.2)	10.1	8	<LOR
B53 (0.0-0.2)	4.9	5	<LOR
B54 (0.0-0.2)	4.7	6	<LOR
B55 (0.0-0.2)	8.3	7	<LOR
B56 (0.0-0.2)	8.2	6	<LOR
B57 (0.0-0.2)	5.0	<1	<LOR
B58 (0.0-0.2)	7.3	1	<LOR
B59 (0.0-0.2)	8.4	<1	<LOR
B60 (0.0-0.2)	6.6	4	<LOR
B61 (0.0-0.2)	8.5	3	<LOR
B62 (0.0-0.2)	11.8	3	<LOR
B63 (0.0-0.2)	6.3	4	<LOR
B64 (0.0-0.2)	7.1	1	<LOR
B65 (0.0-0.2)	5.9	3	<LOR

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TABLE 2 (CONTINUED)
SUMMARY OF LABORATORY ANALYTICAL RESULTS (SOILS) - DIP SITE

Analysis	Moisture Content	Arsenic	OC Pesticides (0.0-0.2)
B66 (0.0-0.2)	9.1	6	<LOR
B67 (0.0-0.2)	9.2	4	<LOR
B68 (0.0-0.2)	5.0	3	<LOR
B69 (0.0-0.2)	4.7	<1	<LOR
B70 (0.0-0.2)	5.0	12	<LOR

Notes: 1 Dutch "C" Criteria 3 Shaded values exceed DEH Environmental Threshold Levels
2 Less than level of reporting 4 Laboratory test results are reported on a dry weight basis

TABLE 3
SUMMARY OF LABORATORY ANALYTICAL RESULTS
(TCLP) - DIP SITE

Analysis	Arsenic (TCLP)	OC Pesticides (TCLP)
Units	mg/L	µg/L
Detection Limit	0.1	2
Water Quality Guidelines ¹	0.05	0.014 DDE
B2 (0.0-0.2)	<0.1	<3
B3 (0.0-0.2)	<0.1	<2
B5 (0.0-0.2)	<0.1	<3
B13 (0.0-0.2)	<0.1	<3
B25 (0.0-0.2)	<0.1	<3

Notes 1 Guidelines for the protection of aquatic ecosystems (Fresh Waters) Australia and New Zealand Environment and Conservation Council, Australian Water Quality Guidelines for Fresh and Marine Waters, November 1992 (Reference 2).