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Groundwater and Environmental Services

PO Box 190
Cambridge
07 8831612 / 027 4874410
6 May 2006

Auckland Regional Council
Private Bag 92012
Auckland

ATTENTION: Peter Kavanagh

Dear Peter,

I have attached a report on the additional remediation and validation at the Kowhai Timber (now Matakana Timber Ltd) site.

Please let me know if you have any questions or comments.

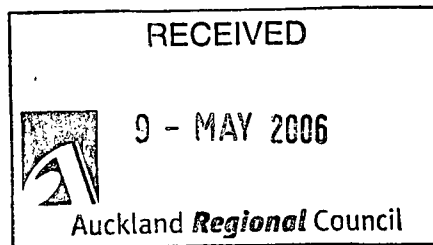
Regards,



Andrew MacDonald
Groundwater and Environmental Services

✓
OK
check cr no.s.

145-200pm



Groundwater and Environmental Services

PO Box 190
Cambridge
07 8831612 / 027 4874410
10 April 2006

Auckland Regional Council
Private Bag 92012
Auckland

ATTENTION: Peter Kavanagh

Dear Peter,

I have attached a copy of the additional remediation and validation report for the treatment plant area at the former Kowhai Timber property on Matakana Road.

As agreed with Guy Sowry, additional remediation was carried out around former sampling locations 26 and 27 to reduce the remaining chromium levels.

Please let me know if you have any questions.

Regards,



Andrew MacDonald
Groundwater and Environmental Services

RECEIVED

13 APR 2006



Auckland **Regional** Council

KOWHAI TIMBER (1990) LIMITED

**ADDITIONAL REMEDIATION & VALIDATION REPORT
TREATMENT PLANT AREA
KOWHAI TIMBER
362 MATAKANA VALLEY ROAD,
MATAKANA**

**Prepared by:
Groundwater and Environmental Services
P O Box 190,
Cambridge
3 April 2006**

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Figure 1 Site Layout, Remediation Area & Previous Sampling Locations

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Appendices

Appendix A Landfill Weighbridge Receipt

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DISCLAIMER

No liability is assumed for misrepresentation of data or for items not visible, accessible or present at the time of investigations conducted by Groundwater and Environmental Services that may affect the validity and/or accuracy of the interpretation of environmental data.

Interpretations and conclusions presented herein are based on data presented in this report, information from others and experience on similar projects. The available data does not preclude the presence of materials at other locations at the site, which presently or in the future may be considered hazardous. Services in respect of this investigation have been performed in accordance with professional standards for investigations of contamination assessment. No guarantees are either expressed or implied.

This document and the information contained herein have been prepared for the use of Kowhai Timber (1990) Limited. Any reliance on this report by any other party shall be at such party's sole risk.

Report prepared on: 3 April 2006

Report prepared by:



Andrew MacDonald, MSc(Hons), Principal

Groundwater and Environmental Services

1 INTRODUCTION

Contamination by timber treatment chemicals had been identified around the CCA treatment plant at Kowhai Timber's property at 362 Matakana Valley Road. The nature of the detected contamination and details of the environmental investigations carried out to date at the property are provided in the September 2003 report by Groundwater & Environmental Services¹.

A remedial action plan for the treatment plant area² was prepared in accordance with the Ministry for the Environment's Guidelines for Reporting on Contaminated Sites³ and submitted to Auckland Regional Council for approval.

Remedial work was carried out and a remediation and validation report⁴ was prepared and submitted to Auckland Regional Council (ARC). Following a review of the report, ARC noted that chromium levels in the east of the remediation area exceeded the levels outlined in the proposed Auckland Regional Plan: Air, Land and Water (ALWP) and that a discharge consent would be required if no further remediation was undertaken.

ARC's contaminated sites officer, Guy Sowry, stated that the area of concern for high chromium levels was around sample locations KTL05026 and KTL05027.

It was decided that additional remediation work would be carried out in this area of KTL05026 and KTL05027 to deal with the high chromium concentrations. The excavation extended out to include the location of sample KTL05017, which also had a higher chromium level.

This report details the additional remedial work undertaken and the validation of that remediation. This report is designed to accompany the earlier remediation and validation report for the treatment plant area and, where detailed information was provided in the earlier report, corresponding sections in this report are abridged.

¹ Groundwater & Environmental Services (September 2003). Soil Contamination Investigation, 362 Matakana Valley Road, Matakana. Report prepared for Kowhai Timber (1990) Limited.

² Groundwater & Environmental Services (19 July 2004). Remedial Action Plan, 362 Matakana Valley Road, Matakana. Report prepared for Kowhai Timber (1990) Limited.

³ Ministry for the Environment (November 2003). Guidelines for Reporting on Contaminated Sites. Contaminated Sites Management Guidelines No. 1.

⁴ Groundwater & Environmental Services (24 June 2005). Remediation and Validation Report, Treatment Plant Area, Kowhai Timber, 362 Matakana Valley Road, Matakana. Report prepared for Kowhai Timber (1990) Limited.

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1.1 Site Identification

The site is identified as 362 Matakana Valley Road, Matakana.

The legal description is: Pt Allot 51 Matakana PSH BLK III Mahurangi SD

1.2 Scope of Work

The scope of work carried out for the additional remediation and validation of the identified contamination consisted of:

1. Organising the remediation contractor and briefing;
2. Location and marking out of the areas to be remediated;
3. Excavation and removal of contaminated material from the identified areas;
4. Transporting the excavated material to Redvale landfill for disposal under a special waste disposal permit;
5. Validation of the remediated areas by sampling, analysis and visual inspection; and
6. Reporting the results of the remediation and validation.

1.3 Summary of Contamination

The nature and extent of the original contamination was discussed in the earlier reports for the site. The bulk of the high level contamination was remediated in the earlier phases of remediation and that work is detailed in the previous remediation and validation report.

The remaining contamination that was dealt with in this phase of remediation was restricted to elevated chromium levels in the east of the original remediation area. These were restricted to the zone around KTL05026 and KTL05027.

The location of the original remediation zone and the previous samples is shown on Figure 1.

1.4 Remediation Goals

The goal of the additional remediation was to bring the chromium concentrations down to an acceptable level for the protection of human health and the environment.

1.5 Selected Remediation Option

In line with the procedures for the earlier phases of remediation, it was decided to excavate the remaining contaminated material for disposal to a licensed landfill.

2 SITE REMEDIATION WORKS

The remediation activities were described in detail in the Remedial Action Plan (RAP) for the property. Information about the implementation of the RAP is provided in the following sections.

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2.1 Contractor Selection and Briefing

The contractor selected to undertake the additional remedial works was Rathe Contractors Ltd (Rathe). Rathe had carried out the earlier phases of remediation at the site and the workers were familiar with the nature of contamination and site-specific health and safety procedures for remediation. The staff included an excavator operator and truck driver. Appropriate personal protection equipment was provided by the contractor for the staff to use as required.

2.2 Remediation Area

The remediation area was located southeast of the former timber treatment plant. The contaminated material consisted of sandy to silty clay.

An estimate of the lateral extent, depth range and volume of material to be remediated was made on the basis of the previous validation results. The estimate for the volume of material to be removed from the site to complete the remediation 5 m³. This estimate assumed excavation to an average depth of 300 mm across an area of 5 m by 3 m around the identified high contamination.

Figure 2 shows the February 2006 remediation area.

The area requiring remediation was identified and marked out prior to the excavation commencing.

2.3 Community Relations, Noise and Odours

As for the earlier work, no specific consultation with surrounding landowners or occupiers was carried out prior to or during the remediation.

No noise nuisance or odour problems were created during the remediation.

2.4 Excavation and Removal of Contaminated Material

The additional contaminated material was excavated from the identified area and transported to Redvale landfill for disposal.

Prior to leaving the designated remediation area, the truck and excavator were inspected to ensure that no contaminated material was tracked to other parts of the property.

No pre-treatment of the excavated material was necessary to make it less hazardous for handling and transport, however appropriate health and safety procedures were followed to avoid the generation of contaminated dust and contact with contaminated material by remediation workers.

Disposal at Redvale Landfill was in accordance with the resource consents and acceptance procedures for that facility. The disposal was carried out under the conditions of the special waste disposal permit obtained for the earlier remediation work.

The excavation and disposal was carried out on 9 February 2006.

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Validation sampling was carried out according to the method outlined in section 2.6 below.

The weighbridge receipt from Redvale Landfill was retained to provide proof of the volume of material disposed of. The receipt is attached to this report in Appendix A.

2.5 Control of Sediment Runoff and Contaminant Migration from Excavations

Sediment control measures were put in place between the excavation and the nearby stream to prevent the movement of contaminated sediment into the stream. The excavation was graded so that sediment could not escape from its other sides.

Prior to leaving the excavation area, the truck was inspected to ensure no contaminated soil or other material was tracked off site or to other areas on site. Any material adhering to the truck was cleaned off into the excavation area and loaded into the truck. These measures ensured that no potentially contaminated dust or soil was deposited on other parts of the site or along the route to the landfill.

2.5.1 Soil replacement

No imported soil or fill was required to replace contaminated material excavated from the site.

2.6 Validation Sampling

At the completion of the remediation, the exposed sides and base of the excavation was sampled by Andrew MacDonald of Groundwater and Environmental Services to verify that remaining contaminant levels were below the applicable guideline values for the site.

Samples were delivered directly to Hill Laboratories, Hamilton under chain of custody documentation and analysed for copper, chromium and arsenic (CCA).

The remaining levels of contamination are recorded in Table 1 and the laboratory analytical report is attached in Appendix B.

2.6.1 Sampling Methods

Sample collection at each validation location was carried out using a stainless steel trowel. Samples taken from the base of a remediated area were taken from the surface down to 100 mm below the excavation surface. Samples from the edge of the remediated areas were taken over the depth range of the excavation at that point.

The samples were placed directly into sample jars supplied by Hill Laboratories. Once in the jars, samples were sealed and placed directly into a chilly bin and kept in cold storage prior to dispatch to the laboratory under chain of custody (COC) documentation.

The samples were given a unique identification number according to the following system:

Client Identifier/Year Reference/Sequential Reference

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The sequential reference was a 3-digit number starting at 028.

A decontaminated stainless steel trowel was used for each sample location. The trowels were decontaminated prior to use by rinsing in a potable water bath, washing in a solution of potable water and Decon 90 (a zero residue analytical detergent), and rinsing in another bath of potable water.

2.7 Reinstatement of Remediated Areas

The property remains under commercial/industrial land use. Once the remediated area was validated, it was allowed to be re-vegetated to reduce the potential for surface water runoff. The remediation area is not accessed for any site activities and no further reinstatement was required.

2.8 Health and Safety

All remediation activities were subject to the provisions of the site-specific health and safety plan for intrusive activities involving contaminated materials as provided in the RAP.

There was no public access to the remediation area during site works.

3 VALIDATION RESULTS

Analytical results for the validation analyses at the site are given below. All samples were analysed at Hill Laboratories, Hamilton. The full text of the laboratory analytical report, including a summary of the methods used and detection limits, is provided in Appendix B.

Three validation samples were collected on 22 February 2006 for this stage of the remediation of the site.

Earlier investigations at the property indicated that chromium was present as Cr(III) rather than the less stable Cr(VI). The MFE's timber treatment guidelines⁵ adopted a soil acceptance value for protection of plant life of 600 mg/kg. Similarly, an ecological investigation level (EIL) of 400 mg/kg for Cr(III) was specified in the Australian national environmental protection measures.

The analytical results for the validation contained chromium at levels between 84 and 115 mg/kg. The analytical results are included on Table 1 and the validation sample locations are shown on Figure 2.

No further remediation was carried out following the receipt these validation results.

⁵ Ministry for the Environment (June 1997). Health and Environmental Guidelines for Selected Timber Treatment Chemicals.

Table 1 Validation Sampling Results - 22 February 2006

Sample Number	Arsenic	Chromium	Copper
KTL06028	45	115	17
KTL06029	103	86	31
KTL06030	30	84	14
MFE Guidelines	500	NL	NL

Notes:

1. All concentrations are in mg/kg.
2. NL denotes no guideline limit.
3. Bold values exceed MFE guideline values for unpaved or paved (no management plan) industrial/commercial sites and for the protection of maintenance workers.

On the basis of the validation results, there are unlikely to be any significant adverse effects on the environment around the former timber treatment plant from the remaining chromium concentrations.

4 DESCRIPTION OF REMEDIATED AREA

Material was removed from the identified remediation area on 9 February 2006.

The estimate of the volume of material to be removed from the site to complete the remediation was 5 m³ (approximately 8.5 tonnes).

The total weight of material removed from the site for disposal at Redvale Landfill during this stage of remediation was 8,940 t, which is consistent with the amount of material that was marked for removal.

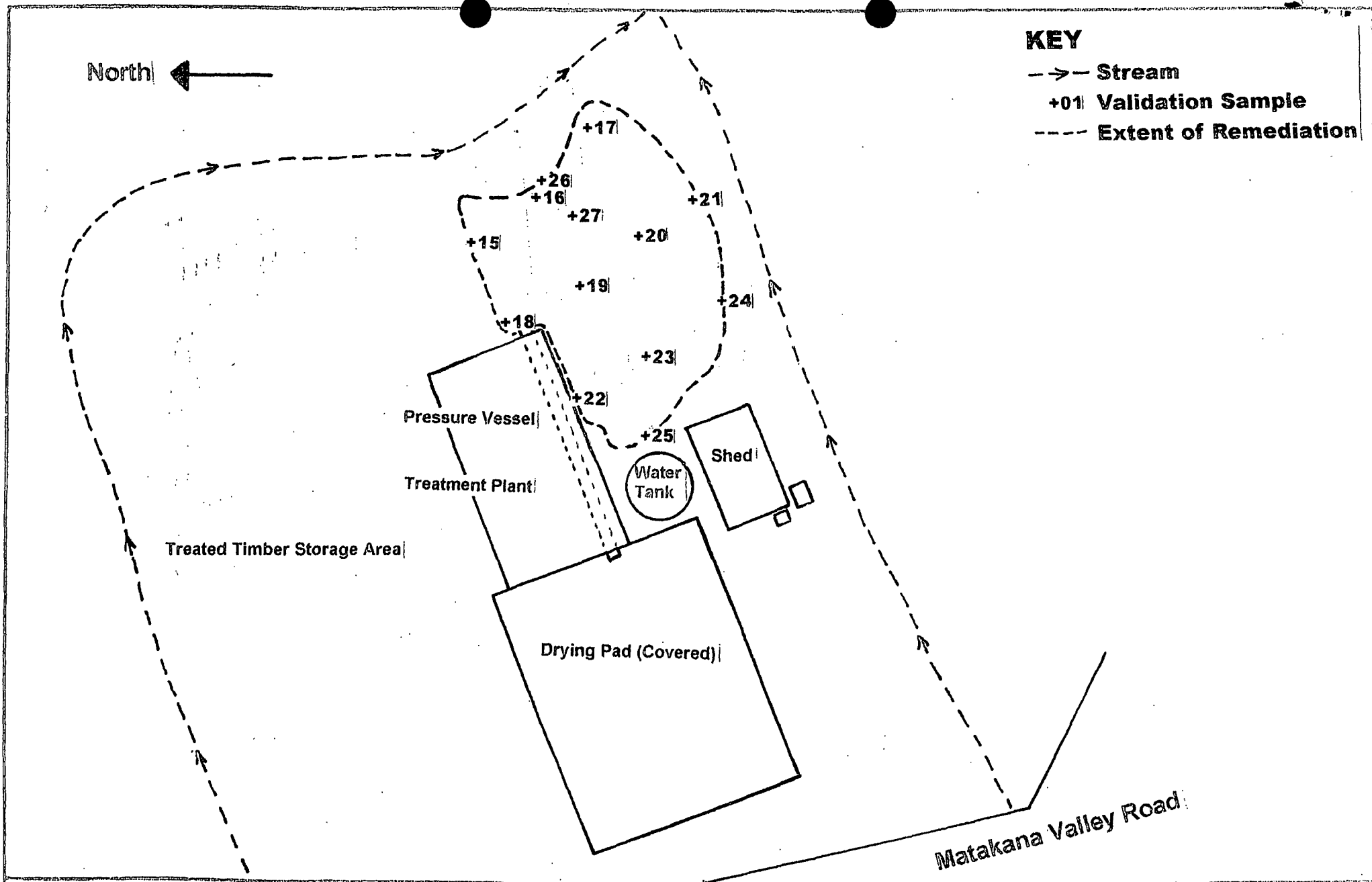
The layout and extent of the remediated area is provided on Figure 2.

5 CONCLUSIONS AND RECOMMENDATIONS

The validation sampling results show that the remaining area in the east of the original remediation zone (southeast of the timber treatment plant) has been remediated and that the remaining chromium levels are unlikely to result in significant adverse effects on the environment.

No further remediation is recommended for this area.

Provided that the use of the site remains in the commercial/industrial category, no further site management plans are required for the remediated area. In the event that there was a need to change the land use to a more sensitive classification, additional environmental investigation would be required.



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Environmental Services

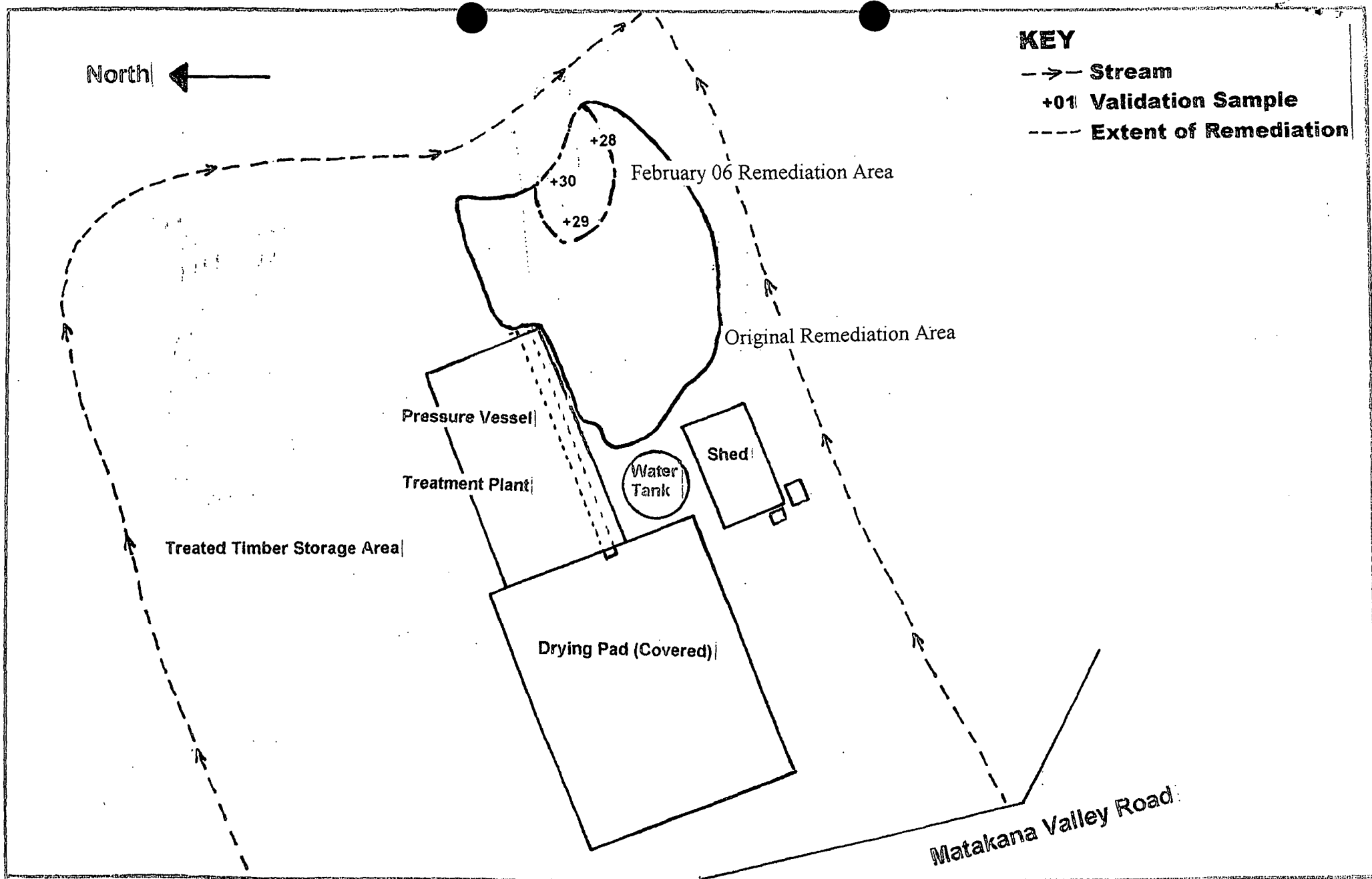
**Figure 1: Site Layout, Remediation Area
& Previous Sample Locations**

Approximate Scale 1:3000

DATE	CHECKED	SCALE
DATE	DATE Apr 06	

DATE

SHEET OF
10



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Environmental Services

**Figure 2: February 06 Remediation Area
& Sampling Locations**

Approximate Scale 1:3000

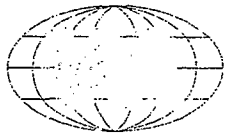
DRAWN	CHECKED	SCALE	SHEET
TRACED	DATE Apr 06		SERIES OF
			NO.

Appendix A

Landfill Weighbridge Receipt

REDVALE LANDFILL
LANDFILL ACCESS RD, DAIRY FLAT
PO BOX 228 SILVERDALE
TELEPHONE 0-9-427 0600
FAX 0-9-426 8284

Waste Management



GST Reg No: 10-414-695

Customer:

Kowhai Timber Ltd
PO Box 16073
SANDRINGHAM

Ticket No.: 214136
Transaction Type: A/C
Site:

Operator: Richard B
Tel No.: (09) 427 0600

Redvale Landfill

Vehicle Reg. No.: AYP209
Carrier:

Vehicle Description:
Carrier Reg. No.:

Driver

Driver's Signature

Waste Type: Contaminated Soil

Description: CONTSOIL

Comments:

Origin:

North

Order No.:

Disposal Module: 4665-803617-61-top

	Kg	Seq No.	Date	Time
Gross	19340		09/02/2006	10:36 AM
Tare	10400		09/02/2006	10:55 AM
Nett	8940		Volume	

Nett \$

Operator's signature

GST \$

Gross \$

Appendix B

Laboratory Analytical Report

Hill Laboratories

R | Hill Laboratories Limited

Address:
1 Clyde Street,
Private Bag 3205,
Hamilton, New Zealand

Telephone:
+64 (7) 858-2000
Facsimile:
+64 (7) 858-2001

Email:
mail@hill-labs.co.nz
Internet:
www.hill-labs.co.nz



Client: Groundwater & Environmental Service
Address: P O Box 190,
CAMBRIDGE
Contact: Andrew MacDonald

Laboratory No: 407802
Date Registered: 22/02/2006
Date Completed: 27/02/2006
Page Number: 1 of 1

Client's Reference: KOWHAI

The results for the analyses you requested are as follows:

Sample Type: Environmental Solids, Soil

Sample Name	Lab No	Total Recoverable Arsenic (mg/kg dry wt)	Total Recoverable Chromium (mg/kg dry wt)	Total Recoverable Copper (mg/kg dry wt)
KTL06028 22/02/06	407802/1	45	115	17
KTL06029 22/02/06	407802/2	103	86	31
KTL06030 22/02/06	407802/3	30	84	14

Sample Containers

The following table shows the sample containers that were associated with this job.

Container Description	Container Size (mL)	Number of Containers
Glass Jar (Soils)	300	3

Details of sample bottle preparation procedures are available upon request.

Summary of Methods Used and Detection Limits

The following table(s) gives a brief description of the methods used to conduct the analyses for this job.

The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Substance Type: Environmental Solids

Parameter	Method Used	Detection Limit
Dry and sieve sample	Air dry (35 °C), sieved to pass 2mm.	N/A
Total Recoverable digest	Nitric / hydrochloric acid digestion. US EPA 200.2	N/A
Total Recoverable Arsenic	Nitric / hydrochloric acid digestion, ICP-MS. US EPA 200.2	2 mg/kg dry wt
Total Recoverable Chromium	Nitric / hydrochloric acid digestion, ICP-MS. US EPA 200.2	2 mg/kg dry wt
Total Recoverable Copper	Nitric / hydrochloric acid digestion, ICP-MS. US EPA 200.2	2 mg/kg dry wt

Analyst's Comments:

These samples were collected by yourselves and analysed as received at the laboratory.

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the submitter.

This report must not be reproduced, except in full, without the written consent of the signatory.

Peter Robinson, MSc(Hons), PhD FNZIC
Environmental Division Manager

Terry Cooney, MSc(Hons), PhD MNZIC
General Manager



This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised.
The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked *, which are not accredited.