GAHCHO KUÉ PROJECT

ENVIRONMENTAL IMPACT STATEMENT

ANNEX I

WATER QUALITY BASELINE

August 2008 **09-1365-1004**

TABLE OF CONTENTS

SECTION **PAGE**

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

I1 INTRODUCTION

I1.1 OVERVIEW

The Gahcho Kué Project (Project) is located at Kennady Lake, about 280 kilometres (km) northeast of Yellowknife, Northwest Territories (NWT) (Figure I1.1-1). Kennady Lake and surrounding lakes are sub-arctic tundra lakes located near the southern limit of the continuous permafrost zone, about 350 km south of the Arctic Circle. The local topography is characterized by rolling rocky ridges, low-lying muskeg, and numerous shallow lakes. Kennady Lake is a headwater lake of the Kirk Lake watershed, which is part of the Lockhart River watershed. The Lockhart River watershed drains into Great Slave Lake at McLeod Bay.

I1.2 OBJECTIVES

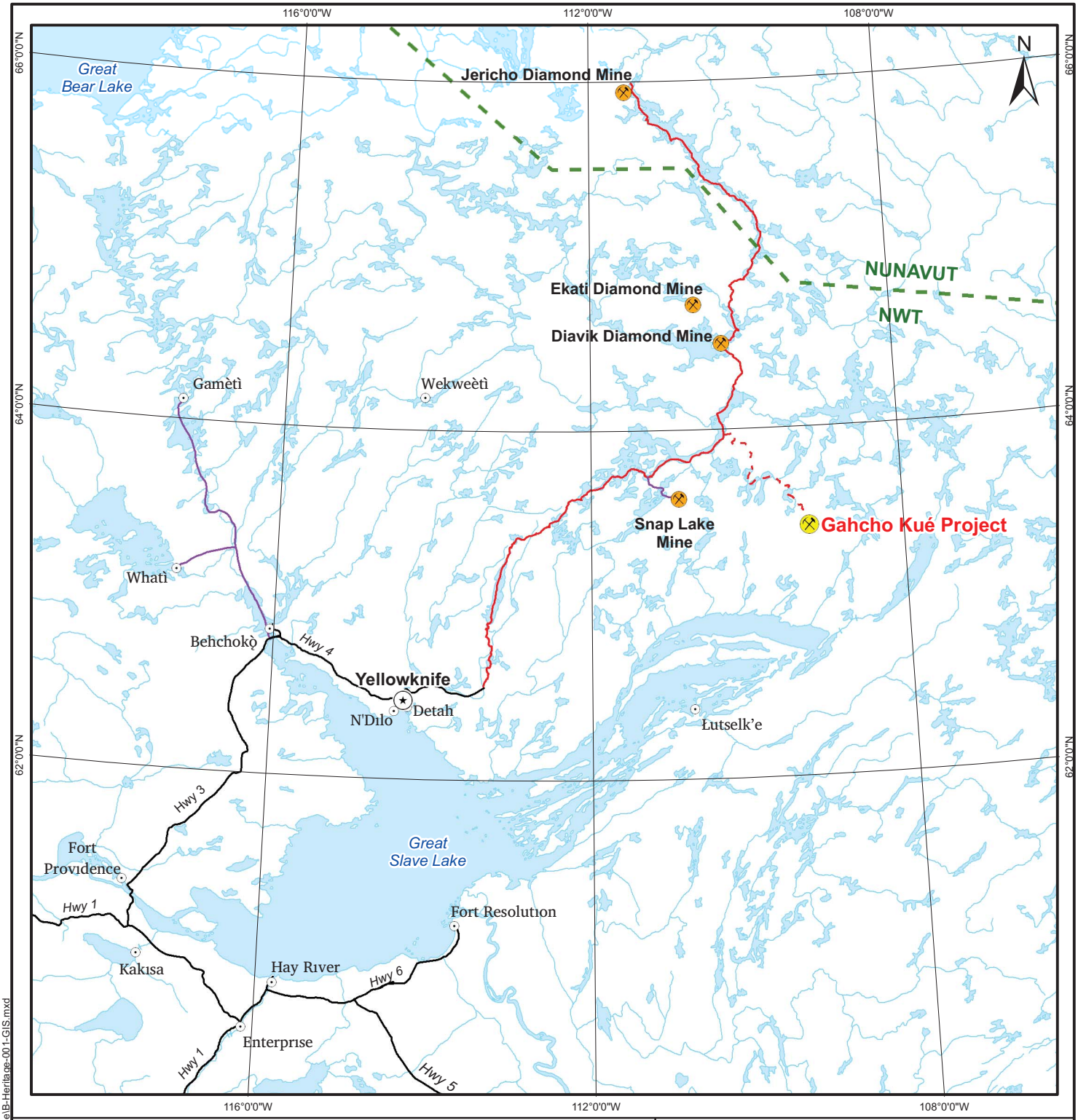
The water quality baseline[1] has the following objectives:

- to describe and discuss the baseline water and sediment conditions in lakes that may be potentially affected by the Project;
- to discuss seasonal and spatial variation of water and sediment quality parameters; and
- to compare baseline water quality data with applicable aquatic life and drinking water guidelines.

I1.3 EXISTING DEVELOPMENT

The Kennady Lake watershed is one of several headwaters feeding the Lockhart River watershed. There has been no industrial activity near Kennady Lake prior to exploration activities related to the Project. Existing industrial activity is present at Snap Lake, which is a headwater lake of the upper Lockhart River watershed (De Beers 2002). The Snap Lake Mine is located about 70 km west of Kennady Lake, and water potentially affected by the Snap Lake Mine meets water from Kennady Lake at Aylmer Lake, about 40 km north of Kennady Lake.

[1] This Annex was prepared in 2008. Please refer to Section 8 (Key Line of Inquiry: Water Quality and Fish in Kennady) for additional baseline information that is used in the Impact Assessment of the Gahcho Kué Project.



LEGEND

- Gahcho Kué Project
- Existing Mine
- Territorial Capital
- Populated Place
- Highway
- Existing Winter Road
- Tibbitt-to-Contwoyto Winter Road
- Winter Access Road
- Watercourse
- Waterbody
- Territorial/Provincial Boundary

NOTES

Base data source: The Atlas of Canada

GAHCHO KUÉ PROJECT

Location of the Gahcho Kué Project

PROJECTION: Canadian Lambert Conf. Conic	DATUM: NAD83	
Scale: 1:3,500,000 (50 25 0 50 Kilometres)		
FILE No: B-Heritage-001-GIS		DATE: September 20, 2010
JOB NO: 09-1365-1004	REVISION NO: 8	Figure I1.1-1
OFFICE: GOLD-CAL	DRAWN: CW / CHECK: JB	

DE BEERS CANADA

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I2 STUDY AREAS

The baseline study areas were selected to include lakes where measurable changes in water quality might occur due to the Gahcho Kué Project (Project) activities. The following areas were selected:

- lakes within watersheds directly receiving Project-related releases and downstream of the Kennady Lake watershed through the outlet at Kirk Lake were included within the local study area (LSA);
- all areas within the Lockhart River watershed up to the confluence of the Lockhart River and McLeod Bay of Great Slave Lake were included within the regional study area (RSA); and
- lakes along the winter access road connecting the Project to the Tibbitt-to-Contwoyto winter road, located partially in the LSA and RSA were assessed separately.

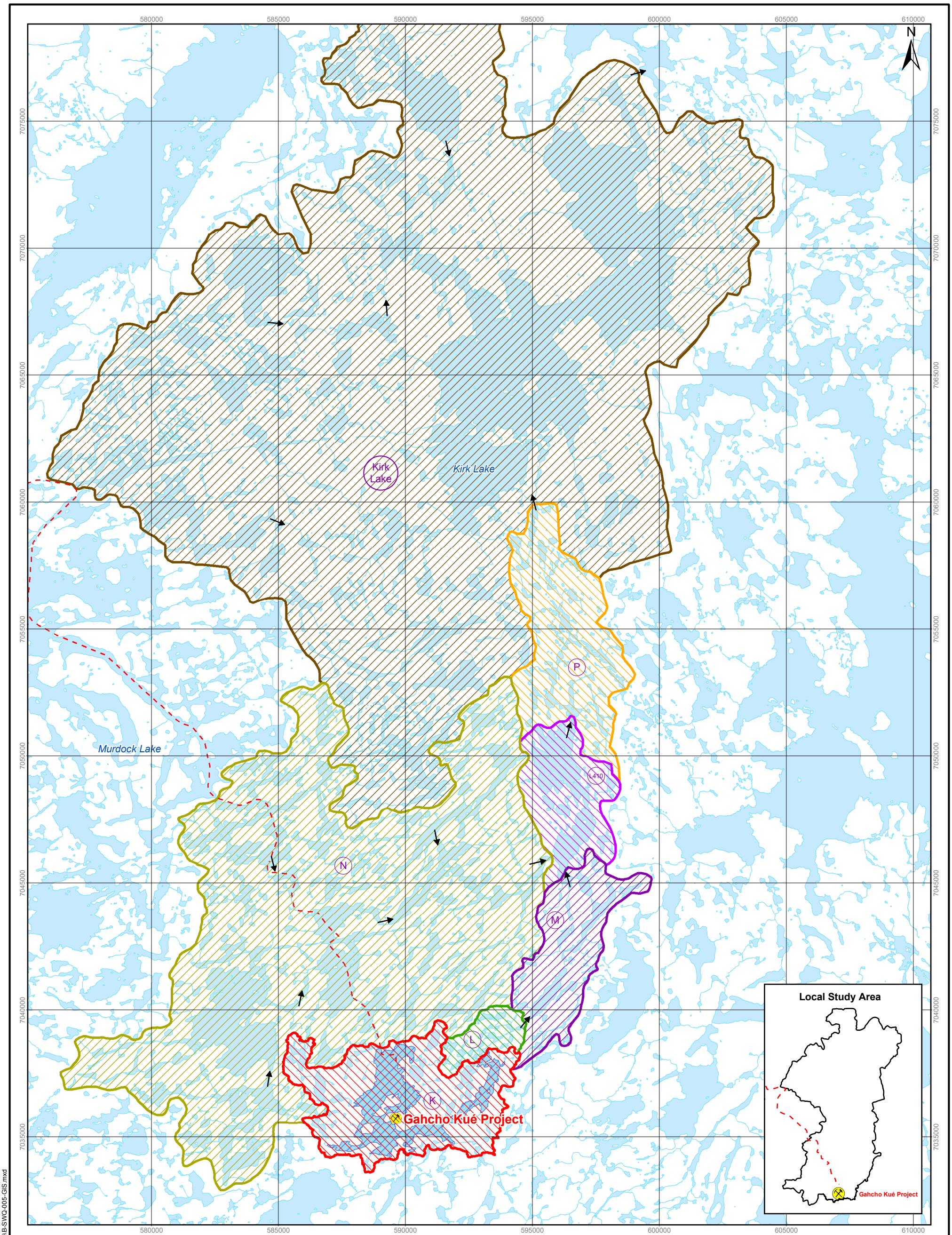
I2.1 LOCAL STUDY AREA

The extent of the LSA was determined through watershed principles, where the watersheds downstream and adjacent to Kennady Lake were selected (Figure I2.1-1).

The LSA includes all watersheds upstream of the Kirk Lake outlet (Figure I2.1-1). It represents 738.87 square kilometres (km^2) and is divided into the following areas:

- Kennady Lake;
- lakes in the Kennady Lake watershed;
- lakes downstream of Kennady Lake (L and M watersheds);
- lakes in the N watershed; and
- Lake 410 and Kirk Lake (Lake 410, P, and Kirk Lake watersheds).

The Kennady Lake (K) watershed includes the bulk of the Project footprint individual sub-watersheds which flow into Kennady Lake. The L and M watersheds are located immediately downstream and receive water from Kennady Lake.



LEGEND

- Gahcho Kué Project
- Winter Access Road
- Watercourse
- Waterbody
- Kennady Lake
- Flow Direction

Watershed Boundary

- Kennady Lake Watershed
- L Watershed
- M Watershed
- N Watershed
- Lake 410 Watershed
- P Watershed
- Kirk Lake Watershed

(M) Watershed Identifier

NOTES

Base data source: National Topographic Base Data (NTDB) 1:50,000

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GAHCHO KUÉ PROJECT

Surface Water Quality Baseline Local Study Area

PROJECTION: UTM Zone 12	DATUM: NAD83	De Beers Canada
Scale: 1:140,000 (2 1 0 2 Kilometres)		
FILE No: B-SWQ-005-GIS		DATE: February 19, 2008
JOB NO: VE51664	REVISION NO: 5	
OFFICE: AMEC-GCY	DRAWN: NH / CHECK: ST	**Figure I2.1-1**

The N watershed is adjacent to the Kennady Lake watershed (K watershed) and has a downstream confluence at Lake 410. This watershed is included in the baseline annex because water from the K watershed may be diverted into the N watershed during Project activities.

Water from the M and N watersheds flows into Lake 410, which in-turn flows through the P watershed into Kirk Lake. The Lake 410, P, and Kirk Lake watersheds were included as the most downstream receiving watersheds within the LSA.

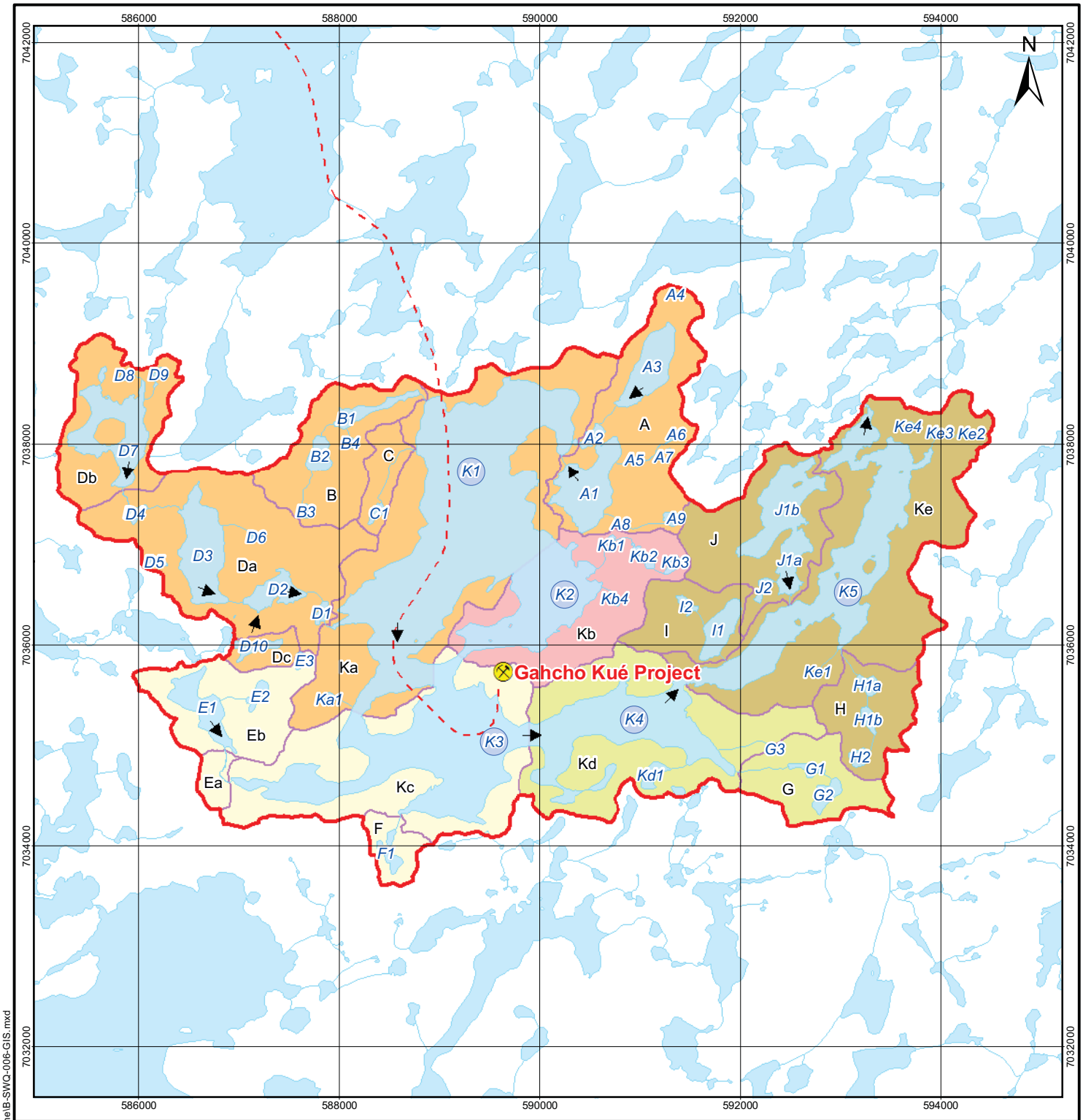
I2.1.1 Kennady Lake

Kennady Lake has a total surface area of 8.15 km^2 and a volume of about 38 million cubic metres (Mm^3) at the end of the open water season. This lake consists of five major basins that were delineated by the key morphometric features. The five basins are referred to as K1 through K5 (Figure I2.1-2). The Kennady Lake basins are interconnected by relatively shallow and narrow channels, which can become isolated during winter when these channels freeze to the bottom. During such events, the lake can be considered as a group of individual lakes. Maximum depths in these basins range from 9 to 18 metres (m) and at the outlet of K5, Kennady Lake drains a total area of 32.47 km^2 (Table I2.1-1).

Table I2.1-1 Summary of Kennady Lake Morphometry

Sub-Basin	Sub-basin Area (km^2)	Percent of Lake Area (%)	Lake Volume (million m^3)	Lake Volume (%)	Maximum Lake Depth (m)	Local Watershed Drainage Area (km^2)
K1	3.19	39	18.3	48.0	14	13.78
K2	0.76	9	4.4	11.5	14	2.14
K3	1.78	22	8.6	22.6	18	5.17
K4	0.99	12	3.3	8.7	12	3.82
K5	1.43	18	3.5	9.2	9	7.56
Total	**8.15**	**100**	**38.1**	**100.0**	**-**	**32.47**

Notes: K1 to K5 = sub-basins of Kennady Lake.
km^2 = square kilometre; m^3 = cubic metre; m = metre; % = percent; - = not applicable.



LEGEND

- Gahcho Kué Project
- Winter Access Road
- Watercourse
- Waterbody
- K1 Kennady Lake Basin Identifier
- A1 Lake Identifier
- Kennady Lake Watershed Boundary
- Sub-watershed Ka
- Sub-watershed Kb
- Sub-watershed Kc
- Sub-watershed Kd
- Sub-watershed Ke
- A Sub-watershed Identifier
- Flow Direction

NOTES

Base data source: National Topographic Base Data (NTDB) 1:50,000

GAHCHO KUÉ PROJECT

Watershed Boundaries and Lakes in the Kennady Lake Watershed

PROJECTION: UTM Zone 12	DATUM: NAD83	
Scale: 1:55,000 (1 0 0.5 0 1 Kilometres)		
FILE No: B-SWQ-006-GIS		DATE: July 28, 2008
JOB NO: VE51664	REVISION NO: 2	
OFFICE: AMEC-CAL	DRAWN: NH / CHECK: TR	

De Beers Canada

Figure I2.1-2

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The K1 basin is located in the northwest portion of Kennady Lake. It is the largest basin of Kennady Lake and is partially isolated from the K2 basin by an island and shallow narrow channels to the southeast (Figure I2.1-2). It is also separated from the K3 basin, which is to the south, by a shallow, narrow channel. The K1 basin drains southward through channels between islands and mainland areas flowing mainly into the K3 basin. The K1 basin is deepest in the southern part and shallower throughout the northern sections.

The K2 basin is the smallest in Kennady Lake (Table I2.1-1). It is located in the northern part of the lake and is confined between the mainland and a large island (Figure I2.1-2). The basin flows southward through a small narrows to the K3 basin and is well connected laterally to the K1 basin. Water depths gradually increase from shallow zones near the east mainland shoreline towards the large island.

The K3 basin is located in the southwest part of Kennady Lake and is the second largest basin by volume in Kennady Lake (Table I2.1-1). It is connected to the K1 and K2 basins to the north by a series of shallow channels between islands and mainland areas. The north central part of this basin is the deepest area in Kennady Lake. The south part of the basin contains a large bay connected to the K4 basin to the east and a long narrow channel.

The K4 basin is the second smallest basin in Kennady Lake (Table I2.1-1). This basin is located in the southeastern part of the lake between the K3 and K5 basins, and drains through a very shallow channel east into the K5 basin. The deepest area of the K4 basin is in its west-central area.

The K5 basin is located in the east part of Kennady Lake and is the shallowest basin within Kennady Lake (Table I2.1-1). Extensive areas in the northern part of this basin are less than 4 to 5 m in depth, and the deepest portion is located in one small area of the southern part of the basin. The basin is long and narrow and contains several small bays and coves. The outlet of Kennady Lake to the L watershed is located at the northern end of the K5 basin.

I2.1.2 Lakes in the Kennady Lake Watershed

Lakes in the Kennady Lake watershed include several small lakes in surrounding sub-watersheds that discharge into Kennady Lake (Figure I2.1-2). The entire Kennady Lake watershed has a total surface area of 32.47 km^2 (Table I2.1-1); 11.3 km^2 of which is covered by surface water (e.g., lakes) (Table I2.1-2).

Table I2.1-2 Summary of Surface Area and Maximum Depth of Selected Surveyed Lakes in the Kennady Lake Sub-Watersheds

Associated Basin of Kennady Lake	Local Sub-Watershed	Lake Area (km^2)	Maximum Lake Depth (m)
K1	**Ka Sub-Watershed**	3.20	-
	K1	3.19	14
	Ka1	0.01	1
K1	**A Sub-Watershed**	0.64	-
	A1	0.34	8
	A2	0.03	6
	A3	0.24	14
	A9	0.02	6
K1	**B Sub-Watershed**	0.17	-
	B1	0.08	4.1
K1	**C Sub-Watershed**	0.018	-
K1	**D Sub-Watershed**	1.03	-
	D1	0.02	3
	D7	0.40	4
	D10	0.04	4
K2	**Kb Sub-Watershed**	0.82	-
	K2	0.76	14
	Kb2	0.03	1
	Kb3	0.02	2
	Kb4	0.01	2
K3	**Kc Sub-Watershed**	1.78	-
	K3	1.78	20
K3	**E Sub-Watershed**	0.24	-
	E1	0.20	3
	E2	0.03	0.7
	E3	0.01	2
K3	**F Sub-Watershed**	0.04	-
K4	**Kd Sub-Watershed**	1.03	-
	K4	0.99	12
K4	**G Sub-Watershed**	0.09	-
	G1	0.03	3
	G2	0.06	2
K5	**Ke Sub-Watershed**	1.45	-
	K5	1.43	9

Table I2.1-2 Summary of Surface Area and Maximum Depth of the Surveyed Lakes in the Kennady Lake Sub-Watersheds (continued)

Associated Basin of Kennady Lake	Local Sub-Watershed	Lake Area (km^2)	Maximum Lake Depth (m)
K5	**H Sub-Watershed**	0.10	-
K5	**I Sub-Watershed**	0.15	-
	I1	0.13	11
	I2	0.02	11
K5	**J Sub-Watershed**	0.53	-
	J1	0.50	6
	J2	0.02	[a]
Total		**11.30**	**-**

Notes: This table does not include all lakes in each sub-watershed.

[a] An in-situ profile was not preformed; therefore no maximum lake depth is available.

km^2 = square kilometre; m = metre; - = not applicable.

Initially, the sub-watersheds of each of the five basins of Kennady Lake (i.e., K1 to K5) were identified by corresponding letters (i.e., Ka to Ke) as shown by the shading in Figure I2.1-2. However, the larger sub-watersheds (i.e., Ka, Kc, Kd, and Ke) were further sub-divided using letters without the "K" designation. For example, the sub-watershed of basin K1 was initially designated as Ka, but Ka was further sub-divided into smaller drainages A, B, C, D, and the remainder of Ka.

The K1 basin includes the Ka, A, B, C, and D local sub-watersheds (Table I2.1-2) and has the largest total drainage area (13.78 km^2; Table I2.1-1) of the five Kennady Lake basins. The A sub-watershed contains nine lakes, while the B and C sub-watersheds contain four lakes and one lake, respectively (Figure I2.1-2). The D sub-watershed (consisting of Da, Db, and Dc) contains 10 lakes and is the largest sub-watershed connected to the K1 basin (Figure I2.1-2). One small, shallow lake (Ka1) was identified in the portion of the Ka sub-watershed not delineated further into smaller watersheds.

The Kb sub-watershed is the only sub-watershed connected to the K2 basin and contains four small lakes. The total drainage area is 2.14 km^2 (Table I2.1-1) with a lake surface area of 0.82 km^2, which includes the K2 basin (Table I2.1-2). Lakes in the Kb sub-watershed (excluding K2 basin) are shallow with maximum observed depths of about 1 to 2 m.

The K3 basin includes three sub-watersheds: Kc, E, and F (Table I2.1-2). The total drainage area of the sub-watershed of basin K3 is 5.17 km^2 (Table I2.1-1) and the sub-watershed has a total lake surface area, including K3 basin, of

2.06 km^2. The E (consisting of Ea and Eb) sub-watershed contains three lakes, while one lake was identified in the F sub-watershed (Figure I2.1-2).

The K4 basin of Kennady Lake includes sub-watersheds Kd and G (Figure I2.1-2). The G sub-watershed consists of three lakes. Other lakes in the sub-watershed, including Kd1, are included in the overall drainage calculation of the Kd sub-watershed. The drainage area of the sub-watershed of basin K4 is 3.82 km^2 (Table I2.1-1), which is the smallest drainage area of the five major basins of Kennady Lake.

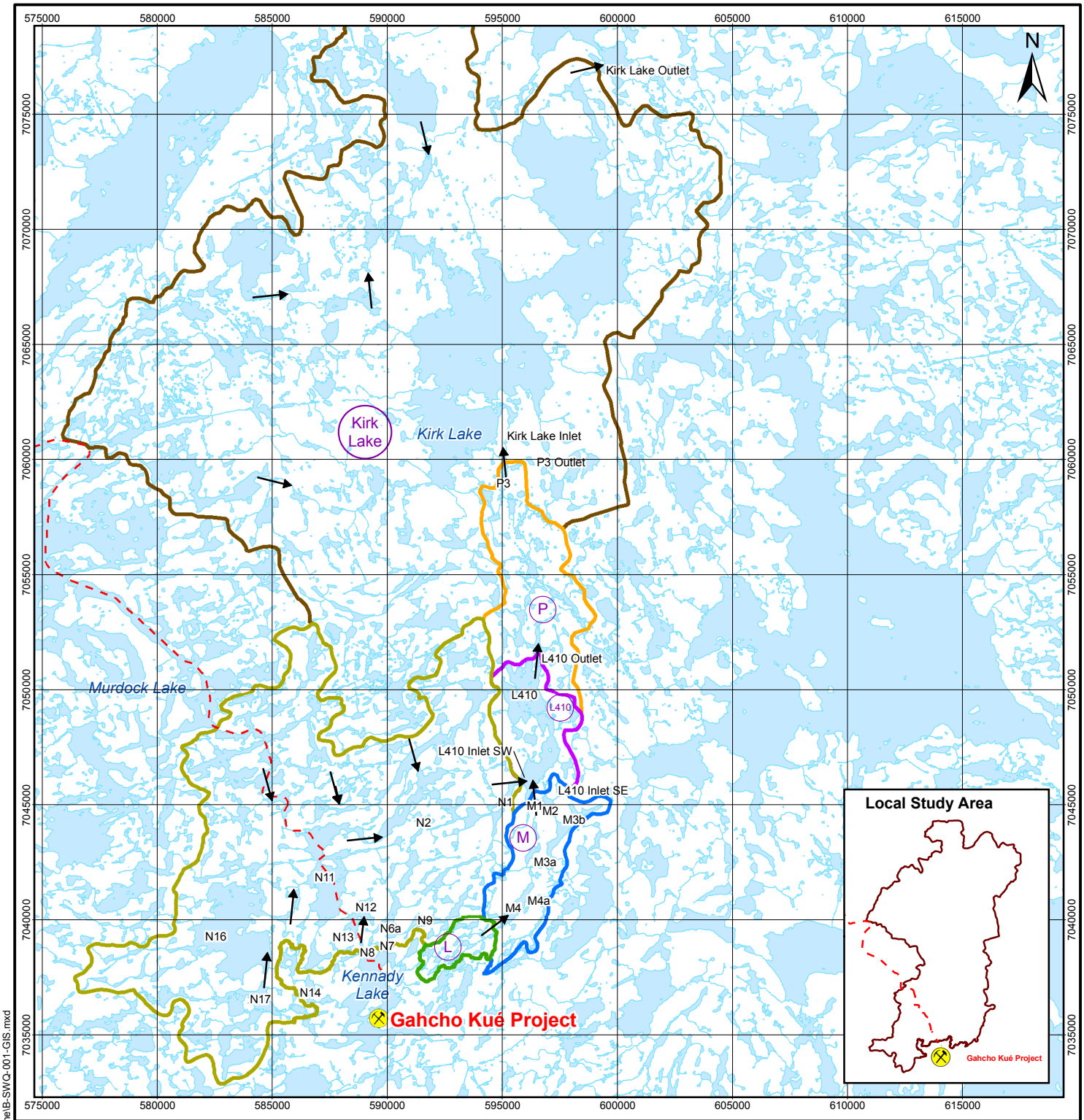
The K5 basin includes sub-watersheds Ke, H, I, and J (Table I2.1-2). The H sub-watershed contains three lakes, while the I sub-watershed contains two. The J sub-watershed contains two lakes and is the largest of the three sub-watersheds (Figure I2.1-2). Four other small lakes were not delineated into sub-watersheds but were included in the overall drainage area calculations for the Ke sub-watershed. The sub-watershed of basin K5 has a total drainage area of 7.56 km^2.

I2.1.3 Lakes Downstream of Kennady Lake

Lakes downstream of Kennady Lake include lakes downstream from the outflow of Kennady Lake (K5 outlet) through the L and M watersheds (Figure I2.1-3).

Kennady Lake and Lake L4 drain into Lake L3 through separate inlets (Figure I2.1-4). Lake L3 drains into Lake L2, along with water from L11 and L13 lakes. Lakes L11 and L13 are the receiving waterbodies for a series of headwater lakes that are not directly connected to Kennady Lake. Three separate inlets drain into Lake L1b, including water from the Kennady Lake watershed via Lake L2, headwater lakes drained via Lake L5, and an unnamed stream draining both L7 and L8 lakes. The water from Lake L1b is drained into Lake L1a before being drained into the M watershed. The L watershed locally drains 5.07 km^2 and has an overall drainage area of 37.53 km^2 at the outlet of Lake L1a (Table I2.1-3).

The M watershed receives all water from Kennady Lake and the L watershed. Water from Lake M4 drains through lakes M3b, M3a, M2, and M1 before discharging into Lake 410 (Figure I2.1-3). Other lakes in the M watershed drain into a series of lakes through inlets that are separate from the water draining from Kennady Lake and the L watershed. The M watershed has a local drainage area of the M lake watershed of 19.18 km^2 and a total drainage area of 56.71 km^2 at the outlet of M1 (Table I2.1-3).



LEGEND

- Gahcho Kué Project
- Winter Access Road
- Watercourse
- Waterbody
- Flow Direction

Watershed Boundary

- Watershed L
- Watershed M
- Watershed N
- Lake 410 Watershed
- Watershed P
- Kirk Lake Watershed

M Watershed Identifier

NOTES

Base data source: National Topographic Base Data (NTDB) 1:50,000

GAHCHO KUÉ PROJECT

Watershed Boundaries and Lakes Downstream of Kennady Lake to Kirk Lake Outlet

PROJECTION: UTM Zone 12	DATUM: NAD83	
Scale: 1:240,000 (4 2 0 4 Kilometres)		
FILE No: B-SWQ-001-GIS		DATE: February 19, 2008
JOB NO: VE51664	REVISION NO: 2	
OFFICE: AMEC-CGY	DRAWN: NH	CHECK: TR

De Beers Canada

Figure I2.1-3

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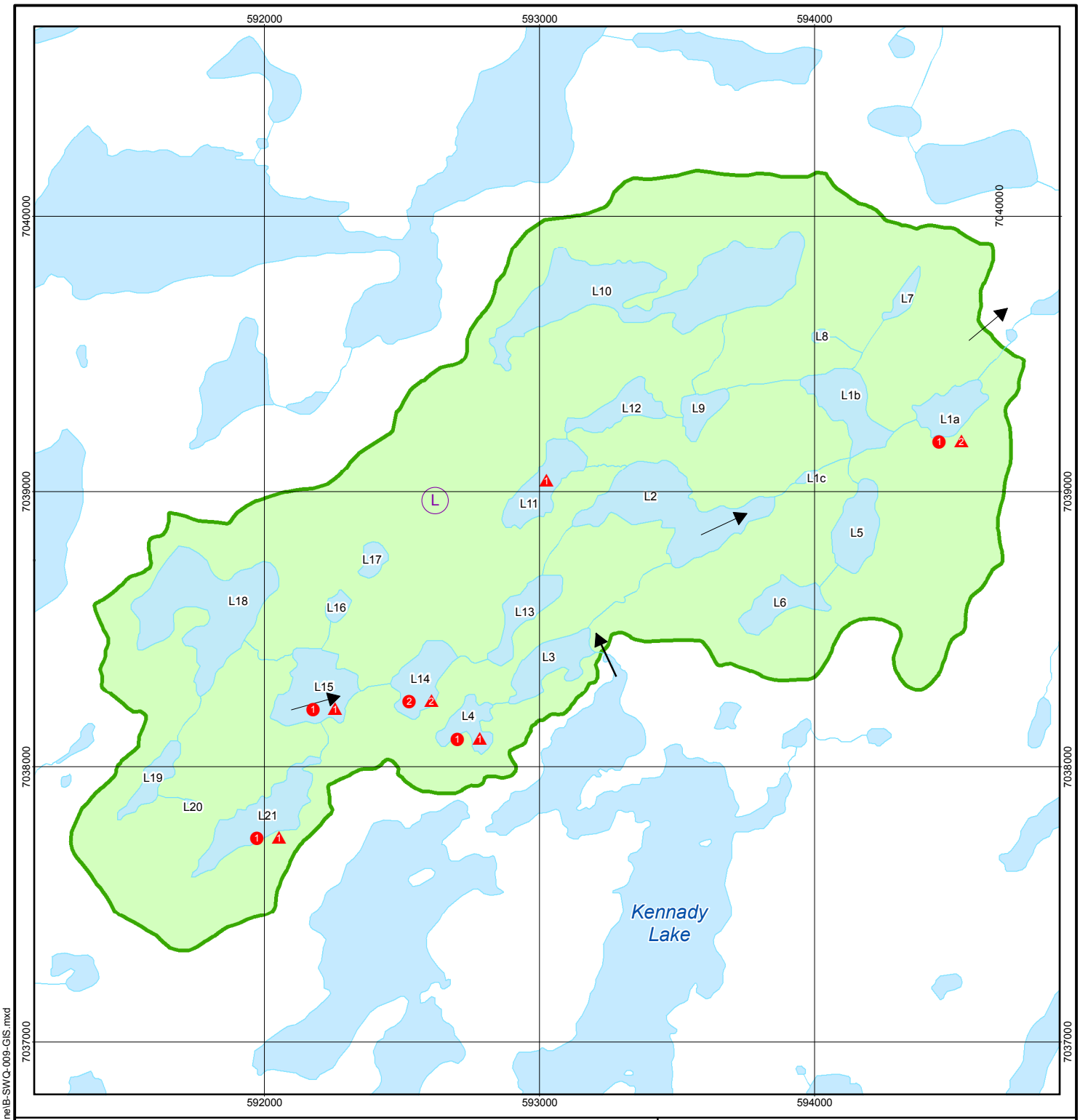

LEGEND

- Watercourse
- Waterbody
- K1 Lake Identifier
- Flow Direction

Watershed Boundary

- Watershed L
- (L) Watershed Identifier

Summer

- In Situ - Spot Measurement or Vertical Profile
- Grab Sampling
- Profile Sampling
- Sediment Sampling

Note: Numbers in the symbols denote the number of samples collected

NOTES

Base data source: National Topographic Base Data (NTDB) 1:50,000

GAHCHO KUÉ PROJECT

Watershed Boundary, Lakes, and Surface Water Quality Sampling in the L Watershed

PROJECTION: UTM Zone 12	DATUM: NAD83	
Scale: 1:20,000 (300 150 0 300 Metres)		
FILE No: B-SWQ-009-GIS		DATE: February 15, 2008
JOB NO: VE51664	REVISION NO: 2	Figure I2.1-4
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Table I2.1-3 Summary of Lake and Watershed Areas in the Local Study Area Downstream of Kennady Lake Watershed

Watershed	Lake Identifier	Lake Area (km^2)	Drainage Area at Lake Outlet (km^2)	Sub-watershed Overall Drainage (km^2)	Total Overall Drainage in Local Study Area (km^2)
Kennady Lake					
K					
	K5 (outlet)	-	32.46	-	-
Total at K Watershed outlet					**32.46**
Lake Downstream of Kennady Lake					
L					
	L3	0.05	0.22	0.22	-
	L2	0.13	3.63	3.85	-
	L1b	0.06	0.91	4.76	-
	L1a (L watershed outlet)	0.04	0.31	5.07	-
Total at L Watershed outlet					**37.53**
M					
	M4	0.81	7.54	7.54	-
	M3	0.91	7.54	15.08	-
	M2	0.32	1.62	16.70	-
	M1 (M watershed outlet)	0.11	2.48	19.18	-
Total at M Watershed outlet					**56.71**
Lakes in the N Watershed					
N2 Sub-watershed					
	N9	1.00	(a)	(a)	-
	N7	0.06	0.30	0.30	-
	N6	0.81	9.62	9.92	-
	N5	0.52	3.55	13.47	-
	N4	0.03	0.12	13.59	-
	N3	0.12	1.52	15.11	-
	N2	0.27	0.72	**15.84**	-
N11 Sub-watershed					
	N14	0.21	0.98	0.98	-
	N13	0.03	0.26	1.24	-
	N11	5.38	55.43	**114.68**(b)	-
N1 Sub-watershed					
	Inflow from N2	-	-	15.84	-
	Inflow from N11	-	-	114.68	-
Total at N1 Outlet		4.17	-	52.00	**182.52**

Table I2.1-3 Summary of Lake and Watershed Areas in the Local Study Area Downstream of Kennady Lake Watershed (continued)

Watershed	Lake Identifier	Lake Area (km^2)	Drainage Area at Lake Outlet (km^2)	Sub-watershed Overall Drainage (km^2)	Total Overall Drainage in Local Study Area (km^2)
Lake 410 Watershed					
	Inflow from M1	-	-	56.71	-
	Inflow from N1	-	-	182.52	-
	Combined Upstream Inflow	-	-	239.23	-
Total at Lake 410 Outlet		5.79	16.48	16.48[(c)]	**255.71**
Kirk Lake Watershed					
	Inflow from Lake 410	-	-	255.71	-
	Additional Inflow from P Sub-watershed	-	28.70	284.41	-
	Local Inflow	64.18	454.49	454.49	-
Total at Kirk Lake Outlet					**738.90**
Total Drainage for Local Study Area					**738.90**

(a) Drainage area at lake outlet and sub-watershed overall drainage calculations for this lake was combined and presented with Lake N6.

(b) Includes the sub-area overall drainage calculations from other lakes in this watershed that were not surveyed.

(c) Includes the Lake 410 area of 5.79 km^2.

km^2 = square kilometre; - = not applicable.

I2.1.4 Lakes in the N Watershed

Lakes in the N watershed form another headwater watershed in the LSA (Figure I2.1-3). Water originating from the Kennady Lake watershed and the N watershed has a downstream confluence in Lake 410. These lakes are located to the north and west of Kennady Lake.

Lakes near the drainage divide with the Kennady Lake watershed were given lake identifiers (e.g., N7, N8, N9, N13, N14, and N17), while many of the larger lakes in the northern areas of the watershed were not identified or surveyed. Lakes in the N watershed bordering the Kennady Lake watershed or flowing through Lake N2 have lake surface areas ranging between 0.03 and 5.38 km^2 (Table I2.1-3).

Lakes in the N watershed were divided into two major sub-watersheds, drained by Lake N11 and by Lake N2, through two separate inflows into Lake N1. The sub-watershed drained by Lake N11 contains Lake N16, designated as a control

lake. The drainage area at the inflow of Lake N1, draining water from lakes upstream and including Lake N2, is 15.84 km^2. The majority of the water in the N watershed (114.68 km^2) is drained through Lake N11 to N1. The N watershed has an overall drainage area of 182.52 km^2 (Table I2.1-3).

I2.1.5 Lake 410 and Kirk Lake

The remaining lakes in the LSA include Lake 410, lakes in the P watershed, and Kirk Lake. These lakes are the receiving waterbodies for lakes downstream of Kennady Lake and lakes in the N watershed (Figure I2.1-3).

Lake 410 is located in the northeast part of the LSA and is the downstream receiving waterbody of the K, L, M, and N watersheds. It has a surface water area of 5.79 km^2, which is 71% of the total surface area of Kennady Lake and drains a total area of 255.71 km^2 (Table I2.1-3). Water from Kennady Lake and the downstream L and M watersheds drain into Lake 410 via the southeast inlet, while the N watershed drains into the lake through the southwest inlet.

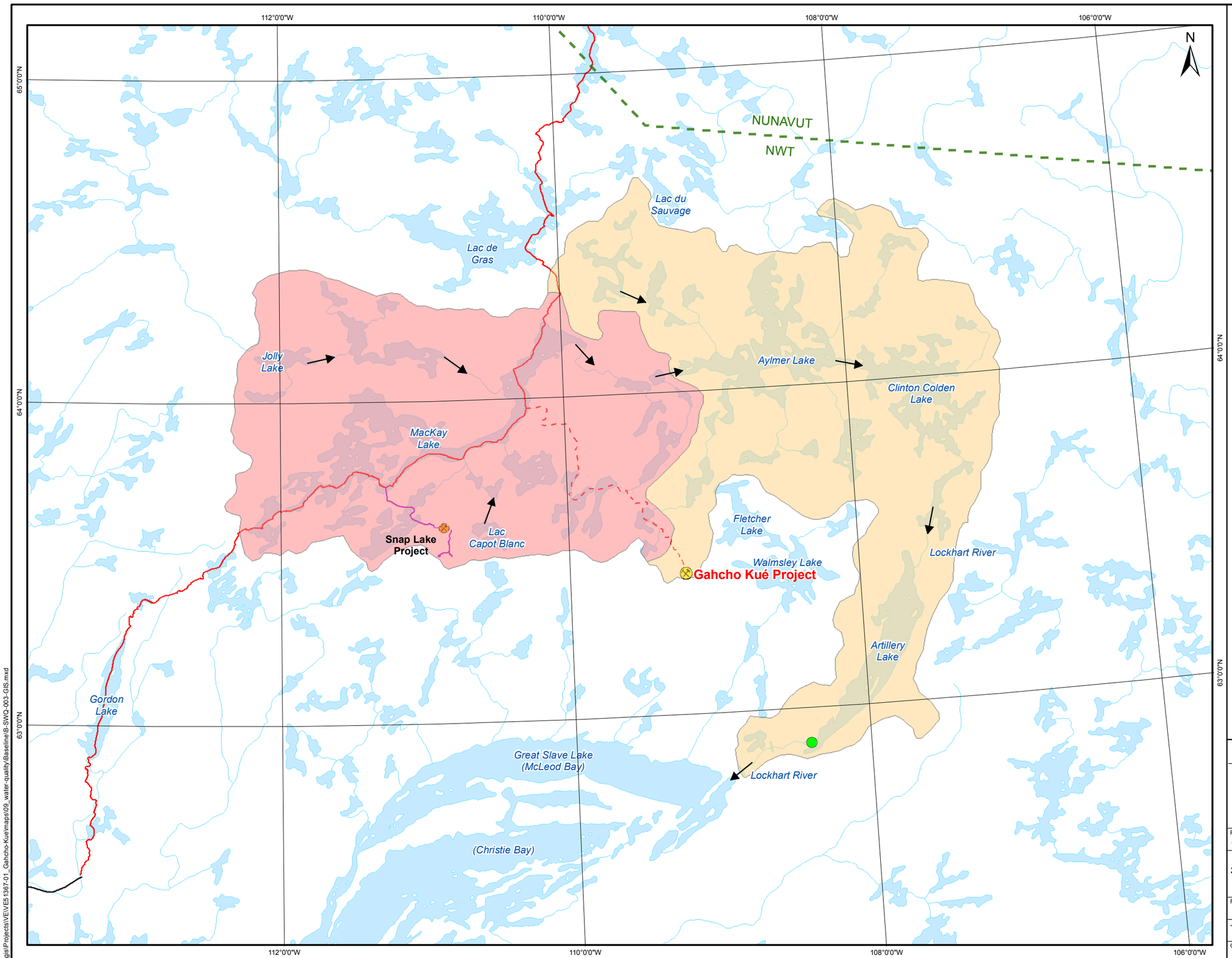
The P watershed is located north of the Lake 410 watershed and receives water from Lake 410 and upstream watersheds. It drains water from Lake 410 into the Kirk Lake watershed. The P watershed has a local watershed area of 16.48 km^2 and a total drainage area of 255.71 km^2.

Kirk Lake is the most downstream lake surveyed in the LSA. Located in the northeastern portion of the LSA, Kirk Lake drains into Aylmer Lake, which is connected to the Lockhart River. Kirk Lake has a surface area of 64.18 km^2 and drains a total area of 738.90 km^2, which is the total drainage for the LSA (Table I2.1-3).

I2.2 REGIONAL STUDY AREA

The RSA for the Project includes the entire Lockhart River basin. All water in the RSA drains into McLeod Bay in the northeastern portion of Great Slave Lake (Figure I2.2-1).

The Lockhart River basin has a total drainage area of approximately 27,492 km^2. Larger lakes that occur within the RSA include MacKay, Aylmer, Clinton Colden, and Artillery lakes. Artillery Lake is located near the outlet of the Lockhart River basin.



LEGEND

- Gahcho Kué Project
- Snap Lake Mine
- Territorial Boundary
- Highway
- Existing Winter Road
- Tibbitt-to-Contwoyto Winter Road
- Winter Access Road
- Watercourse
- Waterbody
- Flow Direction
- Lower Lockhart River Watershed
- Upper Lockhart River Watershed
- Environment Canada Water Quality Monitoring Station

NOTES

Base data source: The Atlas of Canada

GAHCHO KUÉ PROJECT

Surface Water Quality Baseline Regional Study Area

PROJECTION: Canadian Lambert Conf. Conic	DATUM: NAD83	
Scale: 1:1,250,000 (25 12.5 0 25 Kilometres)		
FILE No: B-SWQ-003-GIS		DATE: June 11, 2008
JOB NO: VE51664	REVISION NO: 4	
OFFICE: AMEC-CAL	DRAWN: NH / CHECK: ST	

Figure I2.2-1

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The RSA was divided into the following two major areas:

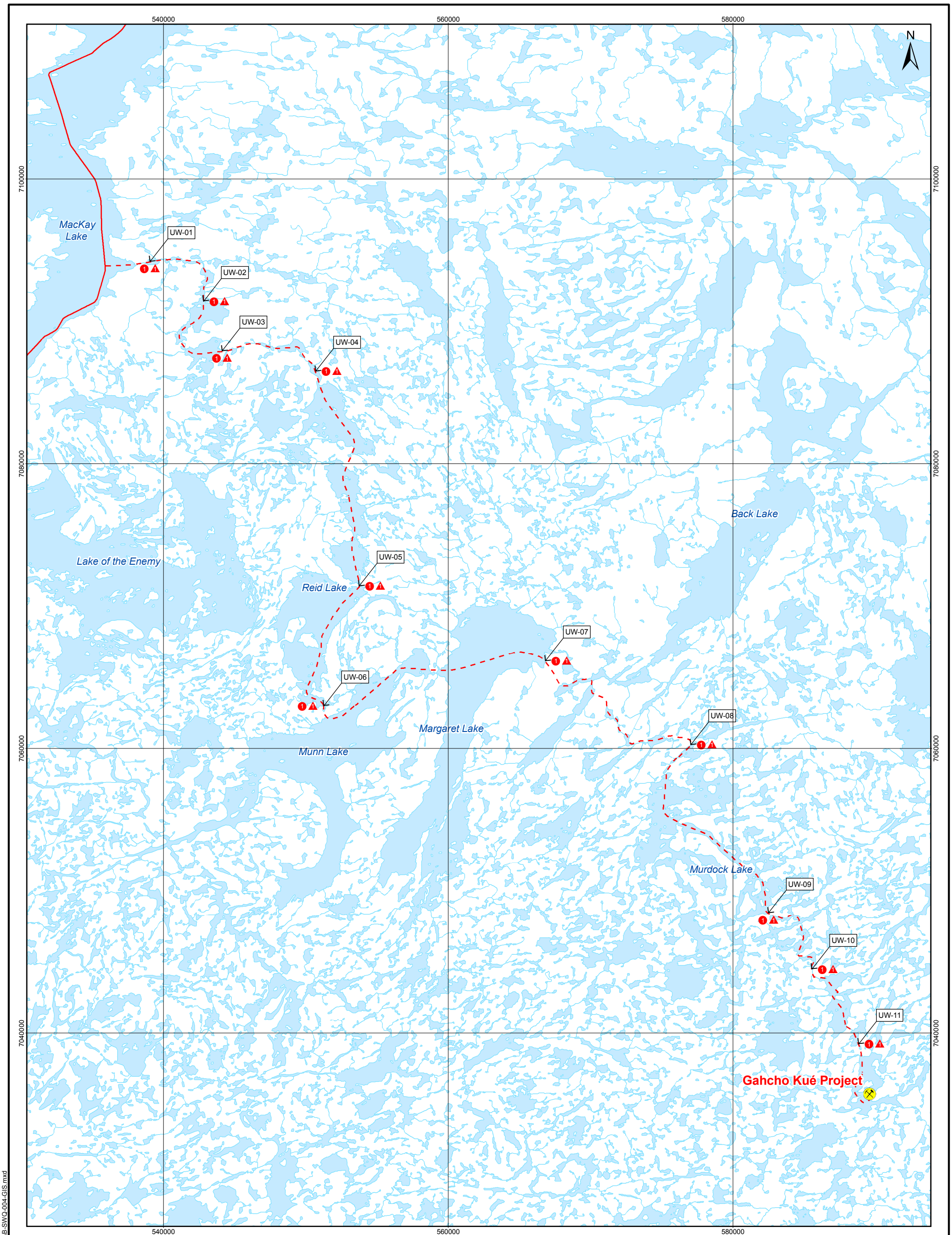
- upper Lockhart River watershed; and
- lower Lockhart River watershed.

The upper Lockhart River watershed includes headwater lakes that flow into MacKay Lake and all lakes flowing into the lower Lockhart River watershed upstream of the inlet of Aylmer Lake (Figure I2.2-1).

The lower Lockhart River watershed includes all headwater lakes that flow into Aylmer Lake, including lakes in the LSA. All other headwater lakes flowing into the Lockhart River downstream of Aylmer Lake to the outlet at Great Slave Lake were included in this portion of the RSA.

I2.3 WINTER ACCESS ROAD

A winter access road operates periodically as a spur off the Tibbitt-to-Contwoyto winter road at MacKay Lake to the Gahcho Kué exploration camp (Figure I2.3-1). The winter access road extends roughly 120 km and allows for access to Kennady Lake during ice-covered conditions. Located entirely within the Lockhart River watershed, the winter access road follows several lakes in the upper and lower Lockhart River watershed, including some surveyed lakes in the LSA.



LEGEND

- Gahcho Kué Project
- Tibbitt-to-Contwoyto Winter Road
- Winter Access Road
- Watercourse
- Waterbody
- Esker

UW-1 Unnamed Waterbody Identifier

Summer Sampling

- In Situ - Spot Measurement
- Grab Water Sampling

NOTES

Base data source: National Topographic Base Data (NTDB) 1:250,000

GAHCHO KUÉ PROJECT

Water Quality Baseline
Winter Access Road Study Area

PROJECTION: UTM Zone 12	DATUM: NAD83	De Beers Canada
Scale: 1:250,000 (5 2.5 0 5 Kilometres)		
FILE No: B-SWQ-004-GIS		DATE: February 15, 2008
JOB NO: VE51664	REVISION NO: 5	Figure I2.3-1
OFFICE: AMEC-CGY	DRAWN: NH	CHECK: ST

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I3 METHODS

I3.1 KEY BASELINE INVESTIGATIONS

This annex was prepared to describe the baseline water and sediment quality for the Gahcho Kué Project (Project). These data include physical limnology, and water and sediment chemistry within lakes during open water and under-ice conditions. The field and analytical results were compared to established guidelines for the protection of aquatic life, as well as drinking water standards.

The term "water quality" is used throughout this annex, and includes both the physical and chemical characteristics of water. Sediment quality was determined less frequently than the water quality parameters, as sediment quality has less temporal variability than water quality. Sediment can influence changes in water quality by releasing suspended substances into the water column, thus affecting the water quality.

A detailed description of existing surface water quality is based on historical data and data collected from more recent field programs (1995 through 2005) within the baseline study areas. All data were compiled into a database that was used to describe the baseline water quality and support the assessment of environmental effects of the Project.

I3.1.1 Water Quality Parameters

Physical and chemical parameters were used to describe the water quality of the different lakes in the local and regional study areas. Parameters can be classed into major categories that are used to describe different aspects of the water or sediment. The major categories of parameters used in the water quality baseline annex are detailed below.

I3.1.1.1 Field-Measured Parameters

Parameters such as temperature, dissolved oxygen (DO), specific conductivity, and pH, are measured in-situ using a water quality multi-parameter meter (multi-meter). This category of parameters was used to describe the physical limnology of the lakes studied in the baseline.

I3.1.1.2 Conventional Parameters

Conventional parameters include those that are monitored to provide a general characterization of the water column. These parameters directly and indirectly reflect the chemical, physical, and biological processes taking place in lakes and streams.

The conventional parameters include:

- The pH is a measure of acidity or alkalinity of water. A value of 7.0 indicates that the water is neutral while values lower than 7.0 are acidic and values over 7.0 are alkaline.
- Specific conductivity is indicative of the amount of ions found in the water. It is a measure of the water's ability to conduct electrical current. It is normalized to 25 degrees Celsius (°C) to provide comparative values that are independent of temperature effects on conductivity.
- Total dissolved solids (TDS) are strongly correlated to specific conductivity and are a measure of the concentration of dissolved anions and cations found in the water.
- Hardness is a measure of the quantity of cations, usually calcium and magnesium, found in the water. The toxicity of metals tends to decrease with increasing hardness.
- Alkalinity is a measure of the quantity of anions, such as bicarbonate, found in the water and expresses the capacity of the water to buffer acidic inputs.
- Major anions (bicarbonate, carbonate, chloride, and sulphate) and cations (calcium, magnesium, sodium, and potassium) are individually measured to determine the water input source (i.e., groundwater baseflow or surface runoff) and to describe the major ionic properties of the water. Major ions account for most of the TDS measured in the water.

I3.1.1.3 Nutrients

Phosphorus and nitrogen compounds, which limit plant growth, are measured to determine the biological productivity of a waterbody. This group of parameters is used to classify the trophic status of a waterbody, which can range from oligotrophic (low biological productivity) to eutrophic (high biological productivity).

The nutrient parameters include:

- Nitrogen compounds are usually present in several forms in the water, such as inorganic (ammonia, nitrate, nitrite) and organic forms.
- Total Kjeldahl nitrogen (TKN) is a common measurement of the nitrogen available for plant uptake, which is the measure of the concentrations of ammonia and organic nitrogen. It is also very close to the amount of total nitrogen.
- Phosphorus is another very important nutrient and can range in concentration from 0.001 milligrams per litre (mg/L) in unproductive waters to over 0.1 mg/L in highly productive waters.

I3.1.1.4 Organics

Several natural and synthetic compounds containing carbon were considered in this group. The following organics were measured for the baseline:

- Chemical oxygen demand (COD) is a measure of the amount of oxygen needed to chemically oxidize organic compounds in the water and thus represents stable organics.
- The colour of the water is an indicator of the amount of dissolved organic carbon (DOC) content or the amount of dissolved organic matter from decomposition of plants found in the water.
- Total organic carbon (TOC), includes DOC and particulate forms of organic compounds. Total organic carbon is a measure of the organic content, which tends to be higher in the sediment than in the water because the particulate phase tends to settle out of the water column (see Section I3.1.1.6).
- Phenolic compounds (referred to as phenol) are released into the water from the decomposition of plants and can naturally occur in trace amounts. Phenols can also be released into the water as the byproduct of industrial processes.
- Oil and grease is a measure of the concentration of all hydrocarbons found in water, whether it is from artificial or natural sources.
- Total petroleum hydrocarbons (TPH) are a measure of the overall concentration of petroleum hydrocarbons found in the water or sediment, which may include constituents from natural sources (i.e., decay of organic matter).

I3.1.1.5 Metals

Metals often referred to as trace elements are a component of all waterbodies and are present in small amounts in the water and larger quantities within the sediment. Total metals were analyzed in both the water and sediment, while the dissolved bio-available fraction of metals was also measured in the water. The toxicity of certain metals is dependant on factors such as the hardness of the water, the pH, and the relative concentration of certain major ions.

I3.1.1.6 Texture and Carbon Content

This group of parameters is measured in the laboratory and indicates the major constituents of the sediment. The following parameters were analyzed during most sampling events:

- Texture is a measurement of the proportion of sand, silt, and clay in the sediment and is also indicative of the chemical constituents that may be adsorbed to the sediment.
- Total organic carbon and total inorganic carbon measure the amount of organic matter and inorganic material, respectively, found within the sediment.

I3.1.2 Water Quality Trends

Northern lakes exhibit seasonal and spatial variability, which are observed through changes in the concentration of various water quality parameters.

I3.1.2.1 Seasonal Trends

Seasonality is a very important feature in lakes of northern Canada, where long cold winters can cause ice build-up that can isolate lakes within a watershed by freezing channels to the bottom. The ice build-up itself causes pure water to form ice while the dissolved substances are concentrated into the unfrozen water.

During open water conditions, runoff from snowmelt and precipitation, which is usually low in dissolved substances, decreases TDS. As the volume of inputs to a lake from surface runoff increases, the TDS tends to decrease.

Oxygen depletion by sediments and organisms is also common in winter months. Since ice forms a barrier between the atmosphere and the water, oxygen is not replenished from the atmosphere until open water conditions return.

Oxygenation during open water conditions can replenish the decreasing oxygen supply of waterbodies due to turbulence caused by winds, which helps the DO concentration increase.

The open water season in the Project area lasts usually from the end of May or mid June to early October; thus, during the majority of the year, the waterbodies are frozen and isolated from one another. For this reason, water quality in this study was compared for open water (i.e., spring, summer, and fall) and under-ice (i.e., winter) conditions.

I3.1.2.2 Spatial Trends

Spatial heterogeneity of typical water quality features originate from differences in lake morphometry, the intensity of surface water and groundwater interactions, the amount of surface inflow and outflow from tributaries, as well as other factors. Seasonal effects also contribute to spatial differences, particularly in vertical distribution of water quality parameters (e.g., stratification effects).

The major feature in spatial trends of water quality within northern regions is its relative homogeneity. Water quality of lakes in the study areas originates from direct precipitation to the surface in winter, which enters lakes during the snowmelt period. Spring runoff occurred mostly as flow on top of the frozen ground, thus limiting the amount of dissolved and particulate substances that could enter the waterbody. Very shallow and seasonal sub-soil flow can occur during the short summer season when some organics and nutrients from the soil can enter surface waterbodies. Thus, the number of opportunities for heterogeneity are limited in the northern region, resulting in very pronounced similarities in the water quality between the different waterbodies.

There is a small but relatively typical group of lakes with substantially different water quality that exist in these areas. These types of lakes are generally located on or near drainage divides and/or within wetlands areas. These lakes usually have higher concentrations of mineral substances and elevated levels of organics. They usually do not have an inflow. Outflow from these lakes occurs only during periods of high water level.

Both groups of lakes (i.e., those that exist on drainage divides and those fed mainly with precipitation) were found in the study area and are presented in this baseline annex.

I3.1.3 Graphs and Summaries

Data were collected for the baseline between 1995 and 2005, representing a large amount of water quality information. To provide a clear understanding of the baseline water quality conditions, the following methods were used to present the data:

- limnological profiles;
- summary water quality tables; and
- time series plots.

I3.2 DATA SOURCES

Water and sediment quality data were obtained from many baseline studies and historical sources throughout the LSA and RSA. The sources of data used in this baseline study are summarized in the following sections.

I3.2.1 Local Study Area

Between 1995 and 2005, 20 different water quality sampling programs were conducted by various consultants in the LSA; the citations of these studies are listed in Table I3.2-1 and are referred to below.

Canamera Geological Limited conducted in-situ profiles in 1996, and Jacques Whitford collected in-situ and vertical profiles for three basins of Kennady Lake and for Lake N16 in 1998 and 1999.

Jacques Whitford Environmental Ltd. (Jacques Whitford) conducted the following inventory studies:

- three summer baseline programs for Kennady Lake between 2001 and 2003;
- one winter baseline study in 1998; and
- one baseline program for waterbodies surrounding Kennady Lake in 2002.

Table I3.2-1 Water Quality Inventory Studies, 1995 to 2005

Identifying Number	Report Author(s)	Year of Publication	Report Title
1	Canamera Geological Ltd. Environmental Resources Division	1996	Temperature Profiles (1996). 5034 Diamond Project, Kennady Lake. Submitted to Monopros Ltd., Yellowknife, Northwest Territories
2	Jacques Whitford Environment Ltd.	July 1998	Water Quality Assessment of Kennady Lake, 1998 Final Report. Project No. BCV50016 Submitted to Monopros Ltd., Yellowknife, Northwest Territories
3	Jacques Whitford Environment Ltd.	April 19, 1999	Memorandum: Trip Report #1 and Data Assessment for Kennady Lake Water Quality - 1999 Survey Program. Submitted to Monopros Ltd., Yellowknife, Northwest Territories
4	Jacques Whitford Environment Ltd.	October 14, 1999	Results of Water Sampling Program For Kennady Lake, July 1999 Survey. Project No. 50091. Submitted to Monopros Ltd., Yellowknife, Northwest Territories
5	Jacques Whitford Environment Ltd. and EBA Engineering Consultants Ltd.	May 2001	Gahcho Kué (Kennady Lake) Environmental Baseline Investigations (2000). Project No. 0701-99-13487. Submitted to De Beers Canada Exploration Inc., Yellowknife, Northwest Territories
6	Jacques Whitford Environment Ltd.	March 4, 2002	Baseline Limnology Program (2001), Gahcho Kué (Kennady Lake). Project No. ABC50254. Submitted to De Beers Canada Exploration Inc., Yellowknife, Northwest Territories
7	Jacques Whitford Environment Ltd.	April 29, 2002	Data Compilation (1995-2001) and Trends Analysis Gahcho Kué (Kennady Lake). Project No. ABC50310. Submitted to De Beers Canada Exploration Inc., Yellowknife, Northwest Territories
8	EBA Engineering Consultants Ltd.	October 2002	Gahcho Kué Winter 2001 Water Quality Sampling Program, Gahcho Kué, NWT. Project No. 0701-98-13487.028. Submitted to De Beers Canada Exploration Inc., Yellowknife, Northwest Territories
9	EBA Engineering Consultants Ltd.	January 2003	Kennady Lake Winter 2002 Water Quality Sampling Program, Kennady Lake, Northwest Territories. Project No. 0701-98-13487.035. Submitted to De Beers Canada Exploration Inc., Yellowknife, Northwest Territories
10	Jacques Whitford Environment Ltd.	June 4, 2003	Baseline Limnology Program (2002), Gahcho Kué (Kennady Lake). Project No. NTY71008. Submitted to De Beers Canada Exploration Inc., Yellowknife, Northwest Territories
11	Jacques Whitford Environment Ltd.	June 4, 2003.	Gahcho Kué (Kennady Lake) Limnological Survey of Potentially Affected Bodies of Water (2002). Project No. NTY71008. Submitted to De Beers Canada Exploration Inc., Yellowknife, Northwest Territories
12	Jacques Whitford Environment Ltd.	January 20, 2004	Baseline Limnology Program (2003), Gahcho Kué (Kennady Lake). Project No. NTY71037. Submitted to De Beers Canada Exploration Inc., Yellowknife, Northwest Territories

Table I3.2-1 Water Quality Inventory Studies, 1995 to 2005 (continued)

Identifying Number	Report Author(s)	Year of Publication	Report Title
13	EBA Engineering Consultants Ltd.	May 2004	Kennady Lake Winter 2003 Water Quality Sampling Program. Project No. 0701-98-13487.048. Submitted to De Beers Canada Exploration Inc., Yellowknife, Northwest Territories
14	EBA Engineering Consultants Ltd.	May 2004	Faraday Lake Winter 2003 Water Quality Sampling Program. Project No. 0701-98-13487.048. Submitted to De Beers Canada Exploration Inc., Yellowknife, Northwest Territories
15	EBA Engineering Consultants Ltd.	May 2004	Kelvin Lake Winter 2003 Water Quality Sampling Program. Project No. 0701-98-13487.048. Submitted to De Beers Canada Exploration Inc., Yellowknife, Northwest Territories
16	EBA Engineering Consultants Ltd.	September 2004	Kennady Lake Winter 2004 Water Quality Sampling Program. Project No. 1740071.001. Submitted to De Beers Canada Exploration Inc., Yellowknife, Northwest Territories
17	AMEC Earth & Environmental	-	Gahcho Kué Fisheries and Aquatic Resources Field Program (Unpublished Data for 2004)
18	AMEC Earth & Environmental	-	Gahcho Kué Surface Water Quality Field Program (Unpublished Data for 2004)
19	AMEC Earth & Environmental	-	Gahcho Kué Fisheries and Aquatic Resources Field Program (Unpublished Data for 2005)
20	AMEC Earth & Environmental	-	Gahcho Kué Surface Water Quality Field Program (Unpublished Data for 2005)

Notes: - = not applicable (not published).

In 2002, Jacques Whitford prepared a compilation report presenting water quality information from the above field programs, as well as data collected from 1995 to 1997 that were not included in previously issued consultant reports. Jacques Whitford and EBA Engineering Consultants Ltd. (EBA) conducted a joint environmental baseline study in 2000. EBA conducted winter water quality sampling programs of Kennady Lake yearly between 2001 and 2004. Winter water quality inventory studies were also conducted by EBA for Lakes M3 and M4 in 2003.

AMEC Earth & Environmental (AMEC) measured in-situ depth profiles in various waterbodies throughout the LSA during all seasons in 2004 and during the summer of 2005. Complete water quality analyses were conducted in spring and summer of 2004 and again in the summer of 2005.Sediment samples were collected during the summer of 2004 by AMEC. Grab sediment samples were collected from each Kennady Lake basin, Lake N16, and Lake 410 (Table I3.2-2). Grab sediment samples were also collected by AMEC during the

summer of 2005 from Kirk Lake and four locations in the K3 Basin of Kennady Lake.

Table I3.2-2 Sediment Quality Inventory Studies, 2004 to 2005

Identifying Number	Report Author(s)	Year of Publication	Report Title
1s	AMEC Earth & Environmental	-	Gahcho Kué Sediment Quality Field Program (Unpublished Data for 2004)
2s	AMEC Earth & Environmental	-	Gahcho Kué Sediment Water Quality Field Program (Unpublished Data for 2005)

Notes: - = not applicable (not published).

I3.2.2 Regional Study Area

De Beers did not conduct a baseline field program specifically for the RSA. Instead, historical water quality data collected in the Lockhart River watershed was used to describe water quality in the RSA, as the available historical data were sufficient to characterize water quality in the RSA.

The Department of Indian and Northern Affairs Canada (INAC) collected baseline water and sediment quality data from different locations throughout the Lockhart River watershed in July 1993 and 1994 (Puznicki 1996, 1997). Additional water and sediment monitoring data from 1999 for the Lockhart River watershed were also obtained from INAC (Blais 2005, pers. comm.).

Data for Snap Lake and the surrounding area were obtained between 1998 and 2001 (De Beers 2002). These data represent water quality information for different seasons from a headwater watershed in the RSA, with conditions similar to the LSA.

A time series was compiled from water quality data collected between 1969 and 2004 from a long-term monitoring station (Environment Canada Station No. NW07RD0001) at the Artillery Lake outlet to the Lower Lockhart River (Figure I2.2-1) (Environment Canada 2005).

I3.2.3 Winter Access Road

The winter access road connects Kennady Lake to the Tibbitt-to-Contwoyto winter road at MacKay Lake. No historical water quality data were available for waterbodies along the route. A field sampling program was conducted in August 2004 for selected sites along the route. Altogether, 11 sites associated with different lakes and stream crossings were studied.

I3.3 LOCATION AND TIMING OF SAMPLING

Water and sediment samples were collected from several locations throughout the LSA and along the winter access road.

I3.3.1 Local Study Area

Within the LSA, samples were collected in Kennady Lake and lakes in the Kennady Lake watershed, and in lakes downstream of the Kennady Lake watershed to the outlet of Kirk Lake (Figures I3.3-1 and I3.3-2, respectively). Since several baseline field programs were conducted in the LSA, the location, timing, and frequency for each sampled lake was denoted for each parameter group.

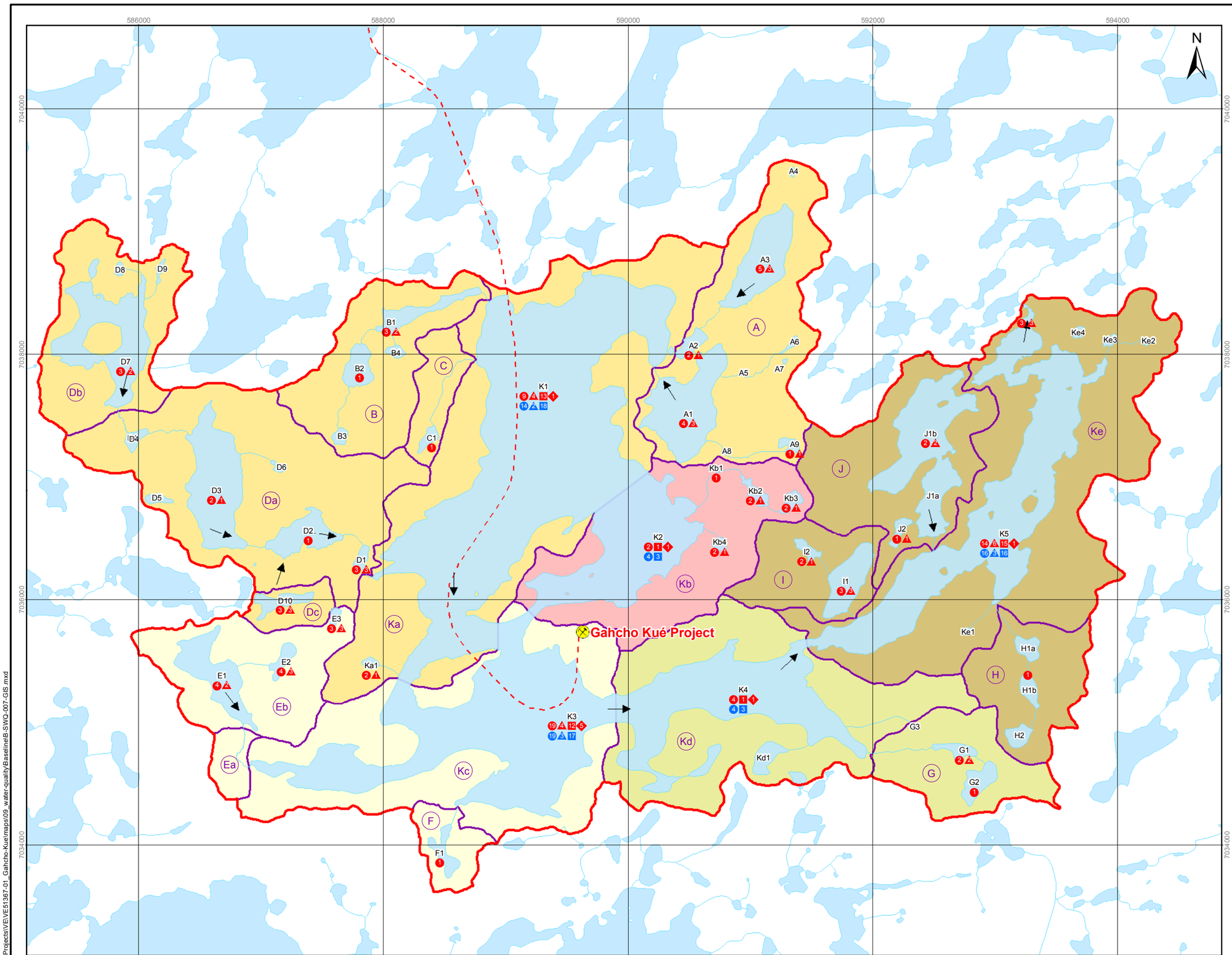
Parameter groups were used to differentiate the type of water or sediment sample collected. The different parameter groups are represented on the maps using different symbols (Figures I3.3-1 and I3.3-2):

- in-situ measurements are denoted with a circle;
- grab water samples are denoted with a triangle;
- water samples collected as part of a vertical profile are denoted with a square; and
- grab sediment samples are denoted with a diamond.

The numbers in the symbols display the frequency of sampling for each parameter group, while the colour of the symbol denotes sampling during under-ice (blue) and open water (red) conditions.

The frequency denoted for the profile samples (square) were provided for each sample collected, not the overall number of sampling days within the lake. For example, if discrete water samples were collected at three different depths throughout the water column of a given lake during one sampling day, the frequency of sampling was three (for the number of samples) and not one (which is the number of sampling days).

The sampling frequency in Kennady Lake (Figure I3.3-1) is illustrated for each basin of the lake. Several other lakes display more than one listing of sampling events to differentiate the location of samples, such as distinguishing between the inlet and the centre of a lake, or to highlight differences in sampling events between two distinct basins.



LEGEND

- Gahcho Kué Project
- Winter Access Road
- Watercourse
- Waterbody
- K1 Lake Identifier
- Flow Direction

Watershed Boundary

- Kennady Lake Watershed

Subwatershed Boundary

- Subwatershed Ka
- Subwatershed Kb
- Subwatershed Kc
- Subwatershed Kd
- Subwatershed Ke
- I Subwatershed Identifier

Summer

- In Situ - Spot Measurement or Vertical Profile
- Grab Sampling
- Profile Sampling
- Sediment Sampling

Winter

- In Situ - Spot Measurement or Vertical Profile
- Grab Sampling
- Profile Sampling

Note: Numbers in the symbols denote the number of samples collected

NOTES
Base data source: National Topographic Base Data (NTDB) 1:50,000

GAHCHO KUÉ PROJECT

Surface Water Quality Sampling in the Kennady Lake Watershed

PROJECTION: UTM Zone 12	DATUM: NAD83	
Scale: 1:30,000 (0.5 0.25 0 0.5 Kilometres)		
FILE No: B-SWQ-007-GIS		DATE: February 15, 2008
JOB NO: VE51664	REVISION NO: 4	
OFFICE: AMEC-CGY	DRAWN: NH / CHECK: ST	

De Beers Canada

Figure I3.3-1

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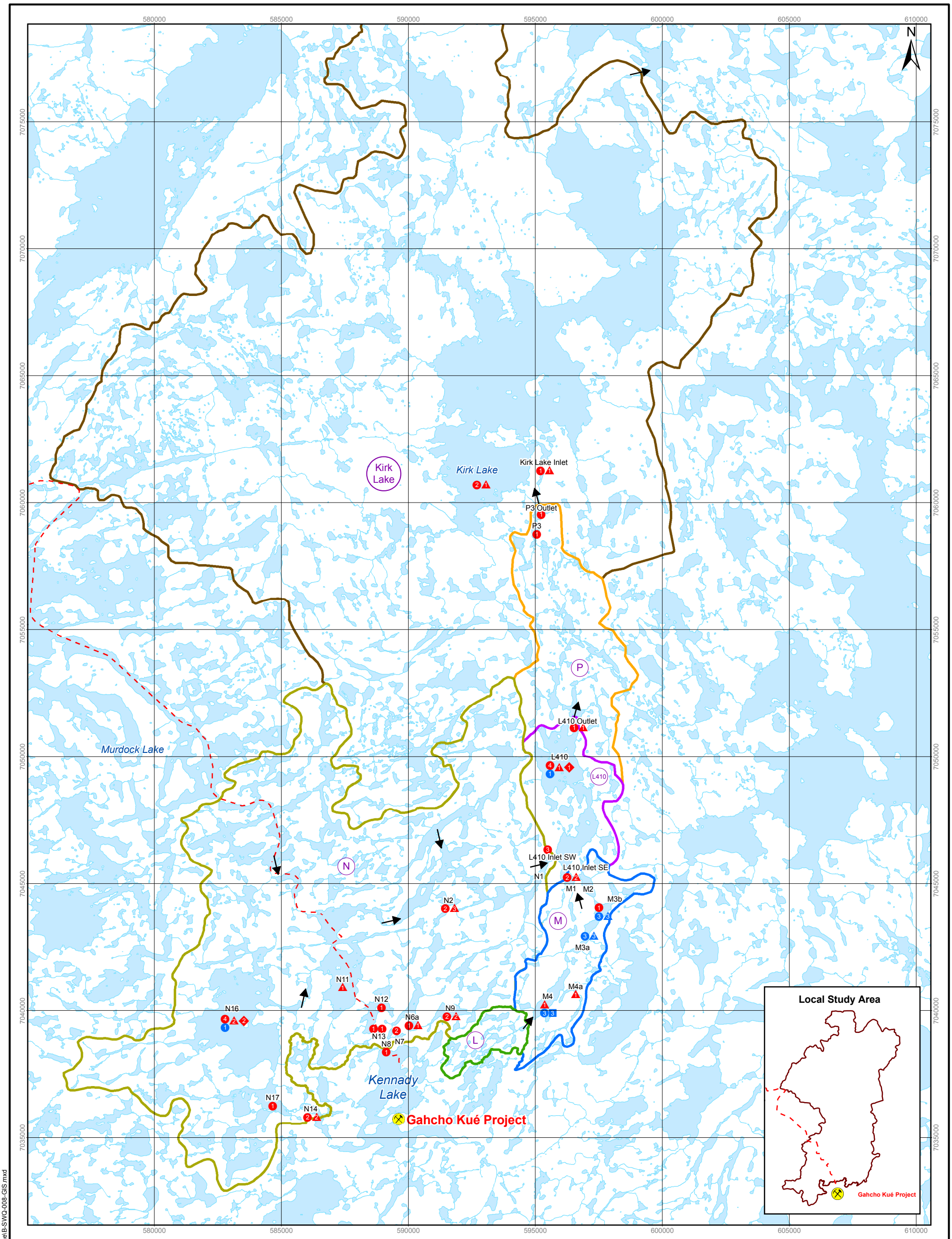

LEGEND

- Gahcho Kué Project
- Winter Access Road
- Watercourse
- Waterbody
- N8 Lake Identifier
- Flow Direction

Watershed Boundary

- Watershed L
- Watershed M
- Watershed N
- Lake 410 Watershed
- Watershed P
- Kirk Lake Watershed
- M Watershed Identifier

Summer Sampling

- In Situ - Spot Measurement or Vertical Profile
- Grab Sampling
- Profile Sampling
- Sediment Sampling

Winter Sampling

- In Situ - Spot Measurement or Vertical Profile
- Grab Sampling
- Profile Sampling

Note: Numbers in the symbols denote the number of samples collected

NOTES

Base data source: National Topographic Base Data (NTDB) 1:50,000

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GAHCHO KUÉ PROJECT

Surface Water Quality Sampling Downstream of Kennady Lake to Kirk Lake Outlet

PROJECTION: UTM Zone 12	DATUM: NAD83	De Beers Canada
Scale: 1:140,000 (2 1 0 2 Kilometres)		
FILE No: B-SWQ-008-GIS		DATE: February 14, 2008
JOB NO: VE51664	REVISION NO: 3	
OFFICE: AMEC-CGY	DRAWN: NH / CHECK: ST	**Figure I3.3-2**

Lake N16 is also referred to as the control lake. It was initially sampled in 1996, 1998, 1999, and 2001 by Canamera and Jacques Whitford because it is a lake of similar size to Kennady Lake, located in the adjacent N watershed. Recent field studies continued sampling Lake N16 to compare changes in water quality conditions in this lake to that of Kennady Lake, as Lake N16 is not expected to receive Project releases and may be used as a partial reference for future water quality studies.

I3.3.2 Regional Study Area

Water and sediment samples were collected from lakes in the RSA during different field programs (Figure I3.3-3). Historical INAC data collected in 1993, 1994, and 1999, and data collected for the baseline assessment of Snap Lake (1998 to 2001 in De Beers 2002) were gathered during open water and under-ice conditions for lakes throughout the RSA. Also included on the figure are the location of the winter access road baseline sampling program conducted in 2004.

The frequency and sample type(s) were not provided in Figure I3.3-3, rather, the shape of the symbol denotes whether historical data (triangle) were compiled or baseline winter access road data (circle) were collected for a given lake. The colour of the symbol indicates whether a sample was collected during open water (red) or under-ice (blue) conditions, and the number denotes the lake identifier.

Several waterbodies located near Snap Lake were sampled as part of the baseline assessment for the Snap Lake Mine (De Beers 2002). Due to the small scale of the map representing the Lockhart River basin, all data representing the Snap Lake baseline assessment were illustrated collectively for Snap Lake (Lake Identifier 10).

Water samples were collected between one and six times a year, from 1969 to 2004 (with the exception of 1982) from the Environment Canada water quality monitoring station, located at the outlet of Artillery Lake. This monitoring station is denoted in Figure I3.3-3 by a green circle. Some years, data were collected only for open water conditions, while other years only under-ice conditions were characterized. Most years have data for both open water and under-ice conditions.

I3.3.3 Winter Access Road

The winter access road baseline sampling locations were illustrated in Figure I2.3-1 to show their locations relative to the upper and lower Lockhart River watersheds.

112°0'0"W
110°0'0"W
108°0'0"W
106°0'0"W
65°0'0"N
64°0'0"N
63°0'0"N

N

NUNAVUT
NWT

Lac du Sauvage
Lac de Gras
Jolly Lake
MacKay Lake
Aylmer Lake
Clinton Colden Lake
Fletcher Lake
Walmsley Lake
Artillery Lake
Lockhart River
Lac Capot Blanc
Snap Lake Project
Gahcho Kué Project
Gordon Lake
Great Slave Lake (McLeod Bay)
(Christie Bay)

UW-01 UW-02 UW-03 UW-04 UW-05 UW-06 UW-07 UW-08 UW-09 UW-10 UW-11

LEGEND

- Gahcho Kué Project
- Snap Lake Mine
- Territorial Boundary
- Highway
- Existing Winter Road
- Tibbitt-to-Contwoyto Winter Road
- Winter Access Road
- Watercourse
- Waterbody
- Flow Direction
- Lower Lockhart River Watershed
- Upper Lockhart River Watershed

Sampling Location

- 1993, 1994, 1999 Open Water Survey
- 1999 Winter Survey
- 2004 Open Water Survey (Winter Road)
- Environment Canada Water Quality Monitoring Station

NOTES

Base data source: The Atlas of Canada

GAHCHO KUÉ PROJECT

Surface Water Quality Sampling Locations in the Regional Study Area

PROJECTION: Canadian Lambert Conf. Conic	DATUM: NAD83	
Scale: 1:1,250,000 (25 12.5 0 25 Kilometres)		
FILE No: B-SWQ-017-GIS		DATE: July 28, 2008
JOB NO: VE51664	REVISION NO: 4	
OFFICE: AMEC-CAL	DRAWN: NH / CHECK: ST	

De Beers Canada

Figure I3.3-3

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All samples were collected during open water conditions and are denoted in red. In-situ (spot) measurements are illustrated by a circle and grab water samples are denoted with a triangle, while the number in each symbol indicates the frequency of sampling.

The sampling program for the winter access road was completed in August 2004 and provided a snapshot of surface water quality during open water conditions. Before collecting water quality samples, waterbodies along the winter access road route were examined by helicopter to identify potential sampling site locations. Sampling site selection was based on morphological features of the waterbodies and presence of erosion or vegetation stress.

The program targeted small to mid-sized lakes because the potential for impacts was considered greater for comparatively small waterbodies. Eleven sample sites were selected to represent the surface water quality of waterbodies found along the winter access road route. Photographs and global positioning system coordinates were taken at all sampling sites (Appendix I.I).

I3.4 SAMPLING AND ANALYTICAL METHODS

Field sampling protocols were relatively consistent among all sampling programs, although slight variations were reported from one program to another. Variations were associated primarily with differences in seasonal conditions and the variation in size of the investigated waterbodies.

I3.4.1 Method of Organization

All data from the reports were classified as in-situ (spot or profile measurements), grab samples, or vertical profile sampling. Data were compiled into a database organized for water quality and sediments by location, type of sample (e.g., grab sample), parameter group, and report reference (Table I3.4-1, and Appendix I.II, Table I.II-1). Data were organized by location and parameter group for water quality (Tables I3.4-2 and I3.4-3, and Appendix I.II, Table I.II-1) and sediment (Table I3.4-4) in the RSA.

In-situ measurements, such as temperature, DO, specific conductivity, and pH, were collected using a calibrated handheld water quality multi-meter. Spot measurements were taken near the surface of a waterbody; while a vertical profile included several measurements that were taken at 0.5 to 1 m increments throughout the water column.

Table I3.4-1 Locations, Number of Sampling Periods, and Report References for Sampling in the Local Study Area and Winter Access Road

Coordinates[a]			No. of Sampling Periods[b]	2004 Lake Identifier[c]	Historic Lake Identifier[d]	In Situ (Spot or Profile)[e,f]							Grab sample[e]									Profile[e]				
													Water quality					Sediment Quality				Water Quality				
Easting	Northing	NAD				DO	Temperature	pH	Conductivity	Specific Conductivity	Total Dissolved Solids	Secchi Depth	Conventional Parameters	Major Ions	Organics	Total Metals	Dissolved Metals	Texture	Organics	Major Ions	Metals	Conventional Parameters	Major Ions	Organics	Total Metals	Dissolved Metals
Kennady Lake																										
588848	7037136	83	1	K1	Station A	17	17	17	-	17	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
588924	7036693	83	19	K1	North Basin, Station A	6, 8, 9, 13, 16, 17,20	6, 8, 9, 13, 16, 17,20	6	20	17, 20	-	6	-	-	-	-	-	-	-	-	-	4, 7, 8, 9, 13, 16, 20	4, 8, 9, 13, 16, 20	4, 8, 9, 13, 16, 20	4, 8, 9, 13, 16, 20	4, 8, 9, 13, 16, 20
589000	7036500	83	7	K1	North Basin	12	12	-	12	-	-	12	-	-	-	-	-	-	-	-	-	7, 12	7, 12	-	7, 12	7
589060	7036696	27	1	K1	North Basin	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-
589189	7037813	27	1	K1	North Basin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-
589203	7037034	83	10	K1	North Basin, Station A	6, 10, 17, 18	6, 10, 17, 18	6, 10, 17, 18	6, 10, 18	17, 18	17, 18	6, 10	10	6, 10	-	10	-	1s	1s	1s	1s	2, 6, 18	2, 6, 18	6, 18	2, 6, 18	2, 18
589330	7037446	83	4	K1	North Basin, Station A	17	17	-	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-
589710	7038671	83	2	K1	K1 Outlet, TK-32	5,18	5,18	18	5,18	5	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-
589350	7036159	83	4	K2	Station D	16, 17	16, 17	17	-	17	17	-	-	-	-	-	-	-	-	-	-	16	16	16	16	16
589670	7036125	83	3	K2	Station B Station D,	17, 18	17, 18	17, 18	-	17, 18	17, 18	-	-	-	-	-	-	1s	1s	1s	1s	18	18	18	18	18
589946	7036451	83	1	K2	Station D	17	17	-	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
588763	7034782	27	3	K3	Station E	16	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	16	16	16	16
588977	7035291	83	11	K3	South Basin, Station B, Station E, West Basin	10, 12, 17	2, 7, 10, 12, 17	7, 10	7, 10, 12, 17	-	-	10, 12	10	10	-	10	-	-	-	-	-	2, 7, 12	2, 7, 12	-	2, 7, 12	2, 7
589000	7034920	27	1	K3	South Basin	7	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
589000	7035000	83	4	K3	South Basin	7, 12	7, 12	7	7, 12	-	-	12	-	-	-	-	-	-	-	-	-	7, 12	7, 12	-	7, 12	7
589150	7035750	83	1	K3	South Basin	-	7	7	7	-	-	-	-	-	-	-	-	-	-	-	-	7	7	-	7	-
589183	7034746	27	1	K3	South Basin	6	6	6	6	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-
589185	7035064	27	1	K3	South Basin	6	6	6	6	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-
589203	7035423	83	23	K3	South Basin, Station B	2, 4, 6, 7, 8, 9, 13, 16, 17, 18, 20	4, 6, 7, 8, 9, 13, 16, 17, 18, 20	6, 17, 18	6, 20	17, 18, 20	17, 18	6, 7	-	-	-	-	-	1s, 2s	1s, 2s	1s, 2s	1s, 2s	4, 6, 7, 8, 9, 13, 16, 18, 20	4, 6, 7, 8, 9, 13, 16, 18, 20	6, 8, 9, 13, 16, 18, 20	4, 6, 7, 8, 9, 13, 16, 18, 20	4, 3, 7, 8, 9, 13, 16, 18, 20
589205	7034985	27	3	K3	South Basin	7	7	7	7	-	-	-	-	-	-	-	-	-	-	-	-	7	7	-	7	-
589284	7034261	27	3	K3	South Basin	-	7	7	7	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
590115	7034989	83	4	K4	Station E	17, 18	17, 18	17, 18	-	17, 18	17, 18	-	-	-	-	-	-	1s	1s	1s	1s	18	18	18	18	18
590237	7035181	83	1	K4	Station E	17	17	-	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
590244	7034946	83	4	K4	Station E, Station F	16, 17	16, 17	17	-	17	17	-	-	-	-	-	-	-	-	-	-	16	16	16	16	16
591869	7035613	83	6	K5	East Basin, Station C	6, 10, 17, 18	6, 10, 17, 18	6, 10, 17, 18	6, 10	17, 18	17, 18	6, 10	10	10	-	10	-	1s	1s	1s	1s	6, 18	6, 18	6, 18	6, 18	6, 18
592333	7035821	27	18	K5	East Basin, Station C	7, 8, 9, 13, 16, 20	7, 8, 9, 13, 16, 20	7, 20	7, 20	20	20	7						-	-	-	-	7, 8, 9, 13, 16, 20	8, 9, 13, 16, 20	8, 9, 13, 16, 20	7, 8, 9, 13, 16, 20	8, 9, 13, 16, 20
593000	7036500	83	5	K5	East Basin	7	7	7	7	-	7	-	-	-	-	-	-	-	-	-	-	7	7	-	7	7
593200	7036600	83	6	K5	East Basin	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	7	7	-	2, 7	2
593200	7036200	83	1	K5	East Basin	4	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	-	4	-
593268	7036791	27	7	K5	East Basin	7	7	7	7	-	-	-	7	7	-	7	7	-	-	-	-	7	-	-	-	-
593321	7037324	83	1	K5	Station C	17	17	-	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lakes in the Kennady Lake Watershed																										
590255	7037842	83	3	A1	A1 Outlet, TK-33	5, 18	5, 18	18	5, 18	5, 18	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-
590462	7037556	83	2	A1	A1 Lake, L4 Lake	11, 18	11, 18	11	11	11, 18	-	11, 18	11	11	-	11	-	-	-	-	-	-	-	-	-	-

Table I3.4-1 Locations, Number of Sampling Periods, and Report References for Sampling in the Local Study Area and Winter Access Road (continued)

Coordinates[a]			No. of Sampling Periods[b]	2004 Lake Identifier[c]	Historic Lake Identifier[d]	In Situ (Spot or Profile)[e,f]							Grab sample[e]									Profile[e]				
													Water quality					Sediment Quality				Water Quality				
Easting	Northing	NAD				DO	Temperature	pH	Conductivity	Specific Conductivity	Total Dissolved Solids	Secchi Depth	Conventional Parameters	Major Ions	Organics	Total Metals	Dissolved Metals	Texture	Organics	Major Ions	Metals	Conventional Parameters	Major Ions	Organics	Total Metals	Dissolved Metals
590500	7038100	83	1	A2	L5 Lake	11	11	11	11	-	-	11	11	11	-	11	-	-	-	-	-	-	-	-	-	-
590792	7038378	83	4	A3	A3 Outlet, TK-41	5, 17, 18	5, 17, 18	18	5, 15	5, 17, 18	18	17	18	18	18	18	18	-	-	-	-	-	-	-	-	-
591071	7038680	83	2	A3	A3 Lake, TK-41	5, 18, 20	5, 18, 20	20	5, 20	5, 18, 20	-	18	20	20	20	20	20	-	-	-	-	-	-	-	-	-
591350	7037300	83	1	A9	L13 Lake	12	12	12	12	-	-	-	12	12	-	12	-	-	-	-	-	-	-	-	-	-
588824	7038505	83	3	B1	B1 Outlet, TK-30	5, 18, 20	5, 18, 20	18, 20	5, 18, 20	5, 18, 20	18, 20	-	18, 20	18, 20	18, 20	18, 20	18, 20	-	-	-	-	-	-	-	-	-
587828	7037996	83	1	B2	B2 Lake	17	17	17	-	17	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-
588500	7037700	83	1	C1	TK-29	5	5	-	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
587848	7036241	83	4	D1	D1 Outlet, L21 Lake, TK-28	5, 12, 18	5, 12, 18	12, 18	5, 12, 18	5, 18	18	-	18	12, 18	18	12, 18	18	-	-	-	-	-	-	-	-	-
587364	7036619	83	1	D2	D2 Lake	17	17	17	-	17	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-
586590	7037088	83	1	D3	D3 Lake	17, 20	17, 20	17, 20	20	17, 20	-	17	20	20	20	20	20	-	-	-	-	-	-	-	-	-
585832	7037565	83	2	D7	D7 Outlet	18	18	18	18	18	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-
585934	7038009	83	1	D7	D7 Lake	17	17	17	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
586650	7035339	83	1	E1	E1 Lake	17	17	17	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
586853	7034976	83	3	E1	E1 Outlet, TK-22	5, 18	5, 18	18	5, 18	5, 18	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-
587108	7035449	83	4	E2	E2 Lake, L17 Lake	12, 17, 18	12, 17, 18	12, 17, 18	12, 18	17, 18	18	-	12, 18	12, 18	18	12, 18	18	-	-	-	-	-	-	-	-	-
587572	7035761	83	1	E3	E3 Outlet	18	18	18	18	18	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-
587674	7035926	83	2	E3	E3 Lake, L18 Lake	12, 18	12, 18	12, 18	12, 18	-	18	-	18	12, 18	18	12, 18	18	-	-	-	-	-	-	-	-	-
587000	7035888	83	3	E4	E4 Lake, L19 Lake	12, 18	12, 18	12, 18	12, 18	18	-	-	12, 18	12, 18	18	12, 18	18	-	-	-	-	-	-	-	-	-
588575	7034685	83	1	F1	TK-50	5	5	-	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
592478	7034778	83	2	G1	G1 Outlet	18	18	18	18	18	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-
592786	7034416	83	1	G2	G2 Lake	18	18	18	-	18	-	-	18	-	-	-	-	-	-	-	-	-	-	-	-	-
591754	7036060	83	2	I1	I1 Lake, L1 Lake	11, 17	11, 17	11	11	17	-	11	11	11	-	11	-	-	-	-	-	-	-	-	-	-
591798	7035892	83	2	I1	I1 Outlet	18	18	18	18	-	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-
591497	7036337	83	1	I2	L8 Lake	11	11	11	11	-	-	11	11	11	-	11	-	-	-	-	-	-	-	-	-	-
591798	7035892	83	1	I2	I2 Outlet	18	18	18	18	18	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
592428	7036785	83	1	J1a	L2 Lake	11	11	11	11	-	-	11	11	11	-	11	-	-	-	-	-	-	-	-	-	-
592322	7037130	83	3	J1b	J1 Lake, L3 Lake, Station C-98	11, 17	11, 17	11	11	17	-	11, 17	2, 11	2, 11	-	2, 11	2	-	-	-	-	-	-	-	-	-
592190	7036522	83	1	J2	L11 Lake	11	11	11	11	-	-	11	11	11	-	11	-	-	-	-	-	-	-	-	-	-
593264	7038349	83	1	K5	K5 Outlet	18, 20	18, 20	18, 20	18, 20	18, 20	-	-	18, 20	18, 20	18, 20	18, 20	18, 20	-	-	-	-	-	-	-	-	-
589705	7038952	83	1	Ka	NT1 Lake	17	17	17	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
587915	7035270	83	1	Ka1	L16 Lake	12	12	12	12	-	-	-	12	12	-	12	-	-	-	-	-	-	-	-	-	-
587990	7035490	83	1	Ka1	TK-23	5	5	-	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
590700	7037080	83	1	Kb1	TK-2	5	5	-	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
591056	7036839	83	2	Kb2	Kb2 Lake, L6 Lake	11, 18	11, 18	11, 18	11	18	-	11	11	11	-	11	-	-	-	-	-	-	-	-	-	-
591352	7036822	83	2	Kb3	Kb3 Lake, L7 Lake	11, 18	11, 18	11, 18	11	18	-	11	11	11	-	11	-	-	-	-	-	-	-	-	-	-
590725	7036495	83	1	Kb4	TK-1	5	5	-	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table I3.4-1 Locations, Number of Sampling Periods, and Report References for Sampling in the Local Study Area and Winter Access Road (continued)

Coordinates[a]			No. of Sampling Periods[b]	2004 Lake Identifier[c]	Historic Lake Identifier[d]	In Situ (Spot or Profile)[e,f]							Grab sample[e]									Profile[e]				
													Water quality					Sediment Quality				Water Quality				
Easting	Northing	NAD				DO	Temperature	pH	Conductivity	Specific Conductivity	Total Dissolved Solids	Secchi Depth	Conventional Parameters	Major Ions	Organics	Total Metals	Dissolved Metals	Texture	Organics	Major Ions	Metals	Conventional Parameters	Major Ions	Organics	Total Metals	Dissolved Metals
590763	7036213	27	1	Kb4	L12 Lake	12	12	12	12	-	-	-	12	12	-	12	-	-	-	-	-	-	-	-	-	-
Lakes Downstream of Kennady Lake																										
594614	7039398	83	2	L1	L1 Outlet	18	18	18	18	18	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-
593023	7039055	83	1	L11	L Basin	-	-	-	-	-	-	-	-	7	-	7	-	-	-	-	-	-	-	-	-	-
592632	7038338	83	2	L14	L14 Lake	12, 18	12, 18	12, 18	12, 18	-	18	-	12, 18	12, 18	18	12, 18	18	-	-	-	-	-	-	-	-	-
592202	7038337	83	1	L15	L10 Lake	11	11	11	11	-	-	11	11	11	-	11	-	-	-	-	-	-	-	-	-	-
591944	7037795	83	1	L21	L9 Lake	11	11	11	11	-	-	11	11	11	-	11	-	-	-	-	-	-	-	-	-	-
592750	7038200	83	1	L4	L15 Lake	12	12	12	12	-	-	-	12	12	-	12	-	-	-	-	-	-	-	-	-	-
597168	7043023	27	3	M3	Station A	14, 19	14, 19	19	19	19	-	19	14	14	14	14	14	-	-	-	-	-	-	-	-	-
597690	7043710	27	3	M3	Station B	14	14	-	-	-	-	-	14	14	14	14	14	-	-	-	-	-	-	-	-	-
595844	7040529	27	3	M4	Station A	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	15	15	15	15
596250	7041000	83	1	M4	Station E	19	19	19	19	19	-	19	2	2	-	2	2	-	-	-	-	-	-	-	-	-
596600	7041500	83	1	M4a	Station F - 98	-	-	-	-	-	-	-	2	2	-	2	2	-	-	-	-	-	-	-	-	-
Lakes in the N Sub-Watershed																										
587400	7040200	83	1	N11	Station I - 98	-	-	-	-	-	-	-	2	2	-	2	2	-	-	-	-	-	-	-	-	-
588588	7039342	83	1	N12	N12 Lake	20	20	-	20	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
588933	7039028	83	1	N13	N13 Lake	20	20	-	20	20	-	-	20	20	20	20	20	-	-	-	-	-	-	-	-	-
585000	7036000	83	1	N14	Station K-98	20	20	-	20	20	-	-	2, 20	2, 20	20	20	2, 20	-	-	-	-	-	-	-	-	-
583672	7039749	83	3	N16	Control Lake	17,18, 20	17,18, 20	17,18, 20	20	17,18, 20	17,18	-	-	-	-	-	-	1s	1s	1s	1s	18	18	18	18	18
583681	7040135	27	1	N16	Station R1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	18	18	18	18
584128	7040602	83	1	N16	Control Lake	17	17	17	-	17	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
584750	7038000	83	1	N16	Station J-98	-	-	-	-	-	-	-	2	2	-	2	2	-	-	-	-	-	-	-	-	-
585161	7036087	83	1	N17	N17 Lake	20	20	-	20	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
591059	7044540	83	2	N2	LC Outlet, N2 Outlet	18, 20	18, 20	18, 20	18, 20	18, 20	18	-	18, 20	18, 20	18, 20	18, 20	18, 20	-	-	-	-	-	-	-	-	-
589519	7039610	83	1	N6a	N6a Lake	18, 20	18, 20	18	18, 20	18, 20	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-
589570	7039027	83	1	N7	N7Lake	18	18	18	18	-	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-
589025	7038485	83	1	N8	TK-31	5	5	-	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
590896	7039474	83	1	N9	N9 Lake	20	20	20	20	20	20	-	20	20	20	20	20	-	-	-	-	-	-	-	-	-
590888	7039409	83	1	N9	N9 Bay	20	20	20	20	20	-	-	20	20	20	20	20	-	-	-	-	-	-	-	-	-
Other Lakes in the Local Study Area																										
594266	7060748	83	1	Kirk Lake	Kirk Lake	20	20	20	20	20	-	-	20	20	20	20	20	2s	2s	2s	2s	-	-	-	-	-
594316	7060565	83	1	Kirk Lake	Kirk Lake Inlet	20	20	20	20	20	-	-	20	20	20	20	20	-	-	-	-	-	-	-	-	-
595678	7046086	83	1	L410	L410 Inlet SW	18, 19, 20	18, 19, 20	18, 19, 20	18, 19, 20	18, 19, 20	18	19	20	20	20	20	20	-	-	-	-	-	-	-	-	-
595711	7046004	83	3	L410	L410 Outlet, L410 Outlet SW	18, 20	18, 20	18, 20	18, 20	20	18, 20	-	18, 20	18, 20	18, 20	18, 20	18, 20	-	-	-	-	-	-	-	-	-
596298	7045483	83	1	L410	L410 Inlet SE	18, 20	18, 20	18, 20	18, 20	18, 20	18, 20	-	18, 20	18, 20	18, 20	18, 20	18, 20	-	-	-	-	-	-	-	-	-
596392	7050262	83	3	L410	410 Lake	17, 18, 20	17, 18, 20	17, 18	20	17, 18, 20	17, 18	-	-	-	-	-	-	1s	1s	1s	1s	18, 20	18, 20	18, 20	18, 20	18, 20
595036	7059757	83	1	P3	P3 Lake	20	20	20	20	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
595124	7059902	83	1	P3	P3 Outlet	20	20	20	20	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Winter Access Road																										
539036	7094223	83	1	UW-1	UW-1	18	18	18	18	18	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-
542938	7091377	83	1	UW-2	UW-2	18	18	18	18	18	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-

Table I3.4-1 Locations, Number of Sampling Periods, and Report References for Sampling in the Local Study Area and Winter Access Road (continued)

Coordinates[a]			No. of Sampling Periods[b]	2004 Lake Identifier[c]	Historic Lake Identifier[d]	In Situ (Spot or Profile)[e,f]							Grab sample[e]									Profile[e]				
													Water quality					Sediment Quality				Water Quality				
Easting	Northing	NAD				DO	Temperature	pH	Conductivity	Specific Conductivity	Total Dissolved Solids	Secchi Depth	Conventional Parameters	Major Ions	Organics	Total Metals	Dissolved Metals	Texture	Organics	Major Ions	Metals	Conventional Parameters	Major Ions	Organics	Total Metals	Dissolved Metals
544189	7087922	83	1	UW-3	UW-3	18	18	18	18	18	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-
550503	7086452	83	1	UW-4	UW-4	18	18	18	18	18	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-
551518	7063034	83	1	UW-6	UW-6	18	18	18	18	18	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-
553835	7071390	83	1	UW-5	UW-5	18	18	18	18	18	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-
566664	7065655	83	1	UW-7	UW-7	18	18	18	18	18	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-
577067	7060283	83	1	UW-8	UW-8	18	18	18	18	18	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-
582527	7048210	83	1	UW-9	UW-9	18	18	18	18	18	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-
585554	7044355	83	1	UW-10	UW-10	18	18	18	18	18	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-
588867	7039200	83	1	UW-11	UW-11	18	18	18	18	18	18	-	18	18	18	18	18	-	-	-	-	-	-	-	-	-

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14 EBA[i], 2004b. Faraday Lake Winter 2003 Water Quality Sampling Program, Project No. 0701-98-13487.048.
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18 AMEC[j], 2004b. Surface Water Quality Field Program. Unpublished Data.
19 AMEC[j], 2005a. Fisheries and Aquatic Resources Survey. Unpublished Data.
20 AMEC[j], 2005b. Surface Water Quality Field Program. Unpublished Data.

References - Sediment Quality

1s AMEC[j], 2004c. Sediment Quality Field Program. Unpublished Data.
2s AMEC[j], 2005c. Sediment Quality Field Program. Unpublished Data.

Notes

(a) The coordinate for the most recent sample at the given location is presented. Locations from previous reports were included if the samples were taken in the same area of the waterbody.
(b) The number of different dates the site was sampled. Unlike a sampling event, this does not take into account multiple samples taken on the same day at the same lake (i.e., multiple depths or field blanks).
(c) Names of lakes in Figures I2.1-2 and I2.1-3 are used to locate the different lakes within the LSA. n/a - No lake name provided on maps.
(d) Names used in the original reports. There can be more than one name for any given location.
(e) The numbers correspond to the report where specific water quality data on the given parameters was found.
(f) Two types of 'in-situ' measurements were combined into this section of the table. A spot sample is when one measurement is taken, while profile refers to a measurements taken at multiple depths during the same sampling event.
(g) The data from this report were not included in this table since the location of these data are unknown.
(h) Refers to Jacques Whitford Environment Limited.
(i) Refers to EBA Engineering Consultants Limited.
(j) Refers to AMEC Earth & Environmental Limited.

NAD = north American datum; DO = dissolved oxygen; - = not available.

Table I3.4-2 Summary of Water Quality Sampling Data for the Regional Study Area

	Sample Location	Sample Date	Station Identifier[a]	Latitude / Longitude	Parameter group				
					Conventional Parameters	Major Ions	Nutrients	Organics	Total Metals
Upper Lockhart Watershed	**Under-Ice Conditions**								
	Courageous Lake	11-Mar-99	43	64.13 / -111.27	✓	✓	✓	-	✓
	Lac Capot Blanc	08-Mar-99	44	63.62 / -110.60	✓	✓	✓	-	✓
	MacKay Lake at King Outflow	11-Mar-99	45	63.84 / -110.72	✓	✓	✓	-	✓
	MacKay Lake at Snake River Outflow	08-Mar-99	46	64.03 / -110.41	✓	✓	✓	-	✓
	MacKay Lake Outflow	10-Mar-99	47	64.18 / -109.91	✓	✓	✓	-	✓
	Munn Lake	08-Mar-99	48	63.72 / -109.82	✓	✓	✓	-	✓
	Undine Lake	11-Mar-99	49	64.08 / -111.65	✓	✓	✓	-	✓
	Open Water Conditions								
	Back Lake	23-Jul-93	1	63.75 / -109.44	✓	✓	✓	-	✓
	MacKay Lake Inflow	06-Aug-99	39	63.88 / -110.41	✓	✓	✓	✓	✓
	MacKay Lake	25-Jul-93	2	63.86 / -110.6	✓	✓	✓	-	✓
	MacKay Outflow	06-Aug-99	40	64.18 / -109.90	✓	✓	✓	✓	✓
	Camsell Lake	06-Aug-99	37	63.71 / -110.96	✓	✓	✓	✓	✓
	Courageous Lake	24-Jul-93	3	64.24 / -111.46	✓	✓	✓	-	✓
	Courageous Lake	24-Jul-93	4	64.13 / -111.28	✓	✓	✓	-	✓
	Courageous Lake	06-Aug-99	38	64.23 / -111.46	✓	✓	✓	✓	✓
	Jolly Lake	18-Jul-94	5	64.14 / -111.93	✓	✓	✓	-	✓
	Matthews Lake	24-Jul-93	6	64.06 / -111.23	✓	✓	✓	-	✓
	MacKay Lake	24-Jul-93	7	64.03 / -110.39	✓	✓	✓	-	✓
	MacKay Lake	20-Jul-93	8	63.92 / -111.34	✓	✓	✓	-	✓
	Margaret Lake	12-Jul-94	9	63.70 / -109.74	✓	✓	✓	-	✓
	Seahorse Lake	06-Aug-99	41	64.30 / -111.27	✓	✓	✓	✓	✓
	Snap Lake	21-Jul-93	10	63.60 / -110.81	✓	✓	✓	-	✓
	Starfish Lake	06-Aug-99	42	64.31 / -111.59	✓	✓	✓	✓	✓
	Undine Lake Near Outflow	24-Jul-93	11	64.07 / -111.63	✓	✓	✓	-	✓
	Unnamed Lake	21-Jul-93	12	63.69 / -110.51	✓	✓	✓	-	✓
	Unnamed Lake	20-Jul-93	13	63.86 / -111.87	✓	✓	✓	-	✓
	Unnamed Lake	24-Jul-93	14	64.10 / -110.81	✓	✓	✓	-	✓
	Warburton Bay	20-Jul-93	15	63.76 / -111.43	✓	✓	✓	-	✓
	Zyena Lake	23-Jul-93	16	63.89 / -109.69	✓	✓	✓	-	✓

Table I3.4-2 Summary of Water Quality Sampling Data for the Regional Study Area (continued)

Sample Location		Sample Date	Station Identifier[a]	Latitude / Longitude	Parameter group				
					Conventional Parameters	Major Ions	Nutrients	Organics	Total Metals
Lower Lockhart Watershed	**Under-Ice Conditions**								
	Afridi Lake	10-Mar-99	50	64.29 / -109.32	✓	✓	✓	-	✓
	Aylmer Lake	10-Mar-99	51	64.08 / -109.21	✓	✓	✓	-	✓
	Thonokeid Outflow	10-Mar-99	52	64.11 / -108.89	✓	✓	✓	-	✓
	Kirk Lake	10-Mar-99	53	63.67 / -109.13	✓	✓	✓	-	✓
	Ptarmigan Lake	10-Mar-99	55	63.55 / -107.52	✓	✓	✓	-	✓
	Thonokeid Narrows	10-Mar-99	56	64.04 / -107.79	✓	✓	✓	-	✓
	Open Water Conditions								
	Afridi Lake	25-Jul-93	17	64.37 / -109.25	✓	✓	✓	-	✓
	Afridi Lake	06-Aug-99	32	64.28 / -109.32	✓	✓	✓	✓	✓
	Aylmer Lake	25-Jul-93	18	64.39 / -108.47	✓	✓	✓	-	✓
	Aylmer Lake	25-Jul-93	19	64.17 / -108.12	✓	✓	✓	-	✓
	Aylmer Lake	25-Jul-93	20	64.10 / -108.93	✓	✓	✓	-	✓
	Aylmer Lake	06-Aug-99	33	64.11 / -108.89	✓	✓	✓	✓	✓
	Laverty Lake	12-Jul-94	21	63.95 / -108.66	✓	✓	✓	-	✓
	Taylor Lake	23-Jul-93	22	63.78 / -108.64	✓	✓	✓	-	✓
	Thonokeid Lake	06-Aug-99	34	64.41 / -109.64	✓	✓	✓	✓	✓
	Thonokeid Lake	06-Aug-99	35	64.47 / -109.85	✓	✓	✓	✓	✓
	Thonokeid Lake	06-Aug-99	36	64.30 / -109.55	✓	✓	✓	✓	✓
	Unnamed Lake	23-Jul-93	23	63.94 / -108.19	✓	✓	✓	-	✓
	Unnamed Lake	23-Jul-93	24	64.30 / -107.58	✓	✓	✓	-	✓
	Unnamed Lake	25-Jul-93	25	64.24 / -109.49	✓	✓	✓	-	✓
	Unnamed Lake	23-Jul-93	26	64.14 / -107.93	✓	✓	✓	-	✓
	Unnamed Lake	22-Jul-93	27	63.74 / -107.52	✓	✓	✓	-	✓
	Unnamed Lake	22-Jul-93	28	62.89 / -108.73	✓	✓	✓	-	✓
	Unnamed Lake	22-Jul-93	29	63.55 / -107.69	✓	✓	✓	-	✓
	Unnamed Lake	22-Jul-93	30	63.57 / -107.72	✓	✓	✓	-	✓
	Unnamed Lake	22-Jul-93	31	63.58 / -107.76	✓	✓	✓	-	✓

Source: Department of Indian and Northern Affairs Canada (INAC) (Puznicki 1996; Blais 2005, pers. comm.).

[a] Station identifier (indicating location of sample) is shown within sampling symbol in Figure I3.3-3.

- = not included in sample analysis; ✓ = included in sample analysis.

Table I3.4-3 Summary of Water Quality Sampling Data for the Lockhart River at the Outlet of Artillery Lake

Sample Date	Parameter Group					
	Conventional Parameters	Major Ions	Nutrients	Organics[a]	Total Metals	Dissolved Metals[b]
Under-Ice Conditions						
02-Feb-73	✓	✓	✓	-	-	-
11-Oct-74	✓	✓	✓	✓	✓	-
21-Apr-76	✓	✓	✓	-	✓	-
04-Apr-77	✓	✓	✓	-	✓	-
25-May-77	✓	✓	✓	-	-	-
04-Feb-80	✓	✓	✓	✓	✓	✓
08-May-80	✓	✓	✓	✓	✓	✓
21-Mar-84	✓	✓	✓	✓	✓	✓
16-Jan-85	✓	✓	✓	✓	✓	✓
11-Mar-85	✓	✓	✓	✓	✓	✓
22-May-85	✓	✓	✓	✓	✓	✓
18-Dec-85	✓	✓	✓	✓	✓	✓
29-Jan-86	✓	✓	✓	✓	✓	✓
14-May-86	✓	✓	✓	✓	✓	✓
12-Feb-87	✓	✓	✓	✓	✓	✓
20-May-87	✓	✓	✓	✓	✓	✓
15-Jan-88	✓	✓	✓	✓	✓	✓
12-May-88	✓	✓	✓	✓	✓	✓
02-Mar-89	✓	✓	✓	✓	✓	✓
14-May-89	✓	✓	✓	✓	✓	✓
05-Sep-89	✓	✓	✓	✓	✓	✓
30-Jan-91	✓	✓	✓	✓	✓	✓
11-Feb-92	✓	✓	✓	✓	✓	✓
04-May-92	✓	✓	✓	✓	✓	✓
04-Mar-93	✓	✓	✓	✓	✓	✓
21-Jan-94	✓	✓	✓	✓	✓	✓
31-Jan-94	✓	✓	✓	✓	✓	✓
15-Nov-94	✓	✓	✓	✓	✓	✓
05-May-95	✓	✓	✓	✓	✓	✓
03-Feb-96	✓	✓	✓	✓	✓	✓
10-Feb-98	✓	✓	✓	✓	✓	✓
04-Feb-99	✓	✓	-	✓	✓	✓
17-Jan-00	✓	✓	✓	✓	✓	✓
10-Apr-00	✓	✓	✓	✓	✓	✓
11-Jan-02	✓	✓	-	-	✓	✓

Table I3.4-3 Summary of Water Quality Sampling Data for the Lockhart River at the Outlet of Artillery Lake (continued)

Sample Date	Parameter Group					
	Conventional Parameters	Major Ions	Nutrients	Organics[a]	Total Metals	Dissolved Metals[b]
11-Feb-03	✓	✓	✓	✓	✓	✓
07-May-03	✓	✓	✓	✓	✓	-
07-May-04	✓	✓	-	-	✓	-
Open Water Conditions						
12-Jun-69	✓	✓	✓	-	✓	-
18-Jul-69	✓	✓	✓	-	✓	-
16-Jul-70	✓	✓	✓	-	✓	-
06-Oct-70	✓	✓	✓	-	✓	-
13-Aug-71	✓	✓	✓	✓	✓	-
26-Jun-72	✓	✓	✓	✓	✓	-
20-Sep-72	✓	✓	✓	✓	✓	-
31-May-73	✓	✓	✓	✓	✓	-
11-Jul-75	✓	✓	✓	-	✓	-
22-Jul-76	✓	✓	✓	-	✓	-
30-Sep-76	✓	✓	✓	-	✓	-
18-Aug-77	✓	✓	✓	✓	✓	-
29-Sep-77	✓	✓	✓	✓	✓	-
05-Sep-78	✓	✓	✓	✓	✓	✓
27-Jun-79	✓	✓	✓	✓	✓	✓
08-Aug-79	✓	✓	✓	✓	✓	✓
19-Jun-80	✓	✓	✓	✓	✓	✓
30-Jul-80	✓	✓	✓	✓	✓	✓
16-Sep-80	✓	✓	✓	✓	✓	✓
24-Jun-81	✓	✓	✓	✓	✓	✓
22-Jul-81	✓	✓	✓	✓	✓	✓
05-Jul-84	✓	✓	✓	✓	✓	✓
26-Sep-84	✓	✓	✓	✓	✓	✓
25-Jun-85	✓	✓	✓	✓	✓	✓
09-Jul-86	✓	✓	✓	✓	✓	✓
13-Aug-86	✓	✓	✓	✓	✓	✓
28-Jul-88	✓	✓	✓	✓	✓	✓
07-Sep-88	✓	✓	✓	✓	✓	✓
07-Jun-89	✓	✓	✓	✓	✓	✓
19-Jul-89	✓	✓	✓	✓	✓	✓
30-Aug-89	✓	✓	✓	✓	✓	✓
29-Jul-91	✓	✓	✓	✓	✓	✓

Table I3.4-3 Summary of Water Quality Sampling Data for the Lockhart River at the Outlet of Artillery Lake (continued)

Sample Date	Parameter Group					
	Conventional Parameters	Major Ions	Nutrients	Organics[a]	Total Metals	Dissolved Metals[b]
28-Aug-91	✓	✓	✓	✓	✓	✓
08-Oct-92	✓	✓	✓	✓	✓	✓
13-Jul-93	✓	✓	✓	✓	✓	✓
21-Aug-93	✓	-	✓	✓	✓	✓
06-Jun-94	✓	✓	✓	✓	✓	✓
26-Aug-94	✓	✓	✓	✓	✓	✓
09-Jun-95	✓	✓	✓	✓	✓	✓
19-Sep-95	✓	✓	✓	✓	✓	✓
18-Jun-96	✓	✓	✓	✓	✓	✓
16-Sep-96	✓	✓	✓	✓	✓	✓
28-Aug-97	✓	✓	✓	-	-	-
29-Aug-98	✓	-	✓	-	-	-
17-Jun-00	✓	✓	✓	✓	✓	✓
23-Aug-00	✓	✓	✓	✓	✓	✓
25-Aug-01	✓	✓	✓	✓	✓	✓
16-Aug-02	✓	✓	✓	✓	✓	✓
10-Jun-03	✓	✓	✓	✓	✓	-
14-Aug-03	✓	✓	✓	✓	✓	-
15-Jun-04	✓	✓	-	-	✓	-
01-Sep-04	✓	-	-	-	-	-

Source: Environment Canada (Station ID NW07RD0001).

Notes: Latitude and longitude for monitoring station are 62.53.20.004 N, 108.28.18.984 W.

[a] Available data limited to total organic carbon or dissolved organic carbon.

[b] Available data limited to arsenic, boron, and strontium.

- = not included in sample analysis; ✓ = included in sample analysis.

Table I3.4-4 Summary of Sediment Quality Sampling Data for the Regional Study Area

Sample Location	Sample Date	Latitude / Longitude	Parameter group		
			Texture	Carbon Content	Total Metals
Upper Lockhart Watershed					
Afridi in middle	10-Mar-99	64.29 / -109.31	-	✓[a]	✓
Afridi in middle	04-Aug-99	64.28 / -109.31	✓	✓[a]	✓
Afridi Lake in North End	25-Jul-93	64.37 / -109.25	-	-	✓
Aylmer at Outram Outflow	10-Mar-99	64.07 / -109.2	-	✓[a]	✓
Aylmer at Thonokeid Outflow	10-Mar-99	64.1 / -108.89	-	✓[a]	✓

Table I3.4-4 Summary of Sediment Quality Sampling Data for the Regional Study Area (continued)

Sample Location	Sample Date	Latitude / Longitude	Parameter group		
			Texture	Carbon Content	Total Metals
Aylmer at Thonokeid Outflow	09-Aug-99	64.1 / -108.89	✓	✓ (a)	✓
Aylmer Lake at Northern Point	25-Jul-93	64.39 / -108.46	-	-	✓
Aylmer Lake in Rocknest Bay	25-Jul-93	64.16 / -108.11	-	-	✓
Aylmer Lake Near Thonokeid River Outflow	25-Jul-93	64.09 / -108.93	-	-	✓
Back Lake Near Main Inflow	22-Jul-93	63.74 / -109.43	-	-	✓
Barnston River	22-Mar-99	62.93 / -110.2	-	✓ (a)	✓
Barnston River	09-Aug-99	62.93 / -110.2	✓	✓ (a)	✓
Bedford Creek	22-Mar-99	62.91 / -109.68	-	✓ (a)	✓
Bedford Creek	09-Aug-99	62.91 / -109.68	✓	✓ (a)	✓
Between King and Lake of the Enemy Outflows on MacKay Lake	25-Jul-93	63.85 / -110.6	-	-	✓
Camsell Lake Outflow	04-Aug-99	63.71 / -110.95	✓	✓ (a)	✓
Courageous Lake at North End	24-Jul-93	64.24 / -111.46	-	-	✓
Courageous Lake at North End	04-Aug-99	64.23 / -111.46	✓	✓ (a)	✓
Courageous Lake near Matthews Outflow	24-Jul-93	64.13 / -111.28	-	-	✓
Courageous near Matthew's Lake Outflow	10-Mar-99	64.13 / -111.27	-	✓ (a)	✓
Hoarfrost River	22-Mar-99	62.84 / -109.3	-	✓ (a)	✓
Hoarfrost River	09-Aug-99	62.84 / -109.3	✓	✓ (a)	✓
Jolly Lake in the Middle	13-Jul-94	64.14 / -111.93	-	-	✓
Unnamed Lake North Lac Cabot Blanc	21-Jul-93	63.69 / -110.5	-	-	✓
Unnamed Lake North of Clinton-Colden Lake	22-Jul-93	64.29 / -107.57	-	-	✓
Unnamed Lake North of the Outrams	25-Jul-93	64.24 / -109.48	-	-	✓
Unnamed Lake West of Ptarmigan Lake	22-Jul-93	63.57 / -107.75	-	-	✓
Unnamed Lake West of Snake Lake	24-Jul-93	64.09 / -110.82	-	-	✓
Unnamed Lake West of Snake Lake	24-Jul-93	64.09 / -110.83	-	-	✓
Unnamed Lake West of Snake Lake	24-Jul-93	64.1 / -110.81	-	-	✓
Unnamed Lake West of Snake Lake	24-Jul-93	64.09 / -110.81	-	-	✓
Waldron River	22-Mar-99	62.93 / -110.56	-	✓ (a)	✓
Lower Lockhart Watershed					
Kirk Lake	10-Mar-99	63.67 / -109.13	-	✓ (a)	✓
Laverty Lake Near Middle	12-Jul-94	63.95 / -108.66	-	-	✓
Lockhart River at Great Slave	11-Mar-99	62.78 / -108.94	-	✓ (a)	✓
Matthews Lake at South End	24-Jul-93	64.06 / -111.22	-	-	✓
MacKay at Outflow of Lake of the Enemy	04-Aug-99	63.88 / -110.4	✓	✓ (a)	✓

Table I3.4-4 Summary of Sediment Quality Sampling Data for the Regional Study Area (continued)

Sample Location	Sample Date	Latitude / Longitude	Parameter group		
			Texture	Carbon Content	Total Metals
MacKay Lake at Snake River Outflow	24-Jul-93	64.03 / -110.38	-	-	✓
MacKay Lake at Snake River Outflow	08-Mar-99	64.03 / -110.41	-	✓ [(a)]	✓
MacKay Lake Main Outflow	10-Mar-99	64.18 / -109.9	-	✓ [(a)]	✓
MacKay Lake Outflow #1	04-Aug-99	64.17 / -109.9	✓	✓ [(a)]	✓
MacKay Lake Outflow #2	04-Aug-99	64.17 / -109.9	✓	✓ [(a)]	✓
Munn Lake near Outflow	08-Mar-99	63.71 / -109.82	-	✓ [(a)]	✓
Ptarmigan	10-Mar-99	63.54 / -107.51	-	✓ [(a)]	✓
Seahorse near Main Outflow	04-Aug-99	64.3 / -111.27	✓	✓ [(a)]	✓
Snap Lake	21-Jul-93	63.59 / -110.81	-	-	✓
Starfish near Main Outflow	04-Aug-99	64.31 / -111.58	✓	✓ [(a)]	✓
Taylor Lake Near Middle	22-Jul-93	63.78 / -108.64	-	-	✓
Thonokeid Lake Central	04-Aug-99	64.41 / -109.63	✓	✓ [(a)]	✓
Thonokeid Lake South Near Main Outflow	04-Aug-99	64.29 / -109.54	✓	✓ [(a)]	✓
Undine near Outflow	24-Jul-93	64.07 / -111.62	-	-	✓
Undine near Outflow	11-Mar-99	64.07 / -111.64	-	✓ [(a)]	✓
Unnamed Lake East of Laverty Lake	22-Jul-93	63.93 / -108.19	-	-	✓
Zyena Lake Near Inflow	22-Jul-93	63.89 / -109.69	-	-	✓
Lac Cabot Blanc near Inflow	08-Mar-99	63.62 / -110.59	-	✓ [(a)]	✓

Source: Department of Indian and Northern Affairs Canada (INAC) (Puznicki 1996; Blais 2005, pers. comm.).

[(a)] Organic carbon only.

- = not included in sample analysis; ✓ = included in sample analysis.

Grab water samples were generally collected from small, shallow waterbodies or larger waterbodies where the water was well mixed. These were discrete samples usually collected near the surface of a waterbody.

Several discrete water samples taken from different depths throughout the water column during the same field program were considered as profile samples. Profile samples were generally obtained in larger lakes, where individual samples were taken near the surface, near the bottom and in the middle of the water column if no stratification occurred. Profile water samples were also collected in cases where a thermocline, a change in temperature by more than 1°C per 1 m, was identified during a vertical profile measurement. In this case, additionally to surface and bottom layers, discrete water samples were collected above, within, and below the thermocline.

Sediment samples were collected as a grab sample, consisting of a single sample that was collected with a dredge.

I3.4.2 Field Procedures

I3.4.2.1 Local Study Area

Sample sites were accessed by boat, float plane, and/or helicopter in the summer and by ski plane, winter access road, and/or snowmobile in the winter. Coordinates for each site were recorded using a global positioning system unit. The coordinates for each collected in-situ measurement, water sample, and sediment sample are included in the water quality database presented in Appendix I.II, Tables I.II-1 and I.II-2.

Dissolved oxygen and temperature profiles were obtained during in-situ sampling, using YSI (models 50B, 55, 58, 85, 556, 600QS), WTW ProfiLine Oxi 197, or Hydrolab probes. During some field programs, other conventional parameters such as pH, conductivity, and TDS were measured using a Hydrolab, Lamotte DHA 3000, WTW pH330, or YSI (model 85, 556, or 600QS) probe. All portable meters were calibrated before measurement in the field. Table I3.4-5 provides a list of field equipment and methods used during the various baseline sampling programs.

Grab and vertical profile sampling were completed using Kemmerer, Van Dorn, or Niskin sampling bottles or Tygon tubing. Grab samples were taken with a clean Kemmerer bottle before being decanted into clean bottles provided by the laboratory. Vertical profile samples were usually obtained using a Van Dorn or Niskin Bottle; however, a Kemmerer bottle was used by EBA during the 2002, 2003, and 2004 winter water quality programs at Kennady Lake and the 2003 winter water quality program at lakes M3 and M4 (EBA 2003, 2004a,b,c,d).

Three field programs used Tygon tubing for water quality sampling (EBA 2002; Jacques Whitford 1998, 1999a). To collect water samples, Tygon tubing was lowered to the desired sample depth and the tube was purged for 1 to 5 minutes before a Mityvac® Nalgene hand pump was used to obtain a sample. For full description of the methods used during these field programs, refer to the original consultant reports (EBA 2002; Jacques Whitford 1998, 1999a).

Sample handling was relatively consistent throughout all programs. In general, sample bottles were rinsed three times with sample water before filling occurred. The samples were then stored in coolers with ice packs. The total and dissolved metal samples were preserved with ultra-pure nitric acid (HNO_3), rendering the pH of the water to less than 2 pH units. The dissolved metal sample was filtered in the field or immediately

upon return to the camp before preservation. Sample to be analyzed for nutrients and certain organics were preserved with sulphuric acid (H_2SO_4) and kept cool.

Table I3.4-5 Summary of the Equipment Used for Water Quality Sampling

Reference No.[(a)]	Author(s)[(b)]	In Situ Measurements	Grab/Vertical Profile Sampling Methods
1	Canamera	H_2O Hydrolab Probe	-
2	Jacques Whitford	YSI Model 50-B	Tygon Tube/Mityvac® Nalgene Hand-Pump
3	Lorax	-	-
4	Jacques Whitford	YSI Model 58	Tygon Tube/Mityvac® Nalgene Hand-Pump
5	Jacques Whitford/EBA	-	-
6	Jacques Whitford	YSI Model 85	Niskin/Van Dorn Bottles
7	Jacques Whitford[(c)]	-	-
8	EBA	YSI Model 55	Tygon Tube/Mityvac® Nalgene Hand-Pump
9	EBA	WTW ProfiLine Oxi 197	Kemmerer Bottle
10	Jacques Whitford	YSI Model 85 and WTW pH 330	Van Dorn Bottle
11	Jacques Whitford	YSI Model 85 and WTW pH 330	Van Dorn Bottle
12	Jacques Whitford	YSI Model 85 and DHA3000 pH	Van Dorn Bottle
13	EBA	WTW ProfiLine Oxi 197	Kemmerer Bottle
14	EBA	WTW ProfiLine Oxi 197	Kemmerer Bottle
15	EBA	WTW ProfiLine Oxi 197	Kemmerer Bottle
16	EBA	WTW ProfiLine Oxi 197	Kemmerer Bottle
17	AMEC	YSI Models 85 and 655 Multiprobes	-
18	AMEC	YSI 556 Multiprobe	Van Dorn Bottle
19	AMEC	YSI Models 85 and 655 Multiprobes	-
20	AMEC	YSI 650QS Sonde	Van Dorn Bottle

(a) See Table I3.2-1 for full reference.

(b) Abbreviated company name given only. See Table I3.2-1 for full reference.

(c) This is a compilation report; data from Lorax Environmental and Canamera Geological Limited are included.

- = The grab/vertical profile sampling methods were not defined in the original consultant report.

Sediment grab samples were obtained using an Ekman dredge and collected in a clean plastic pail (AMEC 2004c, 2005c). Non-powdered latex gloves were used to mix the sediment into a homogeneous sample that was transferred into clean glass jars provided by the laboratory. The samples were stored and shipped to the laboratory in coolers with frozen gel packs.

I3.4.2.2 Regional Study Area

No baseline field programs were designed to take samples in the RSA because historical data available for the Lockhart River watershed were deemed acceptable to characterize water quality. Samples collected in the RSA for the winter access road are discussed below in Section I3.4.2.3.

I3.4.2.3 Winter Access Road

In-situ measurements were recorded using a YSI 655 multi-probe (temperature, DO, pH, and specific conductivity). Grab water samples were collected in a plastic 4-litre (L) jug, which was rinsed three times with sample water before obtaining the sample. The jugs were transported back to the camp on the same day, where they were processed and stabilized (i.e., filtered, transferred into clean sample bottles, and preserved). The samples were stored, shipped, and analyzed similarly to other sampling programs conducted in the LSA.

I3.4.3 Sample Analysis

Samples were shipped to an accredited environmental laboratory for analysis. Water samples were generally analyzed for conventional parameters and major ions, nutrients, organics, and total and dissolved metals (Table I3.4-6). Sediment samples were generally analyzed for texture, carbon content, organics, and total metals (Table I3.4-6).

Table I3.4-6 Summary of Analyzed Parameters in the Local and Regional Study Areas

Sample Type	Parameter Group	Parameter[a]	
Surface Water	Field Parameters	pH conductivity dissolved oxygen (DO) DO, saturation	total dissolved solids (TDS) temperature turbidity
	Laboratory – Conventional Parameters and Major Ions	pH conductivity alkalinity total dissolved solids (TDS) (calculated or filterable) hardness total suspended solids (TSS) turbidity	bicarbonate (HCO_3) calcium (Ca) carbonate (CO_3) chloride (Cl) fluoride (F) magnesium (Mg) potassium (K) sodium (Na) sulphate (SO_4)
	Laboratory – Nutrients	ammonia (NH_3) nitrate (NO_3) nitrite (NO_2) nitrate+nitrite (NO_X)	total Kjeldahl nitrogen (TKN) total phosphorus dissolved phosphorus
	Laboratory – Organics[b]	chemical oxygen demand (COD) colour oil and grease phenol	total organic carbon (TOC) dissolved organic carbon (DOC) total petroleum hydrocarbons (TPH)
	Laboratory – Total and Dissolved Metals	aluminum (Al) antimony (Sb) arsenic (As) barium (Ba) beryllium (Be) bismuth (Bi) boron (B) cadmium (Cd) chromium (Cr) cobalt (Co) copper (Cu) iron (Fe) lead (Pb) lithium (Li) manganese (Mn)	mercury (Hg) molybdenum (Mo) nickel (Ni) selenium (Se) silica, Reactive silicon (Si) silver (Ag) strontium (Sr) thallium (Tl) tin (Sn) titanium (Ti) tungsten (W) uranium (U) vanadium (V) zinc (Zn)
Bottom Sediment	Laboratory – Texture, Carbon Content, Nutrients and Organics	texture: sand, silt, clay total carbon total organic carbon (TOC) total inorganic carbon (TIC) calcium carbonate	nitrate phosphate total petroleum hydrocarbon (TPH)
	Laboratory – Total Metals	aluminum (Al) antimony (Sb) arsenic (As) barium (Ba) beryllium (Be) bismuth (Bi) boron (B) cadmium (Cd) calcium (Ca) chromium (Cr) cobalt (Co) copper (Cu) iron (Fe) lead (Pb) lithium (Li) magnesium (Mg) manganese (Mn) mercury (Hg)	molybdenum (Mo) nickel (Ni) phosphorus (P) potassium (K) selenium (Se) silica, reactive silicon (Si) silver (Ag) sodium (Na) strontium (Sr) thallium (Tl) tin (Sn) titanium (Ti) tungsten (W) uranium (U) vanadium (V) zinc (Zn)

(a) Not all parameters were analyzed during every sampling program.

(b) Non-routine parameters, such as polycyclic aromatic hydrocarbons (PAH), were not analyzed because most surveyed organics were typically reported in very low concentrations.

I3.5 DATA ANALYSIS

Water quality had temporal variability (seasonal) and spatial heterogeneity both vertically in the water column (surface, intermediate, or bottom layer) and among waterbodies.

The analysis of the waterbodies in the LSA focused on detailed discussion of the following two main issues:

- analysis of seasonal vertical distribution of the leading physical limnology parameters, which indicate vertical mixing or stratification (temperature, DO, conductivity, and pH); and
- discussion and evaluation of water quality variability in surface, bottom, and/or intermediate layers of the lake or its basin (depending on the depth of certain lakes in the study area).

A comparative analysis of the water quality among smaller lakes was applied from the upstream lakes in the Kennady Lake watershed to the downstream receiving waterbodies in the LSA.

The same comparative principles were applied in the RSA to establish the present variability of water quality. The RSA was analyzed by dividing it into the upper and lower Lockhart River watersheds, relative to the inflow of water from the Project. The available water quality data from lakes in the RSA were analyzed separately for under-ice and open water conditions to establish the range of variability, as well as the median parameter concentrations under baseline conditions.

The establishment of temporal variability in the RSA is an important issue. Time series data were obtained and analyzed from the Environment Canada monitoring station at the outlet of Artillery Lake in the lower Lockhart River watershed. The time series trend analysis provided information on potential historical changes in water quality within the RSA over a 36-year period.

The data collected along the winter access road route was analyzed spatially during open water conditions to describe the differences or similarities in water quality between the different lakes along the route. The water quality data were summarized to establish the variability of parameter concentrations in lakes along the route.

I3.5.1 Quality Assurance/Quality Control

All field programs conducted for the Gahcho Kué Project after 1998 incorporated quality assurance/quality control procedures. Data collected before 1998 were considered potentially less reliable than more recent data. However, since the data collected before 1998 were within the parameter measurement range for other years, these data were included in the baseline assessment.

Procedures for quality assurance/quality control were used to ensure accuracy and reliability of the sampling and analysis procedures, and included the following techniques:

- Field blanks were used to detect sample contamination during the collection, shipping, and analysis of samples.
- Trip blanks were used to detect sample contamination during transport.
- Duplicate field samples were used to detect variability at a site and verify field-sampling methods.
- Duplicate laboratory samples were used to assess the reproducibility of the laboratory results (i.e., lab methodology and analyses). At least 10 percent (%) of the samples submitted to the laboratory were analyzed as duplicates.
- The laboratory used standard quality assurance/quality control procedures (method blanks, spike samples) as internal checks on the accuracy of their method and to confirm the absence of contamination in their method and equipment.

Upon review of the quality assurance/quality control procedures for the different inventory studies, the field and trip blanks were generally below the detection limit. The results of the quality assurance/quality control programs are available in the different consultant reports (see Section I3.2). Of the quality assurance/quality control sample results, only results for duplicate field samples were included in the analyzed data-sets.

I3.5.2 Detection Limits

The results for many parameters were reported at very low concentrations; in many instances, results were below the method detection limits (MDL) used in current analytical methods. The range of detection limits, the number of different detection limits measured for each parameter, and the number of observations below detection indicate that concentrations were generally measured near the lowest MDL concentration (Table I3.5-1). Because most of the Lockhart River watershed is located in an area with virtually no industrial activity, the most sensitive MDL was considered to be representative of the data series of each given parameter.

I3.5.3 Statistical Analysis

All data were classified into the following three categories, based on the proportion of values below their respective MDLs, and analyzed separately:

- data series where values below the MDL consisted of approximately one-third to one-quarter (or less) of the data series;
- data series where values below the MDL ranged from approximately one-third to two-thirds of the data series; and
- data series where values below the MDL comprised approximately two-thirds to three-quarters (or more) of the data series.

When the data series occurred in the first category, all values below the MDL were assigned a value of one-half of the most sensitive MDL and descriptive statistics (e.g., minimum, median, and maximum) were calculated. By using a value of half of the most sensitive MDL in this case, a representative statistical analysis of the natural conditions could be accomplished.

For data in the second category, descriptive statistics were calculated on values at or above the MDL only. If a value of half the most sensitive MDL was used in this case, the data series may have become skewed.

For data series in the final category, only minimum and maximum values were provided. By using a value of half the most sensitive MDL in this case, descriptive statistics may have provided a median below the most sensitive MDL.

Table I3.5-1 Summary of Detection Limits Found in Historical Records

Parameter	Units	Minimum Recorded Detection Limit	Maximum Recorded Detection Limit	Number of Recorded Detection Limits	Number of Records			Guidelines	
					Total	Below Detection Limits	Percentage (%) Below Detection Limits	Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
								CCME (2006)	Health Canada (2006)
Field Measured									
pH	pH Units	0.1	0.1	1	378	0	0	6.5 to 9.0	6.5 to 8.5 [(b1)]
Conductivity, Specific	µS/cm	1	1	1	515	0	0	-	-
Dissolved Oxygen	mg/L (ppm)	0.1	1.1	3	1351	0	0	6.5 to 9.5[(a1)]	-
Dissolved Oxygen, saturation	%	-	-	-	329	0	0	-	-
Temperature	°C	0.1	0.1	1	1423	0	0	-	-
Conventional Parameters and Major Ions									
pH	pH Units	0.01	0.1	2	338	0	0	6.5 to 9.0	6.5 to 8.5[(b1)]
Conductivity, Specific	µS/cm	0.001	2	4	346	0	0	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	0.2	0.2	1	10	0	0	-	-
Alkalinity, Total	mg/L (ppm)	0.3	5	4	429	49	11	-	-
Hardness, Total	mg/L (ppm)	0.05	6	5	398	92	23	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	2	20	3	229	69	30	-	≤500[(b1)]
Total Suspended Solids (TSS)	mg/L (ppm)	0.1	5	5	346	278	80	-	-
Turbidity	NTU	0.1	1	2	356	104	29	-	1[(b2)]
Calcium	mg/L (ppm)	0.05	1	3	281	21	7	-	-
Magnesium	mg/L (ppm)	0.01	1	4	281	86	31	-	-
Potassium	mg/L (ppm)	0.01	0.5	4	281	91	32	-	-
Sodium	mg/L (ppm)	0.5	1	2	281	94	33	-	≤200[(b1)]
Bicarbonate	mg/L (ppm)	1	5	2	287	24	8	-	-
Carbonate	mg/L (ppm)	1	5	2	287	287	100	-	-
Chloride	mg/L (ppm)	0.1	1	3	422	225	53	-	≤250[(b1)]
Fluoride	mg/L (ppm)	0.02	0.05	3	391	192	49	-	1.5[(b3)]
Sulphate	mg/L (ppm)	0.02	1	5	418	91	22	-	≤500[(b1)]
Nutrients									
Ammonia	mg/L (ppm)	0.005	0.1	3	409	190	46	7.0 to 48.3[(a2)]	-
Nitrate	mg/L (ppm)	0.001	0.2	7	431	281	65	-	45[(b4)]
Nitrite	mg/L (ppm)	0.001	0.3	7	354	278	79	0.06	3.2[(b4)]
Nitrate + Nitrite	mg/L (ppm)	0.006	0.1	2	165	69	42	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	0.001	0.2	3	79	36	46	-	-
Phosphate	mg/L (ppm)	0.3	5	4	28	14	50	-	-
Phosphorus, Total	mg/L (ppm)	0.001	1	5	341	120	35	-	-
Organics									
Oxygen Demand, Chemical (COD)	mg/L (ppm)	1	1	1	97	2	2	-	-
Colour	TCU	1	1	1	97	18	19	-	≤15[(b5)]
Oil and Grease	mg/L (ppm)	0.1	0.1	1	96	77	80	-	-
Phenol	mg/L (ppm)	0.002	0.002	1	96	81	84	0.004	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	0.5	1	2	150	3	2	-	-

Table I3.5-1 Summary of Detection Limits Found in Historical Records (continued)

Parameter	Units	Minimum Recorded Detection Limit	Maximum Recorded Detection Limit	Number of Recorded Detection Limits	Number of Records			Guidelines	
					Total	Below Detection Limits	Percentage (%) Below Detection Limits	Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
								CCME (2006)	Health Canada (2006)
Organic Carbon, Total (TOC)	mg/L (ppm)	0.2	1	3	269	4	1	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	0.1	0.1	1	96	75	78	-	-
Total Metals									
Aluminum (Al)	µg/L (ppb)	0.3	20	4	441	61	14	5 or 100[(a3)]	100[(b6)]
Antimony (Sb)	µg/L (ppb)	0.03	1	5	441	221	50	-	6[(b2)]
Arsenic (As)	µg/L (ppb)	0.03	1	4	441	146	33	5	10[(b2)]
Barium (Ba)	µg/L (ppb)	0.05	10	6	441	112	25	-	1,000[(b2)]
Beryllium (Be)	µg/L (ppb)	0.02	5	6	441	441	100	-	-
Bismuth (Bi)	µg/L (ppb)	0.03	100	5	332	319	96	-	-
Boron (B)	µg/L (ppb)	1	100	5	441	145	33	-	5,000[(b2)]
Cadmium (Cd)	µg/L (ppb)	0.02	0.2	4	442	429	97	0.02[(a4)]	5[(b1)]
Chromium (Cr)	µg/L (ppb)	0.05	15	8	441	341	77	1[(a5)]	50[(b1)]
Cobalt (Co)	µg/L (ppb)	0.1	1	4	441	367	83	-	-
Copper (Cu)	µg/L (ppb)	0.05	10	6	441	203	46	2[(a6)]	≤1,000[(b1)]
Iron (Fe)	µg/L (ppb)	5	50	3	433	125	29	300	≤300[(b1)]
Lead (Pb)	µg/L (ppb)	0.05	1	4	441	391	89	1[(a7)]	10
Lithium (Li)	µg/L (ppb)	0.1	20	4	324	176	54	-	-
Manganese (Mn)	µg/L (ppb)	0.03	5	6	433	389	90	-	≤50[(b1)]
Mercury (Hg)	µg/L (ppb)	0.01	500	5	413	402	97	0.004	1[(b2)]
Molybdenum (Mo)	µg/L (ppb)	0.04	5	7	441	427	97	73	-
Nickel (Ni)	µg/L (ppb)	0.05	8	8	441	91	21	25[(a8)]	-
Selenium (Se)	µg/L (ppb)	0.01	10	6	441	430	98	1	10[(b2)]
Silicon (Si)	µg/L (ppb)	10	100	3	407	12	3	-	-
Silver (Ag)	µg/L (ppb)	0.01	0.4	5	441	413	94	0.1	-
Strontium (Sr)	µg/L (ppb)	0.1	1	3	344	0	0	-	-
Thallium (Tl)	µg/L (ppb)	0.03	100	4	281	270	96	0.8	-
Tin (Sn)	µg/L (ppb)	0.1	300	4	332	164	49	-	-
Titanium (Ti)	µg/L (ppb)	0.1	100	5	184	159	86	-	-
Tungsten (W)	µg/L (ppb)	100	100	1	22	22	100	-	-
Uranium (U)	µg/L (ppb)	0.01	0.5	4	423	381	90	-	-
Vanadium (V)	µg/L (ppb)	0.05	30	6	441	373	85	-	-
Zinc (Zn)	µg/L (ppb)	0.8	8	6	441	220	50	30	≤5,000[(b1)]
Dissolved Metals									
Aluminum (Al)	µg/L (ppb)	0.3	10	4	369	28	8	-	-
Antimony (Sb)	µg/L (ppb)	0.03	0.1	3	369	191	52	-	-
Arsenic (As)	µg/L (ppb)	0.03	0.1	2	369	73	20	-	-
Barium (Ba)	µg/L (ppb)	0.05	10	3	369	98	27	-	-
Beryllium (Be)	µg/L (ppb)	0.1	5	4	369	358	97	-	-

Table I3.5-1 Summary of Detection Limits Found in Historical Records (continued)

Parameter	Units	Minimum Recorded Detection Limit	Maximum Recorded Detection Limit	Number of Recorded Detection Limits	Number of Records			Guidelines	
					Total	Below Detection Limits	Percentage (%) Below Detection Limits	Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
								CCME (2006)	Health Canada (2006)
Bismuth (Bi)	µg/L (ppb)	0.03	100	3	272	264	97	-	-
Boron (B)	µg/L (ppb)	1	100	3	369	118	32	-	-
Cadmium (Cd)	µg/L (ppb)	0.02	0.2	3	367	345	94	-	-
Chromium (Cr)	µg/L (ppb)	0.06	15	4	369	251	68	-	-
Cobalt (Co)	µg/L (ppb)	0.05	1	3	369	296	80	-	-
Copper (Cu)	µg/L (ppb)	0.05	10	5	369	129	35	-	-
Iron (Fe)	µg/L (ppb)	5	30	3	369	184	50	-	-
Lead (Pb)	µg/L (ppb)	0.05	1	2	369	349	95	-	-
Lithium (Li)	µg/L (ppb)	0.1	15	3	272	138	51	-	-
Manganese (Mn)	µg/L (ppb)	0.03	5	5	369	32	9	-	-
Mercury (Hg)	µg/L (ppb)	0.01	1	4	369	367	99	-	-
Molybdenum (Mo)	µg/L (ppb)	0.04	1	5	355	347	98	-	-
Nickel (Ni)	µg/L (ppb)	0.06	1	3	355	20	6	-	-
Selenium (Se)	µg/L (ppb)	0.1	2	4	355	349	98	-	-
Silicon (Si)	µg/L (ppb)	5	100	3	358	4	1	-	-
Silver (Ag)	µg/L (ppb)	0.01	0.1	4	355	343	97	-	-
Strontium (Sr)	µg/L (ppb)	0.1	0.1	1	258	0	0	-	-
Thallium (Tl)	µg/L (ppb)	0.02	100	4	207	187	90	-	-
Tin (Sn)	µg/L (ppb)	0.1	300	2	258	95	37	-	-
Titanium (Ti)	µg/L (ppb)	0.1	100	3	110	106	96	-	-
Tungsten (W)	µg/L (ppb)	0.01	100	2	20	20	100	-	-
Uranium (U)	µg/L (ppb)	0.01	0.5	3	354	328	93	-	
Vanadium (V)	µg/L (ppb)	0.05	30	4	355	348	98	-	-
Zinc (Zn)	µg/L (ppb)	0.8	5	4	354	70	20	-	-

Part 1. Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life (CCME 2006)
(a1) = Guideline is based on temperature of biota. In this case, the cold water biota guidelines for both early life and other life stages are shown.
(a2) = Guideline is dependent on temperature and pH. The value ranges between 6.98 mg/L (pH= 7.0, temperature= 15°C) and 48.3 mg/L (pH= 6.5, temperature= 5°C).
(a3) = Guideline = 5 µg/L at pH <6.5, $[Ca^{2+}]$ <4 mg/L and DOC <2 mg/L; Guideline = 100 µg/L at pH ≥ 6.5, $[Ca^{2+}]$ ≥4 mg/L and DOC ≥ 2 mg/L.
(a4) = Cadmium guideline = $10^{[0.86\ [\log(\text{hardness})]\ -\ 3.2]}$.
(a5) = Guideline is for hexavalent chromium (Cr_{VI}) because its guideline is more stringent than the trivalent chromium (Cr_{III}) guideline of 8.9 µg/L.
(a6) = Copper guideline is dependent on $[CaCO_3]$. Guideline shown is for when $[CaCO_3]$ is 0-120 mg/L. At 120-180 mg/L of $CaCO_3$, guideline = 3 µg/L; and at >180 mg/L $CaCO_3$, guideline = 4 µg/L.
(a7) = Lead guideline is dependent on $[CaCO_3]$. Guideline shown is for $CaCO_3$ at 0-60 mg/L. At 60-120 mg/L $CaCO_3$, guideline = 2 µg/L; at 120-180 mg/L $CaCO_3$, guideline = 4 µg/L; and at >180 mg/L $CaCO_3$, guideline = 7 µg/L.
(a8) = Nickel guideline is dependent on $[CaCO_3]$. Guideline shown is for $CaCO_3$ at 0-60 mg/L. At 60-120 mg/L $CaCO_3$, guideline = 65 µg/L; at 120-180 mg/L $CaCO_3$, guideline = 110 µg/L; and at >180 mg/L $CaCO_3$, guideline = 150 µg/L.

Part 2. Guidelines for Canadian Drinking Water Quality (CDWQ) (Health Canada 2006)
(b1) = Aesthetic Objective
(b2) = Maximum allowable concentration (MAC).
(b3) = It is recommended that the concentration be adjusted to 0.8 to 1.0 mg/L, which is the optimum range for the control of dental cavities.
(b4)) = Equivalent to 10 mg/L as nitrate-nitrogen. Where nitrate and nitrite are determined separately, levels of nitrite should not exceed 3.2 mg/L.
(b5) = True colour guideline - the mean absorbance of filtered water samples at 456 nm shall not be significantly higher than the seasonally adjusted expected value for the system under consideration.
(b6) = A health-based guideline for aluminum in drinking water has not been established. Operational guidance values of less than 100 µg/L total aluminum for conventional treatment plants and less than 200 µg/L total aluminum for other types of treatment systems are recommended.

µS/cm = microSiemens per centimetre; mg/L (ppm) = milligram per litre (parts per million); % = percent; °C = degrees Celsius; NTU = nephelometric turbidity unit; TCU = true colour unit; µg/L (ppb) = micrograms per litre (parts per billion); - = not available.

To avoid this, values at or above the MDL were excluded because they would occur sporadically. Grouping the data series and analyzing them in a different manner prevented values below the MDL from skewing the data series.

Because MDLs were variable among field programs, it was not reasonable to use a value of half the MDL in all cases.

I3.5.4 Comparison of Analytical Results with Guidelines

All results for the water sampling programs and historical data collection were compared to both the most recent Canadian Council of Ministers of the Environment's (CCME) Canadian Water Quality Guidelines (CWQG) for the protection of aquatic life and Health Canada's Guidelines for Canadian Drinking Water Quality (CDWQ) (CCME 2006; Health Canada 2006). The results of the sediment sampling programs were compared to the CCME Interim Sediment Quality Guidelines (ISQG) for the protection of aquatic life (CCME 2002).

Water and sediment quality guidelines are nationally endorsed indicators of environmental quality for the protection of aquatic ecosystems and designated water uses (CCME 2006; Health Canada 2006). The aquatic life guidelines are based on the most current, scientifically defensible toxicological data and are intended to be protective of all forms and life stages of aquatic life (CCME 2006). Exceedance of a guideline does not, therefore, automatically imply unacceptable or harmful conditions. Observed guideline exceedances are a result of naturally occurring conditions and are thus not of concern as local flora and fauna will be adapted to these natural conditions in the environment.

I4 RESULTS

I4.1 LOCAL STUDY AREA

Lakes in the LSA have varying morphometry. Some of them are very shallow, but others are relatively deep and the depth varies from about 1 m to up to 20 m. All lakes are covered by ice during winter (seven to eight months) and have a short period of open water conditions (four to five months), which includes spring, summer, and fall seasons.

In most lakes, the water had a notable pattern of circulation, characterized by vertical mixing, which is referred to as lake overturn or turnover. Spring warming and fall cooling were associated with this circulation pattern, which is driven by water density (at 4°C the density of fresh water is the highest). Vertical mixing in the summer was usually caused by wind-driven circulation.

In smaller or shallower lakes, vertical mixing generated uniform temperature distribution from the surface to the bottom during all seasons. Circulation also causes a uniformity of vertical distribution of other water quality parameters.

Vertical mixing in deeper lakes was sometimes incomplete, which resulted in stratification and the development of a three-layered vertical distribution of temperature and density (upper and bottom semi-homogeneous layers in the water-column with an intermediate layer that has a notable drop in the temperature). Similarly, stratification can occur in the other water quality parameters; however, this is not typical in oligotrophic lakes.

I4.1.1 Kennady Lake

I4.1.1.1 Physical Limnology and Vertical Structure

Due to differences in physical limnology and vertical profiles between open water and under-ice conditions, the physical parameters and vertical profiles for each condition are discussed separately. A compendium of vertical profiles for each basin is presented, while similarities and differences between basins are discussed for each physical parameter. Temperature and DO vertical profile data for all basins of Kennady Lake are described for different seasons between 1995 and 2005. Vertical profiles for specific conductivity were obtained in 2004 during under-ice conditions and in 2004 and 2005 for open water conditions. Field pH vertical profile data were collected periodically between 1995 and 2004 for open water conditions.

I4.1.1.1.1 Under-Ice Conditions

Temperature

During under-ice conditions, all basins in Kennady Lake were inversely stratified (Figure I4.1-1). Cooler waters approaching 0°C occurred immediately below the ice with temperatures gradually increasing with increased depth.

Maximum temperatures (around 4°C) occurred generally at depths greater than 6 m to the bottom of the water column. Shallower zones of less than 4 m within Kennady Lake had a water temperature measured around 2°C near the bottom. One temperature profile in the K3 basin measured a temperature near 3°C at a depth of 4 m.

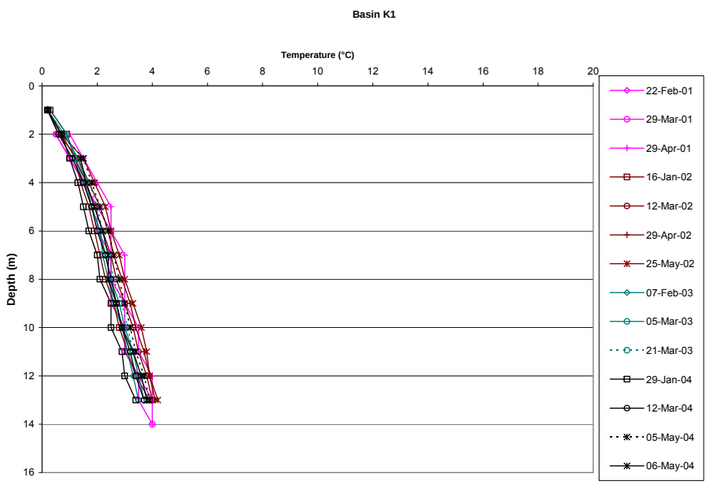
Dissolved Oxygen

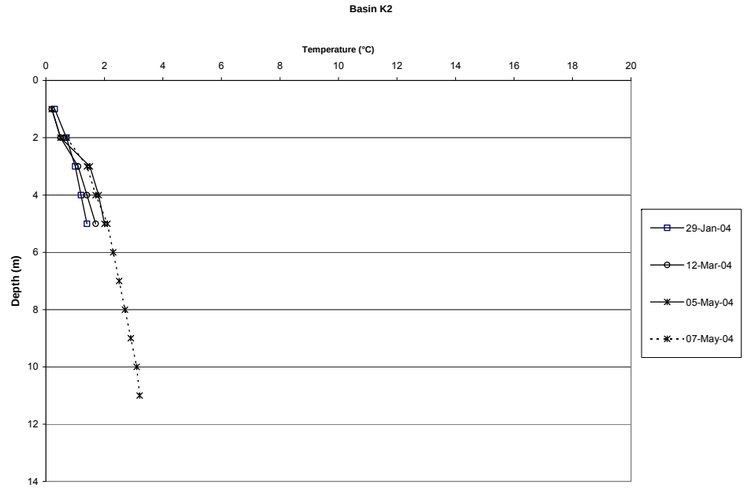
The DO profiles displayed similar patterns among years and between basins. High oxygenation was measured at the ice-water interface, decreasing with increasing depth.

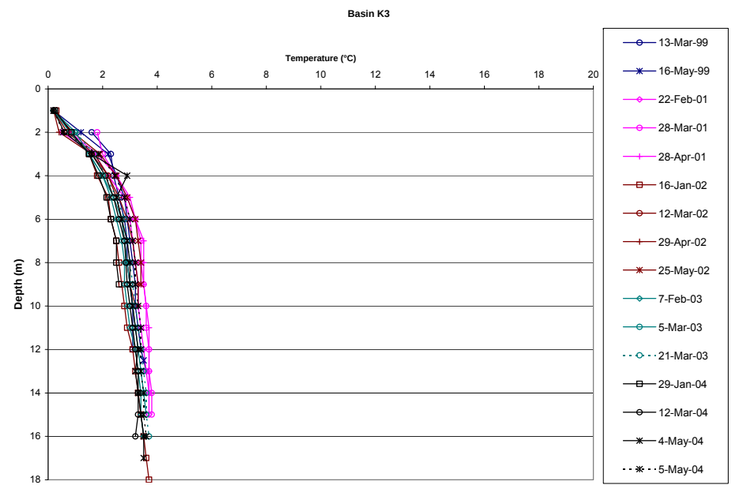
Concentrations of DO ranged from 13 to 22 mg/L in the upper 2 m of the water column and decreased rapidly with depth to near anoxia (i.e., where the concentration of DO was less than 2 mg/L) at depths greater than 12 m during late winter (April to May) (Figure I4.1-2). Relatively low variability (4 to 5 mg/L) was measured from year to year and throughout the season in the upper 2 to 3 m in most basins. The highest variability in the near surface layer (6 to 8 mg/L) was measured in K3 and K5 basins. Greater DO variability, with concentrations ranging up to 12 mg/L, was observed between vertical profile data in the lower (greater than 12 m) and intermediate (3 to 12 m) layers when compared to the near-surface layer.

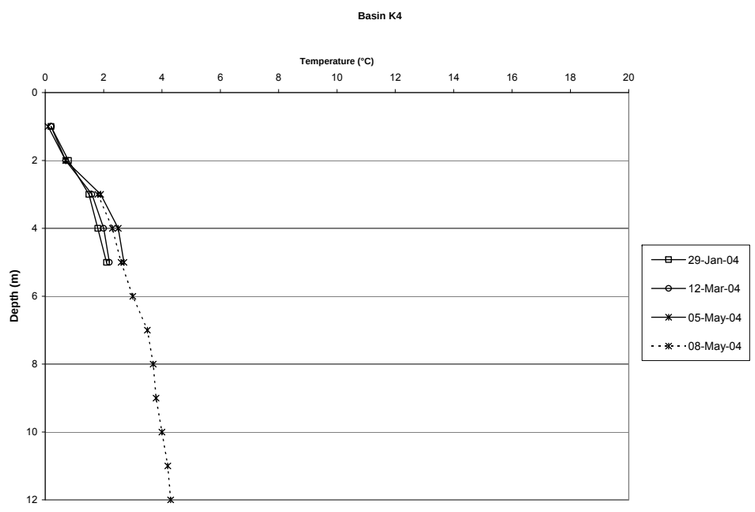
In general, DO concentrations at depths greater than 8 m in deeper basins and at depths below 4 to 6 m in shallow or basins were below the CWQG for the protection of cold-water aquatic life (9.5 mg/L for early life stages and 6.5 mg/L for other life stages). The DO concentrations in the near surface layers of all basins were greater than the lowest acceptable DO concentration of 9.5 mg/L for early life stages.

Figure I4.1-1 Under-Ice Profiles of Temperature for Kennady Lake, 1999 to 2004









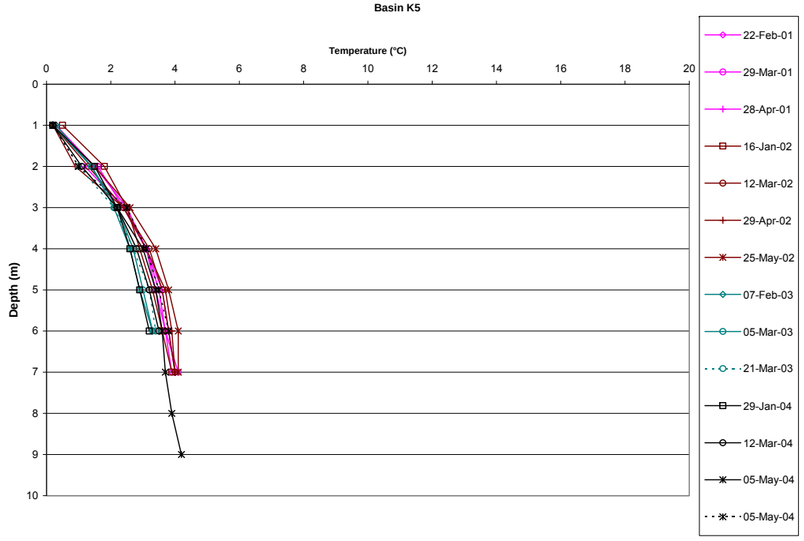
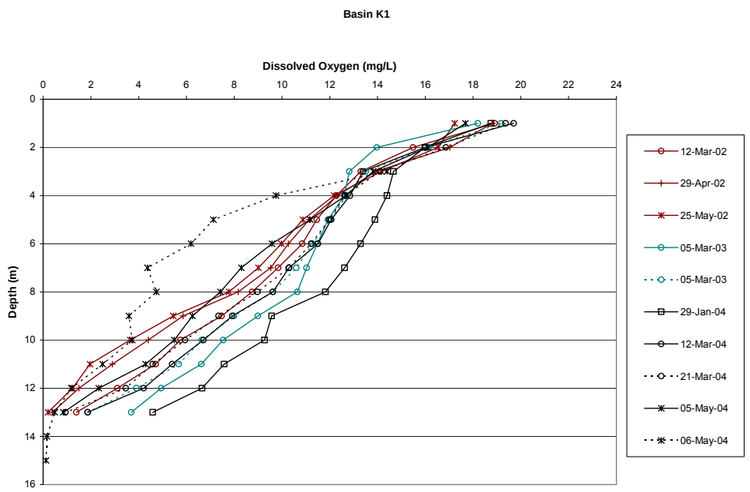
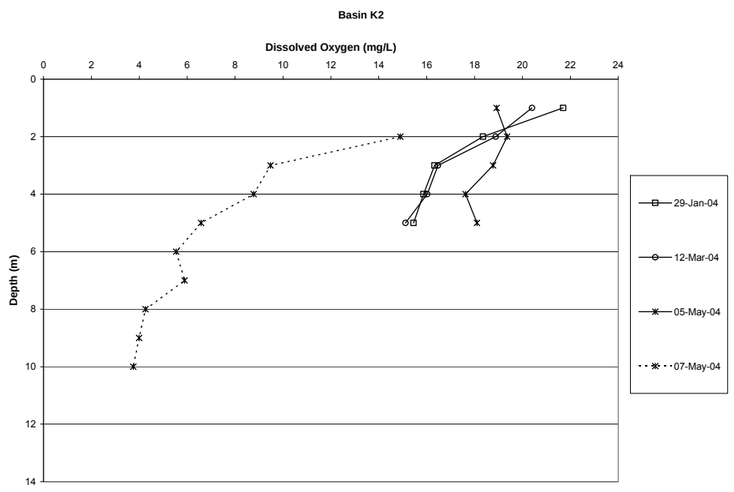
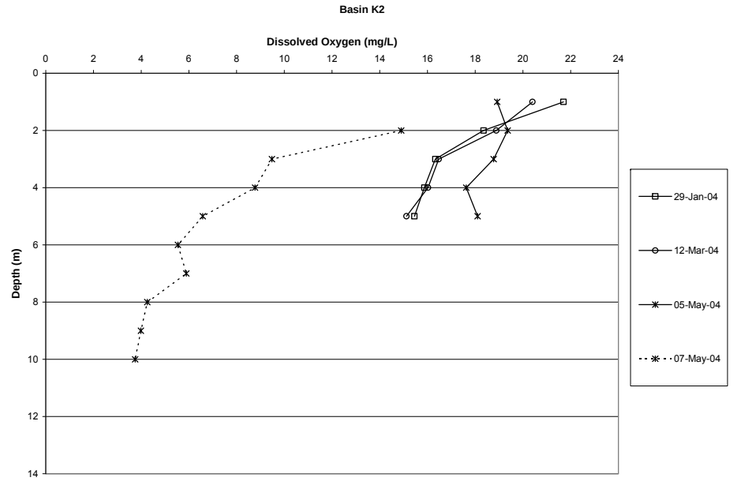
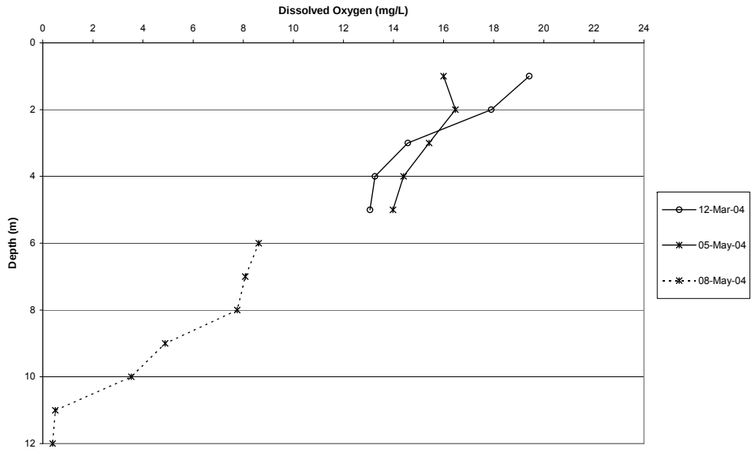


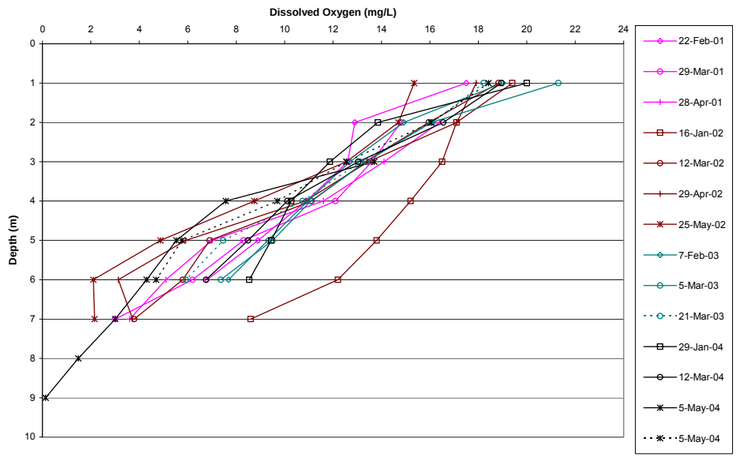
Figure I4.1-2 Under-Ice Profiles of Dissolved Oxygen for Kennady Lake, 1998 to 2004











Specific Conductivity

Measurements taken at different times indicated that Kennady Lake was very low in ionic concentrations. At the ice-water interface, specific conductivity for all basins ranged from 9 to 13 microSiemens per centimetre (µS/cm). Specific conductivity measured during under-ice conditions generally increased slightly with increasing depth in Kennady Lake (Figure I4.1-3). The specific conductivity in K2 basin did not vary with increasing depth, while slight increases to 20 µS/cm were measured with increasing depth in K1 and K5 basins.

Specific conductivity in K3 basin varied between 11 and 21 µS/cm throughout the water column up to a depth of 15 m. At depths greater than 15 m, specific conductivity increased from 21 to 36 µS/cm at the bottom.

In K4 basin, specific conductivity ranged between 11 and 15 µS/cm up to a depth of 9 m, increasing to 72 µS/cm near the bottom (12 m depth). The increase in specific conductivity in the near-bottom layer of K4 basin can be attributed to fine sediments suspended near the bottom.

pH

The pH data for under-ice conditions in Kennady Lake indicate that the water in the lake is moderately acidic. Spot measurements for pH were taken at 0.5 m depths twice during under-ice conditions in 1996 in the K3 and K5 basins (Appendix I.II, Table I.II-1).

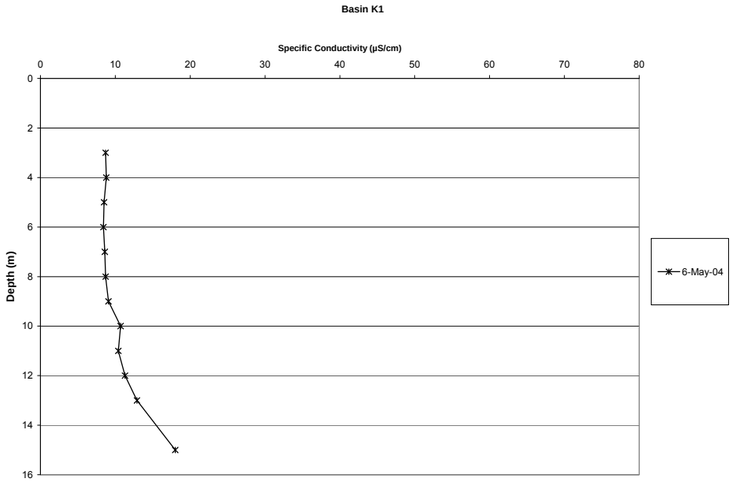
The pH of Kennady Lake was higher in the early winter (November), a value of 6.7 being measured in both basins, compared to late winter (April), where pH values ranged between 6.2 and 6.3. Late winter measurements were below the acceptable pH range of the CWQG (6.5 to 9.0).

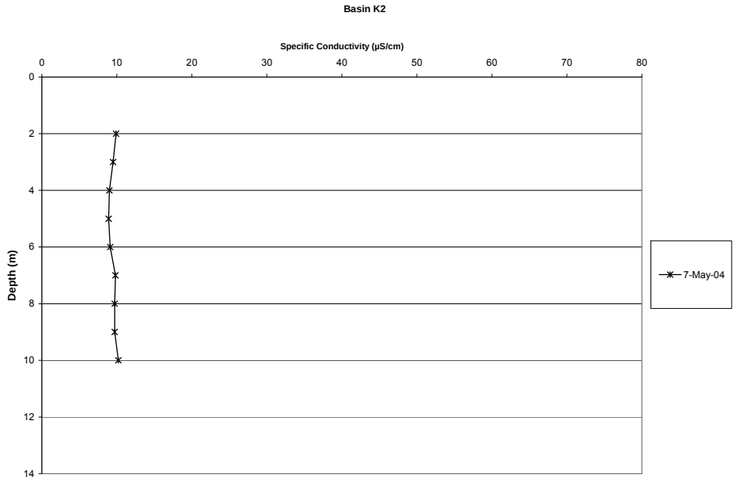
I4.1.1.1.2 Open Water Conditions

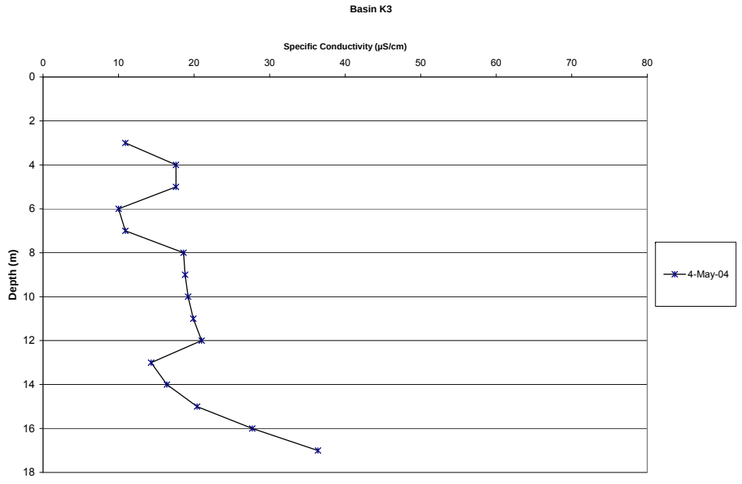
Temperature

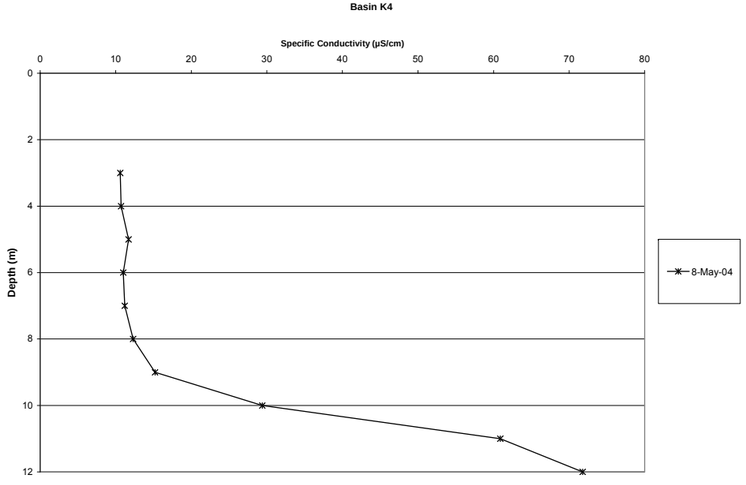
Temperature profiles were vertically homogeneous during most open water sampling events (Figure I4.1-4). This indicated that the water column in Kennady Lake was typically well mixed by temperature-related, density-driven overturn in spring and fall as well as wind-driven circulation during summer months.

Figure I4.1-3 Under Ice Profiles of Specific Conductivity for Kennady Lake, May 4 to 8, 2004









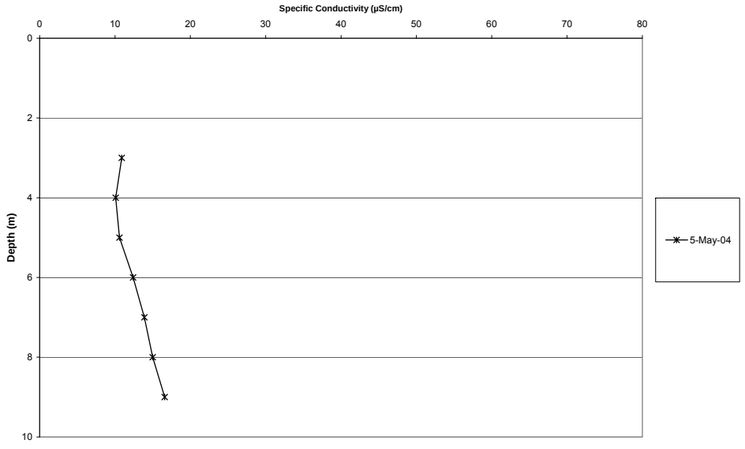
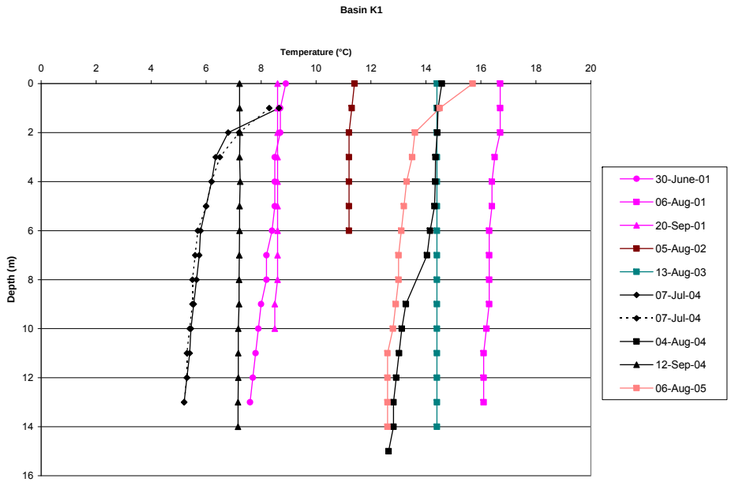
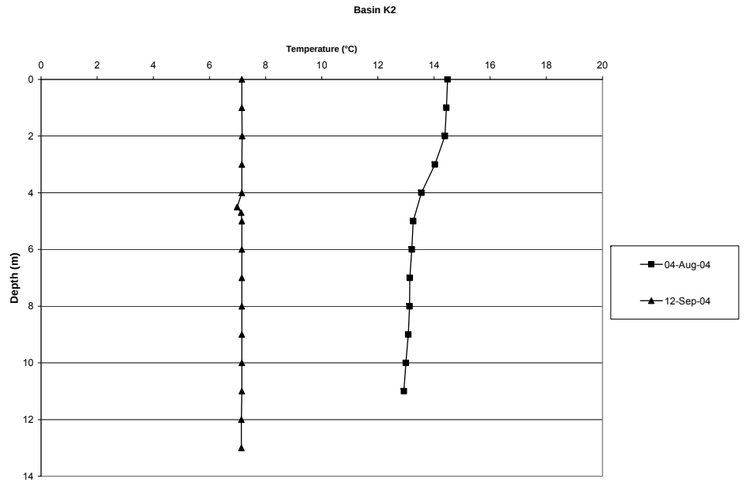
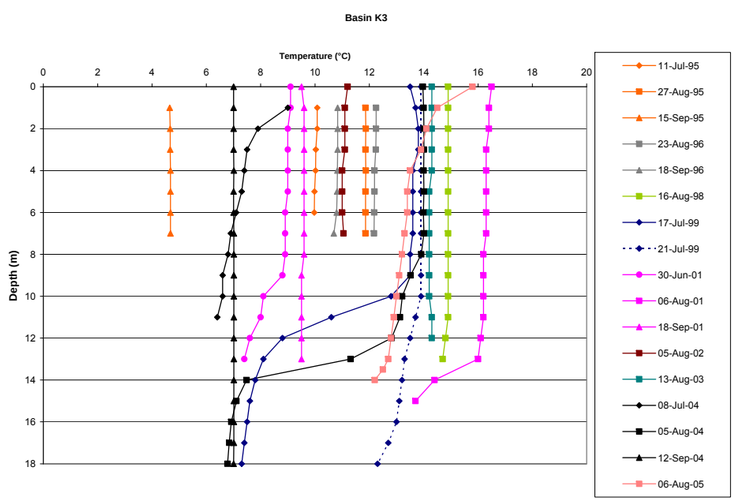
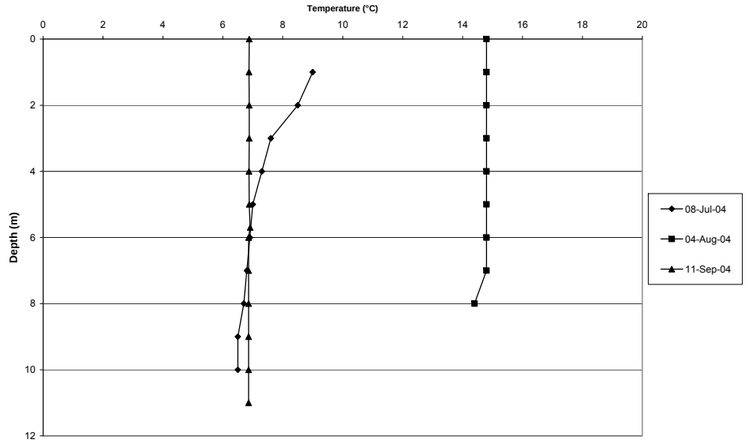


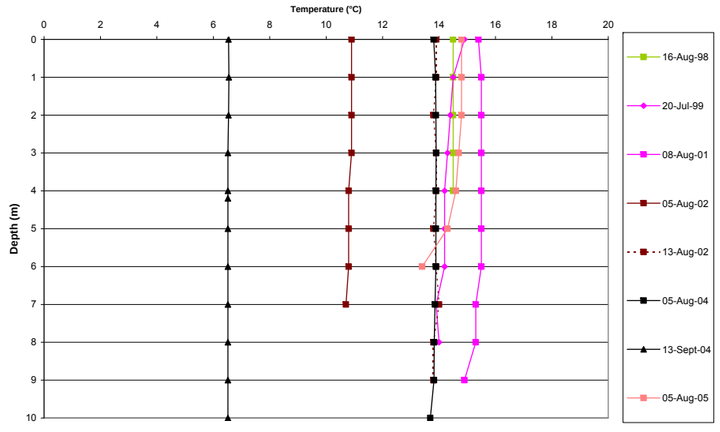
Figure I4.1-4 Open Water Profiles of Temperature for Kennady Lake, 1995 to 2005











Temperatures varied during open water conditions from 5 to 17°C, with increases during the spring followed by decreases in the fall. Temporary shallow thermoclines likely occurred on a few occasions in the surface layer (0 to 3 m) as surface waters are heated from solar radiation. Such conditions were not observed in other basins.

Well-developed seasonal thermoclines were measured in basin K3 during sampling events in late July 1999 and early August 2004. These thermoclines were observed in deeper zones of the basin between depths of 10 and 14 m (station depth is about 18 m). The temperature gradients for these thermoclines were pronounced, being approximately 5.5°C per metre.

Dissolved Oxygen

Dissolved oxygen concentrations were generally uniform throughout the water column of all basins of Kennady Lake during open water conditions, indicating that the lake was well mixed (Figure I4.1-5).

The DO concentrations ranged from 9 to 16.5 mg/L at all depths in all basins, with the exception of decreases in concentration at depths greater than 12 m in basin K3 basin, associated with the measured temperature thermoclines discussed above.

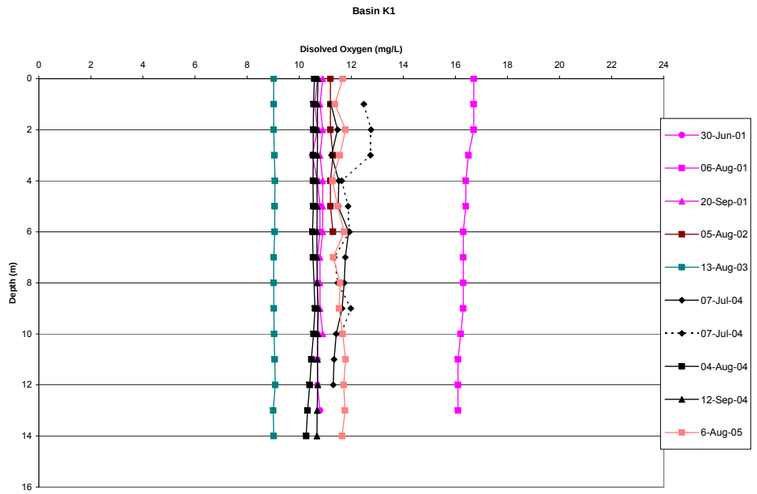
Well-mixed conditions in Kennady Lake during open water conditions resulted from wind-driven turbulent eddies. Variability among seasons was not observed, with August displaying the highest DO variability from year to year.

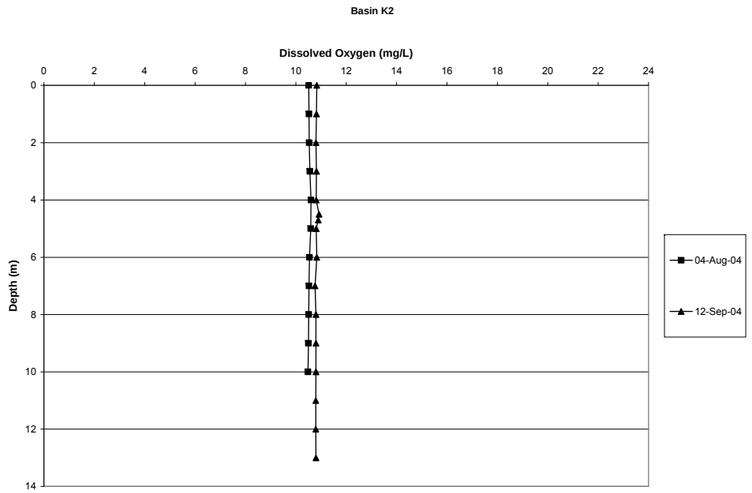
The DO concentrations measured during most sampling events were above the lowest acceptable DO concentrations for the protection of early life stages (9.5 mg/L) and other life stages (6.5 mg/L) of cold water aquatic life in the CWQG. There were no DO concentrations recorded below 6.5 mg/L.

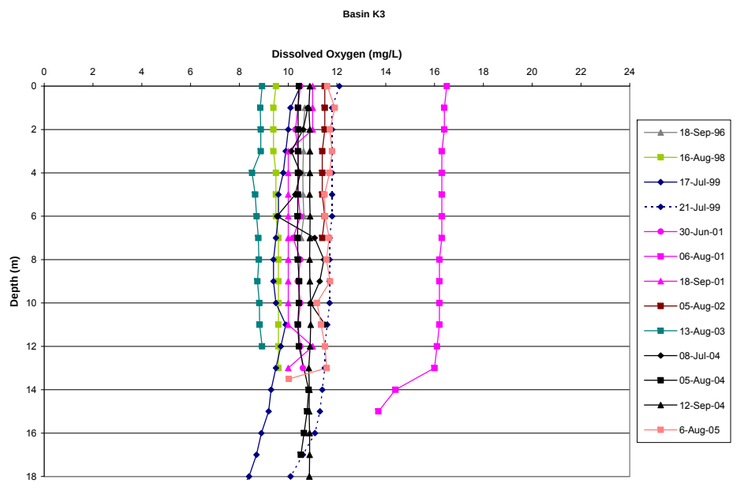
Specific Conductivity

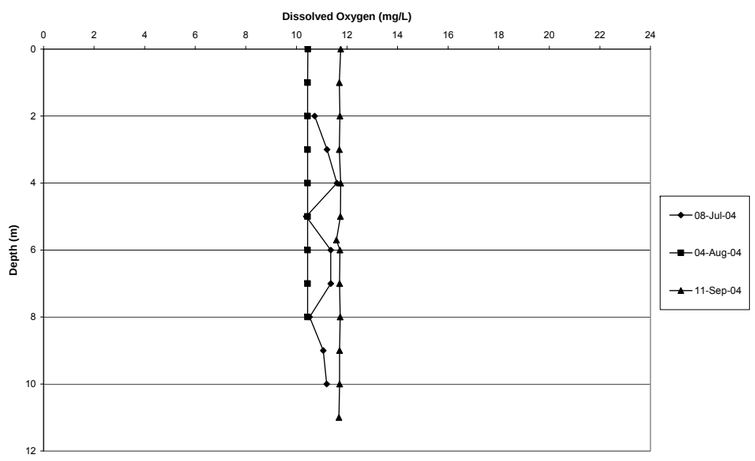
Specific conductivity during open water conditions was very low, indicating that the water in Kennady Lake contains a very low concentration of dissolved substances (Figure I4.1-6). The specific conductivity profiles for all basins of Kennady Lake were also very similar, ranging between 10 and 14 µS/cm. There was very little variability throughout the water column indicating that anions and cations were equally distributed throughout the lake and that all basins of Kennady Lake were well mixed.

Figure I4.1-5 Open Water Profiles of Dissolved Oxygen for Kennady Lake, 1999 to 2005









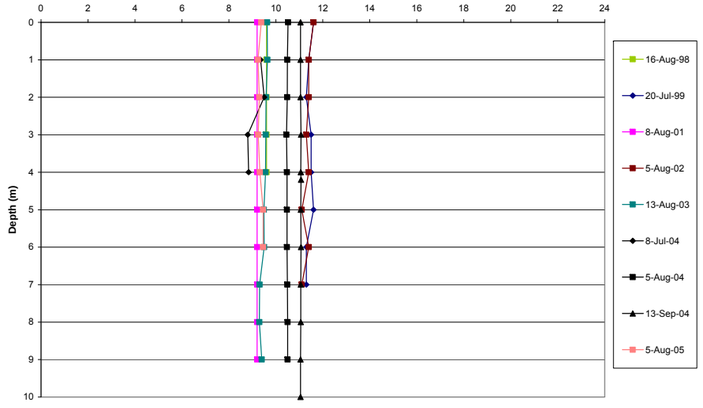
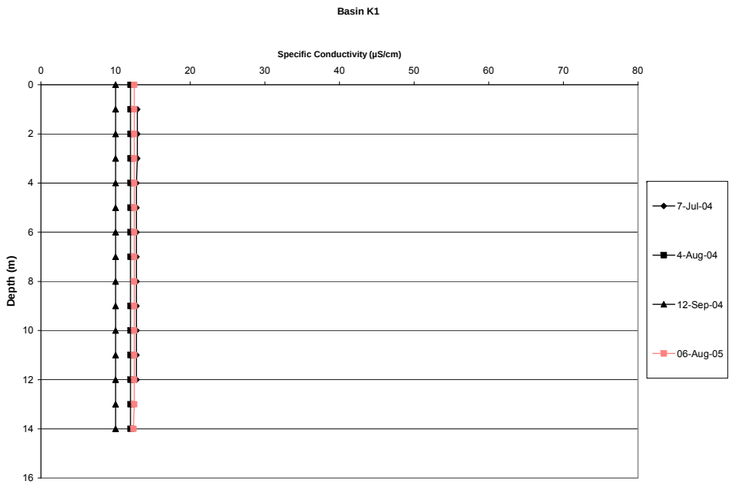
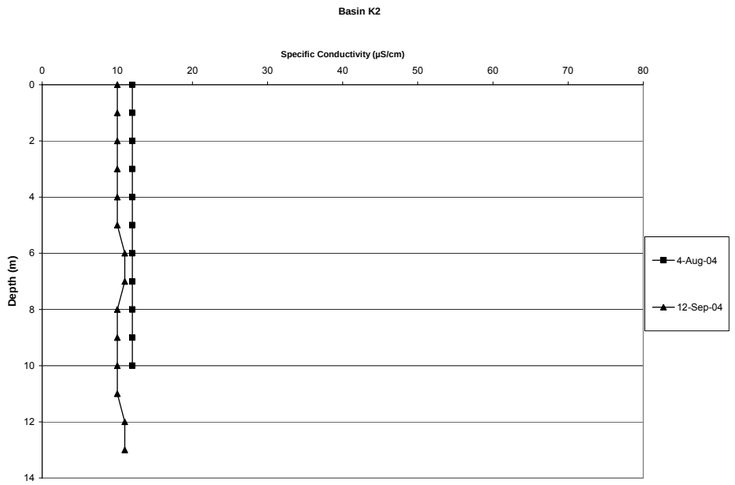
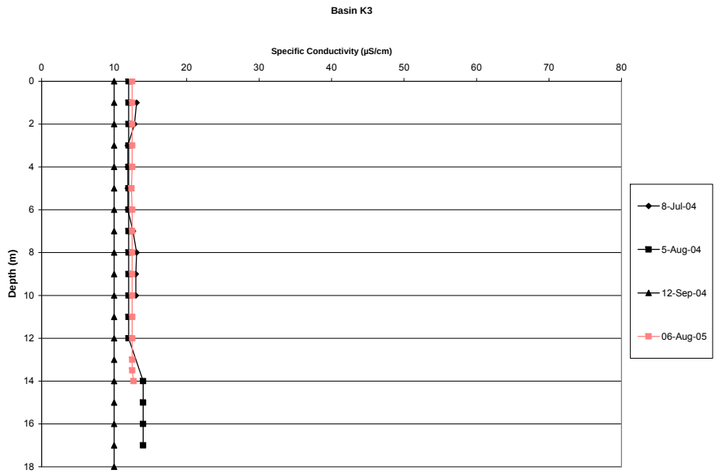
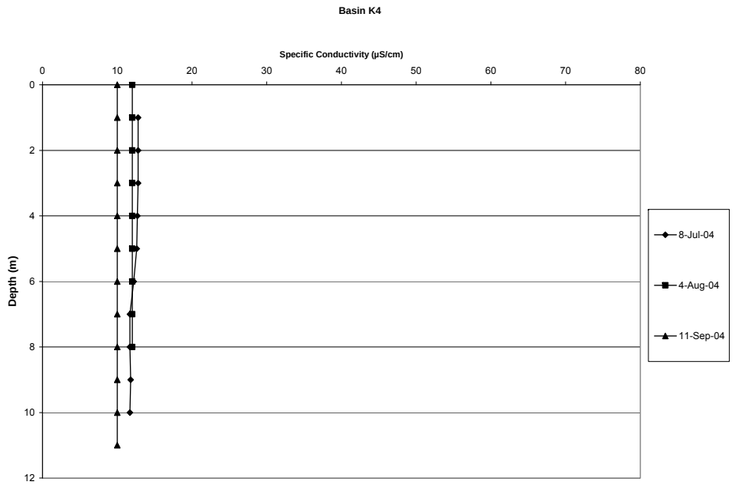


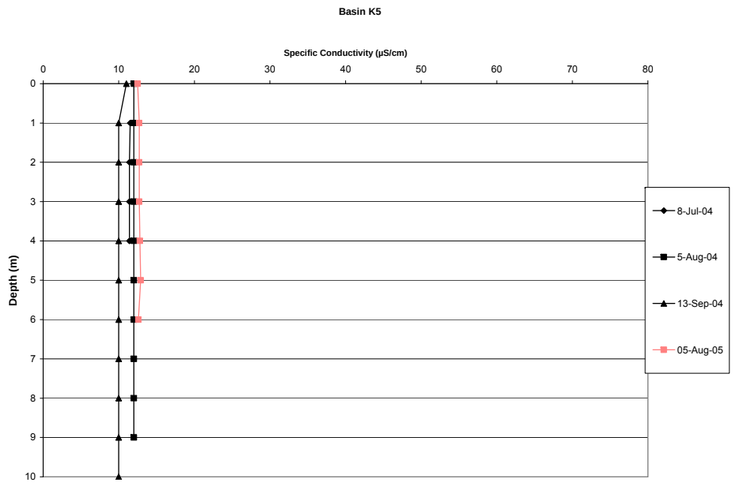
Figure I4.1-6 Open Water Profiles of Specific Conductivity for Kennady Lake, 2004 to 2005











pH

When compared to under-ice conditions, the water of Kennady Lake during open water conditions had a more variable pH. Surface runoff during spring increased the pH of the water to neutrality; however, throughout the late summer and the fall, moderately acidic conditions prevailed (Figure I4.1-7).

The pH during spring and summer ranged between 6.7 and 7.3, while fall measurements ranged between 4.7 and 6.6. Several vertical profiles measured in fall were below the acceptable pH range of the CWQG (6.5 to 9.0).

I4.1.1.2 Water Quality

I4.1.1.2.1 Overview

Water quality data for Kennady Lake was compiled from all available data collected between 1995 and 2005. The following sections provide a summary of baseline water quality conditions, while Table I4.1-1 provides the statistical summary of the water quality in all basins of Kennady Lake during open water and under-ice conditions. Highlighted cells and bolded numbers indicate a guideline exceedance.

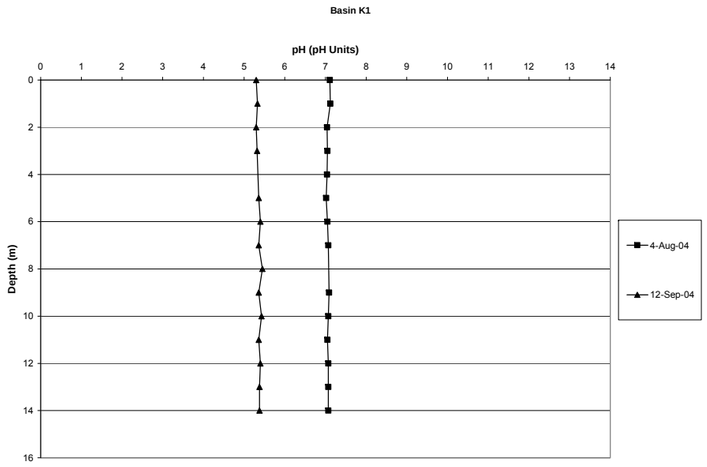
I4.1.1.2.2 Conventional Parameters and Major Ions

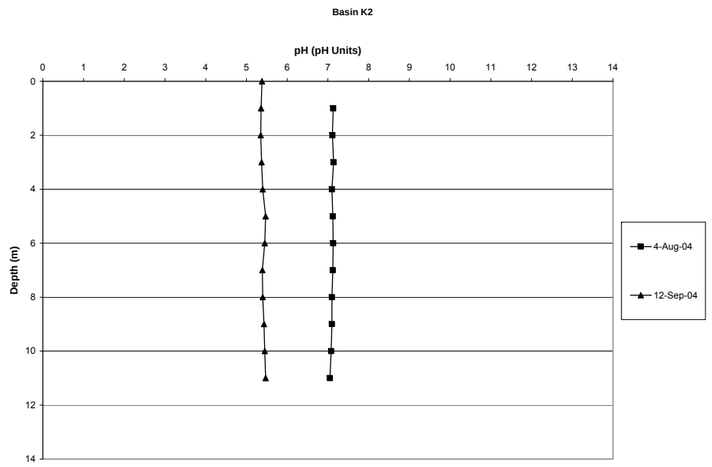
As shown in Table I4.1-1, Kennady Lake has the typical water quality of lakes in the sub-arctic, where the concentrations of dissolved and suspended substances are low. Hardness, alkalinity, and TDS concentrations were low. There was very little spatial difference between the basins, with marginally higher concentrations of all three parameters measured in the downstream basins (K4 and K5).

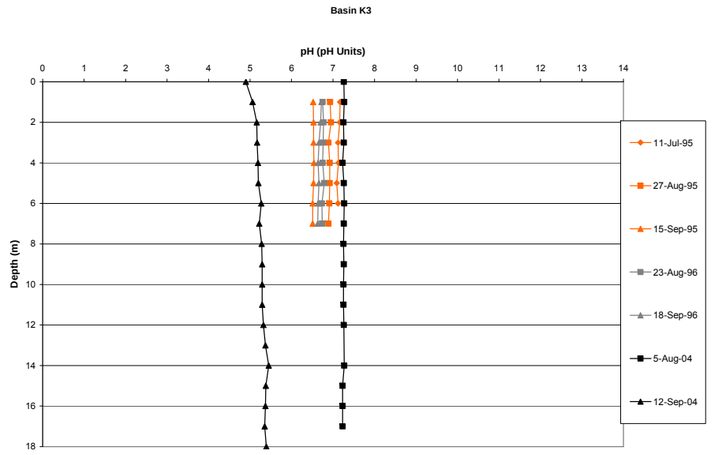
The water in Kennady Lake is soft, having a median hardness of 4 mg/L during open water conditions and 6 mg/L during under-ice conditions (Table I4.1-1). The median alkalinity during both water conditions (also 4 and 6 mg/L) is an indication of the low buffering capacity of water in Kennady Lake.

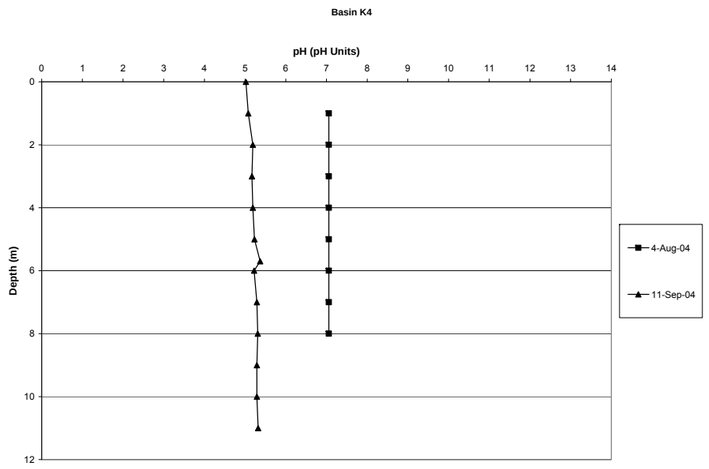
The concentrations of TDS were low during open water and under-ice conditions, (medians of 5.3 and 8 mg/L, respectively), indicating a small amount of dissolved substances in the water. There was no significant spatial difference in the concentration of TDS between basins, with a marginal increase in concentration generally measured in K5 basin (Appendix I.II, Table I.II-1).

Figure I4.1-7 Open Water Profiles of pH for Kennady Lake, 1995 to 2004









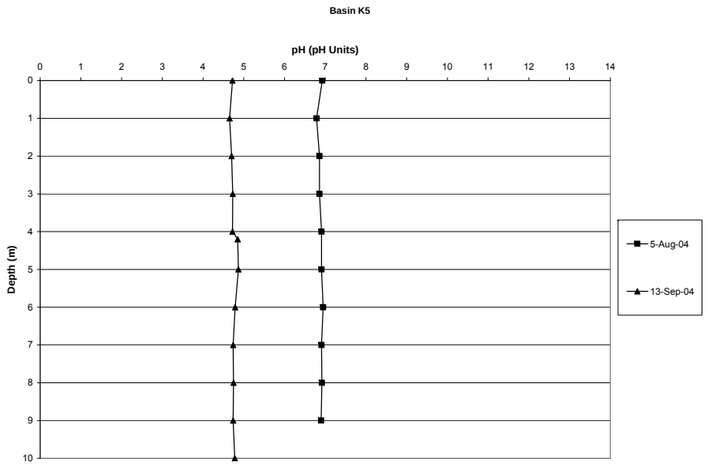


Table I4.1-1 Water Quality Summary for Kennady Lake, 1995 to 2005

Parameter	Unit	Method Detection Limit		Under-Ice Conditions							Open Water Conditions							Guidelines	
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
																		CCME (2006)	Health Canada (2006)
Conventional Parameters and Major Ions																			
pH	pH Units	0.01	0.1	173	**5.6**	**6.2**	7.2	0	0	127	46	**5.6**	**6.2**	7.2	0	0	27	6.5 to 9	6.5 to 8.5[(b1)]
Conductivity, Specific	µS/cm	0.001	2	161	12	18	27	0	0	-	50	10	14	23	0	0	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	0.2	0.2	0	-	-	-	-	-	-	10	0.5	1.1	1.2	0	0	-	-	-
Alkalinity, Total	mg/L (ppm)	0.3	5	213	0.3	6	9	25	12	-	87	<1	4	27	12	14	-	-	-
Hardness, Total	mg/L (ppm)	0.05	6	177	4	6	10	0	0	-	92	0.03	4	5	25	27	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	0.1	20	191	0.1	8	27	22	12	0	95	0.1	5.3	32	20	21	0	-	≤500[(b1)]
Total Suspended Solids (TSS)	mg/L (ppm)	0.1	5	185	<1	-	18	149	81	-	54	<0.1	-	27	40	74	-	-	-
Turbidity	NTU	0.1	1	173	<0.1	-	**3**	75	43	12	76	0.1	0.4	**53**	3	4	26	-	1[(b2)]
Calcium	mg/L (ppm)	0.05	0.5	135	1.1	1.4	3	0	0	-	35	0.03	1	1.3	4	11	-	-	-
Magnesium	mg/L (ppm)	0.01	0.5	135	0.5	0.6	1	0	0	-	35	0.4	-	0.5	25	71	-	-	-
Potassium	mg/L (ppm)	0.01	0.5	135	0.4	0.5	0.8	0	0	-	35	0.4	-	0.4	25	71	-	-	-
Sodium	mg/L (ppm)	0.1	1	156	0.1	0.8	1.2	61	39	0	35	<0.5	0.9	3	18	51	0	-	≤200[(b1)]
Bicarbonate	mg/L (ppm)	1	5	135	1	9	10	4	3	-	38	<1	7	33	12	32	-	-	-
Carbonate	mg/L (ppm)	1	5	135	<5	-	<5	135	100	-	38	<0.5	-	<5	38	100	-	-	-
Chloride	mg/L (ppm)	0.1	1	207	0.1	-	6	146	71	0	86	0.4	0.6	1.7	31	36	0	-	≤250[(b1)]
Fluoride	mg/L (ppm)	0.02	0.05	207	0.03	-	0.06	159	77	0	76	<0.02	0.04	0.07	10	13	0	-	1.5[(b3)]
Sulphate	mg/L (ppm)	0.02	1	205	0.02	1	11	29	14	0	84	0.5	1.1	2	40	48	0	-	≤500[(b1)]
Nutrients																			
Ammonia	mg/L (ppm)	0.005	0.1	229	0.006	0.02	0.06	59	26	0	84	0.005	0.007	0.06	47	56	0	7.0 - 48.3[(a1)]	-
Nitrate	mg/L (ppm)	0.001	0.2	228	0.005	0.03	0.8	91	40	0	96	<0.001	-	<0.2	88	92	0	-	45[(b4)]
Nitrite	mg/L (ppm)	0.001	0.3	182	<0.001	-	0.2	130	71	0	79	0.001	-	<0.3[(b)]	58	73	0	0.06	3.2[(b4)]
Nitrate + Nitrite	mg/L (ppm)	0.006	0.1	145	0.006	0.03	0.3	50	34	-	10	<0.006	-	<0.006	10	100	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	0.001	0.3	0	-	-	-	-	-	-	28	0.1	0.3	1.3	3	11	-	-	-
Phosphate	mg/L (ppm)	0.005	0.3	0	-	-	-	-	-	-	3	<0.3	-	<0.3	3	100	-	-	-
Phosphorus, Total	mg/L (ppm)	0.001	0.3	147	0.001	0.003	0.3	99	67	-	90	0.003	0.006	0.03	17	19	-	-	-
Organics																			
Oxygen Demand, Chemical (COD)	mg/L (ppm)	1	1	0	-	-	-	-	-	-	25	<1	13	15	2	8	-	-	-
Colour	TCU	1	1	0	-	-	-	-	-	-	25	<1	10	**30**	7	28	4	-	≤15[(b5)]
Oil and Grease	mg/L (ppm)	0.1	0.1	0	-	-	-	-	-	-	24	<0.1	-	0.2	22	92	-	-	-
Phenol	mg/L (ppm)	0.002	0.002	0	-	-	-	-	-	-	24	<0.002	-	0.003	23	96	0	0.004	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	1	1	53	3	4	5	0	0	-	25	<1	5	6	1	4	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	1	1	156	0.1	4	9	1	1	-	35	<1	4	4	2	6	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	0.1	0.1	0	-	-	-	-	-	-	24	<0.1	-	<0.1	24	100	-	-	-
Total Metals																			
Aluminum (Al)[(a)]	µg/L (ppb)	0.3	20	213	3	**7**	**51**	0	0	88	98	5	**10**	**730**	23	23	67	5 or 100[(a2)]	100[(b6)]
Antimony (Sb)	µg/L (ppb)	0.03	1	213	0.01	0.1	0.7	60	28	0	98	<0.05	-	**15**	71	72	1	-	6[(b2)]
Arsenic (As)	µg/L (ppb)	0.03	1	213	0.01	0.1	0.3	5	2	0	98	0.06	0.1	1.5	51	52	0	5	10[(b2)]

Table I4.1-1 Water Quality Summary for Kennady Lake, 1995 to 2005 (continued)

Parameter	Unit	Method Detection Limit		Under-Ice Conditions							Open Water Conditions							Guidelines	
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
																		CCME (2006)	Health Canada (2006)
Barium (Ba)	µg/L (ppb)	0.05	10	213	0.002	3	8	3	1	0	98	<1	1.9	11	44	45	0	-	1,000[(b2)]
Beryllium (Be)	µg/L (ppb)	0.02	5	213	<0.2	-	<5	213	100	-	98	<0.2	-	<5	98	100	-	-	-
Bismuth (Bi)	µg/L (ppb)	0.03	100	213	<0.03	-	2	201	94	-	63	<0.03	-	<100	63	100	-	-	-
Boron (B)	µg/L (ppb)	1	100	213	0.5	2	7	5	2	0	98	1	2	9	48	49	0	-	5,000[(b2)]
Cadmium (Cd)[(a)]	µg/L (ppb)	0.02	0.2	213	<0.05[(b)]	-	**0.07**	204	96	0	96	<0.05[(b)]	-	<0.2[(b)]	96	100	0	0.02[(a3)]	5[(b1)]
Chromium (Cr)	µg/L (ppb)	0.06	15	213	<0.06	-	0.8	143	67	0	98	<0.06	-	**1.6**	93	95	3	1[(a4)]	50[(b1)]
Cobalt (Co)	µg/L (ppb)	0.06	15	213	<0.1	-	1.2	185	87	-	98	<0.1	-	0.4	88	90	-	-	-
Copper (Cu)[(a)]	µg/L (ppb)	0.05	10	212	0.3	0.7	**15**	68	32	21	98	0.4	0.5	**8**	63	64	3	2[(a5)]	≤1,000[(b1)]
Iron (Fe)	µg/L (ppb)	5	50	213	2	11	**928**	47	22	3	98	<5	34	195	48	49	0	300	≤300[(b1)]
Lead (Pb)[(a)]	µg/L (ppb)	0.05	1	213	<0.05	-	0.6	198	93	0	98	<0.05	-	0.7	83	85	0	1[(a6)]	10
Lithium (Li)	µg/L (ppb)	0.1	20	213	0.2	0.9	1.4	93	44	-	63	<0.01	-	6	54	86	-	-	-
Manganese (Mn)	µg/L (ppb)	0.03	5	213	0.01	3	**378**	2	1	28	98	2	4	36	20	20	0	-	≤50[(b1)]
Mercury (Hg)	µg/L (ppb)	0.01	500	210	<0.01[(b)]	-	0.02	203	97	0	82	<0.01[(b)]	-	**0.07**	78	95	4	0.004	1[(b2)]
Molybdenum (Mo)	µg/L (ppb)	0.04	5	213	<0.04	-	0.09	210	99	0	98	<0.05	-	<5	98	100	0	73	-
Nickel (Ni)[(a)]	µg/L (ppb)	6	0.31	213	0.03	0.3	2	5	2	0	98	0.2	0.2	10	36	37	0	25[(a7)]	-
Selenium (Se)	µg/L (ppb)	0.01	10	213	0.1	-	<1	206	97	0	98	<0.01	-	**4**	94	96	4	1	10[(b2)]
Silicon (Si)	µg/L (ppb)	10	100	213	90	200	800	0	0	-	85	<10	100	700	5	6	-	-	-
Silver (Ag)	µg/L (ppb)	0.01	0.2	213	<0.01	-	**0.9**	198	93	11	98	<0.01	-	<0.2[(b)]	98	100	0	0.1	-
Strontium (Sr)	µg/L (ppb)	0.1	1	213	4	9	69	0	0	-	73	5	6	20	0	0	-	-	-
Thallium (Tl)	µg/L (ppb)	0.03	100	86	<0.03	-	0.05	83	97	0	88	<0.03	-	0.1	87	99	0	0.8	-
Tin (Sn)	µg/L (ppb)	0.1	300	213	0.1	-	15	92	43	-	63	<0.1	-	0.8	49	78	-	-	-
Titanium (Ti)	µg/L (ppb)	0.1	100	86	<0.1	-	1	80	93	-	63	<0.1	-	4	62	98	-	-	-
Tungsten (W)	µg/L (ppb)	100	100	3	<100	-	<100	3	100	-	19	<100	-	<100	19	100	-	-	-
Uranium (U)	µg/L (ppb)	0.01	0.5	213	<0.01	-	0.2	196	92	-	82	<0.01	-	0.3	78	95	-	-	-
Vanadium (V)	µg/L (ppb)	0.05	30	213	<0.05	-	0.1	211	99	-	98	<0.05	-	0.6	85	87	-	-	-
Zinc (Zn)	µg/L (ppb)	0.8	5	213	0.8	2	14	97	46	0	98	<0.8	-	**63**	71	72	3	30	≤5,000[(b1)]
Dissolved Metals																			
Aluminum (Al)	µg/L (ppb)	0.3	10	204	2	5	15	0	0	-	57	4	5	170	18	32	-	-	-
Antimony (Sb)	µg/L (ppb)	0.03	0.1	204	0.02	0.1	0.8	48	24	-	57	<0.05	-	<0.1	57	100	-	-	-
Arsenic (As)	µg/L (ppb)	0.03	0.1	204	0.02	0.1	1	1	0	-	57	<0.1	0.2	0.2	28	49	-	-	-
Barium (Ba)	µg/L (ppb)	0.05	10	204	0.3	3	7	0	0	-	57	1.8	-	5	41	72	-	-	-
Beryllium (Be)	µg/L (ppb)	0.1	5	204	<0.2	-	<2	204	100	-	57	<0.1	-	<5	57	100	-	-	-
Bismuth (Bi)	µg/L (ppb)	0.03	100	204	<0.03	-	2	196	96	-	32	<0.5	-	<100	32	100	-	-	-
Boron (B)	µg/L (ppb)	1	100	204	0.5	2	7	3	1	-	57	1	-	4	43	75	-	-	-
Cadmium (Cd)	µg/L (ppb)	0.02	0.2	204	0.02	-	0.05	196	96	-	55	<0.05	-	0.07	54	98	-	-	-
Chromium (Cr)	µg/L (ppb)	0.06	15	204	0.06	0.1	4	130	64	-	57	<0.4	-	1.8	49	86	-	-	-
Cobalt (Co)	µg/L (ppb)	0.05	1	204	<0.1	-	0.7	184	90	-	57	<0.05	-	0.3	55	96	-	-	-
Copper (Cu)	µg/L (ppb)	0.05	10	203	0.03	0.8	21	22	11	-	57	0.4	-	6	42	74	-	-	-
Iron (Fe)	µg/L (ppb)	5	30	204	5	9	131	116	57	-	57	<10	-	120	49	86	-	-	-
Lead (Pb)	µg/L (ppb)	0.05	1	261	<10	-	120	246	94	-	57	<0.05	-	0.5	47	82	-	-	-

Table I4.1-1 Water Quality Summary for Kennady Lake, 1995 to 2005 (continued)

Parameter	Unit	Method Detection Limit		Under-Ice Conditions							Open Water Conditions							Guidelines	
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
																		CCME (2006)	Health Canada (2006)
Lithium (Li)	µg/L (ppb)	0.1	15	204	0.2	0.9	1.4	89	44	-	32	<1	-	<15	32	100	-	-	-
Manganese (Mn)	µg/L (ppb)	0.03	5	204	0.09	1.4	300	0	0	-	57	0.2	1	8	25	44	-	-	-
Mercury (Hg)	µg/L (ppb)	0.01	1	204	<0.01	-	0.02	202	99	-	57	<0.01	-	<1	57	100	-	-	-
Molybdenum (Mo)	µg/L (ppb)	0.04	1	190	<0.04	-	0.3	2	1	-	57	<0.05	-	0.5	98	100	-	-	-
Nickel (Ni)	µg/L (ppb)	0.06	1	190	0.02	0.3	2	0	0	-	57	0.1	0.4	3	20	35	-	-	-
Selenium (Se)	µg/L (ppb)	0.1	2	190	<0.1	-	0.2	186	98	-	57	<0.4	-	<2	57	100	-	-	-
Silicon (Si)	µg/L (ppb)	5	100	250	2	200	620	4	2	-	57	<10	90	180	2	4	-	-	-
Silver (Ag)	µg/L (ppb)	0.01	0.1	190	<0.01	-	0.89	180	95	-	57	<0.01	-	<0.1	57	100	-	-	-
Strontium (Sr)	µg/L (ppb)	0.1	0.1	190	4	9	13	0	0	-	32	6	8	11	32	100	-	-	-
Thallium (Tl)	µg/L (ppb)	0.02	100	63	<0.03	-	0.1	59	94	-	57	<0.02	-	0.07	51	89	-	-	-
Tin (Sn)	µg/L (ppb)	0.1	300	190	0.05	1.5	105	48	25	-	32	<0.1	-	<300	32	100	-	-	-
Titanium (Ti)	µg/L (ppb)	0.1	100	63	<0.1	-	0.2	60	95	-	32	<10	-	<100	32	100	-	-	-
Tungsten (W)	µg/L (ppb)	0.01	100	0	-	-	-	-	-	-	20	<0.01	-	<100	20	100	-	-	-
Uranium (U)	µg/L (ppb)	0.01	0.5	190	<0.01	-	0.02	177	93	-	57	<0.01	-	0.01	56	98	-	-	
Vanadium (V)	µg/L (ppb)	0.05	30	190	<0.05	-	<1	190	100	-	57	<0.5	-	<30	57	100	-	-	-
Zinc (Zn)	µg/L (ppb)	0.8	5	190	0.4	2	12	23	12	-	57	<1	4	17	25	44	-	-	-

Source: AMEC (2004b, 2005b), EBA (2002, 2003, 2004a, 2004d) and Jacques Whitford (1998, 1999a, 2002a, 2002b, 2003a, 2004); refer to Table I3.4-1 and Appendix I.II, Table I.II-1 for more detail.

Highlighted cells and **Bolded** numbers indicate where a guideline is exceeded.

(a) The concentration of this metal was compared to guidelines using the median hardness concentration or the median pH value.

(b) The method detection limit for this parameter is higher than applicable guidelines.

Part 1. Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life (CCME 2006)

(a1) = Guideline is dependent on temperature and pH. The value ranges between 6.98 mg/L (pH= 7.0, temperature= 15°C) and 48.3 mg/L (pH= 6.5, temperature= 5°C).

(a2) = Guideline = 5 µg/L at pH <6.5, $[Ca^{2+}]$ <4 mg/L and DOC <2 mg/L; Guideline = 100 µg/L at pH ≥ 6.5, $[Ca^{2+}]$ ≥ 4 mg/L and DOC ≥ 2 mg/L.

(a3) = Cadmium guideline = $10^{[0.86\ [\log(\text{hardness})] - 3.2]}$.

(a4) = Guideline is for hexavalent chromium (Cr_{VI}) because its guideline is more stringent than the trivalent chromium (Cr_{III}) guideline of 8.9 µg/L.

(a5) = Copper guideline is dependent on $[CaCO_3]$. Guideline shown is for $[CaCO_3]$ = 0-120 mg/L. At 120-180 mg/L of $CaCO_3$, guideline = 3 µg/L; and at >180 mg/L $CaCO_3$, guideline = 4 µg/L.

(a6) = Lead guideline is dependent on $[CaCO_3]$. Guideline shown is for $CaCO_3$ at 0-60 mg/L. At 60-120 mg/L $CaCO_3$, guideline = 2 µg/L; at 120-180 mg/L $CaCO_3$, guideline = 4 µg/L; and at >180 mg/L $CaCO_3$, guideline = 7 µg/L.

(a7) = Nickel guideline is dependent on $[CaCO_3]$. Guideline shown is for $CaCO_3$ at 0-60 mg/L. At 60-120 mg/L $CaCO_3$, guideline = 65 µg/L; at 120-180 mg/L $CaCO_3$, guideline = 110 µg/L; and at >180 mg/L $CaCO_3$, guideline = 150 µg/L.

Part 2. Guidelines for Canadian Drinking Water Quality (CDWQ) (Health Canada 2006)

(b1) = Aesthetic Objective

(b2) = Maximum allowable concentration (MAC).

(b3) = It is recommended that the concentration be adjusted to 0.8 to 1.0 mg/L, which is the optimum range for the control of dental cavities.

(b4) = Equivalent to 10 mg/L as nitrate-nitrogen. Where nitrate and nitrite are determined separately, levels of nitrite should not exceed 3.2 mg/L.

(b5) = True colour guideline - the mean absorbance of filtered water samples at 456 nm shall not be significantly higher than the seasonally adjusted expected value for the system under consideration.

(b6) = A health-based guideline for aluminum in drinking water has not been established. Operational guidance values of less than 100 µg/L total aluminum for conventional treatment plants and less than 200 µg/L total aluminum for other types of treatment systems are recommended.

µS/cm = microSiemens per centimetre; mg/L (ppm) = milligrams per litre (parts per million); % = percent; °C = degrees Celsius; < = less than; ≤ = less than or equal to; NTU = nephelometric turbidity unit; TCU = true colour unit; µg/L (ppb) = micrograms per litre (parts per billion); - = not available.

The composition of the major ions in Kennady Lake is another indication of its primary source of water (i.e., rainfall). Bicarbonate was the dominant ion surveyed during both water conditions (Table I4.1-1), while sulphate was at or below the detection limit during most sampling events. Calcium was the major cation measured in all basins of Kennady Lake.

Total suspended solids (TSS) and turbidity were generally measured at or below their respective detection limits during under-ice conditions (81% and 43% of samples were below detection limits during under-ice and open water conditions respectively; Table I4.1-1), indicating that Kennady Lake water is very clear and contains very little suspended substances. Highest measurements of TSS and turbidity were reported during open water conditions.

I4.1.1.2.3 Nutrients

The concentrations of inorganic nitrogen compounds, such as ammonia, nitrate, and nitrite were generally below detection during open water conditions (Table I4.1-1). When these parameters were detected during both water conditions, their concentrations were generally near the detection limit.

Total Kjeldahl nitrogen was only measured during open water conditions, where it was generally found at low concentrations (median of 0.3 mg/L; Table I4.1-1). Total phosphorus (TP) was more variable during under-ice conditions than during open water conditions. However, TP was generally measured at higher concentrations during open water conditions (medians of 0.006 and 0.003 mg/L during open water and under-ice conditions, respectively).

The observed concentrations of nutrients indicate that Kennady Lake can be classed as an oligotrophic lake, having low biological productivity.

I4.1.1.2.4 Organics

Most organic parameters were measured during open water conditions only, with the exception of total organic carbon (TOC) and dissolved organic carbon (DOC). The organic carbon content was low during all seasons and did not vary significantly between basins (Table I4.1-1). The water colour was highest during peak spring runoff and early summer, when exceedances of the Canadian Drinking Water Quality Guideline (CDWQ) of 15 true colour units (TCU) were observed for four sampling events (Appendix I.II).

Chemical oxygen demand (COD) represented the existence of stable organics in the water and was variable, ranging from less than 1 mg/L to 15 mg/L

(Table I4.1-1). Oil and grease, phenol, and petroleum hydrocarbons were generally not detected.

I4.1.1.2.5 Metals

Total and dissolved metals data were compiled separately in this baseline assessment. Total metals include dissolved and particulate fractions. However, applicable guidelines are only available for total metals and thus guideline exceedances are discussed in the context of total metal concentrations.

The concentrations of several metals were generally near or below detection limits (Table I4.1-1), with little variability measured between basins (Appendix I.II, Table I.II-1). More variability was observed during open water conditions; however, median concentrations for most metals were similar during both open water and under-ice conditions.

Exceedances of applicable guidelines were common for the following parameters:

- Aluminum exceeded the aquatic life guideline more frequently during open water conditions, with the highest concentration measured in K3 basin in spring 1995 (Appendix I.II, Table I.II-1). Of the 98 sampling events during open water conditions, guideline exceedances were recorded 86 times. During under-ice conditions, 88 exceedances were recorded in 213 sampling events (Table I4.1-1).
- Antimony, chromium, mercury, selenium, and zinc exceeded applicable guidelines on one or more occasions during open water conditions only.
- Iron, manganese, and silver exceeded applicable guidelines on one or more occasions during under-ice conditions only.
- Copper had a lower median concentration during open water conditions; however, the guideline was exceeded more frequently during under-ice conditions.

The median concentrations of dissolved metals fraction were similar to the total metals concentration (Table I4.1-2).

Total aluminum becomes more toxic at lower concentrations as pH decreases. The CWQG for aluminum is 5 micrograms per litre (μg/L) when the pH is lower than 6.5, and this was the case during several observations at Kennady Lake. The aluminum concentrations measured in Kennady Lake were likely from natural sources since there is currently no significant development in the Kennady Lake watershed.

Table I4.1-2 Sediment Quality Summary for Kennady Lake, 2004 to 2005

Parameter	Unit	Method Detection Limit		Kennady Lake							Guideline
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Sediment Quality Guidelines (ISQG) CCME (2002)
Texture and Carbon Content											
Sand	%	1	1	9	46	70	79	0	0	-	-
Silt	%	1	1	9	15	28	41	0	0	-	-
Clay	%	1	1	9	2	5	14	0	0	-	-
Calcium Carbonate	% wt	0.005	0.005	9	0.1	0.3	0.6	0	0	-	-
Inorganic Carbon, Total (TIC)	% wt	0.01	0.01	9	0.3	0.5	1.7	0	0	-	-
Organic Carbon, Total (TOC)	% wt	0.01	0.01	9	5	10	13	0	0	-	-
Total Carbon	% wt	0.01	0.01	9	5	10	14	0	0	-	-
Nutrients and Organics											
Nitrate	µg/g	0.5	0.5	5	<0.5	-	0.7	3	60	-	-
Phosphate	µg/g	0.5	0.5	5	21	82	148	0	0	-	-
Total Petroleum Hydrocarbons (TPH)	µg/g	8	8	8	628	1,007	2,290	0	0	-	-
Total Metals											
Aluminum	µg/g	5	5	9	12,100	18,400	22,100	0	0	-	-
Arsenic	µg/g	0.5	0.5	9	4	**8**	**11**	0	0	8	5.9
Barium	µg/g	1	1	9	65	88	131	0	0	-	-
Cadmium	µg/g	0.2	0.2	9	0.3	0.5	**1**	0	0	2	0.6
Calcium	µg/g	5	5	9	2,700	3,810	4,370	0	0	-	-
Chromium	µg/g	0.5	0.5	9	25	29	**45**	0	0	2	37.3
Cobalt	µg/g	0.5	0.5	9	10	18	34	0	0	-	-
Copper	µg/g	0.1	0.1	9	**38**	**65**	**84**	0	0	9	35.7
Iron	µg/g	5	5	9	29,600	55,800	69,500	0	0	-	-
Lead	µg/g	0.5	0.5	9	0.9	3	5	0	0	0	35
Magnesium	µg/g	1	1	9	3,050	4,360	6,110	0	0	-	-

Table I4.1-2 Sediment Quality Summary for Kennady Lake, 1995 to 2005 (continued)

Parameter	Unit	Method Detection Limit		Kennady Lake							Guideline
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Sediment Quality Guidelines (ISQG) / CCME (2002)
Manganese	µg/g	0.5	0.5	9	234	348	646	0	0	-	-
Mercury	µg/g	0.5	0.5	9	<0.5[(a)]	-	**0.9**	7	78	2	0.17
Molybdenum	µg/g	0.5	0.5	9	4	5	7	0	0	-	-
Nickel	µg/g	0.5	0.5	9	26	31	80	0	0	-	-
Phosphorus	µg/g	5	5	9	1,180	1,950	2,450	0	0	-	-
Potassium	µg/g	5	5	9	1,450	1,710	2,790	0	0	-	-
Selenium	µg/g	0.5	0.5	9	<0.5	-	1.3	7	78	-	-
Sodium	µg/g	1	1	9	103	139	222	0	0	-	-
Thallium	µg/g	0.5	0.5	9	<0.5	-	<0.5	9	100	-	-
Vanadium	µg/g	0.2	0.2	9	35	38	59	0	0	-	-
Zinc	µg/g	0.5	0.5	9	97	**137**	**272**	0	0	6	123

Source: AMEC (2004c, 2005c); refer to Table I3.4-1 and Appendix I.II, Table I.II-1 for more detail.

Highlighted cells and **Bolded** numbers indicate where a guideline is exceeded.

[(a)] The method detection limit for this parameter is higher than applicable guidelines.

% = Percent; % wt = percent (dry weight basis); µg/g = microgram per gram (dry weight basis); < = less than; - = not applicable.

I4.1.1.3 Sediment Quality

I4.1.1.3.1 Overview

Sediment quality data for Kennady Lake (Figure I3.3-1) was compiled from all available data collected between 1995 and 2005 (Appendix I.II, Table I.II-2). The following sections provide a summary of baseline sediment quality conditions, while Table I4.1-2 provides the statistical summary of the sediment quality in all basins of Kennady Lake. Highlighted cells and bolded numbers indicate where guidelines were exceeded.

I4.1.1.3.2 Texture and Carbon Content

Kennady Lake sediments were mainly composed of sand (46% to 79%), with some silt (15% to 41%) and clay (2% to 14%; Table I4.1-2).

Total organic carbon (TOC) ranged from 5% to 13% of the sediment composition (Table I4.1-2). Inorganic carbon constituted 1.7% or less of the sediment while calcium carbonate content ranged between 0.1% and 0.6%.

I4.1.1.3.3 Nutrients and Organics

Nutrients found in the water can become bound by sediment or, conversely, nutrients can be released from sediment into the water. In Kennady Lake, phosphate was the dominant nutrient bound to the sediment, although the observed concentrations were variable (ranging from 21 to 148 micrograms per gram [μg/g]; Table I4.1-2). Nitrate concentrations were generally low (maximum of 0.7 μg/g), with several sediment samples yielding concentrations below the detection limit of 0.5 μg/g.

The only organic parameter measured in the sediment was total petroleum hydrocarbons (TPH). The TPH content was relatively high and variable, ranging from 628 to 2,290 μg/g (Table I4.1-2). The hydrocarbons found in the sediment may be from natural sources, where the decay of organic matter causes the formation of hydrocarbons. High hydrocarbon concentrations have also been observed in other lakes in the area (e.g., Lake 410) as discussed in Section I4.1.5.3.

I4.1.1.3.4 Metals

The predominant metals in the sediment included iron, aluminum, and magnesium (Table I4.1-2).

Total metals in the sediment were generally measured within the applicable aquatic life guidelines (Table I4.1-2). Arsenic exceeded the Interim Sediment Quality Guideline (ISQG) in most sediment samples, while copper was measured above the ISQG in all samples. Other guideline exceedances were observed for cadmium, mercury, and zinc in certain sediment samples.

I4.1.1.4 Summary

The five basins of Kennady Lake had very similar water quality. The physical limnology and water chemistry were described for all basins by comparison between open water and under-ice conditions. The sediment chemistry was also described for all basins of Kennady Lake.

The physical limnology of Kennady Lake indicated that Kennady Lake is inversely stratified (i.e., warmer water was near the bottom) during under-ice conditions and generally well mixed during open water conditions. There were no spatial differences between the basins; however, a seasonal thermocline developed in the deepest part of the lake (K3 basin) during two sampling years.

The lake water has low TDS, with calcium and bicarbonate as the dominant ions. Nutrients were at low concentrations and only detected during certain sampling events, indicating low potential for biological productivity. Organics were generally not detected, while metals were usually low but variable. Aluminum was often found at concentrations above chronic aquatic life guidelines due to the low pH prevalent in Kennady Lake. Maximum concentrations of cadmium, copper, iron, manganese, silver, and zinc exceeded the CWQG indicating that guidelines can be exceed under natural conditions.

Since most parameters in Kennady Lake were often below detection limits, spatial patterns were difficult to describe for all parameters. Specific conductivity, TDS, TOC, aluminum, copper, and iron were used as key indicators to display the relative spatial changes in concentration of water quality parameters throughout the different basins of Kennady Lake. These parameters were chosen because they were reported above the MDL more often than most other parameters.

The sediment of Kennady Lake consisted mainly of sand, while little organic content was measured. Phosphate was the dominant nutrient, while nitrate was found near or below the detection limit. The TPH content was variable and likely due to organic decay. Iron, aluminum, and manganese were the main constituents of the sediment. Copper and arsenic and on at least one occasion cadmium, mercury, and zinc exceeded sediment quality guidelines indicating that guidelines can be exceed under natural conditions.

The summary of the median concentrations of the selected water quality indicators and metals are presented in Table I4.1-3.

Table I4.1-3 Summary of Median Concentrations of Representative Water Quality Parameters in Kennady Lake over the Study Period, 1995 to 2005

Kennady Lake Sub-Basin	Total Dissolved Solids (mg/L)	Specific Conductivity (µS/cm)	Total Organic Carbon (mg/L)	Total Aluminum (µg/L)	Total Copper (µg/L)	Total Iron (µg/L)
CWQG Guideline	-	-	-	5 or 100	2 to 4	300
CDWQ Guideline	≤500	-	-	100	≤1,000	≤300
Under Ice						
K1	8	17	3	5	0.8	10
K2	8	21	5	7	1.7	7
K3	8	18	4	7	0.6	11
K4	7	19	4	6	3	7
K5	9	19	4	8	.8	14
Open Water						
K1	5	15	3	9	0.4	20
K2	18	14	1.3	92	<5	110
K3	9	13	3	11	0.5	22
K4	20	13	3	<20	<5	<50
K5	6	13	4	14	0.6	40

Notes: Highlighted cells indicate where a guideline is exceeded.

mg/L = milligram per litre; µg/L = microgram per litre; µS/cm = microSiemens per centimetre; ≤ = less than or equal to; < = less than; TDS = total dissolved solids; TOC = total organic carbon; CWQG = Canadian Water Quality Guidelines for the Protection of Aquatic Life; CDWQ = Guidelines for Canadian Drinking Water Quality.

I4.1.2 Lakes in the Kennady Lake Watershed

The Kennady Lake watershed includes lakes in the sub-watersheds that flow into the five basins of Kennady Lake (Figure I3.3-1). These sub-watersheds have a total surface area of 32.5 km^2, of which 11.3 km^2 is lake area (including the five basins of Kennady Lake) (Table I2.1-2). Each series of sub-watersheds flowing directly into Kennady Lake basins were identified as Ka through Ke (Figure I2.1-2). These watersheds were divided further into smaller drainages identified in Figure I2.1-2 by the letters A through J.

Several lakes in the Kennady Lake watershed are shallow (less than two metres in depth) and only grab water samples and in-situ spot measurements were collected during open water conditions. Vertical profiles collected from deeper lakes are presented in Section I4.1.2.1. Water quality characteristics are shown in Section I4.1.2.2 and information on sediment quality is presented in Section I4.1.2.3.

I4.1.2.1 Physical Limnology and Vertical Structure

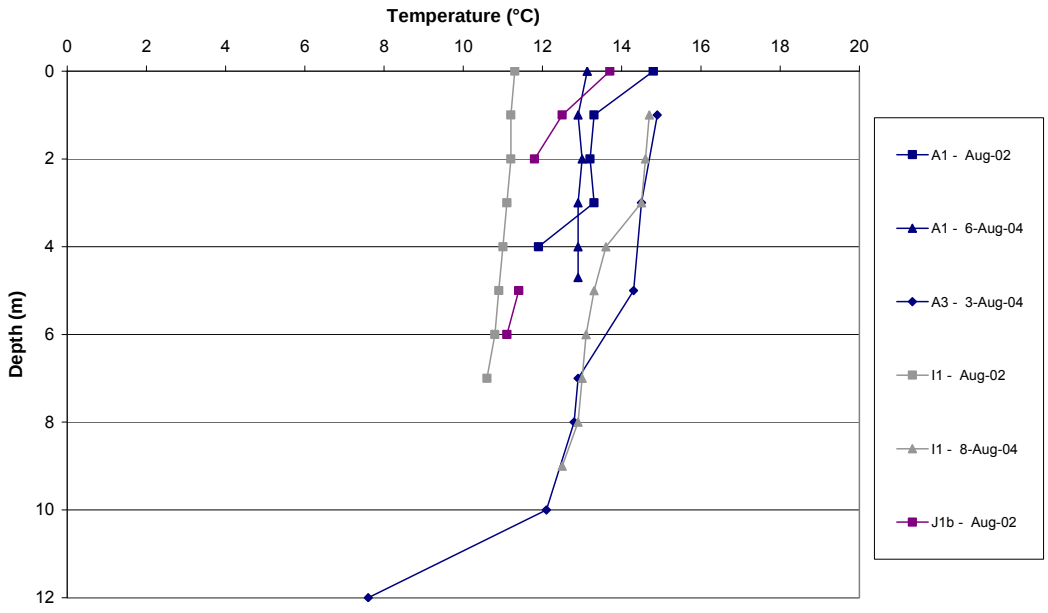
Vertical profile data for physical parameters, such as temperature and DO, were collected during open water conditions for four lakes in the Kennady Lake watershed. In-situ spot measurements were collected in several other lakes, the results of which are presented in Appendix I.II, Table I.II-1. In-situ measurements were not conducted for lakes in the Kennady Lake watershed during under-ice conditions.

I4.1.2.1.1 Temperature

Surface temperature of the lakes in the Kennady Lake watershed varied between 5 and 19°C (Appendix I.II, Table I.II-1). The temperature profiles measured during open water conditions in the deeper lakes had similar ranges in temperature as measurements in the basins of Kennady Lake.

Temperature profile measurements were taken in early August of 2002 and 2004 from lakes A1, A3, I1, and J1b (Figure I4.1-8). The lakes had near surface temperatures ranging from 11 to 15°C and were generally well-mixed. A temporal thermocline was recorded between 10 and 12 m in Lake A3, where the temperature decreased from 12 to 8°C.

Figure I4.1-8 Open Water Profiles of Temperature for Lakes in the Kennady Lake Watershed, 2002 and 2004

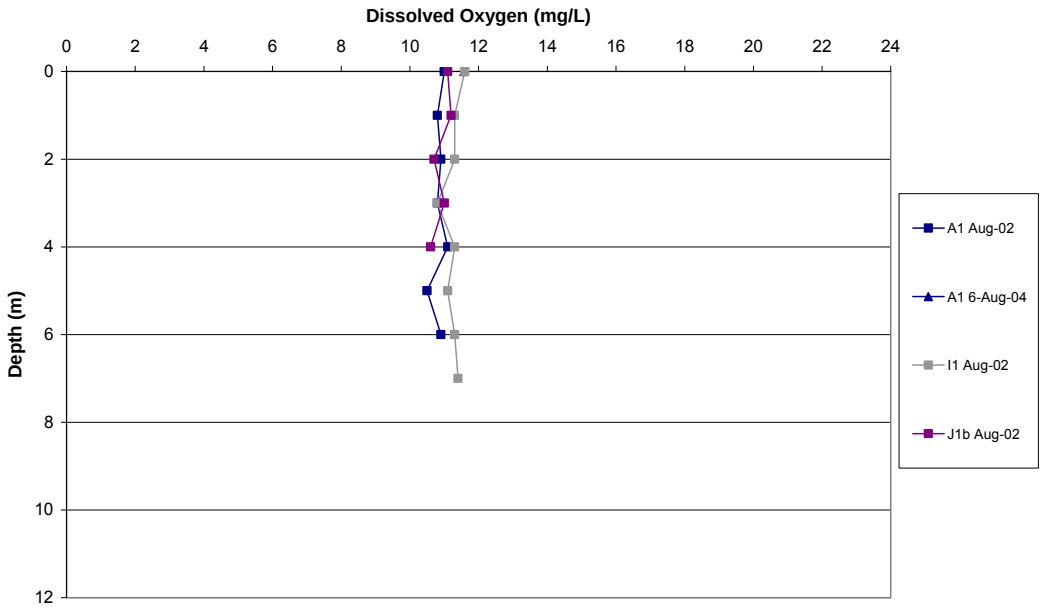


I4.1.2.1.2 Dissolved Oxygen

The near surface concentration of DO in the lakes varied between 5 and 13 mg/L (Appendix I.II, Table I.II-1). The lowest DO concentrations measured were below the lowest acceptable CWQG for early life stages (9.5 mg/L) and other life stages (6.5 mg/L) for cold water aquatic life. These concentrations were recorded in small lakes (Ka1 and Kb4) during the early open water season. Dissolved oxygen concentrations above the minimum CWQG range were measured in several lakes during spring and summer.

The DO vertical profiles had very little variability between surface and near bottom and ranged in concentration between 10 and 12 mg/L (Figure I4.1-9). The lakes were well-mixed and the DO concentrations were above the CWQG values during all observations.

Figure I4.1-9 Open Water Profiles of Dissolved Oxygen for Lakes in the Kennady Lake Watershed, 2002 and 2004

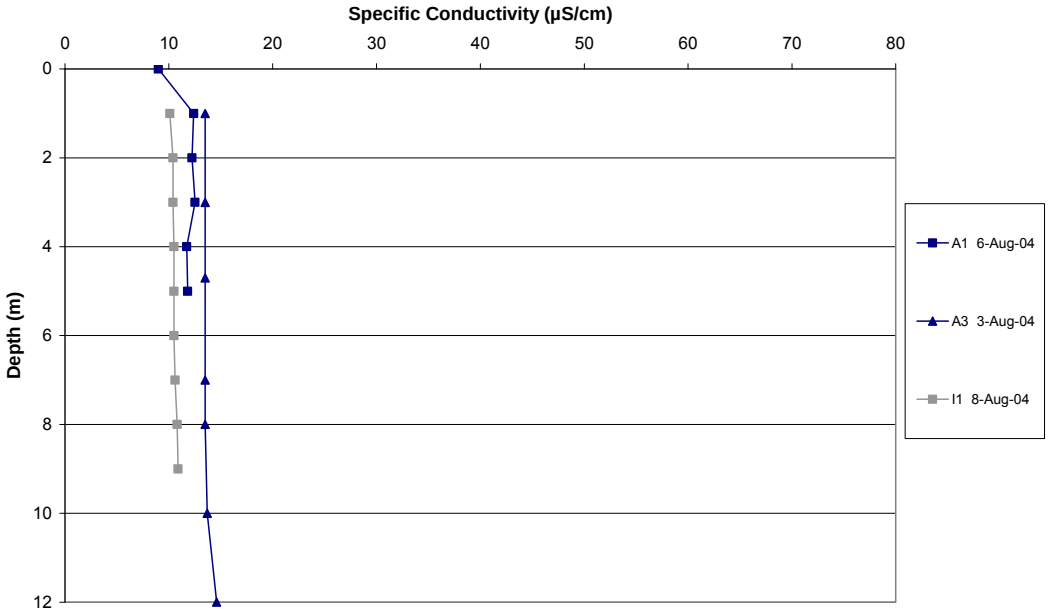


I4.1.2.1.3 Specific Conductivity

The surface concentration of specific conductivity for lakes in the Kennady Lake watershed varied between 4 and 26 μS/cm (Appendix I.II, Table I.II-1). These low measurements indicated that the lakes contained very low concentrations of dissolved substances.

The specific conductivity vertical profiles were very similar, ranging between 9 and 15 µS/cm (Figure I4.1-10). There was very little variability throughout the water column indicating that ions were equally distributed throughout the water column of each lake and that all lakes in the Kennady Lake watershed were well mixed.

Figure I4.1-10 Open Water Profiles of Specific Conductivity for Lakes in the Kennady Lake Watershed, 2004



I4.1.2.1.4 pH

The surface pH readings for the lakes in the Kennady Lake watershed varied between 5.5 and 9.4 pH units (Appendix I.II, Table I.II-1). The lakes were generally slightly acidic to slightly alkaline; however, highly alkaline water was measured in several lakes during summer (early August).

Many lake measurements were below the acceptable range of the CWQG and CDWQ during early spring, while exceedances of the range were measured during certain summer observations. No vertical pH profiles were measured in lakes in the Kennady Lake watershed.

I4.1.2.2 Water Quality

I4.1.2.2.1 Overview

Since the lakes in the Kennady Lake watershed contribute to the loading of substances into the individual basins of Kennady Lake, the water quality similarities and differences are discussed for all surveyed lakes. The available data for all lakes in the Kennady Lake watershed are presented in Table I4.1-4. Lake E2 had a different chemistry than the other lakes in the Kennady Lake watershed and the data for this lake is presented separately in Table I4.1-4.

I4.1.2.2.2 Conventional Parameters and Major Ions

Hardness and alkalinity were low in most lakes (medians of 6 and 10 mg/L respectively; Table I4.1-4), with several measurements below the detection limit. There was very little difference in concentrations between the lakes, with marginally higher concentrations of both parameters measured in Lake E2 (median hardness and alkalinity of 12 and 14 mg/L, respectively). These hardness and alkalinity results indicate that water in most of the lakes in the Kennady Lake watershed is soft and has a low buffering capacity.

Concentrations of TDS were generally low (median of 12 mg/L; Table I4.1-4); however, there was some variability in the amount of dissolved substances found in the different lakes (ranging from less than 0.1 to 64 mg/L). Lake E2 had higher TDS concentrations than most other lakes (median of 55 mg/L).

Bicarbonate was the dominant anion in most lakes (Table I4.1-4). Sulphate was below 10 mg/L in all lakes surveyed. Sodium was the major cation measured in most lakes, with the highest concentrations measured in Lake E2.

Total suspended solids concentrations were generally measured slightly above the detection limit or were not detected (Table I4.1-4). The highest TSS concentrations were measured in Lake E2. The turbidity was often measured above the CDWQ; however, many lakes had measurements below the guideline. The highest measurements of TSS and turbidity were reported during summer (August) in Lake E2 (30 mg/L and 55 nephelometric turbidity unit [NTU], respectively). Generally, the lakes in the Kennady Lake sub-watersheds were very clear (maximum turbidity of 6 NTU) and contained low concentrations of suspended substances (maximum TSS of 4 mg/L).

Table I4.1-4 Water Quality Summary for Lakes in the Kennady Lake Watershed, 1995 to 2005

Parameter	Unit	Method Detection Limit		Lakes in the Kennady Lake Watershed							E2 Lake							Guidelines	
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
																		CCME (2006)	Health Canada (2006)
Conventional Parameters and Major Ions																			
pH	pH Units	0.01	0.1	33	**5.3**	6.7	7.2	0	0	10	5	**6.4**	6.9	7.3	0	0	1	6.5 to 9	6.5 to 8.5[b1]
Conductivity, Specific	µS/cm	0.001	2	42	5	16	31	0	0	-	6	37	40	44	0	0	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	1	5	42	<1	10	35	7	17		5	<5	14	14	1	20	-	-	-
Hardness, Total	mg/L (ppm)	0.05	6	42	4	6	10	26	62	-	5	9	12	14	0	0	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	0.1	20	83	<0.1	12	64	11	13	0	7	16	55	96	0	0	0	-	≤500[b1]
Total Suspended Solids (TSS)	mg/L (ppm)	2	2	26	<2	-	4	20	77	-	4	3	-	55	0	0	-	-	-
Turbidity	NTU	0.1	1	27	0.1	**2**	**6**	2	7	26	4	**4**	-	**30**	2	50	2	-	1[b2]
Calcium	mg/L (ppm)	0.5	0.5	36	0.5	0.6	2	11	31	-	6	2	2	4	0	0	-	-	-
Magnesium	mg/L (ppm)	0.1	0.5	36	<0.5	-	1	25	69	-	6	1	1.4	1.5	0	0	-	-	-
Potassium	mg/L (ppm)	0.1	0.5	36	<0.1	-	0.8	25	69	-	6	<0.5	0.9	1.2	2	33	-	-	-
Sodium	mg/L (ppm)	0.5	1	36	<0.5	1.1	4	5	14	0	6	2	3	4	0	0	0	-	≤200[b1]
Bicarbonate	mg/L (ppm)	1	5	41	<1	12	43	4	10	-	5	6	15	21	0	0	-	-	-
Carbonate	mg/L (ppm)	0.05	5	41	<0.05	-	<5	41	100	-	5	<1	-	<5	5	100	-	-	-
Chloride	mg/L (ppm)	0.1	1	42	<0.1	0.2	1	17	40	0	5	0.3	0.4	1	0	0	0	-	≤250[b1]
Fluoride	mg/L (ppm)	0.02	0.02	27	<0.02	0.04	0.1	1	4	0	4	0.05	-	0.06	0	0	0	-	1.5[b3]
Sulphate	mg/L (ppm)	0.05	1	42	<0.05	1	2	9	21	0	5	3	4	6	0	0	0	-	≤500[b1]
Nutrients																			
Ammonia	mg/L (ppm)	0.005	1	36	0.01	-	<0.1	35	97	0	4	<0.1	-	<0.1	4	100	0	7.0 to 48.3[a1]	-
Nitrate	mg/L (ppm)	0.005	0.05	42	<0.005	-	0.06	40	95	0	5	<0.006	-	<0.05	5	100	0	-	45[b4]
Nitrite	mg/L (ppm)	0.002	0.05	41	<0.002	-	0.003	39	95	0	5	0.003	-	0.003	4	80	0	0.06	3.2[b4]
Nitrate + Nitrite	mg/L (ppm)	0.006	0.006	6	<0.006	-	0.022	5	83	-	1	<0.006	-	<0.006	1	100	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	0.2	0.2	22	<0.2	0.4	1.1	10	45	-	3	1.1	-	3	0	0	-	-	-
Phosphate	mg/L (ppm)	0.005	0.3	10	0.008	-	<0.3	9	90	-	0	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	20	300	36	0.005	0.03	0.04	19	53	-	5	<0.02	-	0.1	3	60	-	-	-
Organics																			
Oxygen Demand, Chemical (COD)	mg/L (ppm)	1	1	26	11	19	62	0	0	-	4	69	-	133	0	0	-	-	-
Colour	TCU	1	1	26	5	**23**	**85**	0	0	20	4	**125**	-	**175**	0	0	2	-	≤15[b5]
Oil and Grease	mg/L (ppm)	0.1	0.1	26	<0.1	-	208	17	65	-	4	<0.1	-	0.2	3	75	-	-	-
Phenol	mg/L (ppm)	0.002	0.002	25	<0.002	-	**0.009**	21	84	2	4	<0.002	-	<0.002	4	100	0	0.004	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	1	1	25	<1	6	20	1	4	-	4	20	-	39	0	0	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	1	1	26	3	6	19	0	0	-	4	19	-	30	0	0	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	0.1	0.1	26	<0.1	-	62	20	77	-	4	<0.1	-	<0.1	4	100	-	-	-
Total Metals																			
Aluminum (Al)[a]	µg/L (ppb)	0.3	20	42	12	66	**240**	17	40	8	3	**207**	-	**1130**	0	0	3	5 or 100[a2]	100[b6]
Antimony (Sb)	µg/L (ppb)	0.003	1	42	<0.05	-	2.1	33	79	0	3	<0.1	-	0.5	2	67	0	-	6[b2]
Arsenic (As)	µg/L (ppb)	0.03	1	42	<0.4	-	0.5	35	83	0	3	0.7	-	1.1	0	0	0	5	10[b2]
Barium (Ba)	µg/L (ppb)	0.05	5	42	2	-	7.4	26	62	0	3	9	-	22	0	0	0	-	1,000[b2]
Beryllium (Be)	µg/L (ppb)	0.2	1	42	<0.2	-	<1	42	100	-	3	<0.5	-	<1	3	100	-	-	-
Bismuth (Bi)	µg/L (ppb)	0.1	50	14	<0.1	-	0.1	13	93	-	1	<0.1	-	<0.1	1	100	-	-	-

Table I4.1-4 Water Quality Summary for Lakes in the Kennady Lake Watershed, 1995 to 2005 (continued)

Parameter	Unit	Method Detection Limit		Lakes in the Kennady Lake Watershed							E2 Lake							Guidelines	
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
																		CCME (2006)	Health Canada (2006)
Boron (B)	µg/L (ppb)	1	20	42	1	-	2	39	93	0	3	<10	-	<20	3	100	0	-	5,000[b2]
Cadmium (Cd)[a]	µg/L (ppb)	0.05	0.2	42	<0.05[b]	-	<0.2[b]	42	100	0	3	<0.2[b]	-	<0.2[b]	3	100	0	0.02[a3]	5[b1]
Chromium (Cr)	µg/L (ppb)	0.06	5	42	0.07	**1.4**	**4**	36	86	5	3	<0.9	-	**1.7**	1	33	2	1[a4]	50[b1]
Cobalt (Co)	µg/L (ppb)	0.1	0.5	42	0.1	-	0.7	31	74	-	3	0.7	-	2	0	0	-	-	-
Copper (Cu)[a]	µg/L (ppb)	0.1	5	41	0.9	-	**10**	30	71	5	3	**5**	-	**12**	0	0	3	2[a5]	≤1,000[b1]
Iron (Fe)	µg/L (ppb)	5	50	38	5	128	**540**	4	11	5	2	**606**	-	**1180**	0	0	2	300	≤300[b1]
Lead (Pb)[a]	µg/L (ppb)	0.05	0.5	38	<0.05	0.1	0.4	4	11	0	3	<0.1	-	0.8	1	33	0	1[a6]	10
Lithium (Li)	µg/L (ppb)	1	20	10	<1	-	<20	10	100	-	0	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	0.05	1	38	0.03	3.7	16	1	3	0	2	17	-	19	0	0	0	-	≤50[b1]
Mercury (Hg)	µg/L (ppb)	0.01	500	38	<0.01[b]	-	<500[b]	38	100	0	2	<1[b]	-	<500[b]	2	100	0	0.026	1[b2]
Molybdenum (Mo)	µg/L (ppb)	0.05	5	42	<0.05	-	0.3	37	88	0	3	0.4	-	0.9	1	33	0	73	-
Nickel (Ni)[a]	µg/L (ppb)	0.06	5	42	0.2	1.2	13	21	50	0	3	1.1	-	6	0	0	0	25[a7]	-
Selenium (Se)	µg/L (ppb)	0.1	10	42	<0.1	-	<10[b]	42	100	0	3	<0.4	-	**19**	2	67	1	1	10[b2]
Silicon (Si)	µg/L (ppb)	10	50	27	5	126	223	1	4	-	2	234	-	389	0	0	-	-	-
Silver (Ag)	µg/L (ppb)	0.4	1	42	<0.01	-	0.5	41	98	0	3	<0.2[b]	-	<0.4[b]	3	100	0	0.1	-
Strontium (Sr)	µg/L (ppb)	0.1	1	16	5	8	14	0	0	-	1	26	-	26	0	0	-	-	-
Thallium (Tl)	µg/L (ppb)	0.05	0.1	40	<0.05	-	<0.1	40	100	0	3	<0.05	-	<0.1	3	100	0	0.8	-
Tin (Sn)	µg/L (ppb)	0.1	20	14	<0.1	-	1.1	13	93	-	1	1	-	1	0	0	-	-	-
Titanium (Ti)	µg/L (ppb)	3	10	14	3	-	4	10	71	-	1	44	-	44	0	0	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	0.01	0.1	42	0.02	-	<0.1	41	98	-	3	0.09	-	0.3	0	0	-	-	-
Vanadium (V)	µg/L (ppb)	0.05	5	42	0.08	0.3	0.4	23	55	-	3	1.3	-	6	0	0	-	-	-
Zinc (Zn)	µg/L (ppb)	0.8	5	42	1	8	**55**	17	40	4	3	13	-	15	0	0	0	30	≤5,000[b1]
Dissolved Metals																			
Aluminum (Al)	µg/L (ppb)	2	10	26	2	32	566	4	15	-	2	134	-	168	0	0	-	-	-
Antimony (Sb)	µg/L (ppb)	0.1	0.1	26	<0.1	-	<0.1	26	100	-	2	<0.1	-	<0.1	2	100	-	-	-
Arsenic (As)	µg/L (ppb)	0.1	0.1	26	0.1	0.2	0.5	11	42	-	2	<0.1	-	0.9	1	50	-	-	-
Barium (Ba)	µg/L (ppb)	3	3	26	3	-	12	18	69	-	2	8	-	8	0	0	-	-	-
Beryllium (Be)	µg/L (ppb)	0.1	0.1	26	<0.1	-	0.1	25	96	-	2	<0.1	-	<0.1	2	100	-	-	-
Bismuth (Bi)	µg/L (ppb)	0.5	0.5	1	<0.5	-	<0.5	1	100	-	0	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	1	4	27	<4	-	2	26	96	-	2	<4	-	<4	2	100	-	-	-
Cadmium (Cd)	µg/L (ppb)	0.05	0.05	27	<0.05	-	0.1	24	89	-	2	<0.05	-	<0.05	2	100	-	-	-
Chromium (Cr)	µg/L (ppb)	0.4	0.5	27	<0.4	-	5	24	89	-	2	1	-	1.8	0	0	-	-	-
Cobalt (Co)	µg/L (ppb)	0.1	0.5	27	0.1	0.1	1.1	9	33	-	2	0.3	-	0.6	0	0	-	-	-
Copper (Cu)	µg/L (ppb)	0.1	2	27	1	-	3	25	93	-	2	4	-	5	0	0	-	-	-
Iron (Fe)	µg/L (ppb)	10	30	27	10	66	597	4	15	-	2	386	-	463	0	0	-	-	-
Lead (Pb)	µg/L (ppb)	0.05	0.05	27	<0.05	-	0.09	26	96	-	2	<0.05	-	<0.05	2	100	-	-	-
Lithium (Li)	µg/L (ppb)	1	1	1	<1	-	<1	1	100	-	0	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	0.05	2	27	0.9	3	14	0	0	-	2	5	-	13	0	0	-	-	-
Mercury (Hg)	µg/L (ppb)	0.01	1	27	<0.01	-	<1	27	100	-	2	<1	-	<1	2	100	-	-	-
Molybdenum (Mo)	µg/L (ppb)	0.05	0.3	27	<0.05	-	<0.3	27	100	-	2	0.5	-	0.5	0	0	-	-	-
Nickel (Ni)	µg/L (ppb)	0.1	0.1	27	0.2	0.4	4	0	0	-	2	1.8	-	3	0	0	-	-	-
Selenium (Se)	µg/L (ppb)	0.1	2	27	<0.1	-	<2	27	100	-	2	<2	-	<2	2	100	-	-	-

Table I4.1-4 Water Quality Summary for Lakes in the Kennady Lake Watershed, 1995 to 2005 (continued)

Parameter	Unit	Method Detection Limit		Lakes in the Kennady Lake Watershed							E2 Lake							Guidelines	
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
																		CCME (2006)	Health Canada (2006)
Silicon (Si)	µg/L (ppb)	5	50	27	12	110	280	0	0	-	2	215	-	415	0	0	-	-	-
Silver (Ag)	µg/L (ppb)	0.05	0.1	27	<0.05	-	<0.1	27	100	-	2	<0.05	-	<0.05	2	100	-	-	-
Strontium (Sr)	µg/L (ppb)	0.1	0.1	1	7	-	7	0	0	-	0	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	0.02	0.05	27	0.02	-	0.2	22	81	-	2	<0.02	-	0.07	1	50	-	-	-
Tin (Sn)	µg/L (ppb)	0.1	0.1	1	-	-	<0.1	1	100	-	0	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	10	10	1	-	-	<0.1	1	100	-	0	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	0.01	0.05	27	<0.01	-	<0.05	27	100	-	2	0.07	-	0.08	0	0	-	-	-
Vanadium (V)	µg/L (ppb)	0.5	1	27	<0.5	-	0.2	26	96	-	2	0.8	-	1.2	0	0	-	-	-
Zinc (Zn)	µg/L (ppb)	1	2	27	0.5	3	12	8	30	-	2	2	-	6	0	0	-	-	-

Source: AMEC (2004b, 2005b) and Jacques Whitford (1998, 2003b, 2004); refer to Table I3.4-1 and Appendix I.II, Table I.II-1 for more detail.

Highlighted cells and Bolded numbers indicate where a guideline is exceeded.

(a) The concentration of this metal was compared to guidelines using the median hardness concentration or the median pH value.

(b) The method detection limit for this parameter is higher than applicable guidelines.

Part 1. Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life (CCME 2006)

(a1) = Guideline is dependent on temperature and pH. The value ranges between 6.98 mg/L (pH= 7.0, temperature= 15°C) and 48.3 mg/L (pH= 6.5, temperature= 5°C).

(a2) = Guideline = 5 µg/L at pH <6.5, $[Ca^{2+}]$ <4 mg/L and DOC <2 mg/L; Guideline = 100 µg/L at pH ≥ 6.5, $[Ca^{2+}]$ ≥4 mg/L and DOC ≥ 2 mg/L.

(a3) = Cadmium guideline = $10^{[0.86\ [\log(\text{hardness})] - 3.2]}$.

(a4) = Guideline is for hexavalent chromium (Cr_{VI}) because its guideline is more stringent than the trivalent chromium (Cr_{III}) guideline of 8.9 µg/L.

(a5) = Copper guideline is dependent on $[CaCO_3]$. Guideline shown is for when $[CaCO_3]$ is 0-120 mg/L. At 120-180 mg/L of $CaCO_3$, guideline = 3 µg/L; and at >180 mg/L $CaCO_3$, guideline = 4 µg/L.

(a6) = Lead guideline is dependent on $[CaCO_3]$. Guideline shown is for $CaCO_3$ at 0-60 mg/L. At 60-120 mg/L $CaCO_3$, guideline = 2 µg/L; at 120-180 mg/L $CaCO_3$, guideline = 4 µg/L; and at >180 mg/L $CaCO_3$, guideline = 7 µg/L.

(a7) = Nickel guideline is dependent on $[CaCO_3]$. Guideline shown is for $CaCO_3$ at 0-60 mg/L. At 60-120 mg/L $CaCO_3$, guideline = 65 µg/L; at 120-180 mg/L $CaCO_3$, guideline = 110 µg/L; and at >180 mg/L $CaCO_3$, guideline = 150 µg/L.

Part 2. Guidelines for Canadian Drinking Water Quality (CDWQ) (Health Canada 2006)

(b1) = Aesthetic Objective.

(b2) = Maximum allowable concentration (MAC).

(b3) = It is recommended that the concentration be adjusted to 0.8 to 1.0 mg/L, which is the optimum range for the control of dental cavities.

(b4) = Equivalent to 10 mg/L as nitrate-nitrogen. Where nitrate and nitrite are determined separately, levels of nitrite should not exceed 3.2 mg/L.

(b5) = True colour guideline - the mean absorbance of filtered water samples at 456 nm shall not be significantly higher than the seasonally adjusted expected value for the system under consideration.

(b6) = A health-based guideline for aluminum in drinking water has not been established. Operational guidance values of less than 100 µg/L total aluminum for conventional treatment plants and less than 200 µg/L total aluminum for other types of treatment systems are recommended.

% = percent; < = less than; ≤ = less than or equal to; - = not available.

I4.1.2.2.3 Nutrients

The concentration of inorganic nitrogen, such as ammonia, nitrate, and nitrite were generally below the detection limit (80 to 100 percent of results were below the detection limit; Table I4.1-4). Total Kjeldahl nitrogen (TKN) was usually measured at low concentrations (median of 0.4 mg/L), with highest concentrations reported in Lake E2 (maximum of 3 mg/L). Total phosphorus was not detected in over half the measurements.

The observed concentrations of nutrients indicate that the lakes have an oligotrophic status. This trophic status indicates that biological productivity of lakes in the Kennady Lake watershed is low.

I4.1.2.2.4 Organics

The organic content measured by TOC and DOC was under 20 mg/L in all lakes with the exception of Lake E2 (Table I4.1-4). The TOC and DOC measured in Lake E2 varied between 19 and 39 mg/L. The water colour often exceeded the CDWQ (median of 23 TCU), with readings from Lake E2 being much higher than in other lakes (ranging from 125 to 175 TCU).

The COD of the water was variable in most lakes (ranging from 11 to 62 mg/L; Table I4.1-4), with the highest measurements reported for Lake E2 (ranging from 69 to 133 mg/L). Phenols were not detected in Lake E2, while CWQG exceedances were observed once in lakes A1 and G1 during summer.

Oil and grease, and total petroleum hydrocarbons (TPH) were generally not detected (Table I4.1-4); however, respective concentrations of 208 mg/L and 62 mg/L were observed during summer (August) at the outlet of Lake A3. The elevated concentrations of these parameters at the outlet of Lake A3 were not observed during other sampling events and may be attributed to a natural increase in hydrocarbons from the decay of vegetation in the outlet channel borne through runoff.

I4.1.2.2.5 Metals

The concentrations of many metals were generally low or below the detection limit, with little variability measured between lakes (Table I4.1-4). For metals reported above the detection limit, Lake E2 tended to have higher concentrations than other lakes in the Kennady Lake watershed. The other lakes had similar concentrations and no pattern was discernible.

Applicable guidelines were commonly exceeded for the following total metal parameters:

- Aluminum exceeded the aquatic life guideline in several lakes, with Lake E2 having the highest concentration (Table I4.1-4). Of the 42 sampling events throughout the lakes, guidelines were exceeded eight times, while non-detectable concentrations associated with detection limits greater than the CWQG were observed for 17 samples. In Lake E2, where aluminum concentrations were highest, the range in concentrations was 207 to 1130 μg/L. Aluminum concentrations ranged between 12 and 240 μg/L in the remaining lakes.
- In all lakes, excluding Lake E2, chromium, copper, and iron exceeded applicable guidelines in five samples, while zinc exceeded the CWQG in four samples (Table I4.1-4).
- In Lake E2, chromium, copper, iron, and selenium concentrations exceeded applicable guidelines at least once, with higher overall concentrations for these parameters relative to the other lakes in the watershed (Table I4.1-4).

The range in concentration of dissolved metals was generally similar to the total metals, indicating that most of the metals concentrations were bio-available (Table I4.1-4). In Lake E2, dissolved aluminum concentrations were significantly lower than total aluminum concentrations, with the dissolved fraction ranging between 134 and 168 μg/L and still exceeding the CWQG to protect aquatic life.

Chronic toxicity under baseline conditions from aluminum exposure is possible for several lakes due to persistently high concentrations of the metal coupled with several low pH measurements. Since the concentration of aluminum was generally similar in magnitude to Kennady Lake and no industrial activity is present, the aluminum concentrations are assumed to be from natural sources. Similarly, the other times when guidelines are exceeded are thought to result from natural values.

I4.1.2.3 Sediment Quality

Baseline sediment sampling was not conducted for lakes in the Kennady Lake watershed, nor were any historical data available. The composition of the sediment in these lakes is undetermined; however, changes to sediment quality as a result of the Project are not expected in any of the lakes in the Kennady Lake watershed.

I4.1.2.4 Summary

Lakes in the sub-watersheds of Kennady Lake had very similar physical limnology and water chemistry, with the exception of Lake E2, which had distinct chemical characteristics.

The selected water quality indicators and metals summarized in Section I4.1.1.3 were used in this section to display the relative fluctuation in the median concentration of these parameters between different lakes in the Kennady Lake watershed (Table I4.1-5).

Table I4.1-5 Summary of Median Concentrations of Representative Water Quality Parameters for Lakes in the Kennady Lake Watershed Over the Study Period, 1995 to 2005

Waterbody Identifier	TDS (mg/L)	Specific Conductivity (µS/cm)	TOC (mg/L)	Total Aluminum (µg/L)	Total Copper (µg/L)	Total Iron (µg/L)
CWQG Guideline	-	-	-	5 or 100	2 to 4	300
CDWQ Guideline	≤500	-	-	100	≤1,000	≤300
Ka Sub-watershed						
A1	19	12	4	<20	<5	51
A2	<10	-	-	<20	<5	162
A3	27	15	4	<20	<1 to <5[(a)]	<50
B1	21	12	5	73	<1 to <5[(a)]	292
D1	26	16	9	66	<5	220
D3	16	9	6	23	<1	80
D7	14	12	6	<20	<5	117
D10	20	18	9	61	<1 to <5[(a)]	111
Ka	4	16	-	240	6	-
Kb Sub-watershed						
Kb2	<10	-	-	40	<5	168
Kb3	<10	-	-	50	8	194
Kb4	6	20	-	230	2	-
Kc Sub-watershed						
E1	19	14	6	22	<5	171
E2	55	40	26	273	5	853
E3	16	20	12	138	<5	185
Kd Sub-watershed						
G1	28	20	9	<20	<5	327
Ke Sub-watershed						
I1	24	17	4	<20	<5	77
I2	13	-	-	130	12	437
J1	14	14	-	30	<5	112
J2	<10	-	-	100	<5	540

Notes: Highlighted cells indicate where a guideline was exceeded.

(a) Most concentrations were under detection, thus a range was provided.

TDS = total dissolved solids; TOC = total organic carbon; < = less than; ≤ = less than or equal to; mg/L = milligrams per litre; µg/L = micrograms per litre; µs/cm = microSiemens per centimetre; CWQG = Canadian Water Quality Guidelines; CDWQ = Guideline(s) for Canadian Drinking Water Quality; - = not available.

I4.1.3 Lakes Downstream of Kennady Lake

Lakes downstream of Kennady Lake include several lakes in the L and M watersheds (Figure I2.1-3). The overall drainage area at the outlet of the most downstream lake (Lake M1) is 56.71 km^2, which includes the entire drainage area of Kennady Lake and associated sub-watersheds, as well as the L and M watersheds (Table I2.1-3).

The Kennady Lake watershed consists of various waterbodies that drain via the northern section of K5 basin, herein referred to as K5 outlet. The K5 outlet drains into the L watershed, which in turn connects to the M watershed before the water enters Lake 410 (Figure I2.1-3).

Lakes of several sizes and depths are present in the L and M watersheds. In smaller lakes, only grab water samples and in-situ spot measurements were collected during open water conditions. Vertical profiles collected during both under-ice and open water conditions from deeper lakes are presented in Section I4.1.3.1. Information on water quality and sediment quality are presented in Sections I4.1.3.2 and I4.1.3.3.

I4.1.3.1 Physical Limnology and Vertical Structure

Vertical profile data for physical parameters, such as temperature and DO, were collected during open water conditions of Lake L21 and during both open water and under-ice conditions of lakes M3 and M4. In-situ spot measurements were collected in other lakes, the results of which are presented in Appendix I.II, Table I.II-1.

I4.1.3.1.1 Under-Ice Conditions

Temperature

The temperature in lakes M3 and M4, taken in 2003, was inversely stratified during under-ice conditions (Figure I4.1-11). Cooler waters approaching 0°C occurred immediately below the ice with temperatures gradually increasing with increased depth. Maximum temperatures (around 4°C) occurred generally at the near bottom depths within the water column. The temperature profile was similar between sampling events and lakes; however, the temperature in Lake M4 increased incrementally less throughout the water column.

Dissolved Oxygen

The DO profiles, taken in 2003, displayed similar patterns between sampling events and between lakes (Figure I4.1-12). High oxygenation was measured at the ice-water interface, decreasing below the acceptable CWQG range at near bottom depths in Lake M3.

Figure I4.1-11 Under-Ice Profiles of Temperature for Lakes M3 and M4 Located Downstream of Kennady Lake, 2003

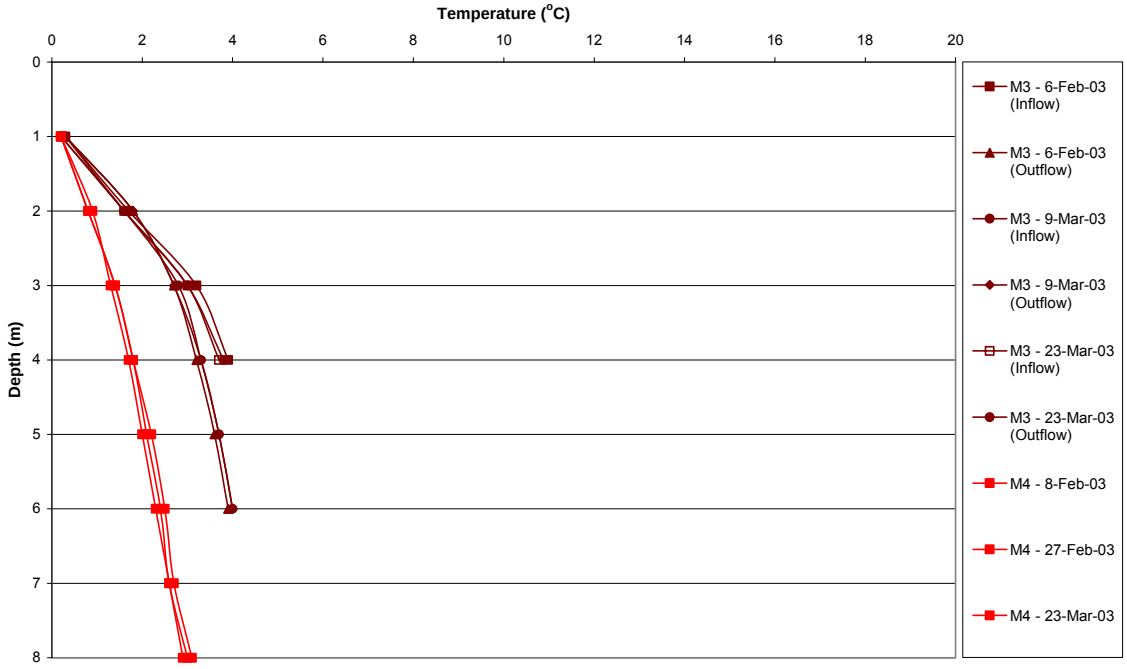
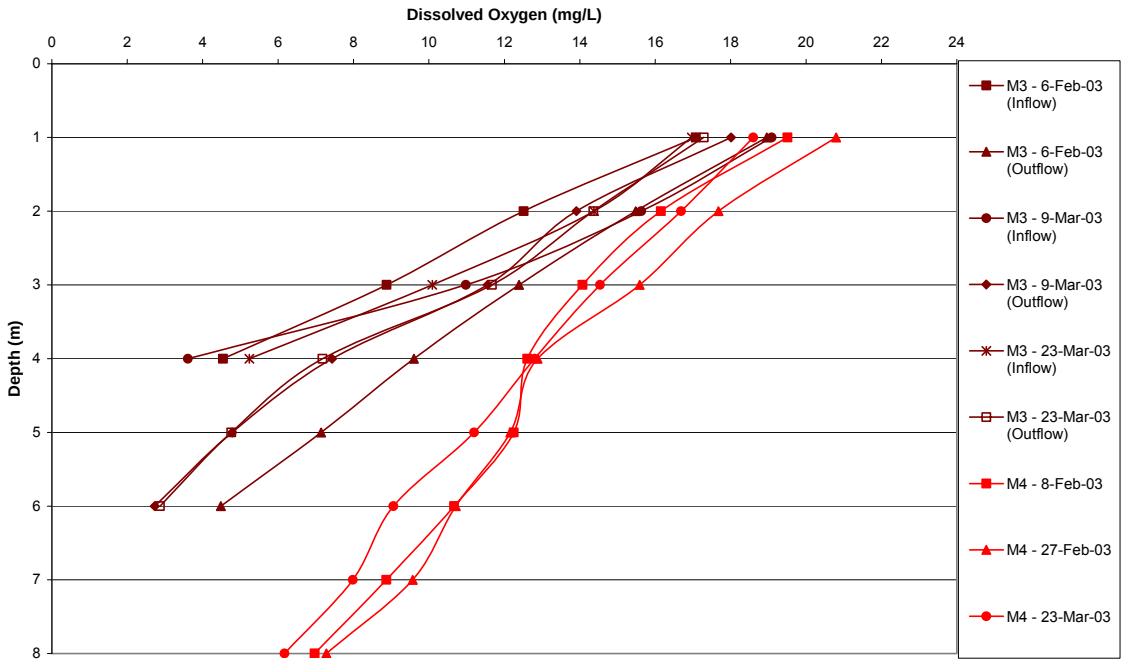


Figure I4.1-12 Under-Ice Profiles of Dissolved Oxygen for Lakes M3 and M4 Located Downstream of Kennady Lake, 2003



Concentrations of DO had a range of 17 to 21 mg/L just below the ice-water interface. Concentrations dropped substantially with increasing depth throughout the water column to less than 6 mg/L in Lake M3 and between 7 and 9 mg/L in Lake M4.

Oxygenation was generally measured in higher concentration at all depths in Lake M4 as compared to Lake M3. Oxygenation in lakes M3 and M4 near the surface was similar in range to observations in Kennady Lake; however, near anoxic conditions were measured at near-bottom depths in Kennady Lake. Less oxygen depletion was observed in lakes M3 and M4.

Specific Conductivity

Neither vertical profiles nor in-situ spot measurements were collected during under-ice conditions from lakes downstream of Kennady Lake. Analytical measurements of water samples taken from lakes during under-ice conditions had specific conductivity values in the range of 19 to 25 μS/cm (Appendix I.II, Table I.II-1).

The specific conductivity in these lakes was slightly higher than Kennady Lake. The slight increase is presumably due to loading of ions as water travels downstream from the headwaters of the Kennady Lake watershed into the L and M watersheds.

pH

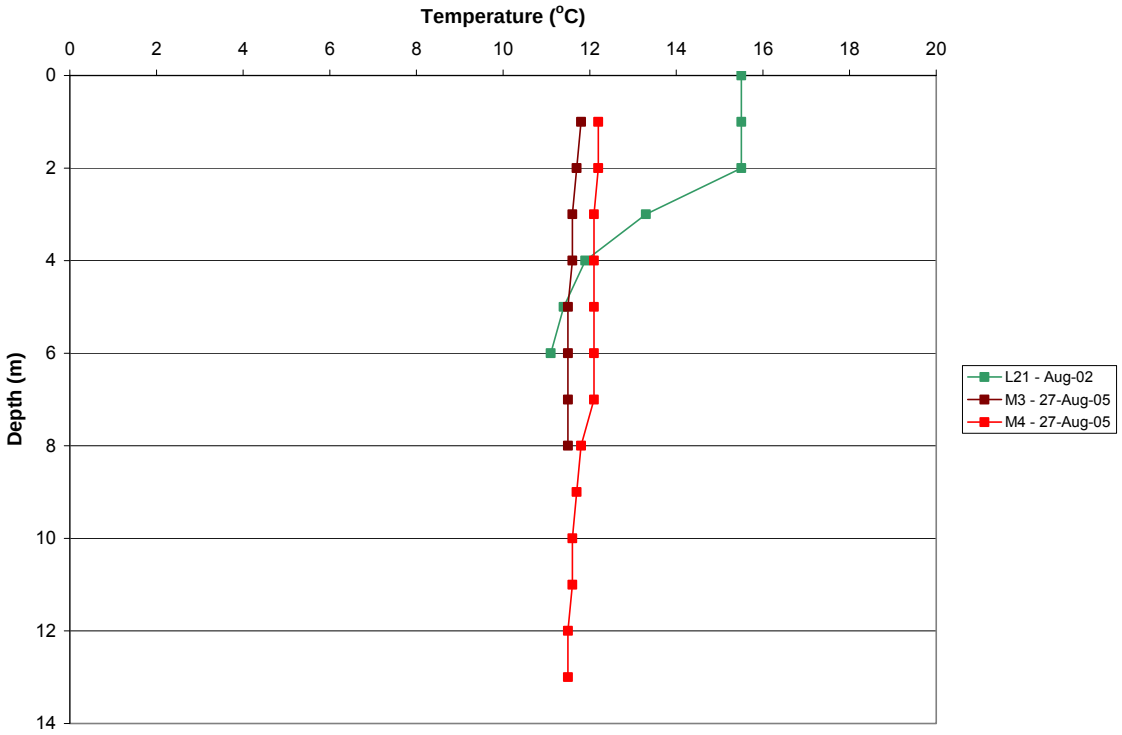
Neither vertical profiles nor in-situ spot measurements were collected during under-ice conditions from lakes downstream of Kennady Lake. Analytical measurements of water samples taken from lakes during under-ice conditions had pH values in the range of 6.1 to 6.6 pH units (Appendix I.II, Table I.II-1). Most pH readings were below the acceptable CWQG and CDWQ ranges; however, they were within the range measured in Kennady Lake.

I4.1.3.1.2 Open Water Conditions

Temperature

Surface temperature of the surveyed lakes downstream of Kennady Lake varied between 11 and 17°C (Appendix I.II, Table I.II-1). Temperature profile measurements were taken in August of 2002 and 2005 from Lakes L21, M3, and M4 (Figure I4.1-13). The lakes had near surface temperatures ranging from 12 to 16°C and the lakes surveyed in the M watershed were well-mixed. A seasonal thermocline was recorded between 2 and 4 m in Lake L21, where the temperature decreased from 16 to 12°C.

Figure I4.1-13 Open Water Profiles of Temperature for Lakes L21, M3, and M4 Located Downstream of Kennady Lake, 2002 and 2005



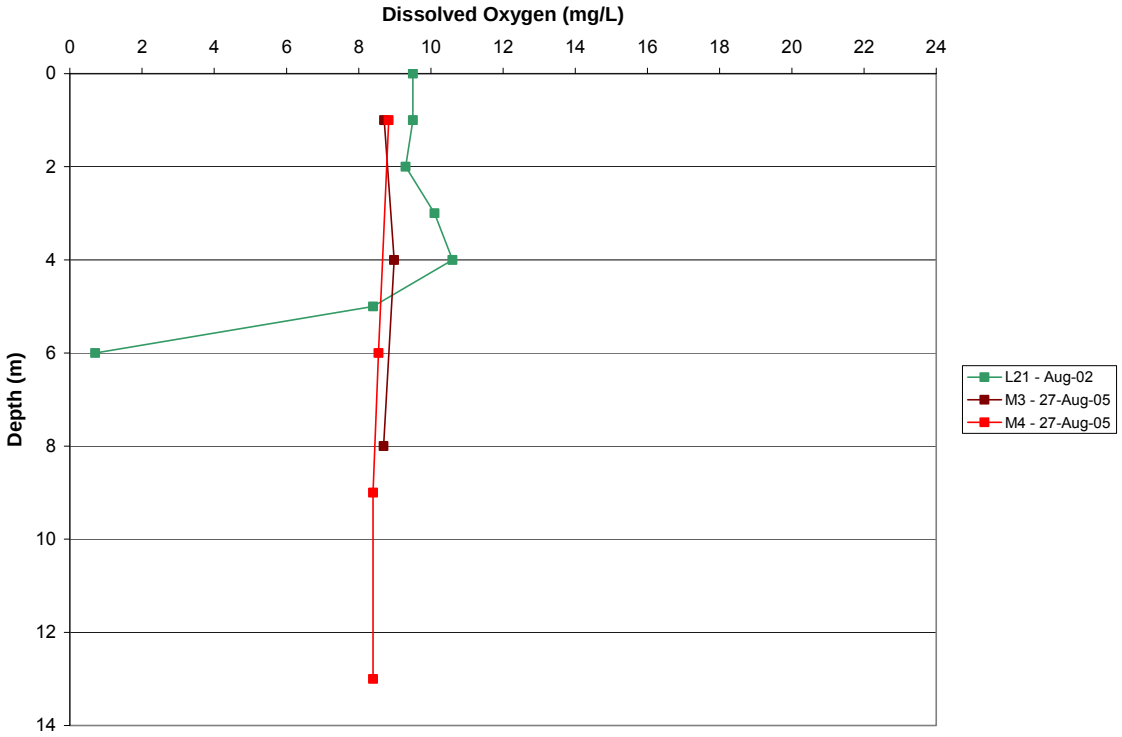
The temperature profiles measured in lakes M3 and M4 during open water conditions were consistent with temperature characteristics in Kennady Lake. No thermocline similar to the one measured in Lake L21 was observed in Kennady Lake, although deeper thermoclines were observed in Basin K3 of Kennady Lake.

Dissolved Oxygen

The near surface concentration of DO in the lakes varied between 9 and 12 mg/L (Appendix I.II, Table I.II-1). The DO concentrations were greater near the surface in lakes in the L watershed than the minimum acceptable CWQG range. However, in Lake L21, the DO had a concentration of nearly 10 mg/L near the surface, increasing to 11 mg/L within the thermocline before decreasing to near anoxia at 6 m.

The DO vertical profiles had very little variability between surface and bottom in Lakes M3 and M4 and ranged in concentration between 9 and 10 mg/L (Figure I4.1-14).

Figure I4.1-14 Open Water Profiles of Dissolved Oxygen for Lakes L21, M3, and M4 Located Downstream of Kennady Lake, 2002 and 2005



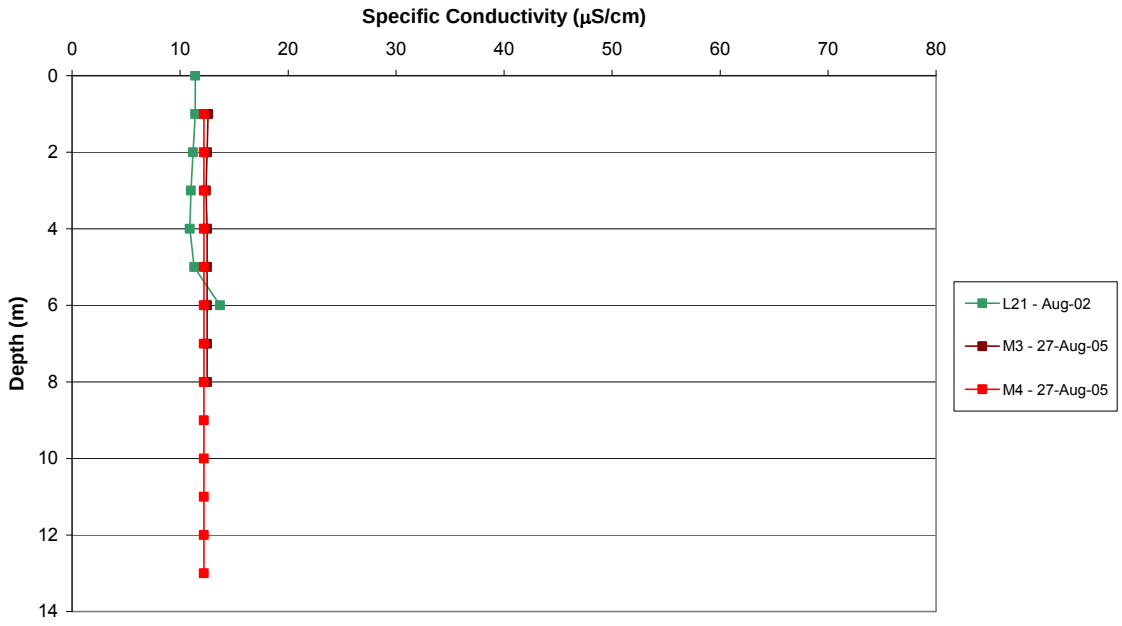
Specific Conductivity

The specific conductivity was only measured as vertical profiles in lakes L21, M3, and M4. The vertical profiles were consistent between lakes, ranging between 12 and 13 µS/cm, with very little variability throughout the water column (Figure I4.1-15). Ions were equally distributed throughout each surveyed lake, similar to findings for Kennady Lake. The low specific conductivity measurements indicated that these lakes had very low concentrations of dissolved substances.

pH

The surface pH readings for the lakes downstream of Kennady Lake varied between 6.6 and 8.3 pH units (Appendix I.II, Table I.II-1). Lakes in the L watershed were slightly acidic to slightly alkaline (pH = 6.6 to 7.3), while the lakes in the M watershed were slightly acidic (6.3 to 6.5). All pH measurements were within the acceptable range of the CWQG and CDWQ. No vertical pH profiles were measured in any lake.

Figure I4.1-15 Open Water Profiles of Specific Conductivity for Lakes L21, M3, and M4 Located Downstream of Kennady Lake, 2002 and 2005



I4.1.3.2 Water Quality

I4.1.3.2.1 Overview

Since the lakes downstream of Kennady Lake receive the major contribution of substances from Kennady Lake and associated watersheds, the water quality similarities and differences within the L and M watersheds are discussed and compared to baseline conditions in Kennady Lake. The available data for lakes downstream of the Kennady Lake watershed are presented in Table I4.1-6 for both under-ice and open water conditions.

I4.1.3.2.2 Conventional Parameters and Major Ions

Alkalinity was low in most lakes downstream of Kennady Lake (medians of 5 and 10 mg/L for under-ice and open water conditions, respectively; Table I4.1-6), with several measurements below the detection limit. Hardness was less than 10 mg/L during under-ice and open water conditions. These hardness and alkalinity results indicate that water in these lakes is soft and has a low buffering capacity.

Table I4.1-6 Water Quality Summary for Lakes Downstream of Kennady Lake, 1995 to 2005

Parameter	Unit	Method Detection Limit		Under-ice conditions							Open Water Conditions							Guidelines	
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
																		CCME (2006)	Health Canada (2006)
Conventional Parameters and Major Ions																			
pH	pH Units	0.01	0.1	21	**6.1**	6.5	6.6	0	0	9	9	**6.1**	6.5	6.8	0	0	4	6.5 to 9	6.5 to 8.5[(b1)]
Conductivity, Specific	µS/cm	0.2	2	21	19	21	25	0	0	-	9	9	16	25	0	0	0	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	1	5	21	1	5	21	8	38	-	10	1	10	30	2	20	-	-	-
Hardness, Total	mg/L (ppm)	0.05	6	21	7	8	9	0	0	-	10	0.5	4	7	0	0	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	0.1	20	21	9	10	13	0	0	0	8	4	31	39	2	25	0	-	≤500[(b1)]
Total Suspended Solids (TSS)	mg/L (ppm)	1	3	21	<1	-	<3	21	100	0	6	<1	-	<2	6	100	-	-	-
Turbidity	NTU	0.1	0.1	21	<0.1	-	<0.1	21	100	0	6	0.5	**1**	**2**	0	0	4	-	1[(b2)]
Calcium	mg/L (ppm)	0.5	0.5	21	1.5	1.7	2	0	0	-	8	0.5	1	1.9	0	0	-	-	-
Magnesium	mg/L (ppm)	0.1	0.5	21	0.7	0.8	0.9	0	0	-	8	0.4	-	0.6	4	50	-	-	-
Potassium	mg/L (ppm)	0.1	0.5	21	0.5	0.6	0.8	0	0	-	8	0.1	-	0.5	4	50	-	-	-
Sodium	mg/L (ppm)	0.5	1	21	0.8	1.1	2	0	0	0	8	<1	2	3	4	50	0	-	≤200[(b1)]
Bicarbonate	mg/L (ppm)	1	5	21	9	10	10	0	0	-	8	1	12	36	2	25	-	-	-
Carbonate	mg/L (ppm)	0.5	5	21	<5	-	<5	21	100	-	8	<0.5	-	<5	8	100	-	-	-
Chloride	mg/L (ppm)	0.1	1	21	<1	-	1	18	86	0	10	0.2	0.6	1	4	40	0	-	≤250[(b1)]
Fluoride	mg/L (ppm)	0.02	0.05	21	<0.05	-	<0.05	21	100	0	6	0.02	0.03	0.05	0	0	0	-	1.5[(b3)]
Sulphate	mg/L (ppm)	0.05	1	21	1.2	1.3	1.4	0	0	0	10	0.6	1.1	1.3	2	20	0	-	≤500[(b1)]
Nutrients																			
Ammonia	mg/L (ppm)	0.005	0.1	21	0.009	0.02	0.1	0	0	0	8	0.01	-	0.02[(c)]	6	75	0	7.0 to 48.3[(a2)]	-
Nitrate	mg/L (ppm)	0.005	0.05	21	<0.006	0.03	0.1	8	38	0	10	0.005	-	0.005[(c)]	8	80	0	-	45[(b4)]
Nitrite	mg/L (ppm)	0.002	0.05	21	<0.002	0.003	0.003	12	57	0	8	<0.002	-	<0.3	8	100	0	0.06	3.2[(b4)]
Nitrate + Nitrite	mg/L (ppm)	0.006	0.006	21	<0.006	0.04	0.1	8	38	-	2	<0.06	-	<0.06	2	100	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	0.2	0.2	0	-	-	-	-	-	-	4	<0.2	-	<0.2	4	100	-	-	-
Phosphate	mg/L (ppm)	0.3	5	0	-	-	-	-	-	-	4	<0.3	-	9	2	50	-	-	-
Phosphorus, Total	mg/L (ppm)	0.001	0.02	21	0.001	0.004	0.006	0	0	-	6	<0.02	-	0.02	4	67	-	-	-
Organics																			
Oxygen Demand, Chemical (COD)	mg/L (ppm)	1	1	0	-	-	-	-	-	-	4	13	15	18	0	0	-	-	-
Colour	TCU	1	1	0	-	-	-	-	-	-	4	10	**20**	**30**	0	0	3	-	≤15[(b5)]
Oil and Grease	mg/L (ppm)	0.1	0.1	0	-	-	-	-	-	-	4	<0.1	-	<0.1	4	100	-	-	-
Phenol	mg/L (ppm)	0.002	0.002	0	-	-	-	-	-	-	4	<0.002	-	<0.002	4	100	0	0.004	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	1	1	0	-	-	-	-	-	-	4	4	4	6	0	0	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	0.2	1	21	5	6	7	0	0	-	4	3	4	6	0	0	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	0.1	0.1	0	-	-	-	-	-	-	4	<0.1	-	<0.1	4	100	-	-	-
Total Metals																			
Aluminum (Al)[(a)]	µg/L (ppb)	0.3	20	21	20	26	32	0	0	2	11	15	83	**170**	6	55	3	5 or 100[(a3)]	100[(b6)]
Antimony (Sb)	µg/L (ppb)	0.05	1	21	0.04	0.1	0.5	0	0	0	11	<0.05	-	<1	11	100	0	-	6[(b2)]
Arsenic (As)	µg/L (ppb)	0.03	1	21	0.08	0.1	0.2	0	0	0	11	<0.1	-	0.2[(c)]	8	73	0	5	10[(b2)]
Barium (Ba)	µg/L (ppb)	0.05	5	21	2	3	4	0	0	0	11	1.6	3	7	4	36	0	-	1,000[(b2)]
Beryllium (Be)	µg/L (ppb)	0.2	1	21	<0.2	-	<0.2	21	100	-	11	<0.5	-	<1	11	100	-	-	-
Bismuth (Bi)	µg/L (ppb)	0.03	50	21	<0.03	-	<0.03	21	100	-	7	<0.1	-	<50	7	100	-	-	-
Boron (B)	µg/L (ppb)	1	20	21	2	2	3	0	0	0	11	2	-	2	8	73	0	-	5,000[(b2)]
Cadmium (Cd)[(a)]	µg/L (ppb)	0.05	0.2	21	<0.05[(b)]	-	<0.05[(b)]	21	100	0	11	<0.05[(b)]	-	<0.2[(b)]	11	100	0	0.02[(a4)]	5[(b1)]

Table I4.1-6 Water Quality Summary for Lakes Downstream of Kennady Lake, 1995 to 2005 (continued)

Parameter	Unit	Method Detection Limit		Under-ice conditions							Open Water Conditions							Guidelines	
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
																		CCME (2006)	Health Canada (2006)
Chromium (Cr)	µg/L (ppb)	0.06	5	21	<0.06	0.1	0.1	11	52	0	11	<0.1	-	<5[b]	11	100	0	1[a5]	50[b1]
Cobalt (Co)	µg/L (ppb)	0.1	0.5	21	<0.1	-	0.1	18	86	-	11	<0.1	-	0.8	7	64	-	-	-
Copper (Cu)[a]	µg/L (ppb)	0.6	5	21	0.8	1	**73**	0	0	3	11	0.5	1	**4**	6	55	1	2[a6]	≤1,000[b1]
Iron (Fe)	µg/L (ppb)	5	50	21	18	46	73	0	0	0	9	5	141	260	2	22	0	300	≤300[b1]
Lead (Pb)[a]	µg/L (ppb)	0.05	0.1	21	<0.05	-	<0.05	21	100	0	11	<0.05	-	0.1	10	91	0	1[a7]	10
Lithium (Li)	µg/L (ppb)	0.1	20	21	<0.1	1.1	1.3	4	19	-	5	1	-	<20	4	80	-	-	-
Manganese (Mn)	µg/L (ppb)	0.05	1	21	1.1	5	30	0	0	0	9	2	4	31	0	0	0	-	≤50[b1]
Mercury (Hg)	µg/L (ppb)	0.01	500	21	<0.02[b]	-	<0.02[b]	21	100	0	8	<0.01[b]	-	<500[b]	8	100	0	0.026	1[b2]
Molybdenum (Mo)	µg/L (ppb)	0.05	5	21	<0.06	-	<0.06	21	100	0	11	<0.05	-	0.2[c]	9	82	0	73	-
Nickel (Ni)[a]	µg/L (ppb)	0.06	8	21	0.2	0.5	0.6	0	0	0	11	0.2	0.9	2[c]	5	45	0	25[a8]	-
Selenium (Se)	µg/L (ppb)	0.1	10	21	<0.1		<0.1	21	100	0	11	<0.4	-	<10[b]	11	100	0	1	10[b2]
Silicon (Si)	µg/L (ppb)	10	100	21	400	500	800	0	0	-	7	40	105	410	0	0	-	-	-
Silver (Ag)	µg/L (ppb)	0.01	0.4	21	<0.1	-	<0.1	21	100	-	11	<0.01	-	<0.4[b]	11	100	0	0.1	-
Strontium (Sr)	µg/L (ppb)	0.1	1	21	7	9	11	0	0	-	7	4	6	12	0	0	-	-	-
Thallium (Tl)	µg/L (ppb)	0.05	0.1	-	-	-	-	-	-	-	11	<0.05	-	<0.1	11	100	0	0.8	-
Tin (Sn)	µg/L (ppb)	0.1	20	21	0.8	3	7	0	0	-	7	<0.1	-	0.2[c]	5	71	-	-	-
Titanium (Ti)	µg/L (ppb)	3	10	-	-	-	-	-	-	-	7	3	-	<10	5	71		-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	0.01	0.1	21	<0.05	-	<0.05	21	100	-	10	0.02	-	0.06[c]	8	80	-	-	-
Vanadium (V)	µg/L (ppb)	0.05	5	21	<0.05	-	<0.05	21	100	-	11	<0.1	-	0.6[c]	8	73	-	-	-
Zinc (Zn)	µg/L (ppb)	0.8	5	21	<0.8	1.1	2	10	48	0	11	<1	6	**30**	4	36	1	30	≤5,000[b1]
Dissolved Metals																			
Aluminum (Al)	µg/L (ppb)	0.3	10	21	17	21	30	0	0	-	6	11	21	71	0	0	-	-	-
Antimony (Sb)	µg/L (ppb)	0.05	0.1	21	0.05	0.1	0.3	0	0	-	6	<0.05	-	<0.1	6	100	-	-	-
Arsenic (As)	µg/L (ppb)	0.03	0.1	21	0.09	0.1	0.3	0	0	-	6	<0.1	-	0.2	3	50	-	-	-
Barium (Ba)	µg/L (ppb)	0.05	3	21	2	3	4	0	0	-	6	<3	-	3	4	67	-	-	-
Beryllium (Be)	µg/L (ppb)	0.1	0.5	21	<0.2	-	<0.2	21	100	-	6	0.1	-	<0.5	5	83	-	-	-
Bismuth (Bi)	µg/L (ppb)	0.03	0.5	21	<0.03	-	<0.03	21	100	-	2	<0.5	-	<0.5	2	100	-	-	-
Boron (B)	µg/L (ppb)	1	4	21	2	3	3	0	0	-	6	1	-	<4	4	67	-	-	-
Cadmium (Cd)	µg/L (ppb)	0.05	0.05	21	<0.05	-	<0.05	21	100	-	6	<0.05	-	<0.05	6	100	-	-	-
Chromium (Cr)	µg/L (ppb)	0.06	0.5	21	0.07	0.1	0.2	10	48	-	6	<0.4	-	<0.5	6	100	-	-	-
Cobalt (Co)	µg/L (ppb)	0.05	0.1	21	<0.1	-	0.1	19	90	-	6	<0.05	-	0.7	5	83	-	-	-
Copper (Cu)	µg/L (ppb)	0.1	2	21	0.8	1.3	48	0	0	-	6	0.8	-	1.1[c]	4	67	-	-	-
Iron (Fe)	µg/L (ppb)	5	30	21	15	35	63	0	0	-	6	39	52	200	0	0	-	-	-
Lead (Pb)	µg/L (ppb)	0.05	0.05	21	<0.05	-	<0.05	21	0	-	6	<0.05	-	0.5	5	83	-	-	-
Lithium (Li)	µg/L (ppb)	0.1	1	21	<0.1	1.1	2	3	14	-	2	<1	-	<1	2	100	-	-	-
Manganese (Mn)	µg/L (ppb)	0.05	0.5	21	0.4	5	27	0	0	-	6	1	4	27	0	0	-	-	-
Mercury (Hg)	µg/L (ppb)	0.02	1	21	<0.02	-	<0.02	21	100	-	6	<0.01	-	<1	6	100	-	-	-
Molybdenum (Mo)	µg/L (ppb)	0.05	0.3	21	<0.06	-	<0.06	21	100	-	6	<0.05	-	<0.3	6	100	-	-	-
Nickel (Ni)	µg/L (ppb)	0.06	0.1	21	0.05	0.6	0.7	0	0	-	6	0.2	0.4	1.3	0	0	-	-	-
Selenium (Se)	µg/L (ppb)	0.1	2	21	<0.1	-	0.1	19	90	-	6	<0.1	-	<2	6	100	-	-	-
Silicon (Si)	µg/L (ppb)	5	100	21	400	600	800	0	0	-	6	65	118	390	0	0	-	-	-
Silver (Ag)	µg/L (ppb)	0.05	0.1	21	<0.1	-	<0.1	21	100	-	6	<0.05	-	5	5	83	-	-	-

Table I4.1-6 Water Quality Summary for Lakes Downstream of Kennady Lake, 1995 to 2005 (continued)

Parameter	Unit	Method Detection Limit		Under-ice conditions							Open Water Conditions							Guidelines	
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
																		CCME (2006)	Health Canada (2006)
Strontium (Sr)	µg/L (ppb)	0.1	0.1	21	7	9	11	0	0	-	2	4	-	6	0	0	-	-	-
Thallium (Tl)	µg/L (ppb)	0.02	0.05	-	-	-	-	-	-	-	6	<0.02	-	<0.05	6	100	-	-	-
Tin (Sn)	µg/L (ppb)	0.1	0.1	21	1.3	5	39	0	0	-	2	<0.1	-	<0.1	2	100	-	-	-
Titanium (Ti)	µg/L (ppb)	10	10	-	-	-	-	-	-	-	2	<10	-	<10	2	100	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	0.05	0.01	21	<0.05	-	<0.05	21	0	-	6	0.02	-	0.05	4	67	-	-	
Vanadium (V)	µg/L (ppb)	0.05	1	21	<0.05	-	<0.05	21	0	-	6	<0.5	-	<1	6	100	-	-	-
Zinc (Zn)	µg/L (ppb)	0.8	2	21	<0.8	2	7	2	0	-	6	1	-	3	3	50	-	-	-

Source: AMEC (2004b), EBA (2004b), and Jacques Whitford (1998, 2002b, 2003b, 2004); refer to Table I3.4-1 and Appendix I.II, Table I.II-1 for more detail.

Highlighted cells and **Bolded** numbers indicate where a guideline was exceeded.

(a) The concentration of this metal was compared to guidelines using the median hardness concentration or the median pH value.

(b) The method detection limit for this parameter is higher than applicable guidelines.

(c) The maximum recorded concentration was provided for this parameter.

Part 1. Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life (CCME 2006)

(a1) = Guideline is dependent on temperature and pH. The value ranges between 6.98 mg/L (pH= 7.0, temperature= 15°C) and 48.3 mg/L (pH= 6.5, temperature= 5°C).

(a2) = Guideline = 5 µg/L at pH <6.5, $[Ca^{2}+]$ <4 mg/L and DOC <2 mg/L; Guideline = 100 µg/L at pH ≥ 6.5, $[Ca^{2}+]$ ≥4 mg/L and DOC ≥2 mg/L.

(a3) = Cadmium guideline = $10^{[0.86\ [\log(\text{hardness})] - 3.2]}$.

(a4) = Guideline is for hexavalent chromium (Cr_{VI}) because its guideline is more stringent than the trivalent chromium (CrIII) guideline of 8.9 µg/L.

(a5) = Copper guideline is dependent on $[CaCO_3]$. Guideline shown is for when $[CaCO_3]$ is 0-120 mg/L. At 120-180 mg/L of $CaCO_3$, guideline = 3 µg/L; and at >180 mg/L $CaCO_3$, guideline = 4 µg/L.

(a6) = Lead guideline is dependent on $[CaCO_3]$. Guideline shown is for $CaCO_3$ at 0-60 mg/L. At 60-120 mg/L $CaCO_3$, guideline = 2 µg/L; at 120-180 mg/L $CaCO_3$, guideline = 4 µg/L; and at >180 mg/L $CaCO_3$, guideline = 7 µg/L.

(a7) = Nickel guideline is dependent on $[CaCO_3]$. Guideline shown is for $CaCO_3$ at 0-60 mg/L. At 60-120 mg/L $CaCO_3$, guideline = 65 µg/L; at 120-180 mg/L $CaCO_3$, guideline = 110 µg/L; and at >180 mg/L $CaCO_3$, guideline = 150 µg/L.

Part 2: Guidelines for Canadian Drinking Water Quality (CDWQ) (Health Canada 2006)

(b1) = Aesthetic Objective.

(b2) = Maximum allowable concentration (MAC).

(b3) = It is recommended that the concentration be adjusted to 0.8 to 1.0 mg/L, which is the optimum range for the control of dental cavities.

(b4) = Equivalent to 10 mg/L as nitrate-nitrogen. Where nitrate and nitrite are determined separately, levels of nitrite should not exceed 3.2 mg/L.

(b5) = True colour guideline - the mean absorbance of filtered water samples at 456 nm shall not be significantly higher than the seasonally adjusted expected value for the system under consideration.

(b6) = A health-based guideline for aluminum in drinking water has not been established. Operational guidance values of less than 100 µg/L total aluminum for conventional treatment plants and less than 200 µg/L total aluminum for other types of treatment systems are recommended.

µS/cm = microSiemens per centimetre; mg/L (ppm) = milligrams per litre (parts per million); % = percent; °C = degrees Celsius; < = less than; ≤ = less than or equal to; NTU = nephelometric turbidity unit; TCU = true colour unit; µg/L (ppb) = micrograms per litre (parts per billion); - = not available.

Concentrations of TDS were generally low; however, there was some variability in the amount of dissolved substances found in the different lakes. During open water conditions, the TDS concentration was three times higher than during under-ice conditions. The concentrations observed during under-ice conditions were similar to Kennady Lake, while open water concentrations were slightly higher.

Bicarbonate was the dominant anion in most lakes (Table I4.1-6). Observed sulphate concentrations were low (maximum of 1.4 mg/L) and were similar between seasons (medians of 1.3 and 1.1 mg/L for under-ice and open water conditions, respectively). Calcium was the major cation observed during both under-ice and open water conditions. The proportion of major ions measured in the L and M watersheds is very similar to those measured at Kennady Lake.

Concentrations of TSS were below detection limits during under-ice and open water conditions (Table I4.1-6). While turbidity was below detection limits during under-ice conditions, exceedances of the CWQG were observed during open water conditions. The observed turbidity during open water conditions resulted primarily from surface runoff containing suspended matter.

I4.1.3.2.3 Nutrients

Nitrate and nitrite concentrations were generally below detection limits in open water conditions, while ammonia concentrations were generally below detection limits during open water conditions (75% of observations were below detection limits; Table I4.1-6) and observed at concentrations at or above detection limits during under-ice conditions. Total phosphorus concentrations were below detection limits in over half of the samples during open water conditions.

These nutrient concentrations indicate that the lakes downstream of Kennady Lake have an oligotrophic status. Similar to Kennady Lake and upstream watersheds, this trophic status indicates that the lakes in the L and M watersheds have low biological productivity.

I4.1.3.2.4 Organics

The TOC and DOC concentrations in the L and M watersheds ranged from 3 to 7 mg/L (Table I4.1-6) and were similar to those observed in Kennady Lake (Table I4.1-1). The water colour often exceeded the CDWQ during open water conditions, due to the DOC borne through the runoff of decaying organic matter.

The COD of the water was slightly variable (ranging from 13 to 18 mg/L; Table I4.1-6), and was similar to observations in Kennady Lake (Table I4.1-1).

Oil and grease, phenol and petroleum hydrocarbons were not detected in the L and M watersheds.

I4.1.3.2.5 Metals

The concentrations of several metals were generally low or below the detection limit, with little variability measured between lakes or between under-ice and open water conditions (Table I4.1-6). The range in concentrations measured in the L and M watersheds were similar to Kennady Lake and the Kennady Lake watersheds. Exceedances of applicable guidelines were common for the following total metal parameters:

- Aluminum exceeded the aquatic life guideline (CWQG) more frequently during open water conditions (Table I4.1-6). Fewer exceedances were measured during under-ice conditions because the water pH was usually 6.5 pH units or higher.
- Copper and zinc also exceeded aquatic life guidelines on more than one occasion.

The range in concentration of dissolved metals was generally similar to the range observed in total metals.

I4.1.3.3 Sediment Quality

Baseline sediment sampling was not conducted for lakes downstream of Kennady Lake, nor were any historical data available. The composition of the sediment in these lakes is undetermined.

I4.1.3.4 Summary

Lakes downstream of Kennady Lake were delineated into the L and M watersheds. The L watershed receives the water from Kennady Lake. The M watershed receives flows from Kennady Lake and the L watershed, along with water from several headwater lakes. The lakes in the L and M watersheds had very similar limnological and chemical characteristics as Kennady Lake and the smaller lakes in the Kennady Lake sub-watersheds.

The selected water quality indicators and metals, summarized in Section I4.1.1.3, were used in this section to display the relative fluctuation in the median concentration of these parameters between different lakes in the L and M watersheds (Table I4.1-7), with comparison to observations at the outlet of Kennady Lake (basin K5 outlet).

Table I4.1-7 Summary of Median Concentrations of Representative Water Quality Parameters in Lakes Downstream of Kennady Lake Over the Study Period, 1995 to 2005

Waterbody Identifier	TDS (mg/L)	Specific Conductivity (µS/cm)	TOC (mg/L)	Total Aluminum (µg/L)	Total Copper (µg/L)	Total Iron (µg/L)
CWQG Guideline	-	-	-	5 or 100	2 to 4	300
CDWQ Guideline	≤500	-	-	100	≤1,000	≤300
K5 Outlet	21	17	3	14	<5	52
L watershed						
L1	26	20	3	<20	<5	<50
L4	4	19	-	150	4	-
L14	23	19	6	<20	<5	74
L15	<10	-	-	90	<5	184
L21	<10	-	-	<20	<5	141
M watershed						
M3a (Inflow)	11	22	6	30	1	61
M3a (Outflow)	10	20	6	29	0.9	45
M4a	39	9	-	83	1.3	260
M4 (Under Ice)	9	21	5	20	1.1	28
M4 (Open Water)	22	11	-	47	1	120

Notes: Highlighted cells indicate where a guideline was exceeded.

TDS = total dissolved solids; TOC = total organic carbon; < = less than; ≤ = less than or equal to; mg/L = milligrams per litre; µg/L = micrograms per litre; µs/cm = microSiemens per centimetre; CWQG = Canadian Water Quality Guidelines; CDWQ = Guideline(s) for Canadian Drinking Water Quality; - = not available.

I4.1.4 Lakes in the N Watershed

The N watershed is located directly north of Kennady Lake, and drains into Lake 410 through a different inlet than the water from the M watershed. The total drainage area of the N watershed into Lake 410 is 182.52 km^2 (Table I2.1-3). Lakes in the N watershed include several headwater lakes that are not connected directly to Kennady Lake and the L and M watersheds (Figure I2.1-3).

Lakes of several sizes and depths are present in the N watershed. In most lakes, only grab water samples and in-situ spot measurements were collected during open water conditions. Vertical profiles were collected during both under-ice and open water conditions from Lake N16. In-situ measurements, and water quality are presented in Section I4.1.4.2. Information on sediment quality is presented in Section I4.1.4.3.

I4.1.4.1 Physical Limnology and Vertical Structure

Vertical profile data for physical parameters were collected during both open water and under-ice conditions for Lake N16. In-situ spot measurements were collected in several other lakes, the results of which are presented in Appendix I.II, Table I.II-1.

I4.1.4.1.1 Under-Ice Conditions

Temperature

The temperature in Lake N16, taken in 2004, showed that the lake was inversely stratified. The temperature increased from 1°C at the ice-water interface to 2°C at depths of 6 m and greater (Figure I4.1-16). Inversely stratified conditions measured in this lake were similar to conditions in Kennady Lake.

Dissolved Oxygen

A DO vertical profile was measured for Lake N16 in 2004 (Figure I4.1-17). The concentration of DO was below the lowest acceptable guideline for early life stages of cold water fish but above the guidelines for other life stages between the ice-water interface and 6 m. The concentration was below the CWQG at 6.5 mg/L for other lake stages of cold water fish at depths greater than 6 m, while anoxic conditions were measured at depths greater than 9 m. The level of oxygenation measured in Lake N16 was within the same range measured in lakes within the Kennady Lake watershed and the L and M watersheds.

Specific Conductivity

In-situ spot measurements were not collected during under-ice conditions from lakes in the N Watershed. One vertical profile was measured in Lake N16 during late winter (May) of 2004 (Figure I4.1-18). The specific conductivity ranged from 9 μS/cm at the ice-water interface to 11 μS/cm at a depth of 10 m.

pH

Vertical profiles and in-situ spot measurements were not collected during under-ice conditions from lakes in the N watershed.

Figure I4.1-16 Under-Ice Profiles of Temperature for Lake N16, 2004

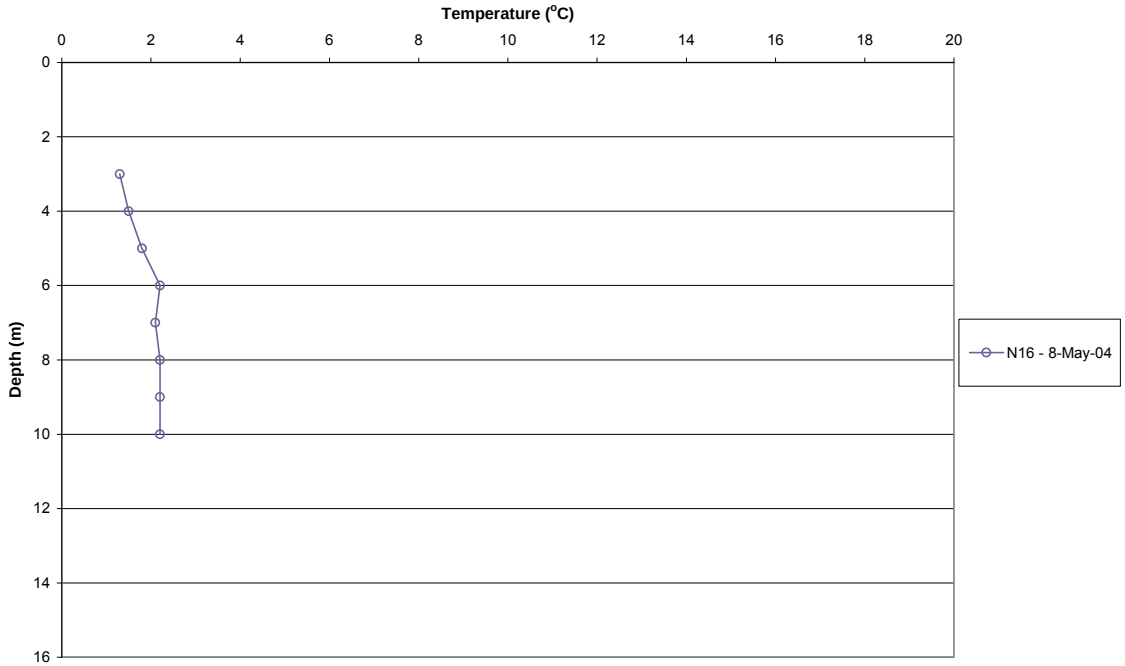


Figure I4.1-17 Under-Ice Profiles of Dissolved Oxygen for Lake N16, 2004

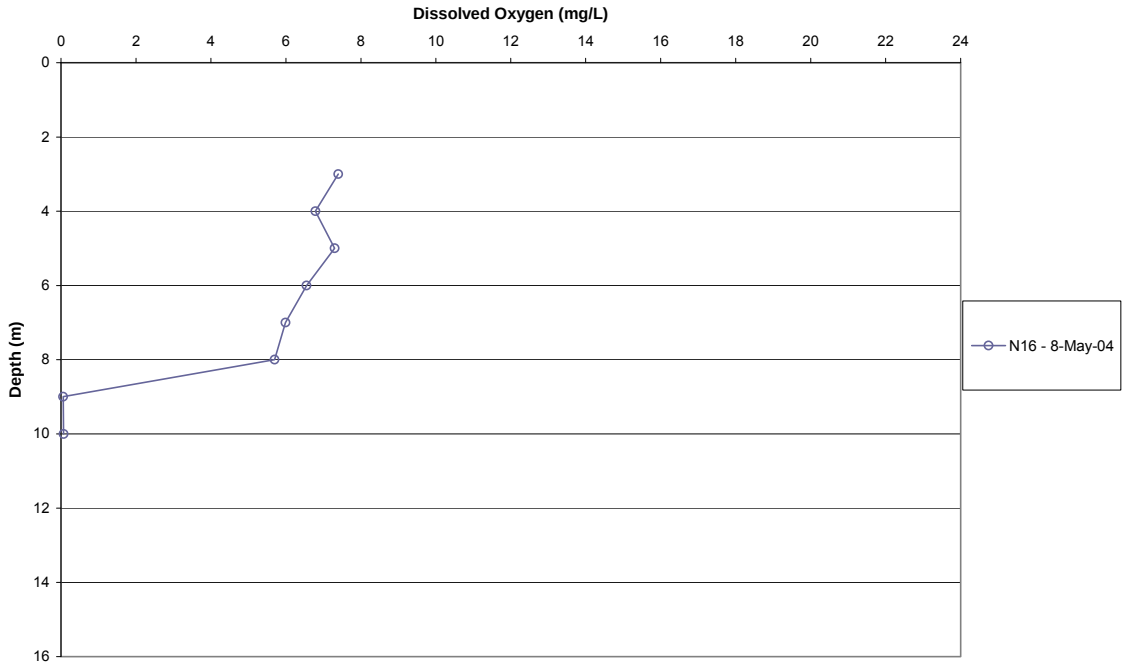
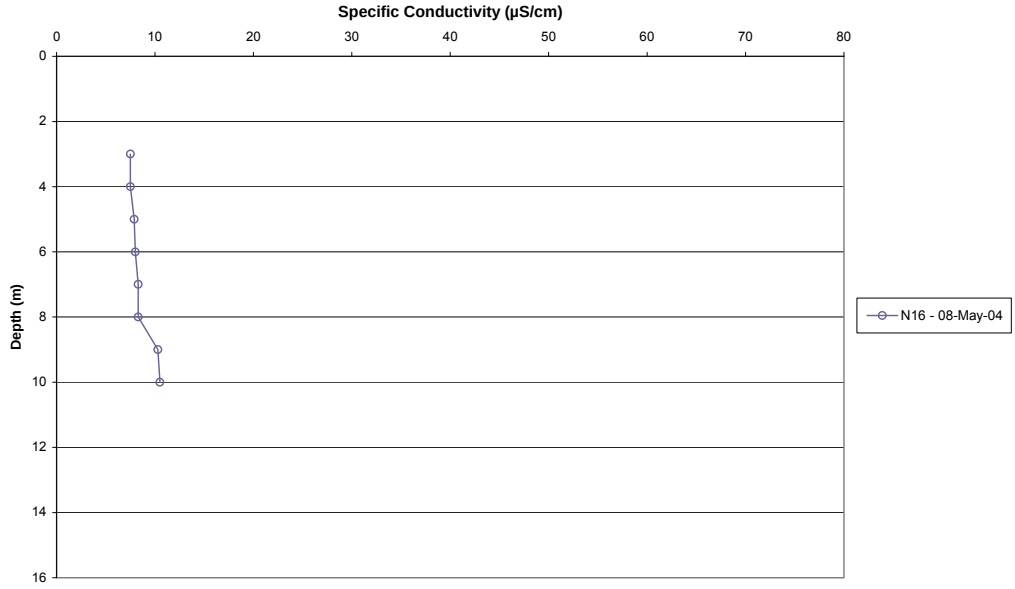


Figure I4.1-18 Under-Ice Profiles of Specific Conductivity for Lake N16, 2004



I4.1.4.1.2 Open Water Conditions

Temperature

Near surface temperature of the lakes in the N watershed varied between 5 and 20°C (Appendix I.II, Table I.II-1). Temperature vertical profile measurements were taken in August of 2004 and 2005 from Lake N16 (Figure I4.1-19). The lakes had near surface temperatures ranging from about 8 to 13°C and were well-mixed.

Dissolved Oxygen

The near surface concentration of DO in lakes in the N watershed varied between 5 and 13 mg/L (Appendix I.II, Table I.II-1). The DO concentration was below the minimum acceptable concentration of 6.5 mg/L for cold water fish (CWQG) in Lake N8 during the spring of 2000. Concentrations greater than the CWQG minimum acceptable concentrations (6.5 to 9.5 mg/L) were measured in several lakes within the N watershed during all seasons.

The DO vertical profiles for Lake N16 showed generally very little variability between surface and bottom; they ranged in concentration between 10 and 11 mg/L (Figure I4.1-20). The profile measured in August 2005 had a decrease in the concentration of DO from 11 to 8 mg/L between 6.5 and 7 m. This decrease near the bottom of the lake is likely due to oxygen depletion by organic matter in the sediment.

Figure I4.1-19 Open Water Profiles of Temperature for Lake N16, 2004 and 2005

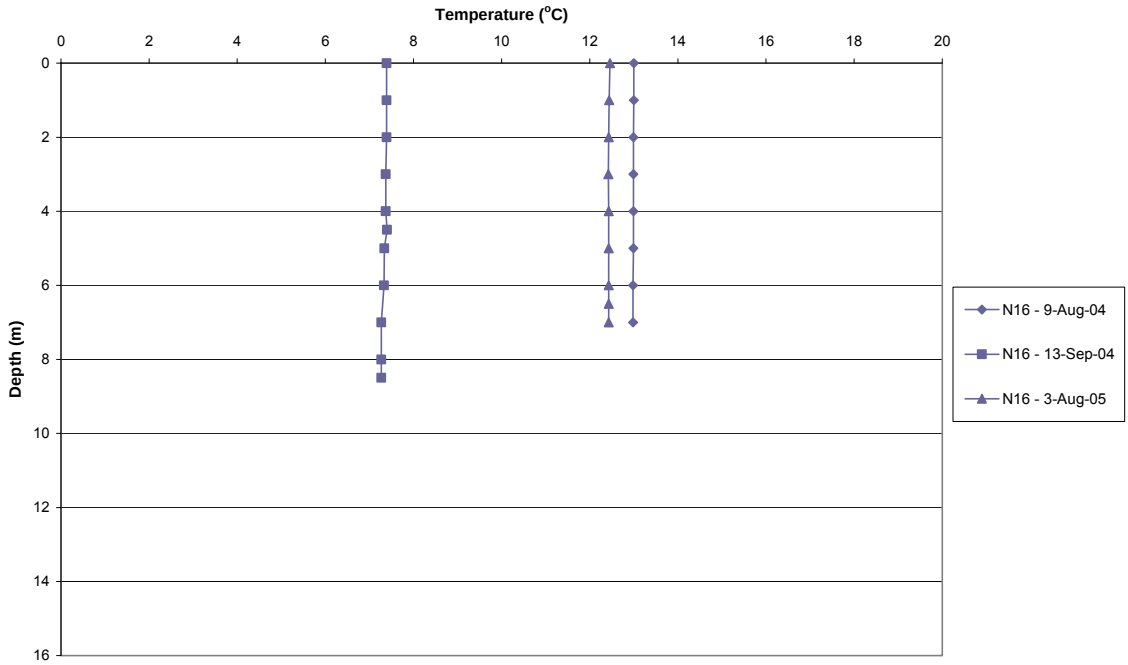
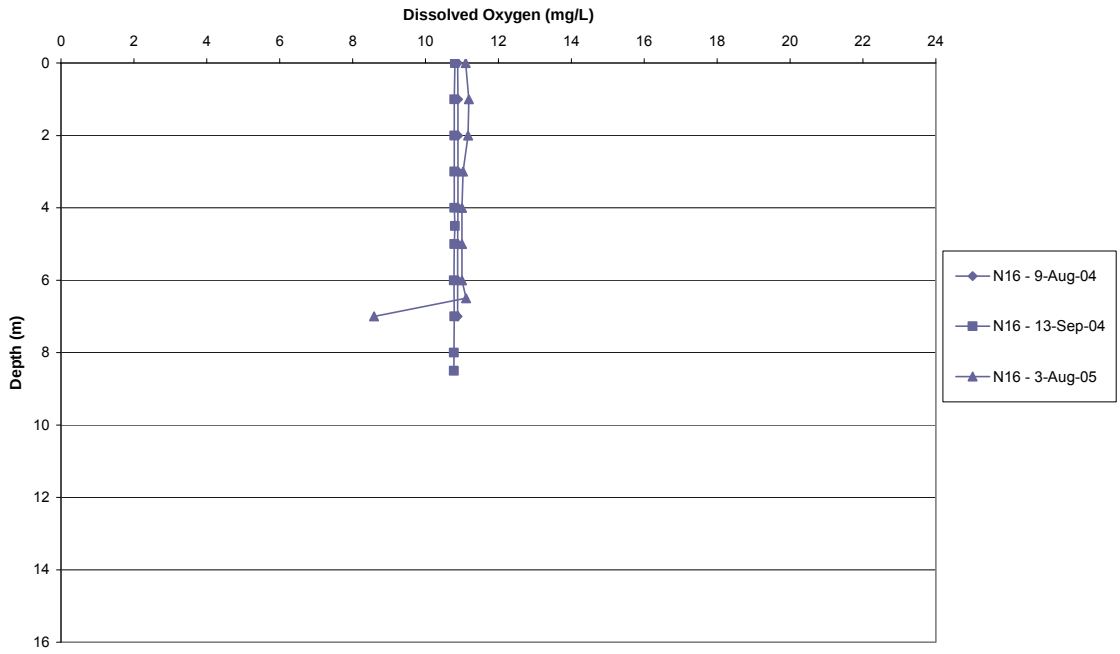


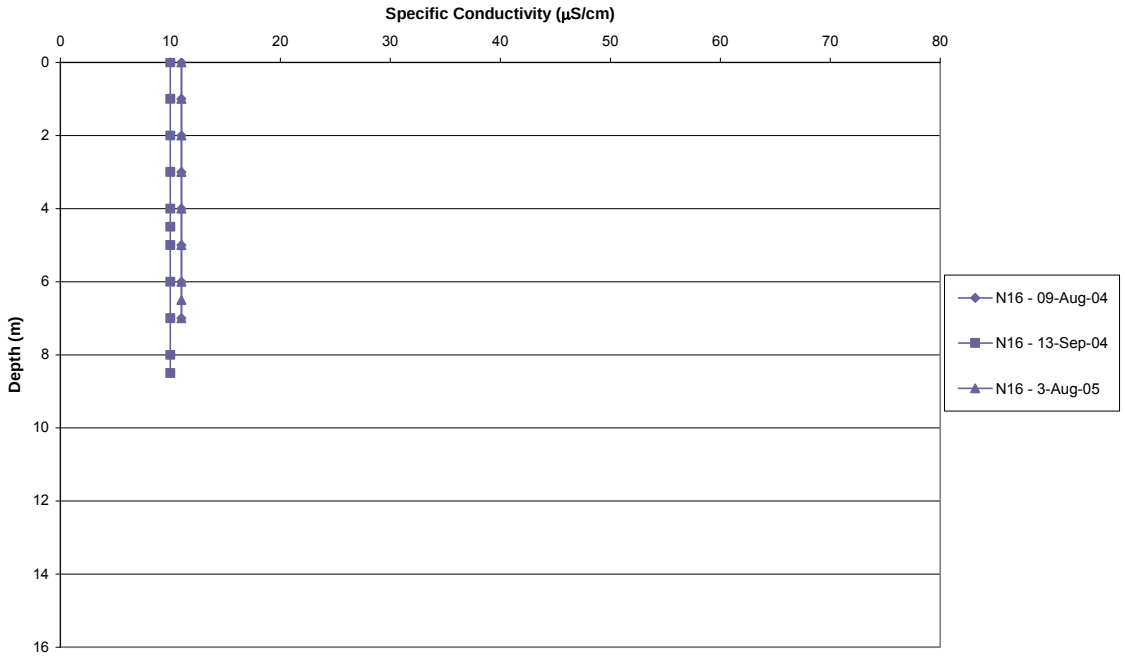
Figure I4.1-20 Open Water Profiles of Dissolved Oxygen for Lake N16, 2004 and 2005



Specific Conductivity

Near-surface specific conductivity of the lakes in the N watershed varied between 6 and 17 μS/cm (Appendix I.II, Table I.II-1). The low specific conductivity measurements indicate that lakes in the N watershed, like Kennady Lake, contained very low concentrations of dissolved substances. The vertical profile data collected in August of 2004 and 2005 from Lake N16 ranged between 10 and 11 μS/cm, with very little variability measured throughout the water column (Figure I4.1-21).

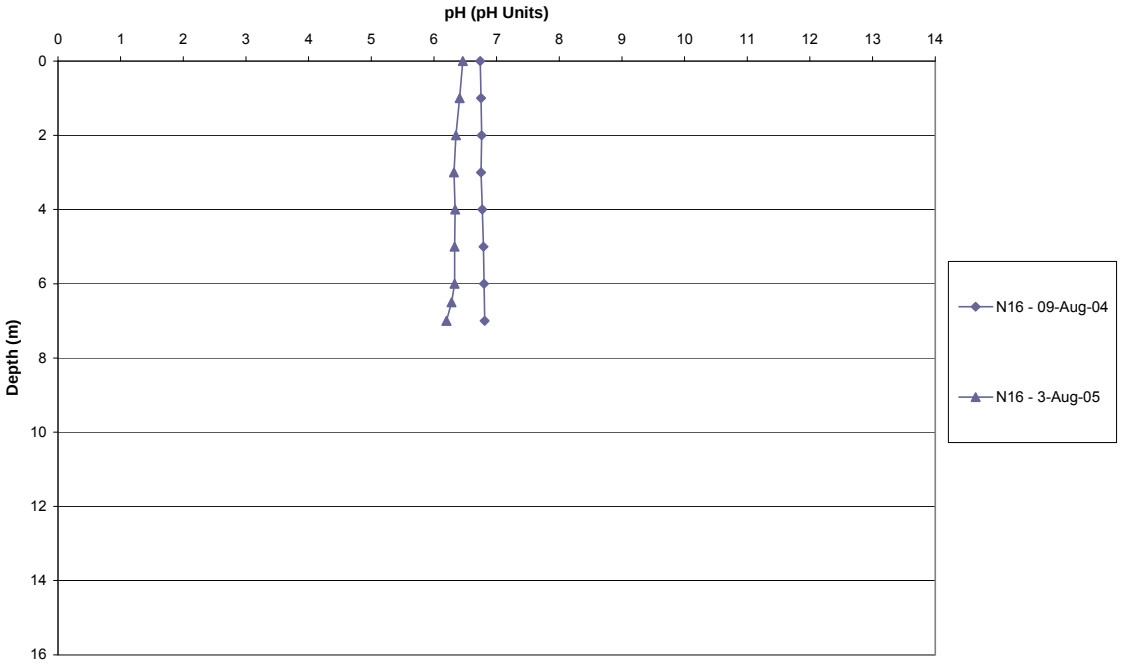
Figure I4.1-21 Open Water Profiles of Specific Conductivity for Lake N16, 2004 and 2005



pH

Some of the lakes in the N watershed were slightly more acidic than Kennady Lake (Appendix I.II, Table I.II-1; Figure I4.1-22). The vertical profiles collected from Lake N16 were vertically uniform (Figure I4.1-22). The fall 2004 profile values for Lake N16 were below the acceptable CWQG and CDWQ range, as were some in-situ measurements collected from other lakes in the watershed.

Figure I4.1-22 Open Water Profiles of pH for Lake N16, 2004 and 2005



I4.1.4.2 Water Quality

I4.1.4.2.1 Overview

Lakes in the N watershed were studied to compare the water quality of a different headwater sub-watershed to characteristics measured in Kennady Lake and its watershed. During several field surveys, Lake N16 was chosen as a control lake outside of the Kennady Lake watershed. Being a headwater lake of similar size to Kennady Lake, Lake N16 was considered an analogue. Water quality data were collected for Lake N16 during open water and under-ice conditions.

Water quality information was also collected from other lakes in the N watershed during open water conditions. Data were collected from Lakes N2, N6a, N7, N9, N11, N13, and N14 (Figure I2.1-3). The water quality data from these lakes, along with data from Lake N16, were compiled together to present the overall water quality portrait of the N watershed (Table I4.1-8).

I4.1.4.2.2 Conventional Parameters and Major Ions

Alkalinity was variable between lakes in the N watershed (ranging from 3 to 34 mg/L; Table I4.1-8). These alkalinity results indicate that the lakes have a low buffering capacity. Hardness concentrations were similar between lakes (ranging from 4 to 5 mg/L), and were within the range observed in the Kennady Lake watershed (Table I4.1-4).

Concentrations of TDS were generally low (median of 7 mg/L Table I4.1-8); however, there was some variability in the concentrations observed in the different lakes (ranging from less than 2 to 52 mg/L). These concentrations were within the range observed in the Kennady Lake watershed (Table I4.1-4).

Bicarbonate was the dominant anion in most lakes and the major contributor to TDS (Table I4.1-8). Sulphate and chloride were observed within the range recorded for the Kennady Lake watershed (Table I4.1-4). Calcium and sodium were the major cations generally observed at concentrations above detection limits (14% of samples were below detection limits).

Concentrations of TSS were generally less than detection limits in the N watershed (83% of samples were below detection limits; Table I4.1-8), with the highest observed concentrations (maximum of 10 mg/L) within the range observed in the Kennady Lake watershed (Table I4.1-4). Some turbidity measurements exceeded the CDWQ, while the overall range in concentration (0.3 to 6 NTU) was similar to other lakes surveyed.

I4.1.4.2.3 Nutrients

Concentrations of nitrate and nitrite were below the detection limit in all samples, while ammonia concentrations were only measured slightly above the detection limit in some lakes (maximum of 0.1 mg/L; Table I4.1-8). Total Kjeldahl nitrogen (TKN) and TP concentrations were less than the detection limit in several lakes, and when measured above detection limits, the concentrations were low (maximums of 0.4 and 0.04 mg/L).

The observed concentrations of nutrients indicate that the lakes in the N watershed, like lakes in the Kennady Lake watershed, have an oligotrophic status and low biological productivity.

Table I4.1-8 Water Quality Summary for Lakes in the N Watershed, 1995 to 2005

Parameter	Unit	Method Detection Limit		Lakes in the N Watershed							Guidelines	
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
											CCME (2006)	Health Canada (2006)
Conventional Parameters and Major Ions												
pH	pH Units	0.01	0.1	23	**5.5**	**6.4**	7.0	0	0	15	6.5 to 9	6.5 to 8.5[(b1)]
Conductivity, Specific	µS/cm	0.001	2	26	8	13	24	0	0	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	0	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	1	1	23	3	8	34	0	0	-	-	-
Hardness, Total	mg/L (ppm)	0.05	6	23	4	4	5	0	0	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	2	20	23	<2	7	52	7	30	0	-	≤500[(b1)]
Total Suspended Solids (TSS)	mg/L (ppm)	1	3	23	<1	-	10	19	83	0	-	-
Turbidity	NTU	0.1	1	23	0.3	1	**6**	12	52	8	-	1[(b2)]
Calcium	mg/L (ppm)	0.5	1	14	<0.5	0.9	1.5	2	14	-	-	-
Magnesium	mg/L (ppm)	0.5	1	14	<0.5	-	<1	14	100	-	-	-
Potassium	mg/L (ppm)	0.1	0.5	14	<0.1	-	<0.5	14	100	-	-	-
Sodium	mg/L (ppm)	0.1	0.5	14	<0.5	0.7	3	2	14	0	-	≤200[(b1)]
Bicarbonate	mg/L (ppm)	1	1	14	9	16	42	0	0	-	-	-
Carbonate	mg/L (ppm)	1	1	14	<1	-	<1	14	100	-	-	-
Chloride	mg/L (ppm)	0.1	0.5	23	<0.1	0.4	0.8	8	35	0	-	≤250[(b1)]
Fluoride	mg/L (ppm)	0.02	0.02	23	0.03	0.04	0.07	0	0	0	-	1.5[(b3)]
Sulphate	mg/L (ppm)	0.5	1	23	0.6	1.1	1.7	0	0	0	-	≤500[(b1)]
Nutrients												
Ammonia	mg/L (ppm)	0.005	0.1	23	<0.005	0.009	0.01[(c)]	15	65	0	7.0 to 48.3[(a1)]	-
Nitrate	mg/L (ppm)	0.005	0.05	23	<0.005	-	<0.05	23	100	0	-	45[(b4)]
Nitrite	mg/L (ppm)	0.05	0.05	14	<0.05	-	<0.05	14	100	0	0.06	3.2[(b4)]
Nitrate + Nitrite	mg/L (ppm)	-	-	0	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	0.2	0.2	7	<0.2	-	0.4	4	57	-	-	-
Phosphate	mg/L (ppm)	1	5	9	0.001	0.004	0.009	0	0	-	-	-
Phosphorus, Total	mg/L (ppm)	50	300	14	<0.02	-	0.04	10	71	-	-	-
Organics												
Oxygen Demand, Chemical (COD)	mg/L (ppm)	1	1	14	8	16	27	0	0	0	-	-
Colour	TCU	1	1	14	<1	15	**50**	3	21	5	-	≤15[(b5)]
Oil and Grease	mg/L (ppm)	0.1	0.1	14	<0.1	-	24	12	86	-	-	-
Phenol	mg/L (ppm)	0.002	0.002	14	<0.002	0.003	**0.004**	9	64	1	0.004	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	1	1	14	3	5	9	0	0	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	0.5	1	20	2	4	8	0	0	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	0.1	0.1	14	<0.1	1.4	15	8	57	-	-	-
Total Metals												
Aluminum (Al)[(a)]	µg/L (ppb)	1	20	23	1	**9**	**482**	7	30	16	5 or 100[(a2)]	100[(b6)]
Antimony (Sb)	µg/L (ppb)	<0.05	0.1	23	<0.05	-	<0.1	23	100	0	-	6[(b2)]
Arsenic (As)	µg/L (ppb)	0.1	0.4	23	<0.1	-	0.4	22	96	0	5	10[(b2)]
Barium (Ba)	µg/L (ppb)	0.05	5	23	2	2	8	12	52	0	-	1,000[(b2)]
Beryllium (Be)	µg/L (ppb)	0.5	0.5	23	<0.5	-	<0.5	23	100	-	-	-
Bismuth (Bi)	µg/L (ppb)	0.5	0.5	9	<0.5	-	<0.5	9	100	-	-	-
Boron (B)	µg/L (ppb)	1	10	23	1	-	2[(c)]	14	61	0	-	5,000[(b2)]

Table I4.1-8 Water Quality Summary for Lakes in the N Watershed, 1995 to 2005 (continued)

Parameter	Unit	Method Detection Limit		Lakes in the N Watershed							Guidelines	
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
											CCME (2006)	Health Canada (2006)
Cadmium (Cd)[a]	µg/L (ppb)	0.05	0.2	23	<0.05[b]	-	<0.2[b]	23	100	0	0.02[a3]	5[b1]
Chromium (Cr)	µg/L (ppb)	0.5	0.9	23	<0.5	-	**3**	20	87	2	1[a4]	50[b1]
Cobalt (Co)	µg/L (ppb)	0.1	0.1	23	<0.1	-	0.2	20	87	-	-	-
Copper (Cu)[a]	µg/L (ppb)	0.1	5	23	0.5	0.7	**7**	11	48	1	2[a5]	≤1,000[b1]
Iron (Fe)	µg/L (ppb)	10	50	23	<10	110	**375**	11	48	1	300	≤300[b1]
Lead (Pb)[a]	µg/L (ppb)	0.05	0.1	23	<0.05	-	1	17	74	0	1[a6]	10
Lithium (Li)	µg/L (ppb)	1	1	9	<1	-	<1	9	100	-	-	-
Manganese (Mn)	µg/L (ppb)	0.05	5	23	1	4	26	1	4	0	-	≤50[b1]
Mercury (Hg)	µg/L (ppb)	0.01	500	23	<0.1[b]	-	<500[b]	23	100	0	0.026	1[b2]
Molybdenum (Mo)	µg/L (ppb)	0.05	0.5	23	<0.05	-	<0.5	23	100	0	73	-
Nickel (Ni)[a]	µg/L (ppb)	0.1	0.6	23	0.2	0.5	1.3	9	39	0	25[a7]	-
Selenium (Se)	µg/L (ppb)	0.5	10	23	<0.5	-	<10[b]	23	100	0	1	10[b2]
Silicon (Si)	µg/L (ppb)	10	50	23	30	100	330	21	91	-	-	-
Silver (Ag)	µg/L (ppb)	0.01	0.2	23	0.01	0.01	<0.2[b]	14	61	0	0.1	-
Strontium (Sr)	µg/L (ppb)	0.1	0.1	9	6	6	8	0	0	-	-	-
Thallium (Tl)	µg/L (ppb)	0.05	0.05	23	<0.05	-	0.05	17	74	0	0.8	-
Tin (Sn)	µg/L (ppb)	0.1	0.1	9	<0.1	0.1	0.2	2	22	-	-	-
Titanium (Ti)	µg/L (ppb)	10	10	9	10	10	10	0	0	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	0	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	0.01	0.05	23	0.01	0.01	0.08	13	57	-	-	-
Vanadium (V)	µg/L (ppb)	0.1	1	23	<0.1	0.2	1.4	15	65	-	-	-
Zinc (Zn)	µg/L (ppb)	1	2	23	<1	3	9	11	48	0	30	≤5,000[b1]
Dissolved Metals												
Aluminum (Al)	µg/L (ppb)	1	10	23	5	14	72	1	4	-	-	-
Antimony (Sb)	µg/L (ppb)	0.05	0.1	23	<0.05	-	<0.1	23	100	-	-	-
Arsenic (As)	µg/L (ppb)	0.1	0.1	23	<0.1	0.2	0.3	15	65	-	-	-
Barium (Ba)	µg/L (ppb)	0.05	3	23	2	2	4	10	43	-	-	-
Beryllium (Be)	µg/L (ppb)	0.1	0.5	23	<0.1	-	0.1[c]	21	91	-	-	-
Bismuth (Bi)	µg/L (ppb)	0.5	0.5	9	<0.5	-	<0.5	9	100	-	-	-
Boron (B)	µg/L (ppb)	1	4	23	1	1	2	14	61	-	-	-
Cadmium (Cd)	µg/L (ppb)	0.05	0.05	23	<0.05	-	0.1	21	91	-	-	-
Chromium (Cr)	µg/L (ppb)	0.4	0.5	23	<0.4	0.5	0.5	14	61	-	-	-
Cobalt (Co)	µg/L (ppb)	0.05	0.1	23	<0.05	0.1	0.2	9	39	-	-	-
Copper (Cu)	µg/L (ppb)	0.1	2	23	0.4	0.5	0.8[c]	14	61	-	-	-
Iron (Fe)	µg/L (ppb)	10	30	23	<20	50	1,080	8	35	-	-	-
Lead (Pb)	µg/L (ppb)	0.05	0.05	23	<0.05	-	0.08	22	96	-	-	-
Lithium (Li)	µg/L (ppb)	1	1	9	<1	-	<1	9	100	-	-	-
Manganese (Mn)	µg/L (ppb)	0.05	2	23	0.2	1.6	23	3	13	-	-	-
Mercury (Hg)	µg/L (ppb)	0.01	1	23	<0.01	-	<1	23	100	-	-	-
Molybdenum (Mo)	µg/L (ppb)	0.05	0.3	23	<0.05	-	<0.3	23	100	-	-	-
Nickel (Ni)	µg/L (ppb)	0.1	0.1	23	0.2	0.2	1.1	0	0	-	-	-
Selenium (Se)	µg/L (ppb)	0.4	2	23	<0.4	-	<2	23	100	-	-	-

Table I4.1-8 Water Quality Summary for Lakes in the N Watershed, 1995 to 2005 (continued)

Parameter	Unit	Method Detection Limit		Lakes in the N Watershed							Guidelines	
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
											CCME (2006)	Health Canada (2006)
Silicon (Si)	µg/L (ppb)	5	50	23	32	90	610	0	0	-	-	-
Silver (Ag)	µg/L (ppb)	0.01	0.05	23	<0.05	-	<0.01	23	100	-	-	-
Strontium (Sr)	µg/L (ppb)	0.1	0.1	9	6	6	8	0	0	-	-	-
Thallium (Tl)	µg/L (ppb)	0.02	0.05	23	<0.02	-	<0.05	23	100	-	-	-
Tin (Sn)	µg/L (ppb)	0.1	0.1	9	<0.1	-	<0.1	9	100	-	-	-
Titanium (Ti)	µg/L (ppb)	10	10	9	<10	-	<10	9	100	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	0	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	0.01	0.05	23	0.01	-	0.02[(c)]	20	87	-	-	-
Vanadium (V)	µg/L (ppb)	0.5	1	23	<0.5	-	<1	23	100	-	-	-
Zinc (Zn)	µg/L (ppb)	1	2	23	1	3	11	2	9	-	-	-

Source: AMEC (2004b, 2005b) and Jacques Whitford (1998); refer to Table I3.4-1 and Appendix I.II, Table I.II-1 for more detail.

Highlighted cells and **Bolded** numbers indicate where a guideline is exceeded.

(a) The concentration of this metal was compared to guidelines using the median hardness concentration or the median pH value.

(b) The method detection limit for this parameter is higher than applicable guidelines.

(c) The maximum recorded concentration was provided for this parameter.

Part 1. Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life (CCME 2006)

(a1) = Guideline is dependent on temperature and pH. The value ranges between 6.98 mg/L (pH= 7.0, temperature= 15°C) and 48.3 mg/L (pH= 6.5, temperature= 5°C).

(a2) = Guideline = 5 µg/L at pH <6.5, $[Ca^{2+}]$ <4 mg/L and DOC <2 mg/L; Guideline = 100 µg/L at pH ≥ 6.5, $[Ca^{2+}]$ ≥4 mg/L and DOC ≥ 2 mg/L.

(a3) = Cadmium guideline = $10^{[0.86\ [\log(\text{hardness})]\ -\ 3.2]}$.

(a4) = Guideline is for hexavalent chromium (Cr_{VI}) because its guideline is more stringent than the trivalent chromium (Cr_{III}) guideline of 8.9 µg/L.

(a5) = Copper guideline is dependent on $[CaCO_3]$. Guideline shown is for when $[CaCO_3]$ is 0-120 mg/L. At 120-180 mg/L of $CaCO_3$, guideline = 3 µg/L; and at >180 mg/L $CaCO_3$, guideline = 4 µg/L.

(a6) = Lead guideline is dependent on $[CaCO_3]$. Guideline shown is for $CaCO_3$ at 0-60 mg/L. At 60-120 mg/L $CaCO_3$, guideline = 2 µg/L; at 120-180 mg/L $CaCO_3$, guideline = 4 µg/L; and at >180 mg/L $CaCO_3$, guideline = 7 µg/L.

(a7) = Nickel guideline is dependent on $[CaCO_3]$. Guideline shown is for $CaCO_3$ at 0-60 mg/L. At 60-120 mg/L $CaCO_3$, guideline = 65 µg/L; at 120-180 mg/L $CaCO_3$, guideline = 110 µg/L; and at >180 mg/L $CaCO_3$, guideline = 150 µg/L.

Part 2: Guidelines for Canadian Drinking Water Quality (CDWQ) (Health Canada 2006)

(b1) = Aesthetic Objective

(b2) = Maximum allowable concentration (MAC).

(b3) = It is recommended that the concentration be adjusted to 0.8 to 1.0 mg/L, which is the optimum range for the control of dental cavities.

(b4) = Equivalent to 10 mg/L as nitrate-nitrogen. Where nitrate and nitrite are determined separately, levels of nitrite should not exceed 3.2 mg/L.

(b5) = True colour guideline - the mean absorbance of filtered water samples at 456 nm shall not be significantly higher than the seasonally adjusted expected value for the system under consideration.

(b6) = A health-based guideline for aluminum in drinking water has not been established. Operational guidance values of less than 100 µg/L total aluminum for conventional treatment plants and less than 200 µg/L total aluminum for other types of treatment systems are recommended.

µS/cm = microSiemens per centimetre; mg/L (ppm) = milligram per litre (parts per million); % = percent; < = less than; ≤ = less than or equal to; °C = degrees Celsius; NTU = nephelometric turbidity unit; TCU = true colour unit; µg/L (ppb) = microgram per litre (parts per billion); - = not available.

I4.1.4.2.4 Organics

The TOC and DOC concentrations in the lakes in the N watershed (ranging from 2 to 9 mg/L; Table I4.1-8) were similar to those observed in the Kennady Lake watershed. The water colour sometimes exceeded the CDWQ, due to surface runoff containing decaying organic matter, which naturally occurs in the area.

The COD of the water was slightly variable (ranging from 8 to 27 mg/L; Table I4.1-8). Oil and grease, TPH, and phenols were not detected in over half of the samples collected in the N watershed. Phenols, likely a by-product of organic decay, exceeded the CWQG in Lake N16 at the 8 m depth.

Oil and grease and TPH concentrations higher than the range found in Kennady Lake were measured in August 2004 in Lake N2 (24 and 15 mg/L respectively; Table I4.1-8). The elevated measurements are attributed to natural sources, such as decaying organic matter causing natural hydrocarbons to be released into the water.

I4.1.4.2.5 Metals

The concentrations of many metals were generally low or below detection limits, with little variability measured between lakes (Table I4.1-8). The range in concentrations measured in lakes in the N watershed was similar to Kennady Lake and the Kennady Lake watershed. Applicable guidelines were exceeded for the following total metal parameters:

- Aluminum exceeded the aquatic life guideline in most lakes due to low pH (Table I4.1-8).
- Chromium, copper, and iron exceeded aquatic life guidelines on at least one occasion.

The range in concentration of dissolved metals was generally similar to the range in metal concentration, indicating that most of the metals were bio-available.

Chronic toxicity under baseline conditions from aluminum exposure is possible for several lakes due to persistently high concentrations of the metal coupled with low pH conditions. Since the concentration of aluminum and other metals were generally similar in magnitude to Kennady Lake and no industrial activity is present in the N watershed, the concentrations are assumed to be from natural sources. Similarly, the other times when guidelines are exceeded are thought to result from natural values.

I4.1.4.3 Sediment Quality

I4.1.4.3.1 Overview

Sediment quality data consists of data collected at Lake N16 between 1995 and 2005 (Figure I2.1-3). The following sections provide a summary of baseline sediment quality conditions in Lake N16, while Table I4.1-9 presents the statistical summary of the sediment quality in Lake N16.

I4.1.4.3.2 Texture and Carbon Content

Lake N16 sediment was mainly composed of sand (28% to 80%; Table I4.1-9) and silt (18% to 64%). Clay (2% to 8%) was present at lower concentrations. Compared with the sediment collected at Kennady Lake, the texture of the sediment at Lake N16 was within the same range of variability; however, slightly higher silt content was present in Lake N16.

Total organic carbon ranged from 0.5% to 8% of the sediment composition (Table I4.1-9). Inorganic carbon constituted 0.2% of the sediment while calcium carbonate content ranged between 0.1% and 0.2%. The carbon content in Lake N16 was lower than observed in Kennady Lake.

I4.1.4.3.3 Nutrients and Organics

Phosphate was the dominant nutrient in Lake N16 sediment, although the observed concentrations were variable (ranging from 18 to 83 µg/g; Table I4.1-9). The nitrate concentration was generally low (maximum of 0.9 µg/g). Nutrient levels in Lake N16 were similar to those observed in Kennady Lake.

The TPH content in Lake N16 was lower and less variable (ranging from 117 to 175 µg/g; Table I4.1-9) than that observed in Kennady Lake (Table I4.1-2).

I4.1.4.3.4 Metals

The dominant metals in the sediment in Lake N16 included iron, aluminum, and magnesium (Table I4.1-9). The range and variability of the dominant metals in Lake N16 were similar to measurements in Kennady Lake.

Total metals in Lake N16 sediment were generally measured within the applicable sediment guidelines for the protection of aquatic life (CCME 2002) (Table I4.1-9). Copper and zinc were the only total metal parameters to exceed the ISQG in Lake N16. Compared to Kennady Lake, the concentrations of potentially toxic metals was lower in Lake N16.

Table I4.1-9 Sediment Quality Summary for Lake N16, 1995 to 2005

Parameter	Unit	Method Detection Limit		Lake N16							Guideline
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Sediment Quality Guidelines (ISQG) CCME (2002)
Texture and Carbon Content											
Sand	%	1	1	2	28	-	80	0	0	-	-
Silt	%	1	1	2	18	-	64	0	0	-	-
Clay	%	1	1	2	2	-	8	0	0	-	-
Calcium Carbonate	%	0.005	0.005	2	0.1	-	0.2	0	0	-	-
Inorganic Carbon, Total (TIC)	%	0.01	0.01	2	0.2	-	2	0	0	-	-
Organic Carbon, Total (TOC)	%	0.01	0.01	2	0.5	-	8	0	0	-	-
Total Carbon	µg/g	0.01	0.01	2	0.7	-	6	0	0	-	-
Nutrients and Organics											
Nitrate	µg/g	0.5	0.5	2	<0.5	-	0.9	1	50	-	-
Phosphate	µg/g	0.5	0.5	2	18	-	83	0	0	-	-
Total Petroleum Hydrocarbons (TPH)	µg/g	8	8	2	117	-	125	0	0	-	-
Total Metals											
Aluminum	µg/g	5	5	2	10,900	-	11,200	0	0	-	-
Arsenic	µg/g	0.5	0.5	2	3	-	3	0	0	0	5.9
Barium	µg/g	1	1	2	56	-	74	0	0	-	-
Cadmium	µg/g	0.2	0.2	2	<0.2	-	0.4	1	50	0	0.6
Calcium	µg/g	5	5	2	1,810	-	2,490	0	0	-	-
Chromium	µg/g	0.5	0.5	2	22	-	27	0	0	0	37.3
Cobalt	µg/g	0.5	0.5	2	9	-	9	0	0	-	-
Copper	µg/g	0.1	0.1	2	22	-	**53**	0	0	1	35.7
Iron	µg/g	5	5	2	18,100	-	23,900	0	0	-	-
Lead	µg/g	0.5	0.5	2	2	-	3	0	0	0	35
Magnesium	µg/g	1	1	2	3,420	-	4,930	0	0	-	-

Table I4.1-9 Sediment Quality Summary for Lake N16, 1995 to 2005 (continued)

Parameter	Unit	Method Detection Limit		Lake N16							Guideline
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Sediment Quality Guidelines (ISQG)
											CCME (2002)
Manganese	µg/g	0.5	0.5	2	174	-	217	0	0	-	-
Mercury	µg/g	0.5	0.5	2	<0.5 [1]	-	<0.5[(a)]	2	100	0	0.17
Molybdenum	µg/g	0.5	0.5	2	1.2	-	3	0	0	-	-
Nickel	µg/g	0.5	0.5	2	26	-	33	0	0	-	-
Phosphorus	µg/g	5	5	2	458	-	997	0	0	-	-
Potassium	µg/g	5	5	2	1,580	-	2,190	0	0	-	-
Selenium	µg/g	0.5	0.5	2	<0.5	-	<0.5	2	100	-	-
Sodium	µg/g	1	1	2	113	-	127	0	0	-	-
Thallium	µg/g	0.5	0.5	2	<0.5	-	<0.5	2	100	-	-
Vanadium	µg/g	0.2	0.2	2	21	-	31	0	0	-	-
Zinc	µg/g	0.5	0.5	2	44	-	**167**	0	0	1	123

Source: AMEC (2004c); refer to Table I3.4-1 and Appendix I.II, Table I.II-1 for more detail.

Highlighted cell and **Bolded** number indicate where a guideline is exceeded.

(a) The MDL for this parameter is higher than the applicable guideline concentration.

% = percent; µg/g = microgram per gram; < = less than; - = not available.

I4.1.4.4 Summary

Lakes in the N watershed are a series of headwater lakes not connected to the Kennady Lake watershed. The lakes in this watershed have limnological and chemical characteristics similar to Kennady Lake and the smaller lakes in the Kennady Lake watershed.

The selected water quality indicators and metals, summarized in Section I4.1.1.3, were used in this section to display the relative fluctuation in the median concentration of these parameters between different lakes in the N watershed (Table I4.1-10). A comparison of water quality between Kennady Lake, Lake N16, and Lake 410 is presented in Section I4.1.5.4.

Table I4.1-10 Summary of Median Concentrations of Representative Water Quality Parameters for Lakes in the N Watershed over the Study Period, 1995 to 2005

Waterbody Identifier	TDS (mg/L)	Specific Conductivity (µS/cm)	TOC (mg/L)	Total Aluminum (µg/L)	Total Copper (µg/L)	Total Iron (µg/L)
CWQG Guideline	-	-	-	5 or 100	2 to 4	300
CDWQ Guideline	≤500	-	-	100	≤1,000	≤300
K5 Outlet	21	17	3	14	<5	52
N Watershed						
N2	25	15	4	<20	<5	84
N6a	32	13	4	<20	7	158
N7	28	16	4	<20	<5	64
N9	15	13	6	250	1.2	63
N11	21	12	-	28	0.8	150
N13	20	17	8	46	<1	250
N14	13	9	5	18	1.1	110
N16	12	12	4	9	0.5	21

Notes: Highlighted cells indicate where a guideline is exceeded.

TDS = total dissolved solids; TOC = total organic carbon; mg/L = milligrams per litre; µg/L = micrograms per litre; µs/cm = microSiemens per centimetre; ≤ = less than or equal to; < = less than; CWQG = Canadian Water Quality Guidelines for the Protection of Aquatic Life; CDWQ = Guidelines for Canadian Drinking Water Quality; - = not available.

I4.1.5 Lake 410 and Kirk Lake

The remaining watersheds in the LSA include Lake 410, P, and Kirk Lake watersheds. These three watersheds cover a total surface area of 454.5 km^2, 70.3 km^2 of which is lake area. The total area draining through the Kirk Lake basin is 738.9 km^2 (Table I2.1-3).

Lake 410 and Kirk Lake are located northeast of Kennady Lake and are the downstream receiving waterbodies of the Kennady Lake watershed, lakes downstream of Kennady Lake, and lakes in the N watershed (Figure I2.1-3). The water from Kennady Lake and the downstream L and M watersheds flows into

Lake 410 via the southeast inlet, while water from the N watershed flows into the lake through the southwest inlet. The Lake 410 watershed drains into Kirk Lake through the P watershed before leaving the LSA.

The P watershed contains several small lakes; however, lake vertical profiles and water quality samples were only collected for Lake 410 and Kirk Lake. In-situ spot measurements were conducted in Lake P3 and at the Lake P3 outlet. Under-ice vertical profiles were measured only at Lake 410. Water quality characteristics for both Lake 410 and Kirk Lake are presented in Section I4.1.5.2. Information on sediment quality is presented in Section I4.1.5.3.

I4.1.5.1 Physical Limnology and Vertical Structure

Open water vertical profile data for physical parameters were collected for Lake 410 and Kirk Lake. Under-ice profiles were measured in Lake 410 in May 2004.

I4.1.5.1.1 Under-Ice Conditions

Temperature

A temperature vertical profile of Lake 410 was taken in May 2004 beginning at a depth of 3 m and ranging down to 6 m. The profile was inversely stratified, where the temperature increased from 0°C at the ice-water interface to 3°C near the bottom of the lake (Figure I4.1-23).

Dissolved Oxygen

A DO vertical profile of Lake 410 was taken in May 2004. The DO was 11 mg/L at the ice-water interface, rapidly declining with increased depth to anoxia near the bottom of the lake (Figure I4.1-24). The oxygenation near the surface was greater than the lowest acceptable concentrations for cold-water aquatic life in the CWQG, while concentrations near the bottom of the lake were below the lowest acceptable concentrations. This profile pattern is commonly observed during under-ice conditions due to the lack of thermal or wind generated mixing in the waterbody and was also observed in lakes surveyed in upstream watersheds.

Figure I4.1-23 Under-Ice Profile of Temperature for Lake 410, 2004

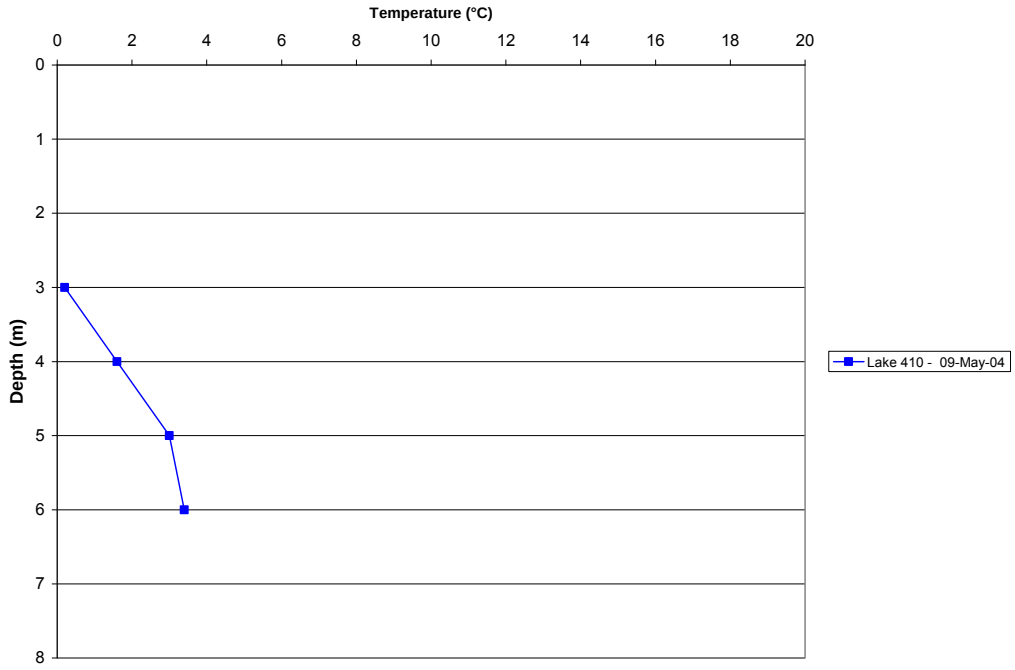
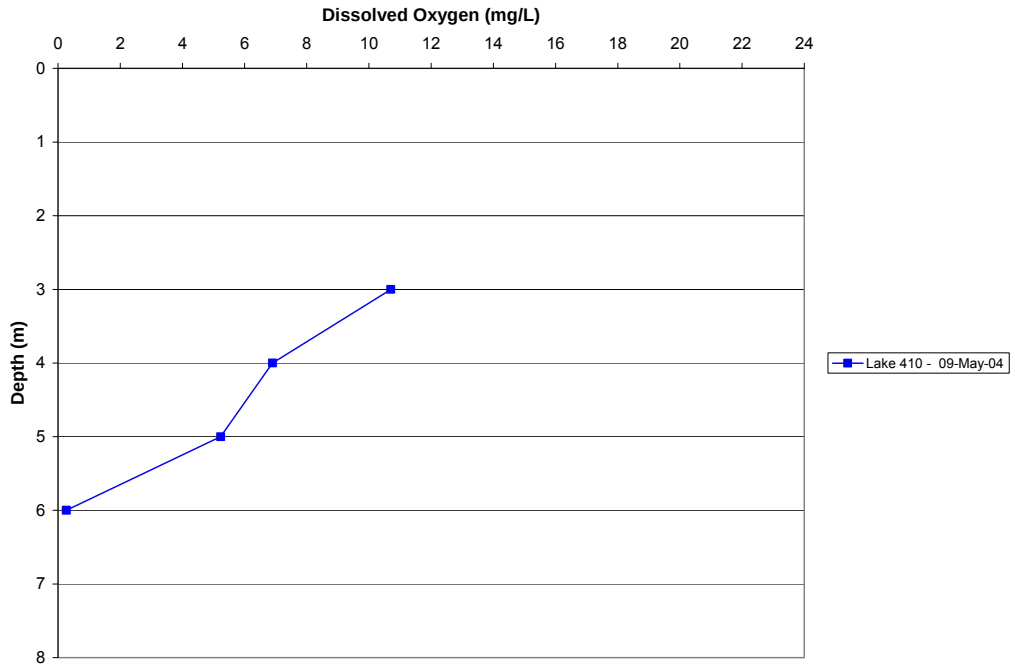


Figure I4.1-24 Under-Ice Profile of Dissolved Oxygen for Lake 410, 2004



Specific Conductivity

Little variability was observed in the vertical profile of specific conductivity in Lake 410. The specific conductivity ranged from 15 to 17 µS/cm (Figure I4.1-25). The lack of observed variability throughout the water column indicated that ions were equally distributed throughout the lake during under-ice conditions.

pH

Vertical profiles and in-situ spot measurements of pH were not collected during under-ice conditions from Lake 410, due to technical problems with the field probe.

I4.1.5.1.2 Open Water Conditions

Temperature

Lake 410 and Kirk Lake had surface temperatures ranging between 6 and 14°C (Appendix I.II, Table I.II-1). The temperature profiles measured during open water conditions had ranges similar to ranges in upstream watersheds.

Vertical profile measurements of temperature were taken in Lake 410 and Kirk Lake in early August and mid-September (Figure I4.1-26). The early August temperatures were similar in both lakes ranging between 13 and 14°C, indicating that the water columns were well-mixed. The mid-September profile, taken in Lake 410, was well mixed although the temperature difference was 6°C (Figure I4.1-26).

Dissolved Oxygen

The near surface DO concentration in Lake 410 and Kirk Lake varied between 3 and 13 mg/L (Appendix I.II, Table I.II-1). The lowest DO concentration measured, was below the minimum acceptable concentration for cold water aquatic life in the CWQG (i.e., 3.0 mg/L), and was recorded in Kirk Lake. The profile in Kirk Lake was taken in August 2005 and a distinct drop in DO was observed near the lake bottom (Figure I4.1-27).

The vertical water column profiles of DO in Lake 410 had very little variability between surface and bottom with concentrations ranging between 10 and 11 mg/L (Figure I4.1-27). Lake 410 was well-mixed and the DO concentrations were greater than the acceptable CWQG range during all observations.

Figure I4.1-25 Under-Ice Profile of Specific Conductivity in Lake 410, 2004

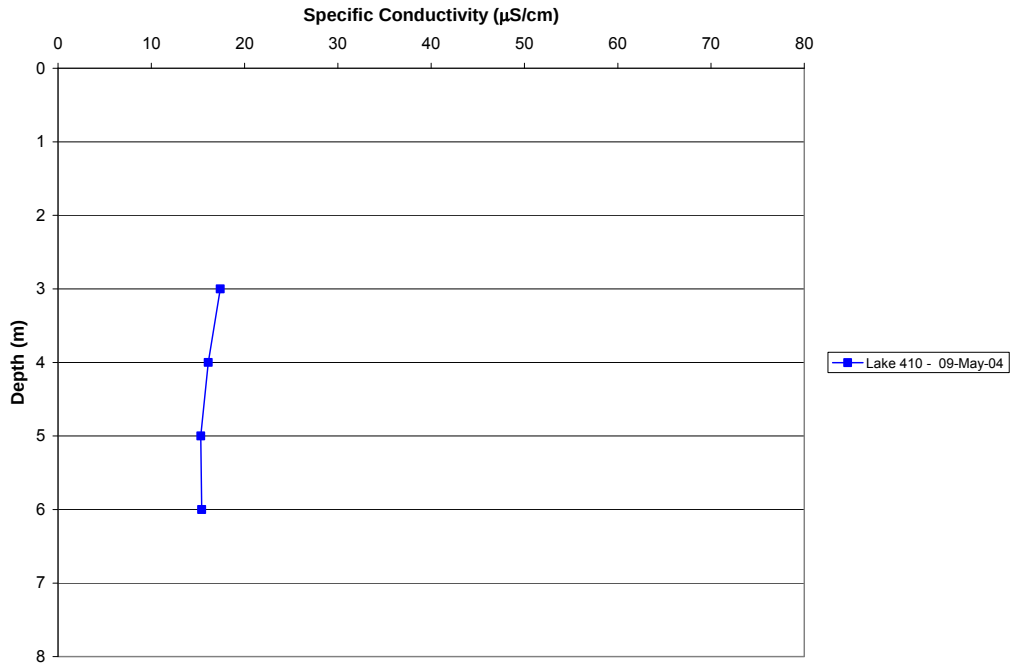


Figure I4.1-26 Open Water Profiles of Temperature for Lake 410 and Kirk Lake, 2004 and 2005

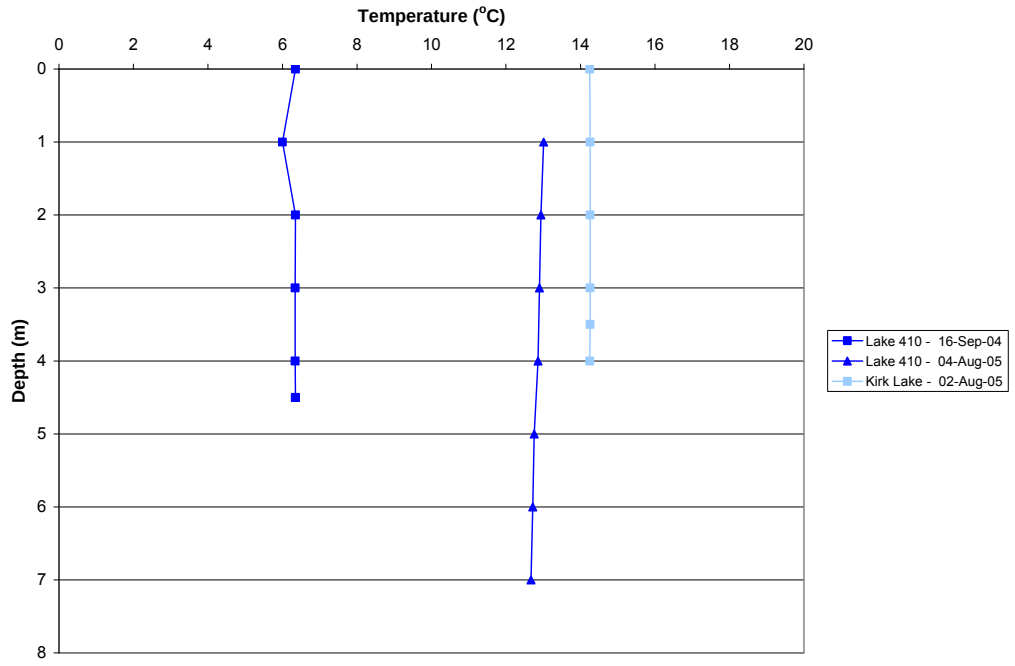
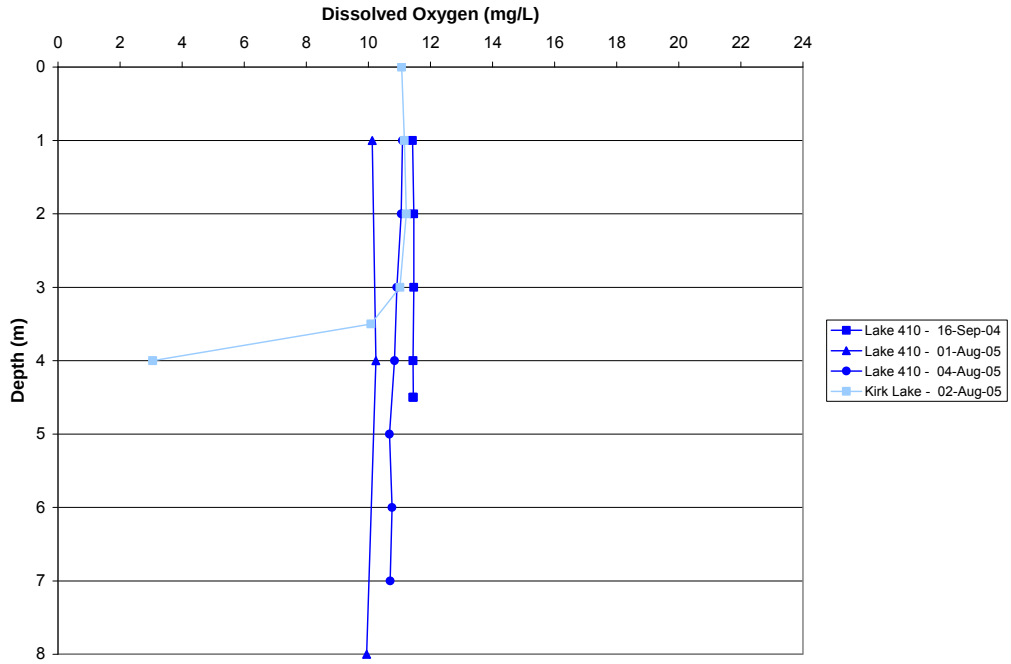


Figure I4.1-27 Open Water Dissolved Oxygen Profiles for Lake 410 and Kirk Lake, 2004 and 2005



Specific Conductivity

Specific conductivity ranged between 10 and 18 µS/cm in these lakes (Appendix I.II, Table I.II-1). These low measurements indicate surface water containing very low concentrations of dissolved substances. Dilution of the upstream contributing waters by overland runoff was observed in the lowering of the overall specific conductivity in the downstream lakes.

The vertical profiles of specific conductivity were very similar in Lake 410 and Kirk Lake. This parameter ranged between 5 and 12 µS/cm for both lakes (Figure I4.1-28). There was very little variability throughout the water column indicating well-mixed lakes with equal distribution of ions throughout.

pH

The surface pH readings for Lake 410 and Kirk Lake varied between 5.1 and 8.0 pH units (Appendix I.II, Table I.II-1). Vertical profiles of Lake 410 and Kirk Lake recorded slightly acidic to neutral pH with little variance observed along the depth profile (Figure I4.1-29). The pH measurements were generally within both the acceptable CWQG range; however, Lake 410 in September 2004 had a more acidic profile, being below the acceptable guideline range.

Figure I4.1-28 Open Water Profiles of Specific Conductivity for Lake 410 and Kirk Lake, 2004 and 2005

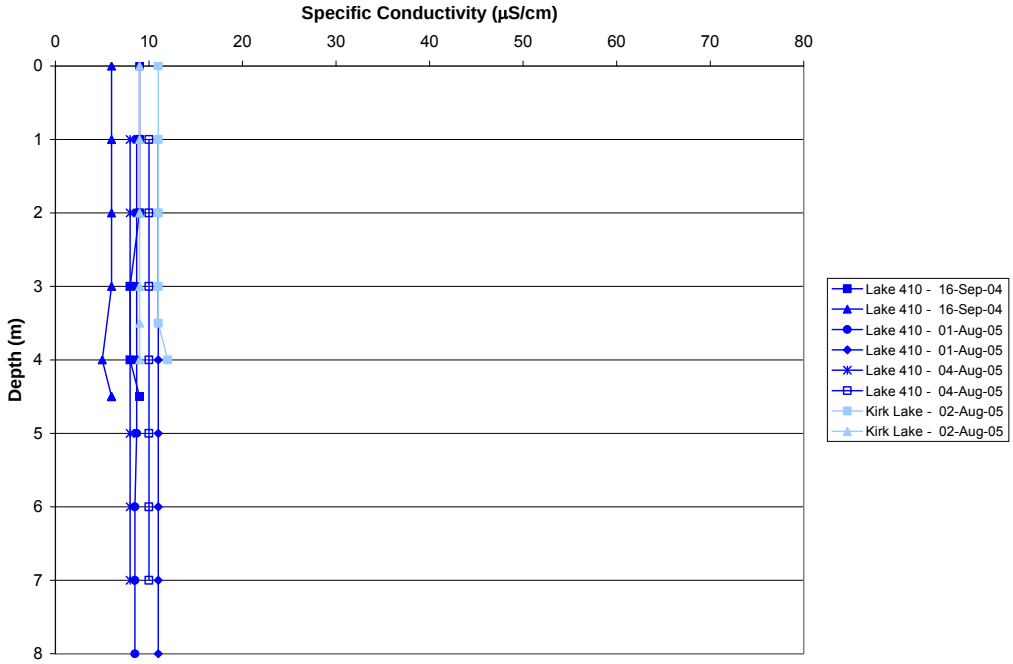
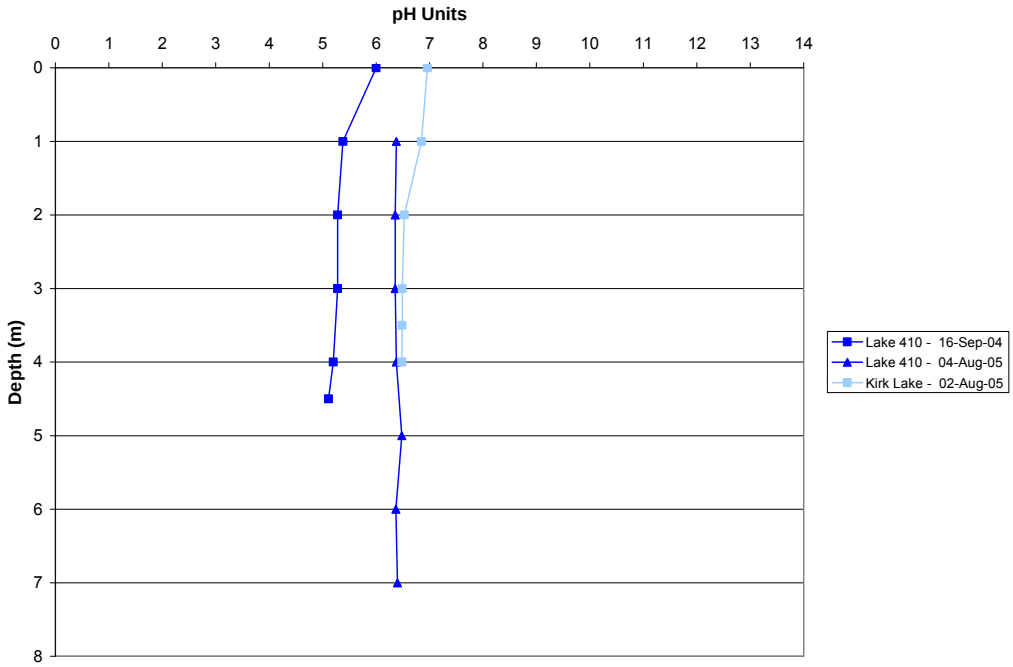


Figure I4.1-29 Open Water Profiles of pH for Lake 410 and Kirk Lake, 2004 and 2005



I4.1.5.2 Water Quality

I4.1.5.2.1 Overview

Lake 410 and Kirk Lake receive waters from the basins of Kennady Lake, and are the final outlet of the waters potentially affected by the Project. Due to the location of these lakes as receiving waterbodies, the similarities and differences in these lakes in relation to Kennady Lake are discussed for Lake 410 and Kirk Lake in this section. The available data for Lake 410 and Kirk Lake are presented in Tables I4.1-11 and I4.1-12, respectively.

I4.1.5.2.2 Conventional Parameters and Major Ions

Hardness was below the detection limit in Lake 410 and Kirk Lake (Tables I4.1-11 and I4.1-12, respectively), indicating that the water in these lakes is very soft. Alkalinity was generally slightly higher than in Kennady Lake. Compared to upstream lakes, Lake 410 and Kirk Lake have a slightly higher buffering capacity.

Table I4.1-11 Water Quality Summary for Lake 410, 2004 to 2005

Parameter	Units	Method Detection Limit		Lake 410				Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Guidelines	
											Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
		Minimum	Maximum	n	Minimum	Median	Maximum				CCME (2006)	Health Canada (2006)
Conventional Parameters and Major Ions												
pH	pH Units	0.01	0.1	10	**5.43**	**5.93**	6.8	0	0	9	6.5 to 9	6.5 to 8.5[(b1)]
Conductivity, Specific	µS/cm	0.1	1	9	11	13	17	0	0	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	1	1	10	7	13	27	0	0	-	-	-
Hardness, Total	mg/L (ppm)	6	6	10	<6	<6	<6	10	100	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	10	10	10	<10	12	24	3	30	-	-	≤500[(b1)]
Total Suspended Solids (TSS)	mg/L (ppm)	2	2	10	<2	<2	2	9	90	-	-	-
Turbidity	NTU	1	1	10	1	1.5	3	0	0	5	-	1[(b2)]
Calcium (Ca)	mg/L (ppm)	0.5	0.5	10	<0.5	0.7	1.2	2	20	-	-	-
Magnesium (Mg)	mg/L (ppm)	0.5	0.5	10	<0.5	<0.5	<0.5	10	100	-	-	-
Potassium (K)	mg/L (ppm)	0.5	0.5	10	<0.5	<0.5	<0.5	10	100	-	-	-
Sodium (Na)	mg/L (ppm)	0.5	0.5	10	<0.5	0.65	2.2	1	10	0	-	≤200[(b1)]
Bicarbonate	mg/L (ppm)	1	1	10	9	15.5	32	0	0	-	-	-
Carbonate	mg/L (ppm)	1	1	10	<1	<1	<1	10	100	-	-	-
Chloride	mg/L (ppm)	0.1	0.1	10	0.3	0.4	0.5	0	0	0	-	≤250[(b1)]
Fluoride	mg/L (ppm)	0.02	0.02	10	0.02	0.035	0.09	0	0	0	-	1.5[(b3)]
Sulphate	mg/L (ppm)	0.5	0.5	10	0.5	1.1	1.5	0	0	0	-	≤500[(b1)]
Nutrients												
Ammonia	mg/L (ppm)	0.1	0.1	10	<0.1	<0.1	<0.1	10	100	0	7.0 to 48.3[(a1)]	-
Nitrate	mg/L (ppm)	0.05	0.05	10	<0.05	<0.05	<0.05	10	100	0	-	45[(b4)]
Nitrite	mg/L (ppm)	0.05	0.05	10	<0.05	<0.05	<0.05	10	100	0	0.06	3.2[(b4)]
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	0.2	0.2	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.02	0.02	10	<0.02	<0.02	0.03	9	90	-	-	-
Organics												
Oxygen Demand, Chemical (COD)	mg/L (ppm)	1	1	5	9	11	18	0	0	-	-	-
Colour	TCU	1	1	10	<1	5	20	2	20	1	-	≤15[(b5)]
Oil and Grease	mg/L (ppm)	0.1	0.1	10	<0.1	<0.1	0.3	8	80	-	-	-
Phenol	mg/L (ppm)	0.002	0.002	10	<0.002	<0.002	<0.002	10	100	0	0.004	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	1	1	5	4	5	5	0	0	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	1	1	5	4	4	5	0	0	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	0.1	0.1	5	<0.1	<0.1	<0.1	5	100	-	-	-
Total Metals												
Aluminum (Al)[(a)]	µg/L (ppb)	5	20	10	**6**	**18.5**	**55**	2	20	8	5 or 100[(a2)]	100[(b6)]
Antimony (Sb)	µg/L (ppb)	0.1	0.1	10	<0.1	<0.1	0.5	8	80	0	-	6[(b2)]
Arsenic (As)	µg/L (ppb)	0.4	0.4	10	<0.4	<0.4	<0.4	10	100	0	5	10[(b2)]
Barium (Ba)	µg/L (ppb)	5	5	10	<5	<5	<5	10	100	0	-	1,000[(b2)]
Beryllium (Be)	µg/L (ppb)	0.5	0.5	10	<0.5	<0.5	<0.5	10	100	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	10	10	10	<10	<10	<10	10	100	0	-	5,000[(b2)]

Table I4.1-11 Water Quality Summary for Lake 410, 2004 to 2005 (continued)

Parameter	Units	Method Detection Limit		Lake 410				Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Guidelines	
											Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
		Minimum	Maximum	n	Minimum	Median	Maximum				CCME (2006)	Health Canada (2006)
Cadmium (Cd)[a]	µg/L (ppb)	0.2	0.2	10	<0.2[b]	<0.2	<0.2[b]	10	100	0	0.02[a3]	5[b1]
Chromium (Cr)	µg/L (ppb)	0.9	0.9	10	<0.9	<0.9	<0.9	10	100	0	1[a4]	50[b1]
Cobalt (Co)	µg/L (ppb)	0.1	0.1	10	<0.1	<0.1	0.1	9	90	-	-	-
Copper (Cu)[a]	µg/L (ppb)	1	5	10	<1	<3.4	<5	9	90	0	2[a5]	≤ 1,000[b1]
Iron (Fe)	µg/L (ppb)	10	50	10	<10	<40	186	6	60	0	300	≤ 300[b1]
Lead (Pb)[a]	µg/L (ppb)	0.1	0.1	10	<0.1	<0.1	0.7	8	80	0	1[a6]	10
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	0.5	1	10	<1	2.4	8.6	4	40	0	-	≤ 50[b1]
Mercury (Hg)	µg/L (ppb)	0.1	500	10	<0.1[b]	<0.55	<500[b]	10	100	0	0.026	1[b2]
Molybdenum (Mo)	µg/L (ppb)	0.5	0.5	10	<0.5	<0.5	<0.5	10	100	0	73	-
Nickel (Ni)[a]	µg/L (ppb)	0.6	0.6	10	<0.6	<0.6	2	7	70	0	25[a7]	-
Selenium (Se)	µg/L (ppb)	0.8	10	10	<0.8	<5.4	<10	10	100	0	1	10[b2]
Silicon (Si)	µg/L (ppb)	10	50	10	60	113	201	0	0	-	-	-
Silver (Ag)	µg/L (ppb)	0.2	0.2	10	<0.2	<0.2	<0.2	10	100	0	0.1	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	0.05	0.05	10	<0.05	<0.05	<0.05	10	100	0	0.8	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	0.05	0.05	10	<0.05	<0.05	<0.05	10	100	-	-	-
Vanadium (V)	µg/L (ppb)	0.1	0.1	10	<0.1	0.2	0.3	2	20	-	-	-
Zinc (Zn)	µg/L (ppb)	2	2	10	<2	<2	24	7	70	0	30	≤ 5,000[b1]
Dissolved Metals												
Aluminum (Al)	µg/L (ppb)	2	10	10	<10	10.5	16	2	20	-	-	-
Antimony (Sb)	µg/L (ppb)	0.1	0.1	10	<0.1	<0.1	<0.1	10	100	-	-	-
Arsenic (As)	µg/L (ppb)	0.1	0.1	10	<0.1	<0.1	0.2	7	70	-	-	-
Barium (Ba)	µg/L (ppb)	3	3	10	<3	<3	<3	10	100	-	-	-
Beryllium (Be)	µg/L (ppb)	0.1	0.1	10	<0.1	0.1	0.1	5	50	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-		-	-	-	-
Boron (B)	µg/L (ppb)	4	4	10	<4	<4	<4	10	100	-	-	-
Cadmium (Cd)	µg/L (ppb)	0.05	0.05	10	<0.05	0.08	0.12	5	50	-	-	-
Chromium (Cr)	µg/L (ppb)	0.4	0.4	10	<0.4	<0.4	<0.4	10	100	-	-	-
Cobalt (Co)	µg/L (ppb)	0.05	0.05	10	<0.05	0.07	0.1	5	50	-	-	-
Copper (Cu)	µg/L (ppb)	1	2	10	<1	<1.7	<2	9	90	-	-	-
Iron (Fe)	µg/L (ppb)	10	20	10	<20	35	80	4	40	-	-	-
Lead (Pb)	µg/L (ppb)	0.05	0.05	10	<0.05	<0.05	<0.05	10	100	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	0.5	2	10	0.9	2	16	3	30	-	-	-
Mercury (Hg)	µg/L (ppb)	0.1	1	10	<0.1	<0.55	<1	10	100	-	-	-
Molybdenum (Mo)	µg/L (ppb)	0.3	0.3	10	<0.3	<0.3	<0.3	10	100	-	-	-
Nickel (Ni)	µg/L (ppb)	0.1	0.1	10	0.1	0.3	1.2	0	0	-	-	-
Selenium (Se)	µg/L (ppb)	0.4	2	10	<0.4	<1.2	<2	10	100	-	-	-

Table I4.1-11 Water Quality Summary for Lake 410, 2004 to 2005 (continued)

Parameter	Units	Method Detection Limit		Lake 410				Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Guidelines	
											Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
		Minimum	Maximum	n	Minimum	Median	Maximum				CCME (2006)	Health Canada (2006)
Silicon (Si)	µg/L (ppb)	5	10	10	79	100	156	0	0	-	-	-
Silver (Ag)	µg/L (ppb)	0.05	0.05	10	<0.05	<0.05	<0.05	10	100	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-		-	-	-	-
Thallium (Tl)	µg/L (ppb)	0.02	0.02	10	<0.02	<0.02	<0.02	10	100	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	0.05	0.05	10	<0.05	<0.05	<0.05	10	100	-	-	-
Vanadium (V)	µg/L (ppb)	0.5	0.5	10	<0.5	<0.5	<0.5	10	100	-	-	-
Zinc (Zn)	µg/L (ppb)	2	2	10	<2	2	3	5	50	-	-	-

Source: AMEC (2004b, 2005b).

Highlighted cells and **Bolded** numbers indicate where a guideline is exceeded.

(a) The concentration of this metal was compared to guidelines using the median hardness concentration or the median pH value.

(b) The method detection limit for this parameter is higher than applicable guidelines.

Part 1. Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life (CCME 2006)

(a1) = Guideline is dependent on temperature and pH. The value ranges between 6.98 mg/L (pH= 7.0, temperature= 15°C) and 48.3 mg/L (pH= 6.5, temperature= 5°C).

(a2) = Guideline = 5 µg/L at pH < 6.5, $[Ca^{2+}]$ < 4 mg/L and DOC < 2 mg/L; Guideline = 100 µg/L at pH ≥ 6.5, $[Ca^{2+}]$ ≥4 mg/L and DOC ≥ 2 mg/L.

(a3) = Cadmium guideline = $10^{[0.86\ [\log(\text{hardness})]\ -\ 3.2]}$.

(a4) = Guideline is for hexavalent chromium (Cr_{VI}) because its guideline is more stringent than the trivalent chromium (Cr_{III}) guideline of 8.9 µg/L.

(a5) = Copper guideline is dependent on $[CaCO_3]$. Guideline shown is for when $[CaCO_3]$ is 0-120 mg/L. At 120-180 mg/L of $CaCO_3$, guideline = 3 µg/L; and at >180 mg/L $CaCO_3$, guideline = 4 µg/L.

(a6) = Lead guideline is dependent on $[CaCO_3]$. Guideline shown is for $CaCO_3$ at 0-60 mg/L. At 60-120 mg/L $CaCO_3$, guideline = 2 µg/L; at 120-180 mg/L $CaCO_3$, guideline = 4 µg/L; and at >180 mg/L $CaCO_3$, guideline = 7 µg/L.

(a7) = Nickel guideline is dependent on $[CaCO_3]$. Guideline shown is for $CaCO_3$ at 0-60 mg/L. At 60-120 mg/L $CaCO_3$, guideline = 65 µg/L; at 120-180 mg/L $CaCO_3$, guideline = 110 µg/L; and at >180 mg/L $CaCO_3$, guideline = 150 µg/L.

Part 2: Guidelines for Canadian Drinking Water Quality (CDWQ) (Health Canada 2006)

(b1) = Aesthetic Objective.

(b2) = Maximum allowable concentration (MAC).

(b3) = It is recommended that the concentration be adjusted to 0.8 to 1.0 mg/L, which is the optimum range for the control of dental cavities.

(b4) = Equivalent to 10 mg/L as nitrate-nitrogen. Where nitrate and nitrite are determined separately, levels of nitrite should not exceed 3.2 mg/L.

(b5) = True colour guideline - the mean absorbance of filtered water samples at 456 nm shall not be significantly higher than the seasonally adjusted expected value for the system under consideration.

(b6) = A health-based guideline for aluminum in drinking water has not been established. Operational guidance values of less than 100 µg/L total aluminum for conventional treatment plants and less than 200 µg/L total aluminum for other types of treatment systems are recommended.

µS/cm = microSiemens per centimetre; mg/L (ppm) = milligrams per litre (parts per million); % = percent; < = less than; ≤ = less than or equal to; °C = degrees Celsius; NTU = nephelometric turbidity unit; TCU = true colour unit; µg/L (ppb) = micrograms per litre (parts per billion); - = not available.

Table I4.1-12 Kirk Lake Water Quality Data, 2005

Parameter	Units	Method Detection Limit	Kirk Lake Inlet	Kirk Lake	Guidelines	
					Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
			02-Aug-05	02-Aug-05	CCME (2006)	Health Canada (2006)
Conventional Parameters and Major Ions						
pH	pH Units	0.01	**5.41**	**5.62**	6.5 to 9	6.5 to 8.5[(b1)]
Conductivity, Specific	µS/cm	1	12	14	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	1	17	14	-	-
Hardness, Total	mg/L (ppm)	6	<6	<6	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	10	<10	<10	-	≤ 500[(b1)]
Total Suspended Solids (TSS)	mg/L (ppm)	2	<2	<2	-	-
Turbidity	NTU	1	**2**	**2**	-	1[(b2)]
Calcium (Ca)	mg/L (ppm)	0.5	0.9	0.9	-	-
Magnesium (Mg)	mg/L (ppm)	0.5	<0.5	<0.5	-	-
Potassium (K)	mg/L (ppm)	0.5	<0.5	<0.5	-	-
Sodium (Na)	mg/L (ppm)	0.5	0.6	0.7	-	≤ 200[(b1)]
Bicarbonate	mg/L (ppm)	1	21	17	-	-
Carbonate	mg/L (ppm)	1	<1	<1	-	-
Chloride	mg/L (ppm)	0.1	0.3	0.4	-	≤ 250[(b1)]
Fluoride	mg/L (ppm)	0.02	0.04	0.06	-	1.5[(b3)]
Sulphate	mg/L (ppm)	0.5	<0.5	0.9	-	≤ 500[(b1)]
Nutrients						
Ammonia	mg/L (ppm)	0.1	<0.1	<0.1	7.0 to 48.3[(a1)]	-
Nitrate	mg/L (ppm)	0.05	<0.05	0.05	-	45[(b4)]
Nitrite	mg/L (ppm)	0.05	<0.05	<0.05	0.06	3.2[(b4)]
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	0.2	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.02	<0.02	<0.02	-	-
Organics						
Oxygen Demand, Chemical (COD)	mg/L (ppm)	1	11	20	-	-
Colour	TCU	1	5	5	-	≤ 15[(b5)]
Oil and Grease	mg/L (ppm)	0.1	<0.1	<0.1	-	-

Table I4.1-12 Kirk Lake Water Quality Data, 2005 (continued)

Parameter	Units	Method Detection Limit	Kirk Lake Inlet	Kirk Lake	Guidelines	
					Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
			02-Aug-05	02-Aug-05	CCME (2006)	Health Canada (2006)
Phenol	mg/L (ppm)	0.002	0.002	<0.002	0.004	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	1	6	5	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	1	4	5	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	0.1	<0.1	<0.1	-	-
Total Metals						
Aluminum (Al)[a]	µg/L (ppb)	5	**23**	**23**	5 or 100[a2]	100[b6]
Antimony (Sb)	µg/L (ppb)	0.1	<0.1	0.6	-	6[b2]
Arsenic (As)	µg/L (ppb)	0.4	<0.4	0.8	5	10[b2]
Barium (Ba)	µg/L (ppb)	5	<5	<5	-	1,000[b2]
Beryllium (Be)	µg/L (ppb)	0.5	<0.5	<0.5	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-
Boron (B)	µg/L (ppb)	10	<10	<10	-	5,000[b2]
Cadmium (Cd)[a]	µg/L (ppb)	0.2	<0.2[b]	<0.2[b]	0.02[a3]	5[b1]
Chromium (Cr)	µg/L (ppb)	0.9	<0.9	0.9	1[a4]	50[b1]
Cobalt (Co)	µg/L (ppb)	0.1	<0.1	<0.1	-	-
Copper (Cu)[a]	µg/L (ppb)	1	<1	1.5	2[a5]	≤ 1,000[b1]
Iron (Fe)	µg/L (ppb)	10	70	<10	300	≤ 300[b1]
Lead (Pb)[a]	µg/L (ppb)	0.1	<0.1	0.4	1[a6]	10
Lithium (Li)	µg/L (ppb)	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	1	3	<1	-	≤ 50[b1]
Mercury (Hg)	µg/L (ppb)	0.1	<0.1[b]	<0.1[b]	0.026	1[b2]
Molybdenum (Mo)	µg/L (ppb)	0.5	<0.5	<0.5	73	-
Nickel (Ni)[a]	µg/L (ppb)	0.6	<0.6	2.5	25[a7]	-
Selenium (Se)	µg/L (ppb)	0.8	<0.8	<0.8	1	10[b2]
Silicon (Si)	µg/L (ppb)	10	120	50	-	-
Silver (Ag)	µg/L (ppb)	0.2	<0.2	<0.2	0.1	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	0.05	<0.05	<0.05	0.8	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-

Table I4.1-12 Kirk Lake Water Quality Data, 2005 (continued)

Parameter	Units	Method Detection Limit	Kirk Lake Inlet	Kirk Lake	Guidelines	
					Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
			02-Aug-05	02-Aug-05	CCME (2006)	Health Canada (2006)
Tungsten (W)	µg/L (ppb)	-	-	-	-	-
Uranium (U)	µg/L (ppb)	0.05	<0.05	<0.05	-	-
Vanadium (V)	µg/L (ppb)	0.1	0.3	0.3	-	-
Zinc (Zn)	µg/L (ppb)	2	<2	17	30	≤5,000[(b1)]
Dissolved Metals						
Aluminum (Al)	µg/L (ppb)	2	18	14	-	-
Antimony (Sb)	µg/L (ppb)	0.1	<0.1	<0.1	-	-
Arsenic (As)	µg/L (ppb)	0.1	<0.1	0.1	-	-
Barium (Ba)	µg/L (ppb)	3	<3	<3	-	-
Beryllium (Be)	µg/L (ppb)	0.1	0.1	<0.1	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-
Boron (B)	µg/L (ppb)	4	<4	<4	-	-
Cadmium (Cd)	µg/L (ppb)	0.05	0.12	<0.05	-	-
Chromium (Cr)	µg/L (ppb)	0.4	<0.4	<0.4	-	-
Cobalt (Co)	µg/L (ppb)	0.05	0.11	<0.05	-	-
Copper (Cu)	µg/L (ppb)	1	<1	1.4	-	-
Iron (Fe)	µg/L (ppb)	10	140	50	-	-
Lead (Pb)	µg/L (ppb)	0.05	<0.05	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	<500	-	-	-
Manganese (Mn)	µg/L (ppb)	2	4	<2	-	-
Mercury (Hg)	µg/L (ppb)	0.1	<0.1	<0.1	-	-
Molybdenum (Mo)	µg/L (ppb)	0.3	<0.3	<0.3	-	-
Nickel (Ni)	µg/L (ppb)	0.1	0.4	2.1	-	-
Selenium (Se)	µg/L (ppb)	0.4	<0.4	<0.4	-	-
Silicon (Si)	µg/L (ppb)	10	110	70	-	-
Silver (Ag)	µg/L (ppb)	0.05	<0.05	<0.05	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	0.02	<0.02	0.03	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-

Table I4.1-12 Kirk Lake Water Quality Data, 2005 (continued)

Parameter	Units	Method Detection Limit	Kirk Lake Inlet	Kirk Lake	Guidelines	
					Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
			02-Aug-05	02-Aug-05	CCME (2006)	Health Canada (2006)
Tungsten (W)	µg/L (ppb)	-	-	-	-	-
Uranium (U)	µg/L (ppb)	0.05	<0.05	<0.05	-	-
Vanadium (V)	µg/L (ppb)	0.5	<0.5	<0.5	-	-
Zinc (Zn)	µg/L (ppb)	2	<2	20	-	-

Source: AMEC (2005b).

Note: Highlighted cell and **Bolded** number indicate where a guideline is exceeded.

(a) The concentration of this metal was compared to guidelines using the observed hardness concentration or the observed pH value.

(b) The method detection limit for this parameter is higher than applicable guidelines.

Part 1. Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life (CCME 2006)

(a1) = Guideline is dependent on temperature and pH. The value ranges between 6.98 mg/L (pH= 7.0, temperature= 15°C) and 48.3 mg/L (pH= 6.5, temperature= 5°C).

(a2) = Guideline = 5 µg/L at pH < 6.5, $[Ca^{2+}]$ < 4 mg/L and DOC < 2 mg/L; Guideline = 100 µg/L at pH ≥ 6.5, $[Ca^{2+}]$ ≥4 mg/L and DOC ≥ 2 mg/L.

(a3) = Cadmium guideline = $10^{[0.86\ [\log(\text{hardness})] - 3.2]}$.

(a4) = Guideline is for hexavalent chromium (Cr_{VI}) because its guideline is more stringent than the trivalent chromium (Cr_{III}) guideline of 8.9 µg/L.

(a5) = Copper guideline is dependent on $[CaCO_3]$. Guideline shown is for when $[CaCO_3]$ is 0 to 120 mg/L. At 120 to 180 mg/L of $CaCO_3$, guideline = 3 µg/L; and at >180 mg/L $CaCO_3$, guideline = 4 µg/L.

(a6) = Lead guideline is dependent on $[CaCO_3]$. Guideline shown is for $CaCO_3$ at 0 to 60 mg/L. At 60 tp 120 mg/L $CaCO_3$, guideline = 2 µg/L; at 120 to 180 mg/L $CaCO_3$, guideline = 4 µg/L; and at >180 mg/L $CaCO_3$, guideline = 7 µg/L.

(a7) = Nickel guideline is dependent on $[CaCO_3]$. Guideline shown is for $CaCO_3$ at 0 to 60 mg/L. At 60 to 120 mg/L $CaCO_3$, guideline = 65 µg/L; at 120 to 180 mg/L $CaCO_3$, guideline = 110 µg/L; and at >180 mg/L $CaCO_3$, guideline = 150 µg/L.

Part 2. Guidelines for Canadian Drinking Water Quality (CDWQ) (Health Canada 2006)

(b1) = Aesthetic Objective

(b2) = Maximum allowable concentration (MAC).

(b3) = It is recommended that the concentration be adjusted to 0.8 to 1.0 mg/L, which is the optimum range for the control of dental cavities.

(b4) = Equivalent to 10 mg/L as nitrate-nitrogen. Where nitrate and nitrite are determined separately, levels of nitrite should not exceed 3.2 mg/L.

(b5) = True colour guideline - the mean absorbance of filtered water samples at 456 nm shall not be significantly higher than the seasonally adjusted expected value for the system under consideration.

(b6) = A health-based guideline for aluminum in drinking water has not been established. Operational guidance values of less than 100 µg/L total aluminum for conventional treatment plants and less than 200 µg/L total aluminum for other types of treatment systems are recommended.

µS/cm = microSiemens per centimetre; mg/L (ppm) = milligrams per litre (parts per million); % = percent; °C = degrees Celsius; < = less than; NTU = nephelometric turbidity unit; TCU = true colour unit; µg/L (ppb) = micrograms per litre (parts per billion); - = not available.

Concentrations of TDS were generally low (ranging from less than 10 to 24 mg/L; Table I4.1-11) and similar in range to Kennady Lake. Bicarbonate was the dominant anion, with comparable concentrations to those observed in Kennady Lake. Maximum calcium, sodium, and sulphate concentrations were less than 2 mg/L.

Concentrations of total suspended solids were below the detection limit in both Lake 410 and Kirk Lake (Tables I4.1-11 and I4.1-12, respectively). The turbidity, however, was consistently at or above the CDWQ.

I4.1.5.2.3 Nutrients

The concentration of nitrogen compounds in Lake 410 and Kirk Lake including TKN, ammonia, nitrate, and nitrite, were consistently at or below the detection limit (Tables I4.1-11 and I4.1-12, respectively). Total phosphorus concentrations were below detection limits in over half the samples. Similar to Kennady Lake, these nutrient concentrations indicated an oligotrophic status and low biological productivity for these lakes.

I4.1.5.2.4 Organics

Concentrations of TOC and DOC were less than 10 mg/L in Lake 410 and Kirk Lake (Tables I4.1-11 and I4.1-12, respectively). The water colour in Lake 410 exceeded the CDWQ once during the spring season. Generally, organic carbon content in these lakes was similar to concentrations observed in Kennady Lake.

The COD of the water was variable in Lake 410 and Kirk Lake (ranging from 9 to 23 mg/L; Tables I4.1-11 and I4.1-12, respectively) and was similar to the concentrations measured in Kennady Lake. Phenols ranged from below the detection limit to the CWQG concentration of 0.004 mg/L.

Total petroleum hydrocarbons (TPH) were not detected (Tables I4.1-11 and I4.1-12). Oil and grease was detected in two samples from Lake 410 during August 2004 (Table I4.1-11; Appendix I.II, Table I.II-1); however, concentrations were only marginally above the method detection limit (MDL).

I4.1.5.2.5 Metals

Many of the metal concentrations measured in Lake 410 and Kirk Lake were near or below the detection limit (Tables I4.1-11 and I4.1-12, respectively). For metals reported above the detection limit, Lake 410 and Kirk Lake generally had concentrations below those observed in Kennady Lake. The range in concentration of dissolved metals was generally similar to the total metals.

Exceedances of applicable guidelines occurred only with total aluminum, where 84% of measurements were above the acceptable concentration (Tables I4.1-11 and I4.1-12, respectively). Total aluminum ranged between 6 and 55 μg/L and the dissolved fraction was consistently above the total concentration guideline. Aluminum concentrations are similar in magnitude to those observed in Kennady Lake and no industrial activity is present in the watersheds, therefore aluminum sources can be assumed to be naturally occurring in the lakes.

As only aluminum exceeded the CWQG, no chronic effects from other metals were expected on aquatic life in the Lake 410, P, or Kirk Lake watersheds. Chronic toxicity under baseline conditions from aluminum exposure is possible due to persistently high concentrations of the metal coupled with generally low pH and calcium ion measurements.

I4.1.5.3 Sediment Quality

I4.1.5.3.1 Overview

Sediment quality data for Lake 410 and Kirk Lake consist of data collected between 2004 and 2005. The following sections provide a summary of baseline sediment quality conditions, while Table I4.1-13 presents a summary of the sediment quality in Lake 410 and Kirk Lake.

I4.1.5.3.2 Texture and Carbon Content

Sediments collected from Lake 410 and Kirk Lake were mainly composed of sand (61% to 62%; Table I4.1-13), with some silt (28% to 35%) and clay (4% to 10%). Compared with sediments collected from Kennady Lake, the texture of Lake 410 and Kirk Lake sediments were less variable.

Total organic carbon ranged from 0.7% to 17% of the sediment composition in Lake 410 and Kirk Lake (Table I4.1-13), which was similar to the range measured in Kennady Lake. Inorganic carbon constituted less than 3% of the sediment while calcium carbonate content ranged between 0.2% and 0.4%. The carbon content in these lakes was lower than observed in Kennady Lake.

Table I4.1-13 Summary of Sediment Quality for Lake 410 (2004) and Kirk Lake (2005)

Parameter	Unit	Method Detection Limit	Lake 410	Kirk Lake	Guideline
			09-Aug-04	02-Aug-05	Sediment Quality Guidelines (ISQG)
					CCME (2002)
Texture and Carbon Content					
Sand	%	1	62	61	-
Silt	%	1	28	35	-
Clay	%	1	10	4	-
Calcium Carbonate	%	0.005	0.4	0.2	-
Inorganic Carbon, Total (TIC)	%	0.01	2	3	-
Organic Carbon, Total (TOC)	%	0.01	17	0.7	-
Total Carbon	%	0.01	20	4	-
Nutrients and Organics					
Nitrate	µg/g	0.5	<0.5	-	-
Phosphate	µg/g	0.5	74.6	-	-
Total Petroleum Hydrocarbons (TPH)	µg/g	8	3,030	583	-
Total Metals					
Aluminum	µg/g	5	10,300	10,500	-
Arsenic	µg/g	0.5	4	3	5.9
Barium	µg/g	1	63	83	-
Cadmium	µg/g	0.2	0.3	<0.2	0.6
Calcium	µg/g	5	5,030	2,650	-
Chromium	µg/g	0.5	22	35	37.3
Cobalt	µg/g	0.5	17	9	-
Copper	µg/g	0.1	**59**	31	35.7
Iron	µg/g	5	26,300	16,400	-
Lead	µg/g	0.5	3	2	35
Magnesium	µg/g	1	3,470	5,130	-
Manganese	µg/g	0.5	209	167	-
Mercury	µg/g	0.5	<0.5[(a)]	<0.5[(a)]	0.17
Molybdenum	µg/g	0.5	3	0.9	-
Nickel	µg/g	0.5	41	27	-
Phosphorus	µg/g	5	839	642	-
Potassium	µg/g	5	1,190	2,670	-
Selenium	µg/g	0.5	0.6	<0.5	-
Sodium	µg/g	1	167	150	-
Thallium	µg/g	0.5	<0.5	<0.5	-
Vanadium	µg/g	0.2	24	34	-
Zinc	µg/g	0.5	76.5	66	123

Source: AMEC (2004c, 2005c).

Notes: Highlighted cell and **Bolded** number indicate where a guideline is exceeded.

[(a)] The method detection limit for this parameter is higher than applicable guidelines.

% = percent; µg/g = microgram per gram; < = less than; - = not available.

I4.1.5.3.3 Nutrients and Organics

Phosphorus was the dominant nutrient in Lake 410 and Kirk Lake sediments (Table I4.1-13). Nitrate concentrations were below the detection limit. The nutrients bound to the sediment in these lakes exhibited a pattern similar to that observed in Kennady Lake.

The TPH content was variable between Lake 410 and Kirk Lake (Table I4.1-13). The TPH concentration of 3,030 μg/g in Lake 410 sediment was three times higher than in Kennady Lake. The TPH concentration of 583 μg/g in Kirk Lake sediment was about half the concentration observed in Kennady Lake.

I4.1.5.3.4 Metals

The major metal composition of the sediments in Lake 410 and Kirk Lake included iron, aluminum, magnesium, and calcium (Table I4.1-13). The range and variability of the dominant metals in these lakes were similar to measurements in Kennady Lake.

Total metals in the sediment were generally measured within the applicable aquatic life guidelines (Table I4.1-13). Copper was the only total metal parameter to exceed the ISQG. Compared to Kennady Lake, the concentrations of potentially toxic metals was lower in Lake 410 and Kirk Lake.

I4.1.5.4 Summary

Lake 410 and Kirk Lake had very similar physical limnology and water chemistry to Kennady Lake (Table I4.1-14).

Sediment chemistry data was collected from Lake 410 and Kirk Lake. The composition, carbon content, and metal content were similar to Kennady Lake.

The selected water quality indicators and metals summarized in Section I4.1.5.3 compared the fluctuations and characteristics in Lake 410 and Kirk Lake with those present upstream in Kennady Lake (Table I4.1-1). Lake 410 had lower concentrations of TDS, specific conductivity, and iron than Kennady Lake and higher concentrations of total organic carbon and aluminum.

Table I4.1-14 Summary of Median Concentrations of Representative Water Quality Parameters in Lake 410 and Kirk Lake over the Study Period, 1995 to 2005

Waterbody Identifier	TDS (mg/L)	Specific Conductivity (µS/cm)	TOC (mg/L)	Total Aluminum (µg/L)	Total Copper (µg/L)	Total Iron (µg/L)
CWQG Guideline	-	-	-	5 or 100	2 to 4	300
CDWQ Guideline	≤500	-	-	100	≤1,000	≤300
K5 Outlet	21	17	3	14	<5	46
Lake 410 and Kirk Lake						
Lake 410	12	13	5	12	<5	<10
Lake 410 – Inlet SE	16	17	5	36	<1 to <5[(a)]	108
Lake 410 – Inlet SW	20	13	4	10	<1 to <5[(a)]	<10
Kirk Lake – Inlet	<10	12	4	23	<1	70
Kirk Lake	<10	14	5	23	1.5	<10

Notes: Highlighted cells indicate where a guideline is exceeded.

(a) All concentrations were under detection, thus a range in detection limits was provided.

TDS = total dissolved solids; TOC = total organic carbon; µS/cm = microSiemens per centimetre; mg/L = milligram per litre; µg/L = microgram per litre; < = less than; ≤ = less than or equal to; - = not available.

I4.2 REGIONAL STUDY AREA

Puznicki (1996) and INAC (Blais 2005, pers. comm.) investigated the water quality in the Lockhart River watershed in 1993 to 1994 and 1999, respectively. These investigations were in response to the potential increase in industrial activity in the RSA (Figure I2.2-1). Water quality surveys within the Upper Lockhart River watershed were conducted in the Snap Lake area (1998 to 2001), as part of an Environmental Assessment submitted by De Beers for the Snap Lake Mine (De Beers 2002). Water from the upper Lockhart River flows into the lower Lockhart River watershed at Aylmer Lake, this includes water from the Kennady Lake watershed and the LSA (Figure I2.1-1). The water flows downstream through this watershed to McLeod Bay of Great Slave Lake. Kennady Lake is part of the Kirk Lake watershed, which drains into the Lower Lockhart River watershed via Aylmer Lake (Figure I2.2-1). A data series from an Environment Canada long-term water quality monitoring station at the outlet of Artillery Lake (1969 to 2004) was also included in the analysis (Environment Canada 2005). Sampling locations in the RSA are presented in Figure I3.3-3.

I4.2.1 Upper Lockhart River Watershed

I4.2.1.1 Water Quality

I4.2.1.1.1 Overview

Water quality was sampled at seven locations during under-ice conditions and 22 locations during open water conditions (Appendix I.II, Tables I.II-3 and I.II-4). The summary of water quality for under-ice and open water conditions is presented in Table I4.2-1. The summary includes data collected by INAC (Puznicki 1996; Blais 2005, pers. comm.) and baseline data used in the assessment of the Snap Lake Mine (De Beers 2002).

I4.2.1.1.2 Conventional Parameters and Major Ions

Laboratory measurement of pH indicated that the water in the upper Lockhart River watershed was slightly acidic to slightly alkaline. Some measurements were slightly below the acceptable CWQG and CDWQ range and no major differences were measured between seasons.

Hardness and alkalinity concentrations were low, with concentrations for both parameters being under 35 mg/L. The water in these lakes is soft with a low buffering capacity.

The TDS concentration was generally low, with a concentration ranging between 6 and 76 mg/L. There was little difference in the TDS concentration between under-ice and open water conditions.

Bicarbonate was the dominant anion and calcium was the major cation, indicating that surface runoff was the main water source. Low sulphate and sodium concentrations were observed as well.

Total suspended solids concentration varied from below detection to 22 mg/L, with a similar variability in concentration measured during both open water and under-ice conditions. The turbidity of the water in the lakes was similar in range during both water conditions. The CDWQ was exceeded in about 15% of the measurements.

Table I4.2-1 Water Quality Summary of the Upper Lockhart River Watershed, 1993 to 2001

Parameter	Unit	Method Detection Limit		Under-ice conditions							Open Water Conditions							Guidelines	
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
																		CCME (2006)	Health Canada (2006)
Conventional Parameters and Major Ions																			
pH	pH Units	0.01	0.1	28	**6.4**	6.9	7.5	0	0	4	39	**6.2**	6.6	7.7	0	0	7	6.5 to 9	6.5 to 8.5[(b1)]
Conductivity, Specific	µS/cm	0.001	2	0	-	-	-	-	-	-	7	19	23	30	0	0	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	0.2	0.2	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	0.3	5	74	3	7	22	0	0	-	85	0.4	4	31	0	0	-	-	-
Hardness, Total	mg/L (ppm)	0.05	6	47	0.05	7	23	0	0	-	76	2	5	34	0	0	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	0.1	20	70	6	21	60	0	0	-	83	10	19	76	9	11	-	-	≤500[(b1)]
Total Suspended Solids (TSS)	mg/L (ppm)	3	3	77	<3	3	22	35	45	-	86	3	-	21	64	74	-	-	-
Turbidity	NTU	0.1	1	45	<0.1	0.9	**2**	22	49	8	76	0.2	0.6	**4**	0	0	12	-	1[(b2)]
Calcium	mg/L (ppm)	0.05	0.5	69	0.9	1.6	44	0	0	-	76	0.3	1.1	8	0	0	-	-	-
Magnesium	mg/L (ppm)	0.01	0.5	71	0.4	0.8	3	0	0	-	76	0.3	0.5	4	2	3	-	-	-
Potassium	mg/L (ppm)	0.01	0.5	71	0.3	0.5	1.3	0	0	-	76	0.1	0.4	1.5	3	4	-	-	-
Sodium	mg/L (ppm)	0.1	1	71	0.3	0.7	1.8	0	0	-	76	0.3	0.5	1	0	0	-	-	≤200[(b1)]
Bicarbonate	mg/L (ppm)	1	5	33	3	8	22	0	0	-	18	4	9	17	0	0	-	-	-
Carbonate	mg/L (ppm)	5	5	8	<5	-	<5	8	100	-	16	<1	-	<5	16	100	-	-	-
Chloride	mg/L (ppm)	0.2	1	70	<0.2	0.4	10	45	64	-	76	0.2	0.4	12	34	45	-	-	≤250[(b1)]
Fluoride	mg/L (ppm)	0.02	0.05	24	0.04	0.06	0.07	11	46	-	38	0.02	0.04	0.1	10	26	-	-	1.5[(b3)]
Sulphate	mg/L (ppm)	0.02	1	71	0.7	3	36	14	20	-	76	0.7	3	8	42	55	-	-	≤500[(b1)]
Nutrients																			
Ammonia	mg/L (ppm)	0.002	0.1	73	0.008	0.02	0.2	9	12	-	81	0.002	0.02	0.09	27	33	-	7.0 to 48.3[(a1)]	-
Nitrate	mg/L (ppm)	0.006	0.2	3	<0.006	-	0.02	1	33	-	17	0.02	-	0.06	15	88	-	-	45[(b4)]
Nitrite	mg/L (ppm)	0.002	0.3	3	<0.002	-	<0.002	3	100	-	17	<0.008	-	<0.05	17	100	-	0.06	3.2[(b4)]
Nitrate + Nitrite	mg/L (ppm)	0.006	0.1	68	0.008	0.01	0.1	15	22	-	69	0.008	-	0.6	56	81	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	0.001	0.3	25	0.2	0.3	5	0	0	-	40	0.02	0.2	0.7	12	30	-	-	-
Phosphate	mg/L (ppm)	0.005	0.3	0	-	-	-	-	-	-	10	0.002	0.002	0.003	2	20	-	-	-
Phosphorus, Total	mg/L (ppm)	0.001	0.3	22	0.002	0.01	0.01	0	0	-	39	0.001	0.003	0.02	11	28	-	-	-
Organics																			
Oxygen Demand, Chemical (COD)	mg/L (ppm)	1	1	0	-	-	-	-	-	-	7	6	10	17	1	14	-	-	-
Colour	TCU	1	1	30	5	10	**60**	21	70	2	48	0.5	5	**30**	21	44	1	-	≤15[(b5)]
Oil and Grease	mg/L (ppm)	0.1	0.1	18	0.8	1	2	12	67	-	26	0.1	0.1	1.6	15	58	-	-	-
Phenol	mg/L (ppm)	0.002	0.002	-	-	-	-	-	-	-	7	<0.002	-	**0.009**	5	71	1	0.004	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	1	1	23	3	5	8	0	0	-	42	2	3	14	0	0		-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	1	1	46	3	4	11	0	0	-	51	2	4	14	2	0	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	0.1	0.1	0	-	-	-	-	-	-	7	0.1	0.3	0.4	1	14	-	-	-
Total Metals										-									
Aluminum (Al)[(a)]	µg/L (ppb)	0.3	20	76	5	30	**340**	49	64	27	85	0.7	9	**149**	38	45	39	5 or 100[(a2)]	100[(b6)]
Antimony (Sb)	µg/L (ppb)	0.03	1	76	0.04	0.5	1.6	2	3	-	82	0.01	0.4	1	35	43	-	-	6[(b2)]
Arsenic (As)	µg/L (ppb)	0.03	1	66	0.07	-	0.1	57	86	-	72	0.07	-	2	62	86	-	5	10[(b2)]
Barium (Ba)	µg/L (ppb)	0.05	10	76	1.8	3	15	0	0	-	84	0.5	2	10	7	8	-	-	1,000[(b2)]

Table I4.2-1 Water Quality Summary of the Upper Lockhart River Watershed, 1993 to 2001 (continued)

Parameter	Unit	Method Detection Limit		Under-ice conditions							Open Water Conditions							Guidelines	
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
																		CCME (2006)	Health Canada (2006)
Beryllium (Be)	µg/L (ppb)	0.02	5	76	0.1	-	0.3	75	99	-	84	<0.1	-	3	83	99	-	-	-
Bismuth (Bi)	µg/L (ppb)	0.03	100	72	<0.03	-	<10	72	100	-	78	0.1	-	0.5	75	96	-	-	-
Boron (B)	µg/L (ppb)	1	100	9	1	2	3	0	0	-	15	1	2	2	7	47	-	-	5,000[(b2)]
Cadmium (Cd)[(a)]	µg/L (ppb)	0.02	0.2	76	0.01	-	**0.04**	74	97	1	63	<0.05[2]	-	**0.5**	62	98	1	0.02[(a3)]	5[(b1)]
Chromium (Cr)	µg/L (ppb)	0.06	15	76	0.09	0.3	**5**	44	58	4	85	0.2	-	**4**	66	78	4	1[(a4)]	50[(b1)]
Cobalt (Co)	µg/L (ppb)	0.06	15	76	0.1	0.1	3	32	42	-	85	0.1	-	1.4	77	91	-	-	-
Copper (Cu)[(a)]	µg/L (ppb)	0.05	10	76	0.3	0.7	**6**	9	12	7	85	0.2	0.6	**4**	53	62	2	2[(a5)]	≤1,000[(b1)]
Iron (Fe)	µg/L (ppb)	5	50	75	0.02	90	**1,400**	30	40	5	83	13	55	**1,100**	27	33	63	300	≤300[(b1)]
Lead (Pb)[(a)]	µg/L (ppb)	0.05	1	76	0.03	0.3	**3**	36	47	3	85	0.06	-	**2**	69	81	-	1[(a6)]	10
Lithium (Li)	µg/L (ppb)	0.1	20	76	0.4	1.1	3	8	11	-	78	0.5	0.8	1.4	41	53	-	-	-
Manganese (Mn)	µg/L (ppb)	0.03	5	76	0.05	3	**62**	7	9	2	85	0.7	4	**62**	0	0	1	-	≤50[(b1)]
Mercury (Hg)	µg/L (ppb)	0.01	500	69	<0.01[(b)]	-	<0.02[(b)]	69	100	-	43	<0.01[(b)]	-	<1[(b)]	43	100	-	0.026	1[(b2)]
Molybdenum (Mo)	µg/L (ppb)	0.04	5	76	0.07	0.1	0.8	41	54	-	74	0.01	0.04	0.2	55	74	-	73	-
Nickel (Ni)[(a)]	µg/L (ppb)	6	0.31	76	0.1	0.5	3	8	11	-	85	0.1	0.4	6	47	55	-	25[(a7)]	-
Selenium (Se)	µg/L (ppb)	0.1	10	76	<0.1	-	1	75	99	-	85	<0.1	-	1	81	95	-	1	10[(b2)]
Silicon (Si)	µg/L (ppb)	10	100	0	-	-	-	-	-	-	7	80	170	291	0	0	-	-	-
Silver (Ag)	µg/L (ppb)	0.01	0.2	53	0.3	-	0.4	51	96	-	85	<0.1	-	<0.3[2]	85	100	-	0.1	-
Strontium (Sr)	µg/L (ppb)	0.1	1	76	4	9	23	0	0	-	78	3	6	28	0	0	-	-	-
Thallium (Tl)	µg/L (ppb)	0.03	100	71	<0.03	-	0.6	70	99	-	85	0.9	-	**1.7**	82	96	3	0.8	-
Tin (Sn)	µg/L (ppb)	0.1	300	0	-	-	-	-	-	-	3	<0.1	-	<0.1	3	100	-	-	-
Titanium (Ti)	µg/L (ppb)	0.1	100	71	0.5	0.3	12	31	44	-	65	0.1	-	1.6	52	80	-	-	-
Tungsten (W)	µg/L (ppb)	100	100	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	0.01	0.5	76	0.05	-	0.2	60	79	-	85	0.2	-	0.3	83	98	-	-	-
Vanadium (V)	µg/L (ppb)	0.05	30	76	0.1	-	0.8	53	70	-	84	0.08	-	0.6	70	83	-	-	-
Zinc (Zn)	µg/L (ppb)	0.8	5	76	0.9	-	**44**	55	72	4	85	0.5	2	**37**	46	54	2	30	≤5,000[(b1)]
Dissolved Metals																			
Aluminum (Al)	µg/L (ppb)	0.3	10	54	3	46	94	33	61	-	49	1.9	7.6	571	25	51	-	-	-
Antimony (Sb)	µg/L (ppb)	0.03	0.1	54	0.04	0.6	1.6	0	0	-	49	0.03	0.9	2	17	35	-	-	-
Arsenic (As)	µg/L (ppb)	0.03	0.1	43	0.06	-	0.1	34	79	-	36	0.07	-	0.4	27	75	-	-	-
Barium (Ba)	µg/L (ppb)	0.05	10	54	2	3	34	0	0	-	49	1.7	2	19	5	10	-	-	-
Beryllium (Be)	µg/L (ppb)	0.1	5	54	0.1	-	0.1	4	7	-	49	<0.1	-	<0.1	49	100	-	-	-
Bismuth (Bi)	µg/L (ppb)	0.03	100	49	0.1	-	0.2	44	90	-	42	0.1	-	0.6	39	93	-	-	-
Boron (B)	µg/L (ppb)	1	100	9	1	2	3	0	0	-	18	1	1	4	8	44	-	-	-
Cadmium (Cd)	µg/L (ppb)	0.02	0.2	54	0.1	-	0.1	51	94	-	49	<0.05	-	<0.1	49	100	-	-	-
Chromium (Cr)	µg/L (ppb)	0.06	15	54	0.1	0.4	19	20	37	-	49	0.2	-	76	40	82	-	-	-
Cobalt (Co)	µg/L (ppb)	0.05	1	54	0.05	0.1	1.5	13	24	-	49	0.1	-	1.4	38	78	-	-	-
Copper (Cu)	µg/L (ppb)	0.05	10	54	0.5	1.1	4	0	0	-	49	0.4	0.7	3	10	20	-	-	-
Iron (Fe)	µg/L (ppb)	5	30	53	8	51	760	26	49	-	49	3	21	530	16	33	-	-	-
Lead (Pb)	µg/L (ppb)	0.05	1	49	0.05	0.2	21	18	37	-	49	0.06	0.2	1.4	18	37	-	-	-
Lithium (Li)	µg/L (ppb)	0.1	15	54	0.6	1	1.9	0	0	-	42	0.5	0.9	1.4	0	0	-	-	-

Table I4.2-1 Water Quality Summary of the Upper Lockhart River Watershed, 1993 to 2001 (continued)

Parameter	Unit	Method Detection Limit		Under-ice conditions							Open Water Conditions							Guidelines	
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
																		CCME (2006)	Health Canada (2006)
Manganese (Mn)	µg/L (ppb)	0.03	5	54	0.1	3.5	54	0	0	-	49	0.01	1.1	65	4	8	-	-	-
Mercury (Hg)	µg/L (ppb)	0.01	1	43	<0.01	-	<0.02	43	100	-	35	<0.01	-	<1	35	100	-	-	-
Molybdenum (Mo)	µg/L (ppb)	0.04	1	54	0.06	0.1	0.4	25	46	-	30	0.1	-	0.5	49	163	-	-	-
Nickel (Ni)	µg/L (ppb)	0.06	1	54	0.1	0.5	46	0	0	-	49	0.09	0.4	8	6	12	-	-	-
Selenium (Se)	µg/L (ppb)	0.1	2	54	<0.1	-	1	51	94	-	49	<0.1	-	1	48	98	-	-	-
Silicon (Si)	µg/L (ppb)	5	100	0	-	-	-	-	-	-	7	63	103	207	0	0	-	-	-
Silver (Ag)	µg/L (ppb)	0.01	0.1	54	<0.1	-	0.1	50	93		49	<0.05	-	0.1	47	96	-	-	-
Strontium (Sr)	µg/L (ppb)	0.1	0.1	54	4	9	20	0	0	-	42	5	7	10	0	0	-	-	-
Thallium (Tl)	µg/L (ppb)	0.02	100	49	<0.03	-	0.1	46	94	-	49	<0.02	-	0.2	48	98	-	-	-
Tin (Sn)	µg/L (ppb)	0.1	300	0	-	-	-	-	-	-	2	<0.1	-	<0.1	2	100	-	-	-
Titanium (Ti)	µg/L (ppb)	0.1	100	49	0.1	0.3	0.8	31	63	-	42	0.4	-	40	38	90	-	-	-
Tungsten (W)	µg/L (ppb)	0.01	100	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	0.01	0.5	48	0.1	-	0.1	42	88	-	49	<0.05	-	<0.1	49	100	-	-	
Vanadium (V)	µg/L (ppb)	0.05	30	54	0.06	0.06	0.2	37	69	-	49	0.05	-	0.3	41	84	-	-	-
Zinc (Zn)	µg/L (ppb)	0.8	5	54	1	-	20	54	32	-	49	0.6	-	18	25	51	-	-	-

Source: Based on INAC data and baseline data for the Snap Lake Mine (De Beers 2002).

Note: Highlighted cells and **Bolded** numbers indicate where a guideline is exceeded.

(a) The concentration of this metal was compared to guidelines using the median hardness concentration or the median pH value.

(b) The MDL for this parameter is higher than applicable guidelines.

Part 1. Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life (CCME 2006)

(a1) = Guideline is dependent on temperature and pH. The value ranges between 6.98 mg/L (pH= 7.0, temperature= 15°C) and 48.3 mg/L (pH= 6.5, temperature= 5°C).

(a2) = Guideline = 5 µg/L at pH < 6.5, $[Ca^2+]$ < 4 mg/L and DOC < 2 mg/L; Guideline = 100 µg/L at pH ≥ 6.5, $[Ca^2+]$ ≥ 4 mg/L and DOC ≥ 2 mg/L.

(a3) = Cadmium guideline = 10[0.86 [log(hardness)] - 3.2].

(a4) = Guideline is for hexavalent chromium (CrVI) because its guideline is more stringent than the trivalent chromium (CrIII) guideline of 8.9 µg/L.

(a5) = Copper guideline is dependent on $[CaCO_3]$. Guideline shown is for when $[CaCO_3]$ is 0 to 120 mg/L. At 120 to 180 mg/L of $CaCO_3$, guideline = 3 µg/L; and at >180 mg/L $CaCO_3$, guideline = 4 µg/L.

(a6) = Lead guideline is dependent on $[CaCO_3]$. Guideline shown is for $CaCO_3$ at 0 to 60 mg/L. At 60 to 120 mg/L $CaCO_3$, guideline = 2 µg/L; at 120-180 mg/L $CaCO_3$, guideline = 4 µg/L; and at >180 mg/L $CaCO_3$, guideline = 7 µg/L.

(a7) = Nickel guideline is dependent on $[CaCO_3]$. Guideline shown is for $CaCO_3$ at 0 to 60 mg/L. At 60 to 120 mg/L $CaCO_3$, guideline = 65 µg/L; at 120-180 mg/L $CaCO_3$, guideline = 110 µg/L; and at >180 mg/L $CaCO_3$, guideline = 150 µg/L.

Part 2: Guidelines for Canadian Drinking Water Quality (CDWQ) (Health Canada 2006)

(b1) = Aesthetic Objective

(b2) = Maximum allowable concentration (MAC).

(b3) = It is recommended that the concentration be adjusted to 0.8 to 1.0 mg/L, which is the optimum range for the control of dental cavities.

(b4) = Equivalent to 10 mg/L as nitrate-nitrogen. Where nitrate and nitrite are determined separately, levels of nitrite should not exceed 3.2 mg/L.

(b5) = True colour guideline - the mean absorbance of filtered water samples at 456 nm shall not be significantly higher than the seasonally adjusted expected value for the system under consideration.

(b6) = A health-based guideline for aluminum in drinking water has not been established. Operational guidance values of less than 100 µg/L total aluminum for conventional treatment plants and less than 200 µg/L total aluminum for other types of treatment systems are recommended.

µS/cm = microSiemens per centimetre; mg/L (ppm) = milligrams per litre (parts per million); % = percent; < = less than; ≤ = less than or equal to; °C = degrees Celsius; NTU = nephelometric turbidity unit; TCU = true colour unit; µg/L (ppb) = micrograms per litre (parts per billion); - = not available.

I4.2.1.1.3 Nutrients

Nutrient concentrations in the upper Lockhart River watershed indicated an oligotrophic status for most lakes. The concentrations of nitrogen compounds (including TKN, ammonia, nitrate, and nitrite) and phosphorus were consistently at or below detection. Nitrogen and phosphorus compounds were found in higher concentration in some lakes, indicating higher productivity and a rather mesotrophic status. Most lakes, however, had low biological productivity due to low nutrient concentrations.

I4.2.1.1.4 Organics

The organic content measured by TOC and DOC was under 15 mg/L and within the same range during both open water and under-ice conditions (Table I4.2-1). The water colour exceeded the CDWQ in only a couple of lakes likely due to natural inputs. Generally, organic content in these lakes was similar to concentrations measured in the LSA.

The COD of the water was within the same variability of lakes in the LSA. Phenols ranged from below detection to 0.009 mg/L, which was above the CWQG of 0.004 mg/L. Oil and grease concentrations were generally below detection limits, and were otherwise at or near the detection limit. Total petroleum hydrocarbons (TPH) concentrations were generally slight higher than the detection limit.

I4.2.1.1.5 Metals

Many of the metal concentrations measured in the upper Lockhart River watershed were generally near or below detection. Similar ranges were measured during both open water and under-ice conditions. The range in concentration of dissolved metals was generally similar to the total metals, indicating that most of the metals concentrations were bio-available.

Total aluminum exceeded the CWQG in 36% of under-ice measurements and 46% of open water measurements. Sampling was conducted in the watershed before any industrial activity was present. Therefore, the exceedances observed in the watershed were due to natural conditions. Overall fewer aluminum exceedances were measured in the upper Lockhart River watershed than in the LSA due to slightly higher pH measured in the lakes in the RSA.

Other elevated metal concentrations were measured for cadmium, chromium, copper, iron, lead, manganese, selenium, silver, thallium, and zinc. Guideline exceedances were reported for at least one measurement for each parameter.

There were approximately an equal number of exceedances for these parameters during both under-ice and open water conditions.

Due to the variability in lake surface areas and the overall size of the upper Lockhart River watershed, variability in the concentration of metals is expected due to the different geologic formations that are present throughout the watershed. The exceedance of guidelines is also likely due to natural inputs.

I4.2.1.2 Sediment Quality

I4.2.1.2.1 Overview

Sediment quality data for lakes in the upper Lockhart River watershed (Figure I3.3-3) were compiled from data collected between 1998 and 2001 (Appendix I.II, Table I.II-7). The following sections provide a summary of baseline sediment quality conditions, while Table I4.2-2 presents the statistical summary of the sediment quality in both the upper and lower Lockhart River watershed. A description of the sediment quality of the lower Lockhart River watershed is presented in Section I4.2.2.2.

I4.2.1.2.2 Texture and Organic Content

The particle size distribution of the sediment was mainly composed of sand (41% to 94%). Silt (6% to 46%) and clay (0.3% to 13%) were also found within the sediment (Table I4.2-2). The texture of the sediment was variable throughout the upper Lockhart River watershed. Organic content, measured as TOC, ranged from 0.8% to 39% of the sediment composition, which was more highly variable than measurements in the LSA.

I4.2.1.2.3 Nutrients and Organics

Nutrients, such as phosphate and nitrate, and organic parameters, such as total petroleum hydrocarbons, were not measured in the upper Lockhart River watershed.

I4.2.1.2.4 Metals

The major metal composition of the sediment included iron, aluminum, magnesium, potassium, and calcium. The range and variability of the dominant metals in these lakes were variable; however, these five metals were the primary constituents in all surveyed lakes.

Table I4.2-2 Sediment Quality Summary of the Upper and Lower Lockhart River Watershed, 1993 to 2001

Parameter	Unit	Method Detection Limit		Upper Lockhart River							Lower Lockhart River							Guideline
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Interim Sediment Quality Guidelines
																		CCME (2002)
Texture and Carbon Content																		
Sand	%	1	1	7	41	61	94	0	0	-	7	14	52	83	0	0	-	-
Silt	%	1	1	7	6	37	46	0	0	-	7	16	46	67	0	0	-	-
Clay	%	1	1	7	0.3	4	13	0	0	-	7	0.6	3	19	0	0	-	-
Calcium Carbonate	%	0.005	0.005	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	%	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	%	0.01	0.01	15	0.8	3	39	0	0	-	15	1	13	30	0	0	-	-
Total Carbon	µg/g	0.01	0.01	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-
Nutrients and Organics																		
Nitrate	µg/g	0.5	0.5	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-
Phosphate	µg/g	0.5	0.5	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	µg/g	8	8	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-
Total Metals																		
Aluminum	µg/g	5	5	32	2,100	13,925	32,806	0	0	-	23	6,678	15,000	31,000	0	0	-	-
Arsenic	µg/g	0.5	0.5	32	0.5	5	**49**	0	0	15	23	0.6	11	**55**	0	0	15	5.9
Barium	µg/g	1	1	32	35	71	225	8	25	-	23	36	-	322	10	43	-	-
Cadmium	µg/g	0.01	0.2	32	<0.2	0.2	**1**	7	22	4	20	0.05	0.4	**0.8**	3	15	4	0.6
Calcium	µg/g	5	5	25	295	1,322	4,500	0	0	-	16	533	2,017	3,700	0	0	-	-
Chromium	µg/g	0.5	0.5	32	9	33	**48**	0	0	10	23	12	33	**60**	0	0	5	37.3
Cobalt	µg/g	0.5	0.5	32	3	10	25	0	0	-	23	4	15	124	0	0	-	-
Copper	µg/g	0.1	0.1	32	6	35	**85**	0	0	16	23	7	46	**93**	0	0	16	35.7
Iron	µg/g	5	5	32	9,600	21,256	53,295	0	0	-	23	11,300	21,600	176,226	0	0	-	-
Lead	µg/g	0.5	0.5	32	2	5	**502**	0	0	6	23	2	5	**153**	0	-	4	35
Magnesium	µg/g	1	1	25	2,553	4,300	10,200	0	0	-	16	2,046	4,300	10,400	0	0	-	-
Manganese	µg/g	0.5	0.5	32	80	264	3,613	2	6	-	23	122	531	21,200	1	4	-	-
Mercury	µg/g	0.0005	0.5	25	0.001	0.05	**0.7**	0	0	3	16	0.008	0.05	**0.6**	0	0	2	0.17
Molybdenum	µg/g	0.2	0.5	32	<0.2	1.3	5	0	0	-	23	<0.2	2	11	1	4	-	-
Nickel	µg/g	0.5	0.5	32	6	32	79	0	0	-	23	9	46	93	0	0	-	-
Phosphorus	µg/g	5	5	15	17	160	1,330	0	0	-	15	1.8	61	510	0	0	-	-
Potassium	µg/g	5	5	25	859	2,322	6,500	0	0	-	16	947	2,202	7,400	0	0	-	-
Selenium	µg/g	0.1	20	32	0.06	0.8	32	15	47	-	18	0.1	-	0.9[(a)]	15	83	-	-
Sodium	µg/g	1	1,000	25	55	-	800	14	56	-	16	59	-	1,000	0	0	-	-
Thallium	µg/g	0.5	0.5	32	0.1	0.2	0.4	8	25	-	23	0.1	0.2	0.7	7	30	-	-
Vanadium	µg/g	0.2	0.2	32	13	32	42	0	0	-	23	17	31	51	0	0	-	-
Zinc	µg/g	20	20	32	<20	67	**145**	2	6	1	22	23	78	**167**	0	0	2	123

Notes: Highlighted cells and **Bolded** numbers indicate where a guideline is exceeded.

[(a)] The maximum recorded concentration was provided for this parameter.

- = not available; % = percent; µg/g = micrograms per gram; < = less than.

Total metals in the sediment were generally measured below the applicable sediment quality guidelines (CCME 2002). Arsenic and copper were the most common metals to exceed the ISQG. Exceedance of guidelines were recorded for cadmium, chromium, mercury, and zinc, presumably as a result of natural inputs.

Most of the metals were found in variable quantities within the sediment. The sediment in the RSA was different than the sediment collected in the LSA.

I4.2.1.3 Summary

Several lakes located upstream of Aylmer Lake were surveyed between 1993 and 2001. Water and sediment data from these surveys were included in the upper Lockhart River watershed assessment. Several water quality characteristics in this watershed were similar to conditions in the LSA, such as low hardness, alkalinity, and TDS.

Water in the upper Lockhart River watershed generally contained low concentrations of nutrients and organics. Metals were usually near or below detection; however, guideline exceedances were more common than in the LSA. The sediments were variable in texture, carbon content, and metals concentrations.

Observed water and sediment guideline exceedances are a result of naturally occurring conditions and are thus not of concern, as local flora and fauna will be adapted to these natural conditions in the environment.

I4.2.2 Lower Lockhart River Watershed

I4.2.2.1 Water Quality

I4.2.2.1.1 Overview

Six water quality sampling events occurred during under-ice conditions and 20 occurred during open water conditions. The summary of water quality for under-ice and open water conditions is presented in Table I4.2-3. Water quality data did not include dissolved metals. The summary includes data collected by INAC between 1993 and 1999 (Appendix I.II, Tables I.II-5 and I.II-6).

The lower Lockhart River watershed contains a series of small headwater lakes forming several sub-watersheds inflowing into larger lakes (Figure I2.2-1).

Table I4.2-3 Water Quality Summary of the Lower Lockhart River Watershed, 1993 to 2001

Parameter	Unit	Method Detection Limit		Under-ice Conditions							Open water conditions							Guidelines	
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
																		CCME (2006)	Health Canada (2006)
Conventional Parameters and Major Ions																			
pH	pH Units	0.01	0.1	6	6.5	6.6	6.8	0	0	0	20	**6.2**	6.5	7.7	0	0	4	6.5 to 9	6.5 to 8.5[(b1)]
Conductivity, Specific	µS/cm	0.001	2	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	0.2	0.2	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	0.3	5	6	4	5	9	0	0	-	20	0.3	1.7	31	0	0	-	-	-
Hardness, Total	mg/L (ppm)	0.05	6	0	-	-	-	-	-	-	20	2	3.9	34	0	0	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	0.1	20	6	14	24	38	0	-	0	19	<10	13	53	2	11	0	-	≤500[(b1)]
Total Suspended Solids (TSS)	mg/L (ppm)	0.1	5	6	<3	3	3	5	83	-	20	<3	4	8	6	30	-	-	-
Turbidity	NTU	0.1	1	6	0.4	1	2	-	-	4	20	0.4	0.5	**1**	0	0	1	-	1[(b2)]
Calcium (Ca)	mg/L (ppm)	0.05	0.5	6	1	1.3	1.9	-	-	-	20	0.3	0.8	7	2	10	-	-	-
Magnesium (Mg)	mg/L (ppm)	0.01	0.5	6	0.5	0.7	1	-	-	-	20	0.3	0.4	4	3	15	-	-	-
Potassium (K)	mg/L (ppm)	0.01	0.5	6	0.5	0.5	0.8	-	-	-	20	0.1	0.4	1.5	3	15	-	-	-
Sodium (Na)	mg/L (ppm)	0.1	1	6	0.5	0.6	1	-	-	0	20	0.3	0.4	1.3	1	5	0	-	≤200[(b1)]
Bicarbonate	mg/L (ppm)	1	5	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	1	5	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	0.1	1	6	0.1	-	<2	2	33	0	20	<0.2	0.3	0.8	5	25	0	-	≤250[(b1)]
Fluoride	mg/L (ppm)	0.02	0.05	0	-	-	-	-	-	0	0	-	-	-	-	-	-	-	1.5[(b3)]
Sulphate	mg/L (ppm)	0.02	1	6	3	4	4	-	-	0	5	<3	-	<3	5	100	0	-	≤500[(b1)]
Nutrients																			
Ammonia	mg/L (ppm)	0.005	0.1	6	0.01	0.01	0.05	-	-	0	20	<0.002	0.004	0.04	12	60	0	7.0 to 48.3[(a2)]	-
Nitrate	mg/L (ppm)	0.001	0.2	0	-	-	-	-	-	0	5	<0.008	-	<0.008	5	100	0	-	45[(b4)]
Nitrite	mg/L (ppm)	0.001	0.3	0	-	-	-	-	-	0	5	<0.008	-	<0.008	5	100	0	0.06	3.2[(b4)]
Nitrate + Nitrite	mg/L (ppm)	0.006	0.1	6	0.01	0.02	0.02	-	-	-	20	<0.008	-	0.05	19	95	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	0.001	0.3	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	0.005	0.3	0	-	-	-	-	-	-	5	<0.002	-	<0.002	5	100	-	-	-
Phosphorus, Total	mg/L (ppm)	0.001	0.3	6	0.003	0.006	0.01	-	-	-	20	<0.002	0.004	0.02	11	55	-	-	-
Organics								-	-	-									
Oxygen Demand, Chemical (COD)	mg/L (ppm)	1	1	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-
Colour	TCU	1	1	6	<5	-	10	5	83	0	20	<5	5	7	6	30	0	-	≤15[(b5)]
Oil and Grease	mg/L (ppm)	0.1	0.1	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	0.002	0.002	0	-	-	-	-	-	0	0	-	-	-	-	-	-	0.004	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	1	1	0	-	-	-	-	-	-	5	3	3	3	0	0	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	1	1	0	-	-	-	-	-	-	5	3	3	3	0	0	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	0.1	0.1	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-
Total Metals								-	-	-									
Aluminum (Al)[(a)]	µg/L (ppb)	0.3	20	6	8	-	15	-	-	0	20	<0.5	7	<30	9	45	0	5 or 100[(a3)]	100[(b6)]
Antimony (Sb)	µg/L (ppb)	0.03	1	6	0.5	0.5	0.6	-	-	0	19	0.005	0.2	<0.5	12	63	0	-	6[(b2)]
Arsenic (As)	µg/L (ppb)	0.03	1	6	<0.2	-	<0.2	6	100	0	20	<0.2	-	0.6	18	90	0	5	10[(b2)]
Barium (Ba)	µg/L (ppb)	0.05	10	6	1.9	2	4.1	-	-	0	20	0.5	1	5	3	15	0	-	1,000[(b2)]
Beryllium (Be)	µg/L (ppb)	0.02	5	6	<0.1	-	<0.1	6	100	-	20	<0.1	-	<2	20	100	-	-	-
Bismuth (Bi)	µg/L (ppb)	0.03	100	6	<0.1	-	<1	6	100	-	20	<0.1	-	<0.4	20	100	-	-	-
Boron (B)	µg/L (ppb)	1	100	0	-	-	-	-	-	0	0	-	-	-	-	-	-	-	5,000[(b2)]
Cadmium (Cd)[(a)]	µg/L (ppb)	0.02	0.2	6	0.008	-	<0.01	-	-	0	5	<0.3[(b)]	-	<0.3[2]	20	400	0	0.02[(a4)]	5[(b1)]
Chromium (Cr)	µg/L (ppb)	0.06	15	6	0.07	0.2	0.5	-	-	0	20	<0.2	-	<3[2]	20	100	0	1[(a5)]	50[(b1)]

Table I4.2-3 Water Quality Summary of the Lower Lockhart River Watershed, 1993 to 2001 (continued)

Parameter	Unit	Method Detection Limit		Under-ice Conditions							Open water conditions							Guidelines	
		Minimum	Maximum	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	n=	Minimum	Median	Maximum	Number Below Detection	% Below Detection	Number of Times a Guideline is Exceeded	Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
																		CCME (2006)	Health Canada (2006)
Cobalt (Co)	µg/L (ppb)	0.06	15	6	0.07	0.08	0.2	-	-	-	20	<0.1	-	<1	20	100	-	-	-
Copper (Cu)[a]	µg/L (ppb)	0.05	10	6	0.5	0.8	1.2	-	-	0	20	0.2	0.5	<2[b]	13	65	0	2[a6]	≤1,000[b1]
Iron (Fe)	µg/L (ppb)	5	50	6	<20	-	105	4	67	0	20	<20	26	<30	8	40	0	300	≤300[b1]
Lead (Pb)[a]	µg/L (ppb)	0.05	1	6	0.1	0.3	0.5	-	-	0	20	<0.2	-	<1	20	100	0	1[a7]	10
Lithium (Li)	µg/L (ppb)	0.1	20	6	0.9	1.2	2	-	-	-	20	0.5	-	<3	12	60	-	-	-
Manganese (Mn)	µg/L (ppb)	0.03	5	6	0.6	1	21	-	-	0	20	0.7	3	7	0	0	0	-	≤50[b1]
Mercury (Hg)	µg/L (ppb)	0.01	500	6	<0.01	-	<0.01	6	100	0	0	-	-	-	-	-	-	0.026	1[b2]
Molybdenum (Mo)	µg/L (ppb)	0.04	5	6	0.04	-	<0.05	5	83	0	13	0.002	0.02	<1	6	46	0	73	-
Nickel (Ni)[a]	µg/L (ppb)	6	0.31	6	0.5	0.7	1.1	-	-	0	20	<0.1	0.4	<1	5	25	0	25[a8]	-
Selenium (Se)	µg/L (ppb)	0.01	10	6	<1	-	<1	6	100	0	20	<1	-	<10[b]	20	100	0	1	10[b2]
Silicon (Si)	µg/L (ppb)	10	100	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	0.01	0.2	6	<0.01	-	<0.01	5	83	0	20	<0.1	-	<0.3[b]	20	100	0	0.1	-
Strontium (Sr)	µg/L (ppb)	0.1	1	6	6	6	12	-	-	-	20	3	5	10	0	0	-	-	-
Thallium (Tl)	µg/L (ppb)	0.03	100	6	<0.05	-	<0.05	6	100	0	20	<0.1	-	<0.4	20	100	0	0.8	-
Tin (Sn)	µg/L (ppb)	0.1	300	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	0.1	100	6	0.04	0.1	0.4	-	-	-	11	0.2	0.3	<3	9	82	-	-	-
Tungsten (W)	µg/L (ppb)	100	100	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	0.01	0.5	6	<0.05	-	<0.05	6	100		20	<0.1	-	<0.3	20	100	-	-	-
Vanadium (V)	µg/L (ppb)	0.05	30	6	0.08	-	<0.1	6	100		20	<0.1	-	<1	20	100	-	-	-
Zinc (Zn)	µg/L (ppb)	0.8	5	6	<5	-	9	5	83	0	20	<0.5	0.7	<10	11	55	0	30	≤5,000[b1]

Source: Based on INAC data and baseline data for the Snap Lake Mine (De Beers 2002).

Notes: Highlighted cells and **Bolded** numbers indicate where a guideline is exceeded.

[a] The concentration of this metal was compared to guidelines using the median hardness concentration or the median pH value.

[b] The method detection limit for this parameter is higher than applicable guidelines.

Part 1. Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life (CCME 2006)

(a1) = Guideline is dependent on temperature and pH. The value ranges between 6.98 mg/L (pH= 7.0, temperature= 15°C) and 48.3 mg/L (pH= 6.5, temperature= 5°C).

(a2) = Guideline = 5 µg/L at pH < 6.5, $[Ca^{2+}]$ < 4 mg/L and DOC < 2 mg/L; Guideline = 100 µg/L at pH ≥ 6.5, $[Ca^{2+}]$ ≥ 4 mg/L and DOC ≥ 2 mg/L.

(a3) = Cadmium guideline = $10^{[0.86\ [\log(\text{hardness})]\ -\ 3.2]}$.

(a4) = Guideline is for hexavalent chromium (Cr_{VI}) because its guideline is more stringent than the trivalent chromium (Cr_{III}) guideline of 8.9 µg/L.

(a5) = Copper guideline is dependent on $[CaCO_3]$. Guideline shown is for when $[CaCO_3]$ is 0 to 120 mg/L. At 120-180 mg/L of $CaCO_3$, guideline = 3 µg/L; and at >180 mg/L $CaCO_3$, guideline = 4 µg/L.

(a6) = Lead guideline is dependent on $[CaCO_3]$. Guideline shown is for $CaCO_3$ at 0 to 60 mg/L. At 60 to 120 mg/L $CaCO_3$, guideline = 2 µg/L; at 120 to 180 mg/L $CaCO_3$, guideline = 4 µg/L; and at >180 mg/L $CaCO_3$, guideline = 7 µg/L.

(a7) = Nickel guideline is dependent on $[CaCO_3]$. Guideline shown is for $CaCO_3$ at 0 to 60 mg/L. At 60 to 120 mg/L $CaCO_3$, guideline = 65 µg/L; at 120 to 180 mg/L $CaCO_3$, guideline = 110 µg/L; and at >180 mg/L $CaCO_3$, guideline = 150 µg/L.

Part 2: Guidelines for Canadian Drinking Water Quality (CDWQ) (Health Canada 2006)

(b1) = Aesthetic Objective.

(b2) = Maximum allowable concentration (MAC).

(b3) = It is recommended that the concentration be adjusted to 0.8 to 1.0 mg/L, which is the optimum range for the control of dental cavities.

(b4) = Equivalent to 10 mg/L as nitrate-nitrogen. Where nitrate and nitrite are determined separately, levels of nitrite should not exceed 3.2 mg/L.

(b5) = True colour guideline - the mean absorbance of filtered water samples at 456 nm shall not be significantly higher than the seasonally adjusted expected value for the system under consideration.

(b6) = A health-based guideline for aluminum in drinking water has not been established. Operational guidance values of less than 100 µg/L total aluminum for conventional treatment plants and less than 200 µg/L total aluminum for other types of treatment systems are recommended.

µS/cm = microSiemens per centimetre; mg/L (ppm) = milligrams per litre (parts per million); % = percent; < = less than; ≤ = less than or equal to; °C = degrees Celsius; NTU = nephelometric turbidity unit; TCU = true colour unit; µg/L (ppb) = micrograms per litre (parts per billion); - = not available.

I4.2.2.1.2 Physical Limnology and Vertical Structure

Physical limnology and vertical structure of the lakes in the lower Lockhart River were not assessed.

I4.2.2.1.3 Conventional Parameters and Major Ions

Laboratory measurement of pH indicated that the water in the lower Lockhart River watershed was slightly acidic to slightly alkaline. Some measurements were slightly below the acceptable CWQG and CDWQ range. More variability in pH was measured during open water conditions. The range measured in the lower Lockhart River watershed was similar to levels recorded in the upper watershed.

The hardness and alkalinity were low, with concentrations for both parameters being under 32 mg/L (Table I4.2-3). The water in these lakes is soft with a low buffering capacity.

The TDS concentration was generally low, with a concentration ranging between non-detection (less than 10 mg/L) and 53 mg/L. There was a very slight increase in the TDS concentration during under ice conditions. The major water source in this watershed was surface runoff and water from upstream watersheds.

Chloride and sulphate, reported in low concentrations, were the only surveyed anions. Bicarbonate was not measured. The dominant cation was calcium, with concentrations measured to be marginally higher than other cations.

Total suspended solids concentration varied slightly, being similar between seasons and not exceeding a concentration of 8 mg/L (Table I4.2-3). The turbidity of the water in the lakes was similar in range during all seasons, exceeding the CDWQ in five of the samples.

I4.2.2.1.4 Nutrients

Nutrient concentrations in the lower Lockhart River watershed indicated an oligotrophic status for all lakes. The concentration of nitrogen compounds (including TKN, ammonia, and nitrite) and phosphorus were consistently low.

I4.2.2.1.5 Organics

The organic content measured by TOC and DOC was 3 mg/L, similar to measurements in the upper Lockhart River watershed and the LSA. The colour of the water was similar between open water and under-ice conditions and no

guideline exceedances were reported. Other organic compounds were not measured in the lower Lockhart River watershed.

I4.2.2.1.6 Metals

Many of the metal concentrations measured in the lower Lockhart River watershed were generally near or below detection. Similar ranges were measured during both open water and under-ice conditions. The dissolved metals fraction was not presented in the previous studies. No guideline exceedances were reported for total metals.

I4.2.2.2 Sediment Quality

I4.2.2.2.1 Overview

Sediment quality data for lakes in the lower Lockhart River watershed (Figure I3.3-3) were compiled from INAC data collected in 1999 (Appendix I.II, Table I.II-8). The following sections provide a summary of baseline sediment quality conditions, while Table I4.2-2 presents the statistical summary of the sediment quality in both the upper and lower Lockhart River watershed. A description of the sediment quality of the upper Lockhart River watershed was presented in Section I4.2.1.2.

I4.2.2.2.2 Texture and Organic Content

The texture of the sediment was variable throughout the lower Lockhart River watershed. The particle size distribution of the sediment was mainly composed of sand (14% to 83%). Silt (16% to 67%) and clay (0.6% to 19%) were also found within the sediment. Organic content, measured as TOC, ranged from 1% to 30% of the sediment composition, which was more highly variable than measurements in the LSA, but similar to measurements in the upper Lockhart River watershed.

I4.2.2.2.3 Nutrients and Organics

Nutrients, such as phosphate and nitrate, and organic parameters, such as total petroleum hydrocarbons, were not measured in the lower Lockhart River watershed.

I4.2.2.2.4 Metals

The major metal composition of the sediment included iron, aluminum, magnesium, potassium, and calcium. The range of the dominant metals in these

lakes were variable; however, these five metals were the primary constituents in all surveyed lakes.

Total metals in the sediment were generally observed below the applicable aquatic life guidelines (ISQG). Arsenic and copper were the most common metals to exceed the ISQG. Other guideline exceedances were recorded for cadmium, chromium, mercury, and zinc.

I4.2.2.3 Summary

Several lakes located from Aylmer Lake to the confluence of the Lockhart River with McLeod Bay were surveyed by INAC between 1993 and 1999. Water and sediment data from these surveys were included in the lower Lockhart River watershed assessment. Several water quality characteristics in this watershed were similar to conditions in the upper Lockhart River watershed and the LSA, such as low hardness, alkalinity, and TDS.

Concentrations at nutrients and organics were generally low in the lower Lockhart River watershed. Metals were usually near or below detection, with concentrations being diluted from measurements upstream. The sediments were variable in texture, carbon content, and metals concentrations.

I4.2.3 Outlet of Artillery Lake

The Environment Canada monitoring station at the outlet of Artillery Lake represents almost 35 years of water quality data that can be used as a time series. Detailed time series data for the Artillery Lake outlet are presented in Table I.II-9 (Appendix I.II, Table I.II-9).

I4.2.3.1 Water Quality

Observed baseline water quality conditions at the outlet of Artillery Lake were relatively stable in the Lockhart River over the 35-year period from 1969 to 2004. No temporal trend was noted in the time series data and this is demonstrated in time series plots for specific conductivity, alkalinity, hardness, turbidity, TP, DOC, and total aluminum (Figures I4.2-1 through I4.2-7).

During the period of observation, guideline exceedances were reported for certain metals. Cadmium and lead exceeded the CWQG most frequently, with exceedances occurring in 22 and 7 occasions, respectively. Concentrations of chromium, manganese, silver, thallium, and zinc are measured above guidelines on at least one occasion.

Figure I4.2-1 Water Quality at the Outlet of Artillery Lake in the Lower Lockhart River Watershed, 1969 to 2004

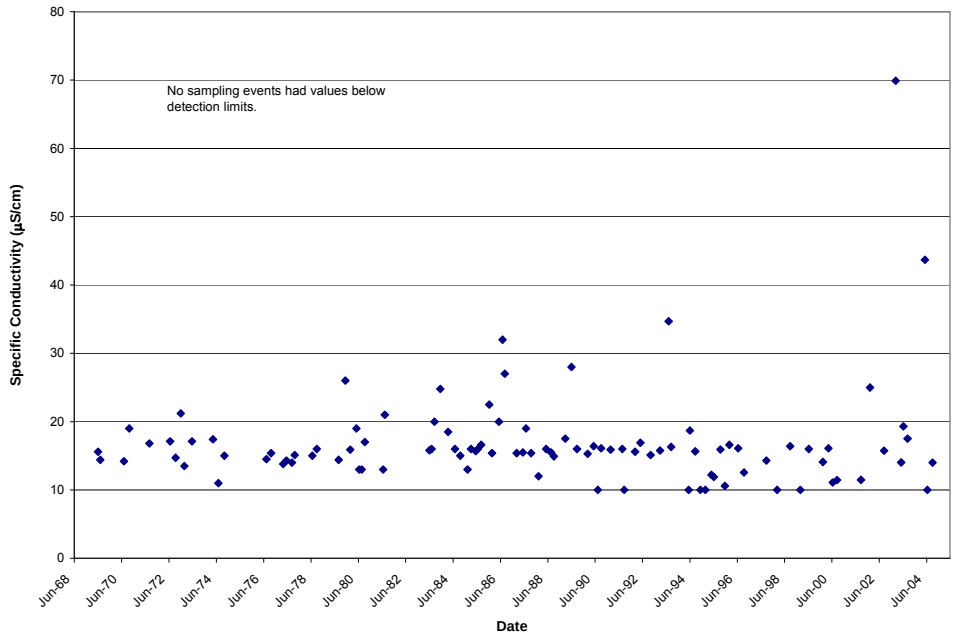
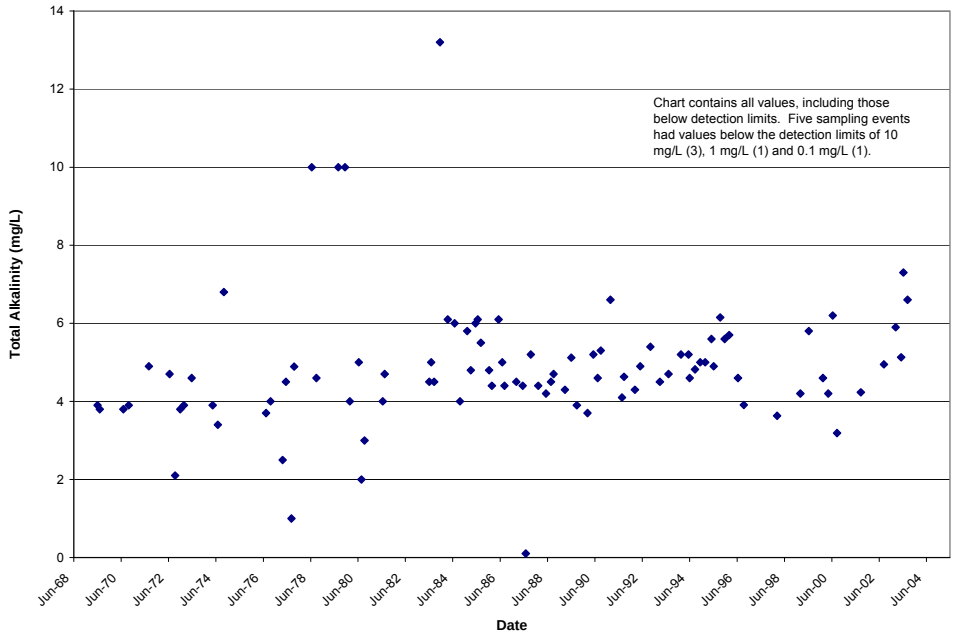


Figure I4.2-2 Water Quality at the Outlet of Artillery Lake in the Lower Lockhart River Watershed, 1969 to 2004



Source: Environment Canada (2005).

Figure I4.2-3 Water Quality at the Outlet of Artillery Lake in the Lower Lockhart River Watershed, 1969 to 2004

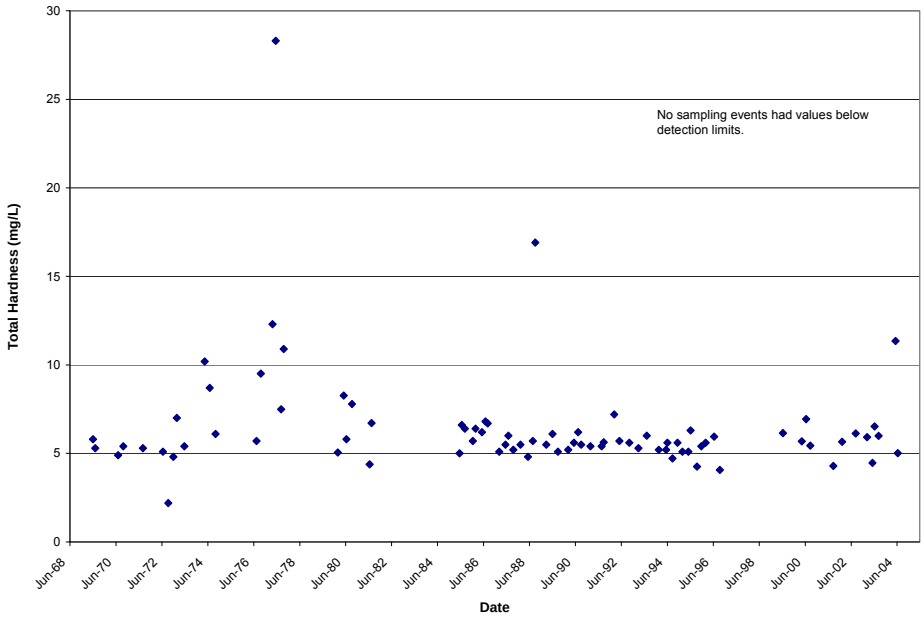
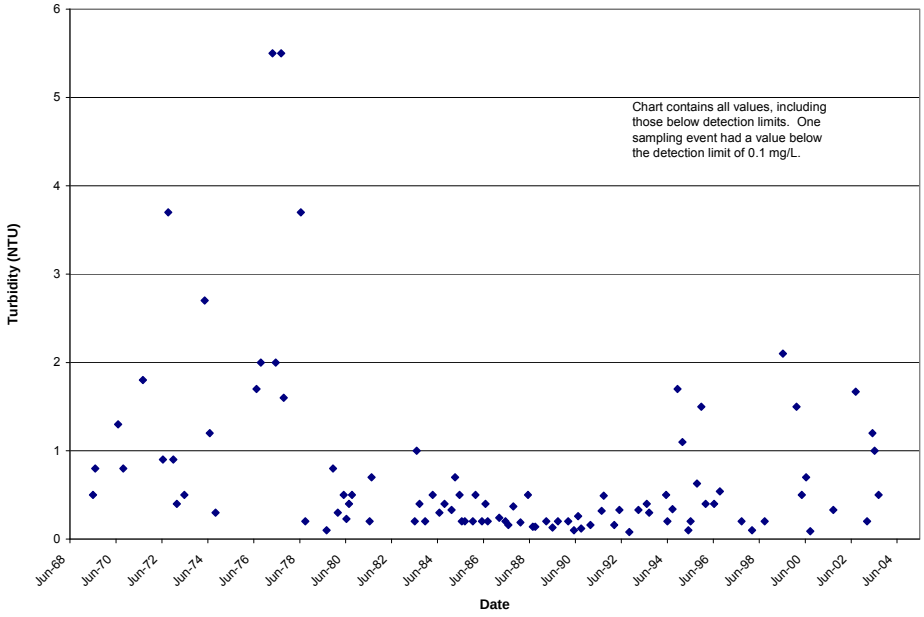


Figure I4.2-4 Water Quality at the Outlet of Artillery Lake in the Lower Lockhart River Watershed, 1969 to 2004



Source: Environment Canada (2005).

Figure I4.2-5 Water Quality at the Outlet of Artillery Lake in the Lower Lockhart River Watershed, 1969 to 2004

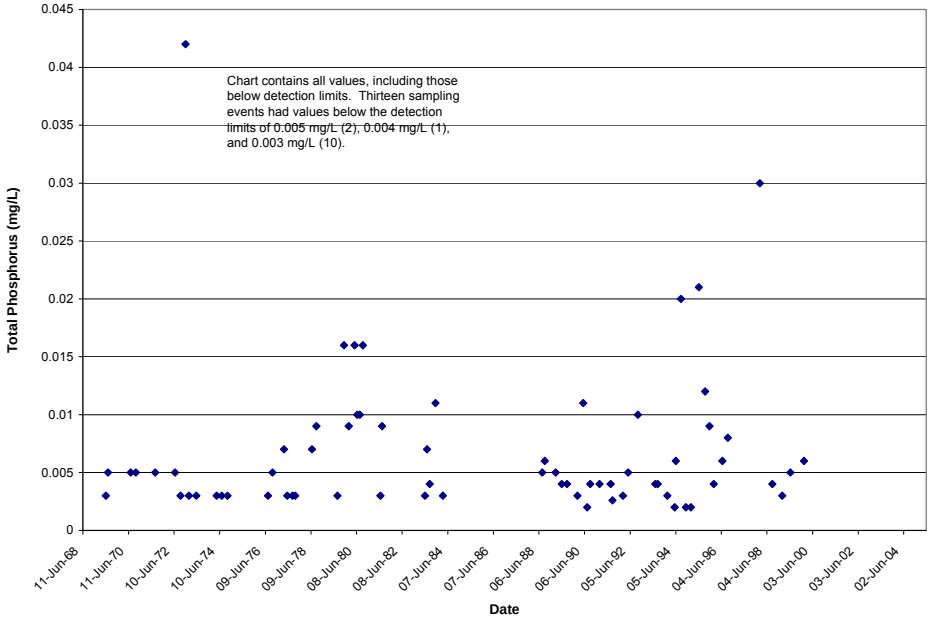
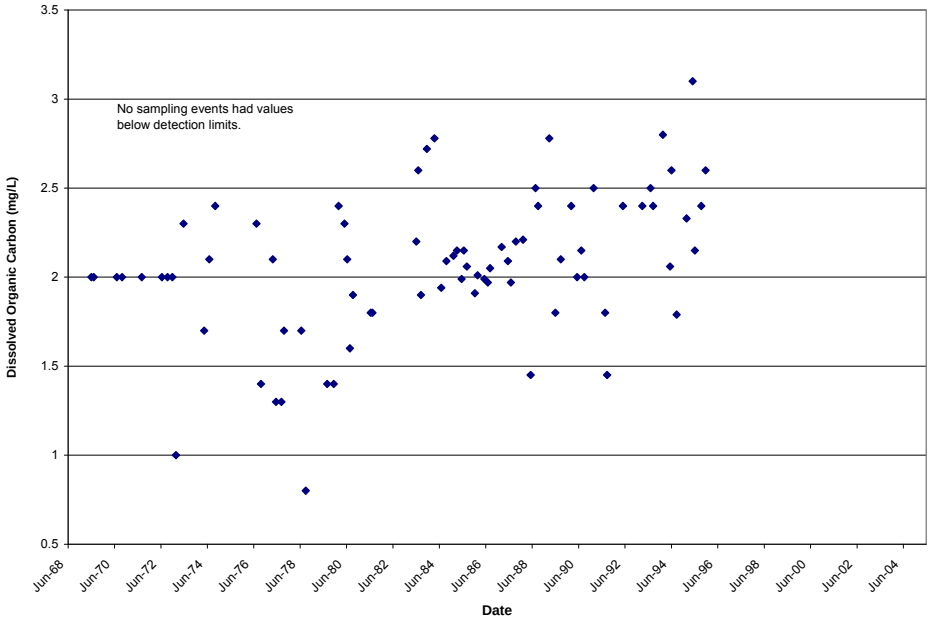
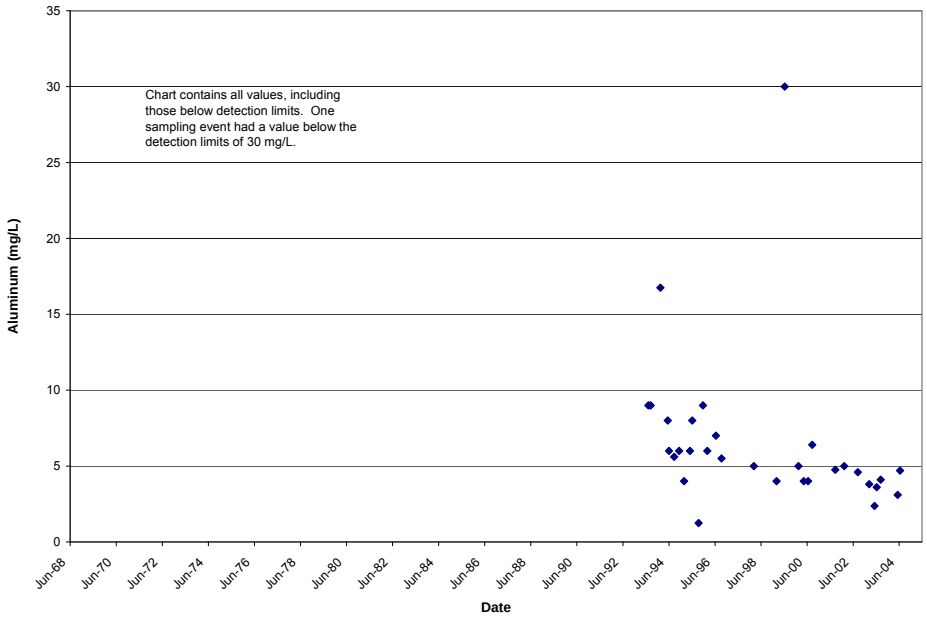


Figure I4.2-6 Water Quality at the Outlet of Artillery Lake in the Lower Lockhart River Watershed, 1969 to 2004



Source: Environment Canada (2005).

Figure I4.2-7 Water Quality at the Outlet of Artillery Lake in the Lower Lockhart River Watershed, 1969 to 2004



Source: Environment Canada (2005).

I4.2.3.2 Sediment Quality

Sediments were not sampled at the Environment Canada monitoring station at the outlet of Artillery Lake.

I4.2.3.3 Summary

The water quality observed at the outlet of Artillery Lake was generally representative of observations within the Lockhart River watershed, including the LSA. The water was soft, had a low buffering capacity, and had low concentrations of major ions. Nutrients and organics were low, showing that the station was located in an oligotrophic aquatic environment. Concentrations of metals over the 35-year time period were similar to those observed elsewhere in the RSA and in the LSA.

No trend was observed for the selected water quality parameters, indicating that the Lockhart River watershed water quality was stable over the past 35 years.

I4.3 WINTER ACCESS ROAD

The winter access road is constructed during winter months over lakes located in both the upper and lower Lockhart River watersheds. The lakes vary in size from small headwater lakes to large lakes connecting several sub-watersheds. The key morphometric features of individual lakes as well as visually pronounced shore disturbances at road portages were the major criteria for site selection along the winter access road.

Water quality samples were collected at 11 sites (referred to as UW01 to UW11) that were representative of different waterbodies and lakes along the winter access road from the Project to the intersection with the Tibbitt-to-Contwoyto winter road at MacKay Lake (Figure I2.3-1). In-situ data and photo documentation from sites along the winter access road from the Project site to the intersection with the Tibbitt-to-Contwoyto winter road at MacKay Lake are provided in Appendix I.I.

Baseline sediment sampling was not conducted along the winter access road route, nor was any historical data available in the representative lakes. The composition of the sediment in these lakes is undetermined. The study area was focused on near-filed (nearshore) areas; road portages where some or potential erosion could occur. There were no bottom sediments in these areas as they were shallow and had bottom covered by boulders. Thus, water quality samples and measurements were only taken in these nearshore zones.

I4.3.1 Physical Limnology and Vertical Structure

In-situ spot measurements of physical parameters were taken near the shore of the investigated lakes at road portages. The in-situ spot measurements for temperature, DO, specific conductivity, and pH are discussed together in this section.

Water temperature and the DO concentration were similar between all sites with values between 12.3 to 15.1°C and 10.8 to 11.8 mg/L, respectively (Table I4.3-1). The pH of the various waterbodies was nearly neutral with the exception of UW01, UW03, UW04, and UW05, which were slightly acidic (pH from 6.5 to 7.0). Specific conductivity was low (16 to 30 µS/cm) in all lakes; however, readings in lakes along the northern part of the winter access road (sites UW05 to VW05) were slightly higher (23 to 30 µS/cm) than more southerly sites (UW0 to VW 11), which were lower (16 to 19 µS/cm).

Table I4.3-1 Water Quality Summary along the Winter Access Road, 2004

Parameter	Units	Winter Access Road											Minimum	Maximum	Guidelines	
		UW01	UW02	UW03	UW04	UW05	UW06	UW07	UW08	UW09	UW10	UW11			Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
		07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04			CCME (2006)	Health Canada (2006)
Field Measured																
pH	pH Units	6.8	7.0	6.9	6.9	6.9	7.3	7.0	7.0	7.4	7.0	7.0	6.8	7.4	6.5 to 9.0	6.5 to 8.5 [(b1)]
Conductivity, Specific	µS/cm	28	22	20	20	21	17	17	15	12	12	14	12	28	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	**11.6**	**11.4**	**11.1**	**10.9**	**11.5**	**11.2**	**11.8**	**11.2**	**10.8**	**11.2**	**11.3**	**10.8**	**11.8**	6.5 to 9.5[(a1)]	-
Dissolved Oxygen, saturation	%	110	111	107	105	107	108	116	111	106	108	105	105	116	-	-
Temperature	°C	12.9	14.0	13.6	13.7	12.3	13.8	14.7	15.1	14.8	14.0	12.3	12.3	15.1	-	-
Conventional Parameters and Major Ions																
pH	pH Units	6.6	6.7	6.5	6.9	7.0	6.8	7.0	6.8	6.8	7.0	6.8	6.5	7.0	6.5 to 9.0	6.5 to 8.5[(b1)]
Conductivity, Specific	µS/cm	30	29	23	23	23	19	19	16		17	17	16	30	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	8	14	4	9	10	8	10	7	7	8	9	4	14	-	-
Hardness, Total	mg/L (ppm)	7	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	7	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	40	24	48	40	36	60	76	28	48	2	40	<2	76	-	≤500[(b1)]
Total Suspended Solids (TSS)	mg/L (ppm)	3	<2	<2	2	<2	<2	<2	<2	<2	<2	<2	<2	3	-	-
Turbidity	NTU	2	2	<1	1	1	1	1	2	2	<1	2	<1	2	-	1[(b2)]
Calcium	mg/L (ppm)	1.3	0.9	0.8	0.8	0.8	0.6	0.6	<0.5	0.5	0.9	0.9	<0.5	1.3	-	-
Magnesium	mg/L (ppm)	0.9	0.6	0.6	0.6	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	-	-
Potassium	mg/L (ppm)	0.6	<0.5	<0.5	0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	-	-
Sodium	mg/L (ppm)	1.4	1.1	1	1	1	0.9	1	0.9	0.6	1.2	0.6	0.6	1.4	-	≤200[(b1)]
Bicarbonate	mg/L (ppm)	10	17	5	11	13	9	12	8	9	9	12	5	17	-	-
Carbonate	mg/L (ppm)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	-	-
Chloride	mg/L (ppm)	0.8	0.5	0.3	0.6	0.3	0.3	0.5	0.2	0.6	0.4	0.2	0.2	0.8	-	≤250[(b1)]
Fluoride	mg/L (ppm)	0.05	0.04	0.04	0.04	0.03	0.02	0.03	0.03	0.03	<0.02	0.04	<0.02	0.05	-	1.5[(b3)]
Sulphate	mg/L (ppm)	7	6	6	3	4	4	3	2	1.1	1.7	1.1	1.1	7	-	≤500[(b1)]
Nutrients																
Ammonia	mg/L (ppm)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	7.0 to 48.3[(a2)]	-
Nitrate	mg/L (ppm)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	45[(b4)]
Nitrite	mg/L (ppm)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	3.2[(b4)]
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	0.04	-	-
Organics																
Oxygen Demand, Chemical (COD)	mg/L (ppm)	17	<1	10	13	7	6	9	12	13	16	27	<1	27	-	-
Colour	TCU	10	5	<1	5	<1	<1	5	<1	5	<1	**50**	<1	**50**	-	≤15[(b5)]
Oil and Grease	mg/L (ppm)	<0.1	0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	-	-
Phenol	mg/L (ppm)	**0.01**	<0.002	<0.002	<0.002	<0.002	<0.002	**0.009**	<0.002	<0.002	<0.002	<0.002	<0.002	**0.01**	0.004	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	4	3	2	4	2	2	2	4	3	4	8	<2	8	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	5	<1	2	4	3	2	2	4	3	3	7	<1	7	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	0.4	0.2	0.1	0.2	0.3	0.3	<0.1	0.1	0.2	0.1	0.1	<0.1	0.4	-	-
Total Metals																
Aluminum (Al)	µg/L (ppb)	42	<20	<20	**139**	<20	<20	54	<20	**145**	<20	**326**	<20	**326**	5 or 100[(a3)]	100[(b6)]
Antimony (Sb)	µg/L (ppb)	<0.1	<0.1	0.3	0.6	0.1	<0.1	<0.1	0.6	<0.1	<0.1	<0.1	<0.1	0.6	-	6[(b2)]

Table I4.3-1 Water Quality Summary along the Winter Access Road 2004 (continued)

Parameter	Units	Winter Access Road											Minimum	Maximum	Guidelines	
		UW01	UW02	UW03	UW04	UW05	UW06	UW07	UW08	UW09	UW10	UW11			Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
		07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04			CCME (2006)	Health Canada (2006)
Arsenic (As)	µg/L (ppb)	0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.5	5	10[b2]
Barium (Ba)	µg/L (ppb)	<5	<5	<5	5	<5	<5	<5	<5	<5	<5	8	<5	8	-	1,000[b2]
Beryllium (Be)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	-	5,000[b2]
Cadmium (Cd)	µg/L (ppb)	<0.2[a]	<0.2[a]	<0.2[a]	<0.2[a]	<0.2[a]	<0.2[a]	<0.2[a]	<0.2[a]	<0.2[a]	<0.2[a]	<0.2[a]	<0.2[a]	<0.2[a]	0.02[a4]	5[b1]
Chromium (Cr)	µg/L (ppb)	<0.9	<0.9	<0.9	**4**	<0.9	<0.9	<0.9	<0.9	**1.4**	<0.9	**3**	<0.9	**4**	1[a5]	50[b1]
Cobalt (Co)	µg/L (ppb)	0.2	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	0.3	<0.1	0.4	-	-
Copper (Cu)	µg/L (ppb)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	2[a6]	≤1,000[b1]
Iron (Fe)	µg/L (ppb)	177	64	<50	118	<50	<50	67	<50	141	66	**375**	<50	**375**	300	≤300[b1]
Lead (Pb)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1[a7]	10
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	4	5	3	7	1.7	1.4	1.3	7	9	5	5	<1.3	9	-	≤50[b1]
Mercury (Hg)	µg/L (ppb)	<1[a]	<1[a]	<1[a]	<1[a]	<1[a]	<1[a]	<1[a]	<1[a]	<1[a]	<1[a]	<1[a]	<1[a]	<1[a]	0.026	1[b2]
Molybdenum (Mo)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	73	-
Nickel (Ni)	µg/L (ppb)	6	4	4	1.8	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	1.1	<0.6	6	25[a8]	-
Selenium (Se)	µg/L (ppb)	<10[a]	<10[a]	<10[a]	<10[a]	<10[a]	<10[a]	<10[a]	<10[a]	<10[a]	<10[a]	<10[a]	<10[a]	<10[a]	1	10[b2]
Silicon (Si)	µg/L (ppb)	184	80	<50	291	<50	<50	157	101	336	62	71	<50	336	-	-
Silver (Ag)	µg/L (ppb)	<0.2[a]	<0.2[a]	<0.2[a]	<0.2[a]	<0.2[a]	<0.2[a]	<0.2[a]	<0.2[a]	<0.2[a]	<0.2[a]	<0.2[a]	<0.2[a]	<0.2[a]	0.1	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.8	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-
Vanadium (V)	µg/L (ppb)	0.2	<0.1	<0.1	0.2	<0.1	<0.1	0.2	<0.1	0.2	<0.1	0.5	<0.1	0.5	-	-
Zinc (Zn)	µg/L (ppb)	8	7	7	9	6	11	4	8	4	3	7	<3	11	30	≤5,000[b1]
Dissolved Metals																
Aluminum (Al)	µg/L (ppb)	10	571	<10	<10	40	13	18	20	<10	11	72	<10	571	-	-
Antimony (Sb)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Arsenic (As)	µg/L (ppb)	0.4	0.2	0.1	0.2	<0.1	<0.1	0.1	0.2	<0.1	0.1	0.3	<0.1	0.4	-	-
Barium (Ba)	µg/L (ppb)	3	19	<3	<3	<3	<3	<3	<3	<3	<3	4	<3	19	-	-
Beryllium (Be)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	-	-
Cadmium (Cd)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-
Chromium (Cr)	µg/L (ppb)	<0.4	11	<0.4	<0.4	0.9	0.4	<0.4	0.5	<0.4	<0.4	0.4	<0.4	11	-	-
Cobalt (Co)	µg/L (ppb)	0.11	0.96	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.07	<0.05	0.96	-	-
Copper (Cu)	µg/L (ppb)	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	-	-
Iron (Fe)	µg/L (ppb)	102	530	<20	22	38	21	29	43	<20	34	147	<20	530	-	-
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	3.3	10.5	2.9	1.1	1.5	0.9	1.3	6	1.8	1.4	2.2	0.9	10.5	-	-

Table I4.3-1 Water Quality Summary along the Winter Access Road 2004 (continued)

Parameter	Units	Winter Access Road											Minimum	Maximum	Guidelines	
		UW01	UW02	UW03	UW04	UW05	UW06	UW07	UW08	UW09	UW10	UW11			Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life	Guidelines for Canadian Drinking Water Quality (CDWQ)
		07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04	07-Aug-04			CCME (2006)	Health Canada (2006)
Mercury (Hg)	µg/L (ppb)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	-	-
Nickel (Ni)	µg/L (ppb)	6.4	8.2	4.1	1.1	0.5	0.4	0.4	0.6	0.2	0.2	0.4	0.2	8.2	-	-
Selenium (Se)	µg/L (ppb)	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	-	-
Silicon (Si)	µg/L (ppb)	103	207	63	70	149	83	111	163	138	97	122	63	207	-	-
Silver (Ag)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	
Vanadium (V)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-
Zinc (Zn)	µg/L (ppb)	3	5	3	14	2	2	2	2	2	2	5	2	14	-	-

Note: Highlighted cells and **Bolded** numbers indicate where a guideline is exceeded.

(a) The MDL for this parameter is higher than applicable guidelines.

Part 1: Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life (CCME 2006)

(a1) = Guideline is based on temperature of biota. In this case, the cold water biota guidelines for both early life and other life stages are shown.

(a2) = Guideline is dependent on temperature and pH. The value ranges between 6.98 mg/L (pH= 7.0, temperature= 15°C) and 48.3 mg/L (pH= 6.5, temperature= 5°C).

(a3) = Guideline = 5 µg/L at pH < 6.5, $[Ca^{2}+]$ < 4 mg/L and DOC < 2 mg/L; Guideline = 100 µg/L at pH ≥ 6.5, $[Ca^{2}+]$ ≥4 mg/L and DOC ≥ 2 mg/L.

(a4) = Cadmium guideline = $10^{[0.86\ [\log(\text{hardness})]\ -\ 3.2]}$.

(a5) = Guideline is for hexavalent chromium (Cr_{VI}) because its guideline is more stringent than the trivalent chromium (Cr_{III}) guideline of 8.9 µg/L.

(a6) = Copper guideline is dependent on $[CaCO_3]$. Guideline shown is for when $[CaCO_3]$ is 0-120 mg/L. At 120-180 mg/L of $CaCO_3$, guideline = 3 µg/L; and at >180 mg/L $CaCO_3$, guideline = 4 µg/L.

(a7) = Lead guideline is dependent on $[CaCO_3]$. Guideline shown is for $CaCO_3$ at 0-60 mg/L. At 60-120 mg/L $CaCO_3$, guideline = 2 µg/L; at 120-180 mg/L $CaCO_3$, guideline = 4 µg/L; and at >180 mg/L $CaCO_3$, guideline = 7 µg/L.

(a8) = Nickel guideline is dependent on $[CaCO_3]$. Guideline shown is for $CaCO_3$ at 0-60 mg/L. At 60-120 mg/L $CaCO_3$, guideline = 65 µg/L; at 120-180 mg/L $CaCO_3$, guideline = 110 µg/L; and at >180 mg/L $CaCO_3$, guideline = 150 µg/L.

Part 2: Guidelines for Canadian Drinking Water Quality (CDWQ) (Health Canada 2006)

(b1) = Aesthetic Objective.

(b2) = Maximum allowable concentration (MAC).

(b3) = It is recommended that the concentration be adjusted to 0.8 to 1.0 mg/L, which is the optimum range for the control of dental cavities.

(b4) = Equivalent to 10 mg/L as nitrate-nitrogen. Where nitrate and nitrite are determined separately, levels of nitrite should not exceed 3.2 mg/L.

(b5) = True colour guideline - the mean absorbance of filtered water samples at 456 nm shall not be significantly higher than the seasonally adjusted expected value for the system under consideration.

(b6) = A health-based guideline for aluminum in drinking water has not been established. Operational guidance values of less than 100 µg/L total aluminum for conventional treatment plants and less than 200 µg/L total aluminum for other types of treatment systems are recommended.

µS/cm = microSiemens per centimetre; mg/L (ppm) = milligrams per litre (parts per million); % = percent; < = less than; ≤ = less than or equal to; °C = degrees Celsius; NTU = nephelometric turbidity unit; TCU = true colour unit; µg/L (ppb) = micrograms per litre (parts per billion); - = not available.

I4.3.2 Water Quality

I4.3.2.1 Overview

Water quality data for the winter access road during open water conditions are presented in Table I4.3-1. Unlike previous sections, baseline data for the winter access road were presented for each individual lake.

I4.3.2.2 Conventional Parameters and Major Ions

Alkalinity and hardness ranged from 6 to 14 mg/L and less than 6 to 6.8 mg/L, respectively. The TDS was also low, up to 14 mg/L, indicating that the water of the representative lakes along the winter access road were mainly fed by surface runoff. Major ions included bicarbonate, calcium, sodium, and sulphate, which were measured in low concentrations.

Total suspended solids were generally not detected along the route, while turbidity was low or below detection. Turbidity did exceed the CDWQ in several lakes as was observed in other lakes in the LSA and RSA.

I4.3.2.3 Nutrients

Nitrogen compounds (ammonia, nitrate, nitrite, and TKN) were not detected along the winter access road route. Total phosphorus was only detected at sites UW04 (0.04 mg/L) and UW11 (0.02 mg/L). The representative lakes along the winter access road route had low biological productivity due to their oligotrophic status, determined through the low concentrations of nutrients.

I4.3.2.4 Organics

The organic content measured by TOC and DOC ranged between less than 1 mg/L and 8 mg/L. Low organic content, similar to the range measured in the LSA, was recorded along the winter access road route. Generally, COD, colour, phenols, oil and grease, and TPH were measured in low concentrations, with several records being below detection. Colour, however, was relatively higher at UW01 (10 TCU) and exceeded the CDWQ at UW11 (50 TCU). Phenols were detected at UW07 (0.009 mg/L), at concentrations above UW01 (0.01 mg/L), the CWQG. Both guideline exceedances are thought to result from natural inputs.

I4.3.2.5 Metals

Many of the metal concentrations measured along the winter access road route were generally near or below detection. Relative concentrations of the different elements varied between lakes. The dissolved fraction of metals was generally similar to total metal concentrations.

Total aluminum exceeded the applicable guidelines in UW04, UW09, and UW11, while remaining near or below detection in the other lakes. Other guideline exceedances were reported for chromium at UW04, UW09, and UW11, and iron at UW-11. All guideline exceedances are thought to result from natural inputs.

I4.3.3 Summary

No noticeable differences in the water quality among the waterbodies surveyed along the winter access road route, compared to the lakes in the LSA and RSA, were determined.

The selected water quality indicators and metals summarized in Section I4.1.5.1 compared the fluctuations and characteristics in the representative lakes along the winter access road route (Table I4.3-2).

Table I4.3-2 Summary of Concentrations of Key Water Quality Indicators along the Winter Access Road, August 2004

Waterbody Identifier	TDS (mg/L)	Specific Conductivity (µS/cm)	TOC (mg/L)	Total Aluminum (µg/L)	Total Copper (µg/L)	Total Iron (µg/L)
CWQG Guideline	-	-	-	5 or 100	2 to 4	300
CDWQ Guideline	≤500	-	-	100	≤1,000	≤300
UW01	40	28	5	42	<5	177
UW02	24	22	<1	<20	<5	64
UW03	48	20	2	<20	<5	<50
UW04	40	20	4	139	<5	118
UW05	36	21	3	<20	<5	<50
UW06	60	17	2	<20	<5	<50
UW07	76	17	2	54	<5	67
UW08	28	15	4	<20	<5	<50
UW09	48	12	3	145	<5	141
UW10	<10	12	3	<20	<5	66
UW11	40	14	7	326	<5	375

Notes: Highlighted cells indicate where a guideline is exceeded.

Location of sampling sites is shown in Figure I2.3-1.

CWQG = Canadian Water Quality Guidelines; CDWQ = Canadian Drinking Water Quality; TDS = total dissolved solids; TOC = total organic carbon; µS/cm = microSiemens per centimetre; mg/L = milligram per litre; µg/L = microgram per litre; < = less than; ≤ = less than or equal to; - = not available.

I5 SUMMARY AND CONCLUSIONS

Kennady Lake and other lakes in the LSA are typical sub-arctic tundra lakes with ice cover extending seven to eight months per year and a short-term open water period (four to five months), occurring typically from early June to October. Baseline water quality data were collected for the LSA between 1995 and 2005 and showed that most lakes can be classified as having low concentrations of total dissolved solids, alkalinity, and hardness. These lakes are oligotrophic due to low levels of mineralization and nutrients. Thus, these lakes are expected to have relatively low biological productivity.

Vertical profile analyses showed that Kennady Lake was inversely stratified during under-ice conditions and predominantly well mixed during open water conditions. These features were consistent with other lakes sampled in the LSA, for example, Lake 410 and control lake (Lake N16). Seasonal thermocline development can occur in deeper parts of Kennady Lake (i.e., K3 basin) during open water conditions.

The near-bottom layers in deeper lake basins were prone to DO depletion during under-ice conditions. Some shallower lakes in the Kennady Lake watershed (e.g., I1 and A1) and basins of Kennady Lake (i.e., K5 basin) remained well mixed throughout open water conditions and did not undergo oxygen depletion during late winter months.

Water quality parameters were relatively homogeneous between basins of Kennady Lake and other lakes in the LSA. There was minor seasonal variability and spatial heterogeneity vertically in the water column (surface, intermediate, or bottom layer), as well as among waterbodies. Metal concentrations were relatively low within most lakes in the LSA. Aluminum, copper, and iron were the most widespread and the most common metal parameters in lakes within the LSA to exceed guidelines. Other metals that exceeded guidelines and were commonly observed throughout the LSA included chromium, manganese, silver, selenium, and zinc. Given the general lack of development in the area, all guideline exceedances are thought to result from natural processes.

All the water quality parameters in the RSA were usually within the range observed in the LSA; however, the most frequent metal parameters to exceed guidelines were cadmium and lead. Concentrations of chromium, manganese, silver, thallium, and zinc had only one registered exceedance in the 35-year data series. Baseline water quality conditions demonstrated a relatively stable pattern over the period from 1969 through 2004. No temporal trends were noted in the time series data.

Bottom sediments in Lake 410 had significantly higher organic content and TPH compared to Kennady Lake and Lake N16 (the control Lake), while Kirk Lake exhibited the highest concentration of inorganic carbon. Elevated organic content appeared to have no correlation with texture. Metal concentrations for most parameters were consistent with those observed in Kennady Lake and Lake N16, with the exception of cobalt.

In general, lakes in the LSA and RSA had high sensitivity to acidification, which is common among aquatic environments of the Canadian Shield and sub-arctic tundra. Acid sensitivity was relatively high in Kennady Lake, the M and N watersheds, and the RSA. Most sub-watersheds discharging into Kennady Lake had moderate sensitivity to acidification, as did Lake 410. One lake in the Lower Lockhart River watershed had low sensitivity to acidification.

There were no noticeable differences in the water quality among the waterbodies along the winter access road when compared to the lakes and streams in the LSA and RSA.

Water quality variations including guidelines exceedances were expected to be associated with natural conditions. The collected data series, including spatial coverage and temporal resolution is presents baseline conditions in the study areas.

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I7 ACRONYMS AND GLOSSARY

I7.1 ACRONYMS

AMEC	AMEC Earth & Environmental, A division of AMEC Americas Limited
$CaCO_3$	calcium carbonate
CCME	Canadian Council of Ministers of the Environment
CDWQ	Guideline(s) for Canadian Drinking Water Quality
COD	chemical oxygen demand
CWQG	Canadian Water Quality Guidelines for the Protection of Aquatic Life
DO	dissolved oxygen
DOC	dissolved organic carbon
EBA	EBA Engineering Consultants Ltd.
HNO_3	nitric acid
H_2SO_4	sulphuric acid
INAC	Department of Indian and Northern Affairs Canada
ISQG	Interim Sediment Quality Guidelines
Jacques Whitford	Jacques Whitford Environmental Ltd.
LSA	local study area
MAC	maximum allowable concentration
MDL(s)	method detection limit(s)
NTU	nephelometric turbidity unit
NWT	Northwest Territories
PAH(s)	polycyclic aromatic hydrocarbon(s)
Project	Gahcho Kué Project
RSA	regional study area
TCU	true colour unit
TDS	total dissolved solids
TKN	total Kjeldahl nitrogen
TOC	total organic carbon
TP	total phosphorus
TPH	total petroleum hydrocarbons
TSS	total suspended solids

I7.2 UNITS OF MEASURE

%	percent
<	less than
≤	less than or equal to
>	greater than

°C	degrees Celsius
cm	centimetre
km	kilometre
km^2	square kilometre
L	litre
m	metre
m^3	cubic metre
mg/L	milligrams per litre
Mm^3	million cubic metres
NTU	nephelometric turbidity unit
ppb	parts per billion
ppm	parts per million
TCU	true colour unit
µg/L	microgram per litre
µg/g	microgram per gram
µS/cm	microSiemens per centimetre

I7.3 GLOSSARY

Alkalinity	A measurement (expressed in milligrams per litre of calcium carbonate) of the capacity of water to neutralize acids. The concentration is measured based on the presence of naturally available bicarbonate, carbonate, and hydroxide ions.
Ammonia-Nitrogen	The overall concentration of nitrogen in both the ionized (NH_4^+) and molecular (NH_3) forms of dissolved ammonia. The ammonia concentration is reported as nitrogen, where the weight of the nitrogen is ignored in the analysis.
Anion	A negatively charged ion.
Anoxia	The complete depletion of DO in the aquatic environment.
Basin	A large area that is lower in elevation than surrounding areas and contains water. Basins are separated by land or shallow channels.
Bicarbonate	A negatively charged ion or anion (HCO_3^-) that forms carbonic acid salts that increase the buffering capacity of water.
Canadian Water Quality Guideline (CWQG) for the Protection of Aquatic Life	Guidelines established by the Canadian Council of Ministers of the Environment and used to assess the potential effects of the concentration of different water quality parameters upon aquatic life (i.e., fish, aquatic plants [macrophytes], and benthic invertebrates).
Cation	A positively charged ion.
Chemical Oxygen Demand (COD)	The amount of oxygen required to decompose (oxidize) all compounds, both organic and inorganic, in water.
Composite Sample	A sample taken by combining several fractions of water from different depths within the water column of a lake into a common vessel that is used to collect the water sample destined for the laboratory. A composite sample can also be obtained as a combination of samples taken from different parts of a waterbody laterally.

Conductivity	A measure of the ability of water to carry an electrical current. This measurement is directly related to the amount of positively (cations) and negatively (anions) charged ions in the water and can be correlated with the concentration of total dissolved solids (TDS).
Dissolved Organic Carbon	All organic carbon that results from the decomposition of organic matter (such as sugars and acids) that leaches from soils and becomes dissolved within the water. High DOC concentrations change the water colour from clear to "tea-coloured'.
Dissolved Oxygen	The amount of free oxygen dissolved in water, usually expressed in milligrams per litre (mg/L), parts per million (ppm), or percent of saturation (%). Adequate concentrations of DO are necessary for fish and other aquatic organisms.
Drainage Area	Total area of a watershed, including land and water surfaces.
Duplicate Field Sample	A second sample collected at the same time and from the same location, repeating the same collection procedure as the original sample. The sample is used to detect variability at a site and verify the field-sampling method.
Duplicate Laboratory Sample	A water sample that is submitted to the laboratory is split into two samples by the Lab., each tested separately. These samples are used to assess the reproducibility of the laboratory results (i.e., laboratory method and analyses).
Ekman dredge	A sampling apparatus used to collect a discrete sample of sediment.
Field Blank	A solution of de-ionized water provided by the laboratory that is used to detect sample contamination during the collection, shipping, and analysis of samples.
Grab sediment sample	A single sediment sample collected using an Ekman dredge or other similar sampling apparatus.
Grab water sample	A single discrete water sample that is collected from a waterbody and sent to the laboratory for analysis.
Groundwater	That part of the subsurface water that occurs beneath the water table, in soils and geologic formations that are fully saturated.
Guideline for Canadian Drinking Water Quality (CDWQ)	Health Canada guidelines used to assess the suitability of water for human consumption.
Hardness	A characteristic of water caused by the presence of positively charged ions (cations) such as calcium, magnesium, iron, and manganese. This parameter is measured in mg/L of calcium carbonate.
Headwater	The source and upper reaches of a stream; also the upper reaches of a reservoir. The water upstream from a structure or point on a stream. The small streams that come together to form a river. Also may be thought of as any and all parts of a river basin except the mainstem river and main tributaries.
Heterogeneity	Consisting of parts that are unlike each other. For example, the variety and abundance of ecological units (e.g., ecosite phases and wetlands types) comprising a landscape mosaic.
Homogeneity	The quality of being similar or comparable in kind or nature.
In-situ Measurement	The on-site measurement of physical water quality parameters in a waterbody. Parameters such as temperature, DO, conductivity, and pH are collected using a handheld meter.
Lake Turnover	An event of complete or nearly complete vertical mixing that occurs in a lake. This happens when water either has equal density through the vertical column or when upper layers of water have a higher density and are little bit heavier. The latter causes upper layers of water to sink, while deeper, less dense water layers rise, causing an equilibrium to form for all water quality parameters for a certain period of time. The effect usually occurs in the spring and fall.

Limnology	The study of open fresh and more rarely saline water bodies, specifically lakes and ponds (both natural and manmade), including their physical, chemical, and biological properties. Limnology traditionally is closely related to hydrobiology, which is concerned with the application of the principles and methods of physics, chemistry, geology, and geography to ecological problems.
Mesotrophic	Trophic state classification for lakes characterized by moderate productivity and nutrient inputs (particularly total phosphorus).
Method Blank	A laboratory grade, pure water sample that is subjected to all laboratory procedures. This is used to detect possibility of cross-contamination between samples in the laboratory.
Method Detection Limit	The minimum concentration of a substance that can be measured and reported with a 99% confidence.
Morphometry	A set of linear, area, and volumetric parameters of a waterbody or watershed that describe geometric features and provide a background for a hydrologic description of a waterbody or drainage area.
Muskeg	A soil type comprised primarily of organic matter. Also known as bog peat.
Nitrate + Nitrite	The sum of the concentrations of nitrate and nitrite.
Oil & Grease	The concentration of all hydrocarbons found in water, whether it is from mineral or petroleum (both artificial and natural) sources.
Oligotrophic Lake	Waterbodies that are nutrient poor and contain little aquatic plant or animal life.
Open Water Conditions	The period of time when the surface of a waterbody is completely free of ice.
Permafrost	Permanently frozen ground (subsoil). Permafrost areas are divided into more northern areas in which permafrost is continuous, and those more southern areas in which patches of permafrost alternate with unfrozen ground.
pH	The negative log of the concentration of the hydronium ion. The pH is a measure of the acidity or alkalinity of all materials dissolved in water, expressed on a scale from 0 to 14, where 7 is neutral, values below 7 are acidic, and values over 7 are alkaline.
Phenol	A class of toxic compounds derived from benzene that can originate naturally in the aquatic environment through the decomposition of organic matter. These compounds can originate artificially through the contamination of the aquatic environment by plastics, herbicides, and disinfectants. They can also be introduced as a by-product in industrial processes.
Polycyclic Aromatic Hydrocarbons (PAH)	A chemical by-product of petroleum-related industry. Aromatics are considered to be highly toxic components of petroleum products. PAHs, many of which are potential carcinogens, are composed of at least two fused benzene rings. Toxicity increases along with molecular size and degree of alkylation of the aromatic nucleus.
Quality Assurance / Quality Control Procedures	A review by field personnel and laboratories of the procedures used in the collection, transport, and analysis of samples.
Sampling Event	Each grab or composite sample collected is referred to as a sampling event.
Secchi Depth	A parameter used to determine the clarity of surface waters. The measurement is made with a “Secchi” disk, a black and white disk that is lowered into the water and the depth is recorded at which it is no longer visible. A secchi depth recording of 5 ft indicates that the device was last visible at 5 ft below the surface. High secchi depth readings indicate clearer water that allows sunlight to penetrate to greater depths. Low readings indicate turbid water which can reduce the passage of sunlight to bottom depths. Limited light penetration can be a factor in diminished aquatic plant growth beneath the surface, thus reducing the biological reaeration at lower depths.

Sediment	Solid material that is transported by, suspended in, or deposited from water. It originates mostly from disintegrated rocks; it also includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope soil characteristics, land usage and quantity and intensity of precipitation.
Solar Radiation	The principal portion of the solar spectrum that spans from approximately 300 nanometres (nm) to 4,000 nm in the electromagnetic spectrum. It is measured in W/m2, which is radiation energy per second per unit area.
Specific Conductivity	(See also Conductivity). A conductivity reading normalized to a temperature of 25ºC. This allows valuable comparisons to be made.
Spike Sample	A laboratory produced sample containing a known concentration of a given parameter to measure the accuracy of laboratory equipment.
Spot measurement	An in-situ measurement taken near the surface of the water column.
Stratification	The separation of lakes into three layers: well mixed top layer, middle layer (see Thermocline), and a bottom layer. In freshwater lakes, stratification usually occurs as a result of temperature effects that cause changes in water density. Stratification may also affect vertical changes in water quality.
Sub-basin	A discrete part of a basin, which partially separates land features or a shallow lake bed.
Sub-watershed	A smaller portion of a watershed containing a drainage area that is connected to the larger portion by a single channel.
Surface Area	The area of the lake water surface, excluding islands.
Temporal Variability	Seasonal or a variation over time.
Thermocline	The vertical zone in the water column where temperature changes by more than 1°C per metre of depth.
Total Dissolved Solids (TDS)	The dissolved matter found in water comprised of mineral salts and small amounts of other inorganic and organic substances.
Total Fraction	
Total Kjeldahl Nitrogen (TKN)	The sum of organic nitrogen and ammonia.
Total Organic Carbon	A measure of the concentration of organic carbon in water, determined by the oxidation of the organic matter into carbon dioxide (CO_2).
Total Petroleum Hydrocarbons (TPH)	A measurement of the overall concentration of petroleum hydrocarbons found in the water.
Total Phosphorus	A measurement of particulate and dissolved phosphorus and phosphate molecules in water.
Total Suspended Solids (TSS)	A measurement of the concentration of particulate matter found in water.
Trip Blank	A water sample prepared by the laboratory and shipped to the field sampling location and then subsequently returned to the laboratory unaltered. These samples are used to detect sample contamination during transport.
Trophic State	Eutrophication is the process by which lakes are enriched with nutrients, increasing the production of rooted aquatic plants and algae. The extent to which this process has occurred is reflected in a lake's trophic classification or state: oligotrophic (nutrient poor), mesotrophic (moderately productive) and eutrophic (very productive and fertile).
Under Ice Conditions	The period of year when the lakes are partially or completely covered with ice.
Vertical Mixing	The mixing of different substances through the water column to yield homogeneous concentrations of different parameters throughout a lake.

Vertical profile	An in-situ measurement consisting of taking readings of physical parameters or samples at certain depth increments in a water column of a lake.
Watershed	The entire catchment area of runoff containing a single outlet.
Wetlands	Wetlands are land where the water table is at, near or above the surface or which is saturated for a long enough period to promote such features as wet-altered soils and water tolerant vegetation. Wetlands include organic wetlands or "peatlands," and mineral wetlands or mineral soil areas that are influenced by excess water but produce little or no peat.

APPENDIX I.I

WINTER ACCESS ROAD SURVEY

Winter Road - UW01
07 August 2004
UTM Zone 12 539036 7094223
Grab sample from lake.

***In situ* field measurements**		
pH	6.8	pH Units
Conductivity	21	µS/cm
Conductivity, Specific	28	µS/cm
Dissolved Oxygen (DO)	11.6	mg/L
Dissolved Oxygen, saturation	110	%
Temperature	12.9	^{o}C
Total Dissolved Solids (TDS)	18	mg/L

Photo I.I-1: Aerial View of UW01.

Photo I.I-2: Uproad View from UW01.

Photo I.I-3: Downroad View from UW01.

Winter Road - UW02
07 August 2004
UTM Zone 12 542938 7091377
Grab sample from lake.

'*in-situ*' field measurements		
pH	7.0	pH Units
Conductivity	18	µS/cm
Conductivity, Specific	22	µS/cm
Dissolved Oxygen (DO)	11.4	mg/L
Dissolved Oxygen, saturation	111	%
Temperature	14	^{o}C
Total Dissolved Solids (TDS)	15	mg/L

Photo I.I-4: Aerial View of UW02.

Photo I.I-5: Uproad View from UW02.

Photo I.I-6: Downroad View from UW02.

Winter Road - UW03
07 August 2004
UTM Zone 12 544189 7087922
Grab sample from lake.

'*in-situ*' field measurements		
pH	6.9	pH Units
Conductivity	16	µS/cm
Conductivity, Specific	20	µS/cm
Dissolved Oxygen (DO)	11.1	mg/L
Dissolved Oxygen, saturation	106	%
Temperature	13.6	^{o}C
Total Dissolved Solids (TDS)	13	mg/L

Photo I.I-7: Aerial View of UW03.

Photo I.I-8: Uproad View from UW03.

Photo I.I-9: Downroad View from UW03.

Winter Road - UW04
07 August 2004
UTM Zone 12 550503 7086452
Grab sample from lake.

'*in-situ*' field measurements		
pH	6.8	pH Units
Conductivity	16	µS/cm
Conductivity, Specific	20	µS/cm
Dissolved Oxygen (DO)	10.9	mg/L
Dissolved Oxygen, saturation	105	%
Temperature	13.7	^{o}C
Total Dissolved Solids (TDS)	13	mg/L

Photo I.I-10: Aerial View of UW04.

Photo I.I-11: Uproad View from UW04.

Photo I.I-12: Downroad View from UW04.

Winter Road - UW05
07 August 2004
UTM Zone 12 553835 7071390
Grab sample from lake.

'*in-situ*' field measurements		
pH	6.9	pH Units
Conductivity	16	µS/cm
Conductivity, Specific	21	µS/cm
Dissolved Oxygen (DO)	11.5	mg/L
Dissolved Oxygen, saturation	107	%
Temperature	12.3	^{o}C
Total Dissolved Solids (TDS)	14	mg/L

Photo I.I-13: Aerial View of UW05.

Photo I.I-14: Uproad View of UW05.

Photo I.I-15: Downroad View of UW05.

Winter Road - UW06
07 August 2004
UTM Zone 12 551518 7063034
Grab sample from lake.

'*in-situ*' field measurements		
pH	7.3	pH Units
Conductivity	14	µS/cm
Conductivity, Specific	17	µS/cm
Dissolved Oxygen (DO)	11.2	mg/L
Dissolved Oxygen, saturation	108	%
Temperature	13.8	^{o}C
Total Dissolved Solids (TDS)	11	mg/L

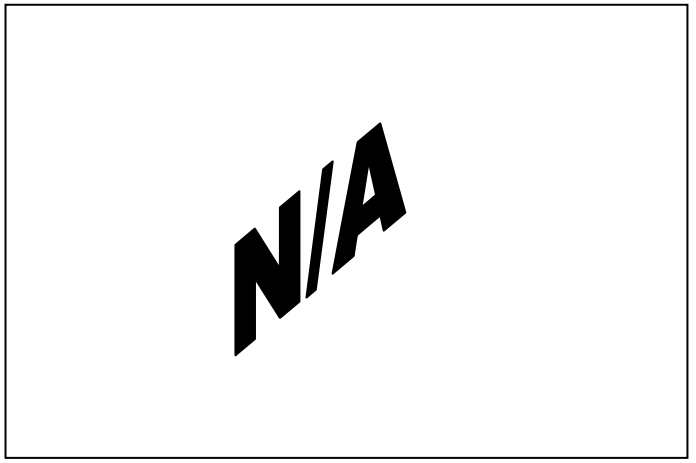

Photo I.I-16: N/A.

Photo I.I-17: Uproad View from UW06.

Photo I.I-17: Downroad View from UW06.

Winter Road - UW07
07 August 2004
UTM Zone 12 566664 7065655
Grab sample from lake.

'in-situ' field measurements		
pH	7.0	pH Units
Conductivity	13	µS/cm
Conductivity, Specific	17	µS/cm
Dissolved Oxygen (DO)	11.8	mg/L
Dissolved Oxygen, saturation	116	%
Temperature	14.7	^{o}C
Total Dissolved Solids (TDS)	11	mg/L

Photo I.I-19: Aerial View of UW07.

Photo I.I-20: Uproad View from UW07.

Photo I.I-21: Downroad View from UW07.

Winter Road - UW08
07 August 2004
UTM Zone 12 577067 7060283
Grab sample from lake.

'*in-situ*' field measurements		
pH	7.0	pH Units
Conductivity	12	µS/cm
Conductivity, Specific	15	µS/cm
Dissolved Oxygen (DO)	11.2	mg/L
Dissolved Oxygen, saturation	111	%
Temperature	15.1	^{o}C
Total Dissolved Solids (TDS)	9	mg/L

Photo I.I-22: Aerial View of UW08.

Photo I.I-23: Uproad View of UW08.

Photo I.I-24: Downroad View of UW08.

Winter Road - UW09
07 August 2004
UTM Zone 12 582527 7048210
Grab sample from lake.

'*in-situ*' field measurements		
pH	7.4	pH Units
Conductivity	10	µS/cm
Conductivity, Specific	12	µS/cm
Dissolved Oxygen (DO)	10.8	mg/L
Dissolved Oxygen, saturation	106	%
Temperature	14.8	^{o}C
Total Dissolved Solids (TDS)	8	mg/L

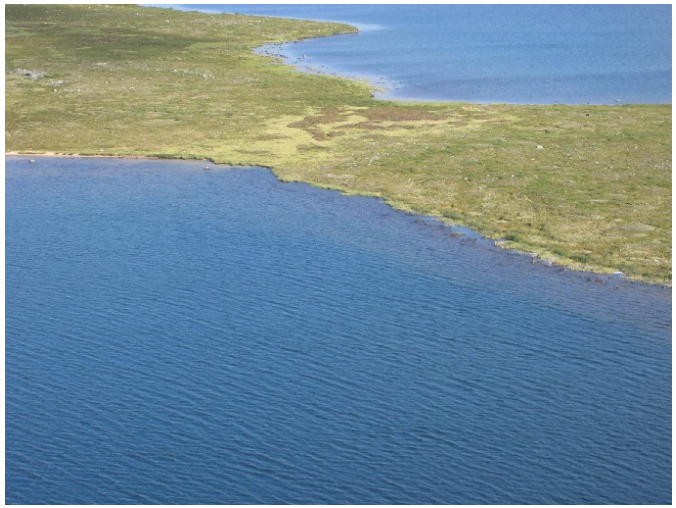

Photo I.I-25: Aerial View of UW09.

Photo I.I-26: Uproad View of UW09.

Photo I.I-27: Downroad View of UW09.

Winter Road - UW10
07 August 2004
UTM Zone 12 585554 7044355
Grab sample from stream.

'*in-situ*' field measurements		
pH	7.0	pH Units
Conductivity	9	µS/cm
Conductivity, Specific	12	µS/cm
Dissolved Oxygen (DO)	11.2	mg/L
Dissolved Oxygen, saturation	108	%
Temperature	14	^{o}C
Total Dissolved Solids (TDS)	8	mg/L

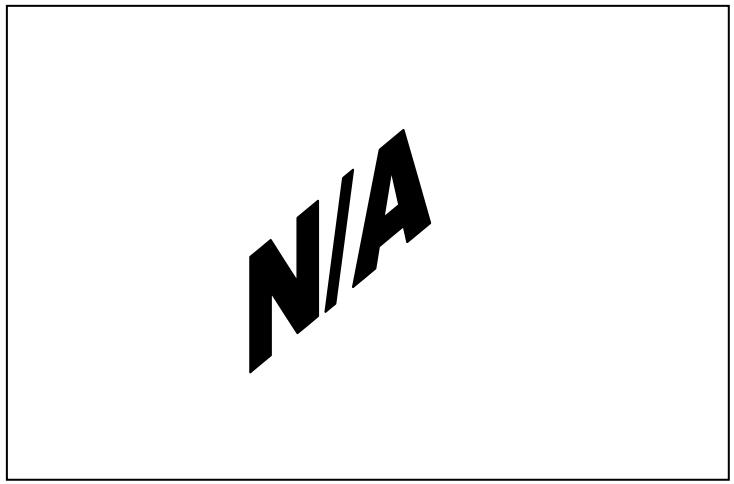

Photo I.I-28: Not available.

Photo I.I-29: Uproad View from UW10.

Photo I.I-30: Downroad View from UW10.

Winter Road – UW11
07 August 2004
UTM Zone 12 588867 703920
Grab sample from lake.

'*in-situ*' field measurements		
pH	7.0	pH Units
Conductivity	11	µS/cm
Conductivity, Specific	14	µS/cm
Dissolved Oxygen (DO)	11.3	mg/L
Dissolved Oxygen, saturation	105	%
Temperature	12.3	oC
Total Dissolved Solids (TDS)	9	mg/L

Photo I.I-31: Aerial View of UW11.

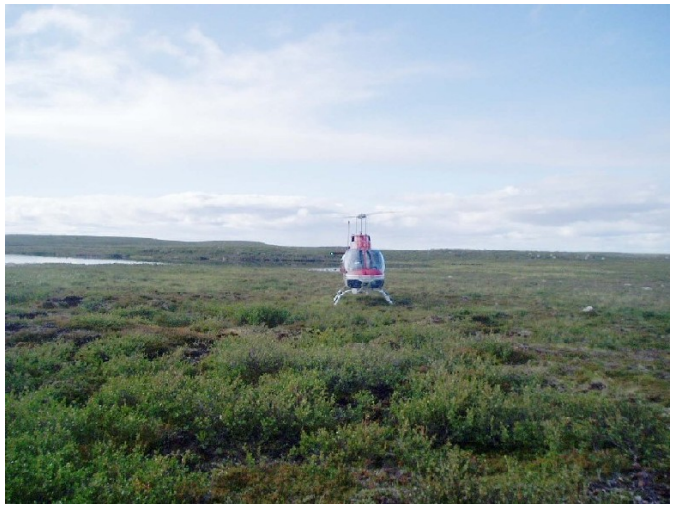

Photo I.I-32: Uproad View of UW11.

Photo I.I-33: Downroad View of UW11.

APPENDIX I.II

DATABASE TABLES

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95
		Unknown	Unknown	Unknown	Unknown	1 m	3 m	4 m	5 m	6 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	3	2.9	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	5.4	5.5	5.4	5.4	5.4
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	<0.5	<0.5	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	0.03	0.03	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	<1	<1	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	<0.005	<0.005	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	<0.005	<0.005	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	0.001	0.001	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.004	0.004	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	11	15	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	<10	<10	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<5	<5	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<100	<100	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	<100	<100	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	896	876	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<15	<15	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<1	<1	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	<10	<10	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	<30	<30	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	<1	<1	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	<15	<15	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	378	367	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	<5	<5	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<1	<1	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	<1	<1	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	<300	<300	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	<2,000	<2,000	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.5	<0.5	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	63	59	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95
		Unknown	Unknown	Unknown	Unknown	1 m	3 m	4 m	5 m	6 m
Sodium (Na)	µg/L (ppb)	-	-	<2,000	<2,000	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	9	9	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	<100	<100	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	<300	<300	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	<100	<100	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	<100	<100	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.5	<0.5	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	<30	<30	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	<5	<5	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	<5	<5	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	<10	<10	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<5	<5	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<100	<100	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	<100	<100	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	848	857	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<15	<15	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<1	<1	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	<10	<10	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	<30	<30	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	<1	<1	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	<15	<15	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	353	362	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	<5	<5	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<1	<1	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	<1	<1	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	<300	<300	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	<2,000	<2,000	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.5	<0.5	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	57	59	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	<2,000	<2,000	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	8	9	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	<100	<100	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	<300	<300	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	<100	<100	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	<100	<100	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.5	<0.5	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	<30	<30	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	<5	<5	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95
		Unknown	Unknown	Unknown	Unknown	1 m	2 m	3 m	4 m	5 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	2.8	2.2	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	4.8	4.8	4.8	4.8	4.8
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	0.8	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	0.03	0.02	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	<1	<1	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	0.005	0.005	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	<0.005	<0.005	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	0.001	0.001	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.005	0.004	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	7	10	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	<10	<10	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<5	<5	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<100	<100	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	<100	<100	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	886	838	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<15	<15	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<1	<1	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	<10	<10	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	<30	<30	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	<1	<1	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	<15	<15	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	360	336	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	<5	<5	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<1	<1	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	<1	<1	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	<300	<300	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	<2,000	<2,000	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.5	<0.5	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	52	56	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95
		Unknown	Unknown	Unknown	Unknown	1 m	2 m	3 m	4 m	5 m
Sodium (Na)	µg/L (ppb)	-	-	<2,000	<2,000	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	10	11	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	<100	<100	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	<300	<300	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	<100	<100	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	<100	<100	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.5	<0.5	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	<30	<30	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	<5	<5	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	<5	<5	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	<10	<10	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<5	<5	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<100	<100	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	<100	<100	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	825	831	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<15	<15	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<1	<1	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	<10	<10	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	<30	<30	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	<1	<1	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	<15	<15	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	353	362	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	<5	<5	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<1	<1	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	<1	<1	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	<300	<300	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	<2,000	<2,000	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.5	<0.5	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	57	59	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	<2,000	<2,000	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	10	11	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	<100	<100	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	<300	<300	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	<100	<100	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	<100	<100	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.5	<0.5	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	<30	<30	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	<5	<5	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		14-Sep-95	14-Sep-95	14-Sep-95	14-Sep-95	14-Sep-95	14-Sep-95	14-Sep-95	14-Sep-95	15-Sep-95
		Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	2.7	2.1	1.9	2.7	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	<0.5	<0.5	<0.5	0.5	-	-	-	-	-
Fluoride	mg/L (ppm)	0.03	0.03	0.03	0.03	-	-	-	-	-
Sulphate	mg/L (ppm)	2	2.1	1.8	1.1	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	<0.005	0.005	0.011	<0.005	-	-	-	-	-
Nitrate	mg/L (ppm)	<0.005	<0.005	<0.005	<0.005	-	-	-	-	-
Nitrite	mg/L (ppm)	0.001	0.001	0.002	0.001	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.004	0.005	0.006	0.004	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	16	9	10	9	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	<10	<10	<10	<10	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	<5	<5	<5	<5	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	<100	<100	<100	<100	-
Boron (B)	µg/L (ppb)	-	-	-	-	<100	<100	<100	<100	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	<0.2	<0.2	<0.2	<0.2	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	819	806	816	857	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	<15	<15	<15	<15	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	<1	<1	<1	<1	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	<10	<10	<10	<10	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	<30	<30	<30	<30	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	<1	<1	<1	<1	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	<15	<15	<15	<15	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	364	361	369	369	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	<5	<5	<5	<5	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	<1	<1	<1	<1	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	<1	<1	<1	<1	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	<300	<300	<300	<300	-
Potassium (K)	µg/L (ppb)	-	-	-	-	<2,000	<2,000	<2,000	<2,000	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	<0.5	<0.5	<0.5	<0.5	-
Silica, Reactive	µg/L (ppb)	-	-	-	-					-
Silicon (Si)	µg/L (ppb)	-	-	-	-	70	66	68	69	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		14-Sep-95	14-Sep-95	14-Sep-95	14-Sep-95	14-Sep-95	14-Sep-95	14-Sep-95	14-Sep-95	15-Sep-95
		Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Sodium (Na)	µg/L (ppb)	-	-	-	-	<2,000	<2,000	<2,000	<2,000	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	8	8	8	8	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	<100	<100	<100	<100	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	<300	<300	<300	<300	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	<100	<100	<100	<100	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	<100	<100	<100	<100	-
Uranium (U)	µg/L (ppb)	-	-	-	-	<0.5	<0.5	<0.5	<0.5	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	<30	<30	<30	<30	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	<5	<5	<5	<5	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	<5
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.1
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.1
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	<10
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	<5
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	<100
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	<100
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.2
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	771
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	<15
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	<1
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	<10
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	<30
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	<1
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	<15
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	344
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	<5
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.05
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	<1
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	<1
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	<300
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	<2,000
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.5
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	56
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.1
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	<2,000
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	8
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	<100
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	<300
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	<100
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	<100
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.5
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	<30
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	<5

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady ake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		15-Sep-95	15-Sep-95	15-Sep-95	12-Apr-96	12-Apr-96	1-Jul-96	1-Jul-96	2-Jul-96	2-Jul-96
		Unknown	Unknown	Unknown	0.5 m	0.5 m	1 m	6 m	1 m	2 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	4.5	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	13	-	-	5.6	5.7
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	<5	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	1.1	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	0.05	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	<1	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	0.029	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	0.011	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	0.002	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	0.005	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	16	17	17	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	<0.1	<0.05	<0.05	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	<0.1	0.11	0.11	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	<10	2.3	2.25	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	<5	<0.5	<0.5	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	<100	<0.5	<0.5	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	<100	2	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	<0.1	<0.05	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	1,370	830	900	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	<15	0.2	0.1	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	<1	<0.1	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	<10	0.5	0.5	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	<30	30	60	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	<1	<0.05	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	<15	<1	<1	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	586	372	407	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	<5	4.77	4.7	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	<1	<0.05	<0.05	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	<1	0.2	0.2	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	<300	<300	<300	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	<2,000	<2,000	<2,000	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	<0.5	3	2	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	108	60	70	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	<0.1	<0.01	<0.01	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady ake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		15-Sep-95	15-Sep-95	15-Sep-95	12-Apr-96	12-Apr-96	1-Jul-96	1-Jul-96	2-Jul-96	2-Jul-96
		Unknown	Unknown	Unknown	0.5 m	0.5 m	1 m	6 m	1 m	2 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	<2,000	<2,000	<2,000	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	9	11.3	7.2	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	<100	<0.05	<0.05	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	<300	0.6	0.5	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	<100	<10	<10	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	<100	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	<30	<0.05	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	<5	1	1	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	<5	<5	6	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	<0.1	<0.1	<0.1	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	<0.1	<0.1	<0.1	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	<10	<10	<10	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	<5	<5	<5	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	<100	<100	<100	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	<100	<100	<100	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	<0.2	<0.2	<0.2	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	785	793	787	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	<15	<15	<15	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	<1	<1	<1	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	<10	<10	<10	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	<30	<30	<30	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	<1	<1	<1	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	<15	<15	<15	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	345	362	349	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	<5	<5	<5	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	<0.05	<0.05	<0.05	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	<1	<1	<1	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	<1	<1	<1	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	<300	<300	<300	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	<2,000	<2,000	<2,000	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	<0.5	<0.5	<0.5	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	51	53	53	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	<0.1	<0.1	<0.1	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	<2,000	<2,000	<2,000	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	8	8	8	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	<100	<100	<100	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	<300	<300	<300	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	<100	<100	<100	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	<100	<100	<100	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.5	<0.5	<0.5	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	<30	<30	<30	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	<5	<5	<5	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		2-Jul-96	2-Jul-96	2-Jul-96	2-Jul-96	2-Jul-96	23-Aug-96	23-Aug-96	23-Aug-96	23-Aug-96
		3 m	4 m	5 m	6 m	7 m	1 m	1.5 m	2 m	3 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	4	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	3.75	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	5.6	5.6	5.7	5.5	5.5	5	-	5	5
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	0.03	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	<1	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	0.011	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	<0.001	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	<0.005	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	0.005	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	12	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	0.06	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	1.9	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	<0.5	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	<0.5	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	890	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	0.6	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	20	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	0.07	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	1	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	388	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	3.48	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	0.2	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	<300	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	<2,000	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	<1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	140	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	<0.01	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		2-Jul-96	2-Jul-96	2-Jul-96	2-Jul-96	2-Jul-96	23-Aug-96	23-Aug-96	23-Aug-96	23-Aug-96
		3 m	4 m	5 m	6 m	7 m	1 m	1.5 m	2 m	3 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	<2,000	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	5.8	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	0.2	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	<10	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	1	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		23-Aug-96	23-Aug-96	23-Aug-96	23-Aug-96	23-Aug-96	18-Sep-96	18-Sep-96	18-Sep-96	18-Sep-96
		4 m	5 m	5.5 m	6.0 m	7.0 m	1 m	1.5 m	2 m	3 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	4.1	-	-	-	3.6	-	-	-
Hardness, Total	mg/L (ppm)	-	3.8	-	-	-	3.61	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	5	5	-	5	5	0.0051	-	-	0.0051
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	<0.5	-	-	-
Fluoride	mg/L (ppm)	-	0.03	-	-	-	<0.02	-	-	-
Sulphate	mg/L (ppm)	-	<1	-	-	-	<1	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	0.016	-	-	-	<0.005	-	-	-
Nitrate	mg/L (ppm)	-	<0.001	-	-	-	0.001	-	-	-
Nitrite	mg/L (ppm)	-	<0.005	-	-	-	0.007	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	0.005	-	-	-	0.008			
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	11	-	-	-	18	-	-
Antimony (Sb)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.06	-	-	-	0.12	-	-
Barium (Ba)	µg/L (ppb)	-	-	1.9	-	-	-	1.56	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.5	-	-	-	<0.5	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.5	-	-	-	<0.5	-	-
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	4	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	860	-	-	-	870	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	0.7	-	-	-	0.4	-	-
Iron (Fe)	µg/L (ppb)	-	-	20	-	-	-	<10	-	-
Lead (Pb)	µg/L (ppb)	-	-	0.12	-	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	1	-	-	-	2	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	390	-	-	-	354	-	-
Manganese (Mn)	µg/L (ppb)	-	-	3.32	-	-	-	2.53	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	-	-
Nickel (Ni)	µg/L (ppb)	-	-	0.2	-	-	-	0.2	-	-
Phosphorus (P)	µg/L (ppb)	-	-	<300	-	-		<300		
Potassium (K)	µg/L (ppb)	-	-	<2,000	-	-	-	<2,000	-	-
Selenium (Se)	µg/L (ppb)	-	-	<1	-	-	-	<1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	90	-	-	-	80	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.01	-	-	-	<0.01	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		23-Aug-96	23-Aug-96	23-Aug-96	23-Aug-96	23-Aug-96	18-Sep-96	18-Sep-96	18-Sep-96	18-Sep-96
		4 m	5 m	5.5 m	6.0 m	7.0 m	1 m	1.5 m	2 m	3 m
Sodium (Na)	µg/L (ppb)	-	-	<2,000	-	-	-	<2,000	-	-
Strontium (Sr)	µg/L (ppb)	-	-	5.5	-	-	-	5.7	-	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	-	-
Tin (Sn)	µg/L (ppb)	-	-	0.2	-	-	-	0.2	-	-
Titanium (Ti)	µg/L (ppb)	-	-	<10	-	-	-	<10	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.1	-	-
Zinc (Zn)	µg/L (ppb)	-	-	1	-	-	-	<1	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-				
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		18-Sep-96	18-Sep-96	18-Sep-96	18-Sep-96	18-Sep-96	28-Nov-96	28-Nov-96	18-Jan-98	18-Jan-98
		4 m	5 m	5.5 m	6 m	7 m	0.5 m	0.5 m	3 m	4 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	4.3	-	-	-	4	-	3	3
Hardness, Total	mg/L (ppm)	-	3.74	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	0.0051	0.0051	-	0.0051	0.0051	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	12	<10
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	1	<1	<1
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	<0.5	-	-	-	0.5	-	<0.5	<0.5
Fluoride	mg/L (ppm)	-	0.03	-	-	-	0.03	-	0.04	0.03
Sulphate	mg/L (ppm)	-	<1	-	-	-	1	-	1	<1
Nutrients										
Ammonia	mg/L (ppm)	-	<0.005	-	-	-	0.009	-	0.015	0.015
Nitrate	mg/L (ppm)	-	0.001	-	-	-	<0.001	-	<0.005	0.005
Nitrite	mg/L (ppm)	-	<0.005	-	-	-	0.005	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	0.005	-	-	-	0.002	-	<0.001	<0.001
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	12	-	-	-	6	4	4
Antimony (Sb)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	<0.05	<0.05
Arsenic (As)	µg/L (ppb)	-	-	0.12	-	-	-	0.1	<0.1	<0.1
Barium (Ba)	µg/L (ppb)	-	-	1.54	-	-	-	1.95	1	0.94
Beryllium (Be)	µg/L (ppb)	-	-	<0.5	-	-	-	<0.5	<0.5	<0.5
Bismuth (Bi)	µg/L (ppb)	-	-	<0.5	-	-	-	<0.5	<0.5	<0.5
Boron (B)	µg/L (ppb)	-	-	3	-	-	-	2	1	1
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	<0.05	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	810	-	-	-	1,060	600	590
Chromium (Cr)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.5	<0.5	<0.5
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	-	-	0.4	-	-	-	0.8	0.3	0.3
Iron (Fe)	µg/L (ppb)	-	-	<10	-	-	-	30	<30	<30
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	0.11	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	-	-	1	-	-	-	<1	<1	<1
Magnesium (Mg)	µg/L (ppb)	-	-	355	-	-	-	460	280	240
Manganese (Mn)	µg/L (ppb)	-	-	2.56	-	-	-	1.11	0.89	0.91
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	<0.01	<0.01
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	<0.05	<0.05
Nickel (Ni)	µg/L (ppb)	-	-	0.2	-	-	-	0.2	0.1	0.1
Phosphorus (P)	µg/L (ppb)			<300				<300	<300	<300
Potassium (K)	µg/L (ppb)	-	-	<2,000	-	-	-	<2,000	230	210
Selenium (Se)	µg/L (ppb)	-	-	<1	-	-	-	<1	<1	<1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	80	-	-	-	110	140	100
Silver (Ag)	µg/L (ppb)	-	-	<0.01	-	-	-	<0.01	<0.01	<0.01

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		18-Sep-96	18-Sep-96	18-Sep-96	18-Sep-96	18-Sep-96	28-Nov-96	28-Nov-96	18-Jan-98	18-Jan-98
		4 m	5 m	5.5 m	6 m	7 m	0.5 m	0.5 m	3 m	4 m
Sodium (Na)	µg/L (ppb)	-	-	<2,000	-	-	-	<2,000	280	280
Strontium (Sr)	µg/L (ppb)	-	-	5.6	-	-	-	6.5	3.8	3.6
Thallium (Tl)	µg/L (ppb)	-	-	<0.05	-	-	-	0.05	<0.05	<0.05
Tin (Sn)	µg/L (ppb)	-	-	<0.1	-	-	-	0.1	<0.1	<0.1
Titanium (Ti)	µg/L (ppb)	-	-	<10	-	-	-	<10	<10	<10
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	<0.01	<0.01	<0.01
Vanadium (V)	µg/L (ppb)	-	-	<0.1	-	-	-	<1	<1	<1
Zinc (Zn)	µg/L (ppb)	-	-	<1	-	-	-	2	1	<1
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	5	5
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	<0.05
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	0.1	<0.1
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	1.49	1.1
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	<0.5	<0.5
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	<0.5	<0.5
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	2	1
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	900	650
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	<0.5	<0.5
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	0.4	0.3
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	<30	<30
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	<1	<1
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	390	270
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	0.1	0.09
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	<0.01	<0.01
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	<0.05
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	0.2	0.1
Phosphorus (P)	µg/L (ppb)								<300	<300
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	360	250
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	<1	<1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	120	80
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	<0.01	<0.01
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	450	330
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	5.8	4.2
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	<0.05
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	<0.1
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	<10	<10
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	<0.01	<0.01
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	<1	<1
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	<1	<1

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		18-Jan-98	18-Jan-98	18-Jan-98	Mar-98 [(d)]	Mar-98 [(d)]	Mar-98 [(d)]	Mar-98 [(d)]	Mar-98 [(d)]	14-Mar-99
		6 m	7 m	8 m	2 m	4 m	8 m	12 m	14 m	2 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-		-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	3	-	2	5	4	4	5	6	4
Hardness, Total	mg/L (ppm)	-		-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	<10	-	14	<10	<10	<10	<10	14	<20
Total Suspended Solids (TSS)	mg/L (ppm)	<1	-	6	<1	1	2	<1	<1	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	<0.5	-	<0.5	0.8	0.8	0.7	0.9		1.5
Fluoride	mg/L (ppm)	0.03		0.03	0.04	0.03	0.03	0.03		0.04
Sulphate	mg/L (ppm)	<1	-	1	2	1	1	1	2	1
Nutrients										
Ammonia	mg/L (ppm)	0.017	-	0.018	0.023	0.023	0.023	0.011	0.013	0.027
Nitrate	mg/L (ppm)	0.013	-	0.828	0.007	<0.005	0.013	0.067	0.095	<0.005
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.002
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	4	-	4	7	6	6	7	8	6
Antimony (Sb)	µg/L (ppb)	<0.05	-	<0.05	<0.05	0.72	<0.05	<0.05	<0.05	<0.05
Arsenic (As)	µg/L (ppb)	<0.1	-	<0.1	0.2	0.1	0.1	0.1	0.2	0.1
Barium (Ba)	µg/L (ppb)	1.2	-	1.04	1.91	1.59	2.27	3.77	4.12	1.58
Beryllium (Be)	µg/L (ppb)	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bismuth (Bi)	µg/L (ppb)	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron (B)	µg/L (ppb)	1	-	1	2	2	2	2	2	2
Cadmium (Cd)	µg/L (ppb)	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calcium (Ca)	µg/L (ppb)	650	-	570	1220	990	1160	1480	1530	1050
Chromium (Cr)	µg/L (ppb)	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt (Co)	µg/L (ppb)	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	0.3	-	0.3	0.6	0.5	0.4	0.5	0.4	5
Iron (Fe)	µg/L (ppb)	<30	-	<30	<30	<30	<30	210	350	<30
Lead (Pb)	µg/L (ppb)	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	<1	-	<1	<1	<1	<1	<1	<1	<1
Magnesium (Mg)	µg/L (ppb)	280	-	240	540	430	460	560	570	400
Manganese (Mn)	µg/L (ppb)	1.54	-	2.24	1.22	1.05	11.4	149	191	1.68
Mercury (Hg)	µg/L (ppb)	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Molybdenum (Mo)	µg/L (ppb)	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel (Ni)	µg/L (ppb)	0.1	-	0.1	0.3	0.2	0.2	0.5	0.5	0.2
Phosphorus (P)	µg/L (ppb)	<300		<300	<300	<300	<300	<300	<300	<300
Potassium (K)	µg/L (ppb)	230	-	210	460	370	400	450	460	<2000
Selenium (Se)	µg/L (ppb)	<1	-	<1	<1	<1	<1	<1	<1	<1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	90	-	90	140	120	250	490	540	140
Silver (Ag)	µg/L (ppb)	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		18-Jan-98	18-Jan-98	18-Jan-98	Mar-98 [d]	Mar-98 [d]	Mar-98 [d]	Mar-98 [d]	Mar-98 [d]	14-Mar-99
		6 m	7 m	8 m	2 m	4 m	8 m	12 m	14 m	2 m
Sodium (Na)	µg/L (ppb)	290	-	290	550	440	470	520	530	<2,000
Strontium (Sr)	µg/L (ppb)	4	-	3.5	7.2	5.9	7	8.9	9.4	6.5
Thallium (Tl)	µg/L (ppb)	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin (Sn)	µg/L (ppb)	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Titanium (Ti)	µg/L (ppb)	<10	-	<10	<10	<10	<10	<10	<10	<10
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium (V)	µg/L (ppb)	<1	-	<1	<1	<1	<1	<1	<1	<1
Zinc (Zn)	µg/L (ppb)	<1	-	12	4	4	4	3	2	<1
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	5	-	5	7	5	5	4	3	5
Antimony (Sb)	µg/L (ppb)	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic (As)	µg/L (ppb)	0.1	-	0.1	0.2	0.1	0.1	0.1	0.1	0.1
Barium (Ba)	µg/L (ppb)	1.62	-	1.85	1.88	1.53	2.21	3.81	4.11	1.53
Beryllium (Be)	µg/L (ppb)	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bismuth (Bi)	µg/L (ppb)	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron (B)	µg/L (ppb)	2	-	2	2	2	2	2	2	2
Cadmium (Cd)	µg/L (ppb)	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calcium (Ca)	µg/L (ppb)	960	-	1040	1320	960	1140	1450	1570	1040
Chromium (Cr)	µg/L (ppb)	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt (Co)	µg/L (ppb)	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	0.4	-	0.5	0.7	0.4	0.5	0.4	0.4	0.5
Iron (Fe)	µg/L (ppb)	<30	-	<30	<30	<30	<30	<30	<30	<30
Lead (Pb)	µg/L (ppb)	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	<1	-	<1	<1	<1	<1	<1	1	<1
Magnesium (Mg)	µg/L (ppb)	420	-	450	520	440	490	560	580	400
Manganese (Mn)	µg/L (ppb)	0.29	-	2.47	0.54	0.41	8.12	147	186	0.34
Mercury (Hg)	µg/L (ppb)	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Molybdenum (Mo)	µg/L (ppb)	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel (Ni)	µg/L (ppb)	0.2	-	0.2	0.3	0.2	0.2	0.5	0.5	0.2
Phosphorus (P)	µg/L (ppb)	<300		<300	<300	<300	<300	<300	<300	<300
Potassium (K)	µg/L (ppb)	350	-	370	460	360	400	470	460	460
Selenium (Se)	µg/L (ppb)	<1	-	<1	<1	<1	<1	<1	<1	<1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	120	-	170	130	120	250	490	530	140
Silver (Ag)	µg/L (ppb)	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sodium (Na)	µg/L (ppb)	540	-	510	570	440	470	510	530	<2000
Strontium (Sr)	µg/L (ppb)	6.1	-	6.5	7.2	5.9	6.9	9.2	9.4	6.5
Thallium (Tl)	µg/L (ppb)	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin (Sn)	µg/L (ppb)	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Titanium (Ti)	µg/L (ppb)	<10	-	<10	<10	<10	<10	<10	<10	<10
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium (V)	µg/L (ppb)	<1	-	<1	<1	<1	<1	<1	<1	<1
Zinc (Zn)	µg/L (ppb)	<1	-	10	5	5	4	4	3	2

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		14-Mar-99	14-Mar-99	14-Mar-99	14-Mar-99	14-Mar-99	17-May-99	17-May-99	17-May-99	17-May-99
		4 m	6 m	9 m	12 m	14 m	2 m	4 m	8 m	12 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	4	4	4	4	5	1	4	<1	4
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	<20	<20	<20	<20	<20	14	14	13	12
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	<3	<3	<3	<3
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	0.9	1	0.7	<0.5	0.6	1.2	0.5	1.1	1
Fluoride	mg/L (ppm)	0.04	0.04	0.03	0.03	0.04	0.06	0.05	0.04	0.04
Sulphate	mg/L (ppm)	<1	<1	<1	<1	<1	<1	<1	<1	<1
Nutrients										
Ammonia	mg/L (ppm)	0.024	0.025	0.028	0.027	0.011	0.019	0.019	0.019	0.022
Nitrate	mg/L (ppm)	0.007	0.023	0.034	0.087	0.141	0.066	<0.005	0.013	0.042
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.002	0.002	0.002	0.002	0.003	0.005	0.005	0.004	0.005
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	6	6	15	7	9	9	5	7	7
Antimony (Sb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic (As)	µg/L (ppb)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Barium (Ba)	µg/L (ppb)	1.61	1.92	2.49	3.42	4.49	1.34	1.65	2.45	3.96
Beryllium (Be)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bismuth (Bi)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron (B)	µg/L (ppb)	2	2	2	2	1	1	1	1	1
Cadmium (Cd)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calcium (Ca)	µg/L (ppb)	1,050	1,140	1,180	1,300	1,470	1,640	1,070	1,210	1,680
Chromium (Cr)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt (Co)	µg/L (ppb)	<0.1	<0.1	<0.1	0.1	0.9	0.5	<0.1	<0.1	0.1
Copper (Cu)	µg/L (ppb)	4	5	4	5	5	4	4	4	4
Iron (Fe)	µg/L (ppb)	<30	<30	30	80	260	240	<30	<30	230
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	<1	<1	<1	<1	<1	<1	<1	<1	<1
Magnesium (Mg)	µg/L (ppb)	400	400	500	500	600	620	470	520	580
Manganese (Mn)	µg/L (ppb)	2.01	3.4	12.2	70.8	326	221	1.48	4.63	169
Mercury (Hg)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01
Molybdenum (Mo)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel (Ni)	µg/L (ppb)	0.2	0.2	0.4	0.3	0.6	0.6	0.2	0.2	0.4
Phosphorus (P)	µg/L (ppb)	<300	<300	<300	<300	<300	<300	<300	<300	<300
Potassium (K)	µg/L (ppb)	<2,000	<2,000	<2,000	<2,000	<2,000	470	400	410	460
Selenium (Se)	µg/L (ppb)	<1	<1	<1	<1	<1	<1	<1	<1	<1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	150	200	340	470	610	650	160	310	580

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		14-Mar-99	14-Mar-99	14-Mar-99	14-Mar-99	14-Mar-99	17-May-99	17-May-99	17-May-99	17-May-99
		4 m	6 m	9 m	12 m	14 m	2 m	4 m	8 m	12 m
Silver (Ag)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sodium (Na)	µg/L (ppb)	<2,000	<2,000	<2,000	<2,000	<2,000	540	480	510	550
Strontium (Sr)	µg/L (ppb)	6.4	7	7.4	8.7	9.6	10	6.5	7.4	8.6
Thallium (Tl)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin (Sn)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Titanium (Ti)	µg/L (ppb)	<10	<10	<10	<10	<10	<10	<10	<10	<10
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium (V)	µg/L (ppb)	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc (Zn)	µg/L (ppb)	2	2	3	9	8	3	2	5	5
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	4	4	5	4	4	4	4	5	3
Antimony (Sb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic (As)	µg/L (ppb)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Barium (Ba)	µg/L (ppb)	1.6	1.86	2.54	3.1	4.18	4.07	1.68	2.38	3.77
Beryllium (Be)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bismuth (Bi)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron (B)	µg/L (ppb)	2	2	2	2	1	1	1	1	1
Cadmium (Cd)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calcium (Ca)	µg/L (ppb)	1,070	1,110	1,190	1,370	1,500	1,540	1,080	1,220	1,510
Chromium (Cr)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt (Co)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	0.3
Copper (Cu)	µg/L (ppb)	0.4	0.4	0.4	0.4	0.4	4	4	5	4
Iron (Fe)	µg/L (ppb)	<30	<30	<30	<30	<30	<30	<30	<30	<30
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	<1	<1	<1	<1	<1	<1	<1	<1	<1
Magnesium (Mg)	µg/L (ppb)	400	500	500	500	600	600	460	490	570
Manganese (Mn)	µg/L (ppb)	0.34	0.54	31.2	63	300	202	0.86	2.87	151
Mercury (Hg)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Molybdenum (Mo)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel (Ni)	µg/L (ppb)	0.2	0.2	0.3	0.3	0.5	0.5	0.5	0.5	0.5
Phosphorus (P)	µg/L (ppb)	<300	<300	<300	<300	<300	<300	<300	<300	<300
Potassium (K)	µg/L (ppb)	460	460	460	460	460	460	400	410	480
Selenium (Se)	µg/L (ppb)	<1	<1	<1	<1	<1	<1	<1	<1	<1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	150	180	340	460	580	620	150	320	580
Silver (Ag)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sodium (Na)	µg/L (ppb)	<2,000	<2,000	<2,000	<2,000	<2,000	550	480	610	540
Strontium (Sr)	µg/L (ppb)	6.3	6.9	7.7	8.1	9.3	9.9	6.8	7.4	9.6
Thallium (Tl)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin (Sn)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Titanium (Ti)	µg/L (ppb)	<10	<10	<10	<10	<10	<10	<10	<10	<10
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium (V)	µg/L (ppb)	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc (Zn)	µg/L (ppb)	1	2	4	9	7	4	3	5	6

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		17-May-99	17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99	22-Feb-01	22-Feb-01
		13 m	2 m	4 m	7 m	9 m	11 m	13 m	2 m	3 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	19	16
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	-	-	-	-	-	0.5	1
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	4	4	4	4	4	4	4	-	5
Hardness, Total	mg/L (ppm)	-	3.95	3.95	3.94	3.89	3.95	4.07	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	6
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	14	10	11	11	15	<10	12	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	<3	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	<0.02
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	0.8	1.7	0.7	0.7	0.7	0.7	0.6	-	<1
Fluoride	mg/L (ppm)	0.04	0.06	0.05	0.04	0.04	0.04	0.05	-	<0.05
Sulphate	mg/L (ppm)	<1	1	<1	<1	2	<1	<1	-	1.2
Nutrients										
Ammonia	mg/L (ppm)	0.011	0.007	0.007	0.005	0.005	0.005	0.006	-	<0.05
Nitrate	mg/L (ppm)	0.011	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.1
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.007	0.006	0.005	0.004	0.004	0.004	0.004	-	<0.02
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	5	10	9	9	10	10	10	-	3.7
Antimony (Sb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	0.18
Arsenic (As)	µg/L (ppb)	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	0.11
Barium (Ba)	µg/L (ppb)	1.61	1.91	1.88	1.89	1.95	1.87	1.87	-	1.71
Beryllium (Be)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.2
Bismuth (Bi)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.03
Boron (B)	µg/L (ppb)	1	2	1	2	2	1	2	-	2
Cadmium (Cd)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.02
Calcium (Ca)	µg/L (ppb)	1,060	910	900	930	910	940	950	-	1,020
Chromium (Cr)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.06
Cobalt (Co)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
Copper (Cu)	µg/L (ppb)	4	0.4	0.4	0.4	0.4	0.4	0.4	-	0.39
Iron (Fe)	µg/L (ppb)	<30	<30	<30	<30	<30	<30	<30	-	11
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05
Lithium (Li)	µg/L (ppb)	<1	<1	<1	<1	<1	<1	<1	-	0.9
Magnesium (Mg)	µg/L (ppb)	470	420	409	408	415	401	413	-	437
Manganese (Mn)	µg/L (ppb)	2.09	3.11	3.04	3.11	3.14	3.09	3.21	-	2.1
Mercury (Hg)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.04
Nickel (Ni)	µg/L (ppb)	0.2	0.3	0.4	0.2	0.2	0.2	0.2	-	0.23
Phosphorus (P)	µg/L (ppb)	<300	<300	<300	<300	<300	<300	<300	-	<2
Potassium (K)	µg/L (ppb)	400	350	350	350	350	350	350	-	373
Selenium (Se)	µg/L (ppb)	<1	<1	<1	<1	<1	<1	<1	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	140	100	90	100	100	100	100	-	200
Silver (Ag)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.03

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		17-May-99	17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99	22-Feb-01	22-Feb-01
		13 m	2 m	4 m	7 m	9 m	11 m	13 m	2 m	3 m
Sodium (Na)	µg/L (ppb)	480	440	450	450	450	450	460	-	505
Strontium (Sr)	µg/L (ppb)	8.6	6.1	6.2	6.2	6.3	6.1	6.1	-	6.8
Thallium (Tl)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.03
Tin (Sn)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
Titanium (Ti)	µg/L (ppb)	<10	<10	<10	<10	<10	<10	<10	-	<0.1
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
Vanadium (V)	µg/L (ppb)	<1	<1	<1	<1	<1	<1	<1	-	<0.05
Zinc (Zn)	µg/L (ppb)	7	<1	<1	<1	<1	<1	<1	-	2.4
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	4	5	5	5	5	5	5	-	2.6
Antimony (Sb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	0.08
Arsenic (As)	µg/L (ppb)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-	0.15
Barium (Ba)	µg/L (ppb)	1.61	1.84	1.82	1.8	1.81	1.8	1.81	-	1.95
Beryllium (Be)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.2
Bismuth (Bi)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.03
Boron (B)	µg/L (ppb)	1	2	2	1	1	1	2	-	2
Cadmium (Cd)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.02
Calcium (Ca)	µg/L (ppb)	1,010	900	920	920	900	930	960	-	1,230
Chromium (Cr)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.17
Cobalt (Co)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
Copper (Cu)	µg/L (ppb)	4	0.4	0.4	0.4	0.4	0.4	0.4	-	0.7
Iron (Fe)	µg/L (ppb)	<30	<30	<30	<30	<30	<30	<30	-	6
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05
Lithium (Li)	µg/L (ppb)	<1	<1	<1	<1	<1	<1	<1	-	0.9
Magnesium (Mg)	µg/L (ppb)	450	414	401	402	396	396	407	-	482
Manganese (Mn)	µg/L (ppb)	1.24	0.36	0.4	0.27	0.3	0.22	0.17	-	0.52
Mercury (Hg)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.04
Nickel (Ni)	µg/L (ppb)	0.5	0.2	0.2	0.2	0.2	0.2	0.2	-	0.22
Phosphorus (P)	µg/L (ppb)	<300	<300	<300	<300	<300	<300	<300	-	3
Potassium (K)	µg/L (ppb)	410	340	360	350	350	350	350	-	392
Selenium (Se)	µg/L (ppb)	<1	<1	<1	<1	<1	<1	<1	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	150	80	90	90	100	80	90	-	200
Silver (Ag)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.03
Sodium (Na)	µg/L (ppb)	470	450	450	450	450	450	450	-	682
Strontium (Sr)	µg/L (ppb)	6.7	6.2	6.1	6.1	6.2	6.1	6.1	-	6.9
Thallium (Tl)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.03
Tin (Sn)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
Titanium (Ti)	µg/L (ppb)	<10	<10	<10	<10	<10	<10	<10	-	<0.1
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
Vanadium (V)	µg/L (ppb)	<1	<1	<1	<1	<1	<1	<1	-	<0.05
Zinc (Zn)	µg/L (ppb)	4	<1	1	<1	4	<1	1	-	<0.8

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01
		4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	15	14	12	11	9	8	6	5	4
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	1.5	2	2	2.5	2.5	2.5	3	3	3.5
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	5	-	-	-	7
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	5	-	-	-	9
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	0.25
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	<1	-	-	-	<1
Fluoride	mg/L (ppm)	-	-	-	-	<0.05	-	-	-	<0.05
Sulphate	mg/L (ppm)	-	-	-	-	1.1	-	-	-	1.2
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	<0.05	-	-	-	<0.05
Nitrate	mg/L (ppm)	-	-	-	-	<0.1	-	-	-	<0.1
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	<0.02	-	-	-	0.06
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	5.1	-	-	-	7.2
Antimony (Sb)	µg/L (ppb)	-	-	-	-	0.19	-	-	-	0.23
Arsenic (As)	µg/L (ppb)	-	-	-	-	0.13	-	-	-	0.16
Barium (Ba)	µg/L (ppb)	-	-	-	-	2.85	-	-	-	4.48
Beryllium (Be)	µg/L (ppb)	-	-	-	-	<0.2	-	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	<0.03	-	-	-	<0.03
Boron (B)	µg/L (ppb)	-	-	-	-	2	-	-	-	2
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	<0.02	-	-	-	<0.02
Calcium (Ca)	µg/L (ppb)	-	-	-	-	1,190	-	-	-	1,320
Chromium (Cr)	µg/L (ppb)	-	-	-	-	<0.06	-	-	-	0.23
Cobalt (Co)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	0.6
Copper (Cu)	µg/L (ppb)	-	-	-	-	0.47	-	-	-	0.5
Iron (Fe)	µg/L (ppb)	-	-	-	-	29	-	-	-	128
Lead (Pb)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	-	1	-	-	-	1
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	439	-	-	-	538
Manganese (Mn)	µg/L (ppb)	-	-	-	-	10.9	-	-	-	240
Mercury (Hg)	µg/L (ppb)	-	-	-	-	<0.02	-	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	<0.04	-	-	-	<0.04
Nickel (Ni)	µg/L (ppb)	-	-	-	-	0.27	-	-	-	0.62
Phosphorus (P)	µg/L (ppb)	-	-	-	-	<2	-	-	-	<2
Potassium (K)	µg/L (ppb)	-	-	-	-	436	-	-	-	439
Selenium (Se)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	300	-	-	-	600
Silver (Ag)	µg/L (ppb)	-	-	-	-	<0.03	-	-	-	<0.03

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01
		4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	554	-	-	-	544
Strontium (Sr)	µg/L (ppb)	-	-	-	-	8.3	-	-	-	9.4
Thallium (Tl)	µg/L (ppb)	-	-	-	-	<0.03	-	-	-	<0.03
Tin (Sn)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	<0.1
Titanium (Ti)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	<0.1
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	<0.01	-	-	-	<0.01
Vanadium (V)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	-	-	1.1	-	-	-	1.8
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	3.4	-	-	-	6.8
Antimony (Sb)	µg/L (ppb)	-	-	-	-	0.11	-	-	-	0.23
Arsenic (As)	µg/L (ppb)	-	-	-	-	0.12	-	-	-	0.17
Barium (Ba)	µg/L (ppb)	-	-	-	-	2.55	-	-	-	4.5
Beryllium (Be)	µg/L (ppb)	-	-	-	-	<0.2	-	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	<0.03	-	-	-	<0.03
Boron (B)	µg/L (ppb)	-	-	-	-	2	-	-	-	2
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	<0.02	-	-	-	<0.02
Calcium (Ca)	µg/L (ppb)	-	-	-	-	1,400	-	-	-	1,840
Chromium (Cr)	µg/L (ppb)	-	-	-	-	<0.06	-	-	-	<0.06
Cobalt (Co)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	0.7
Copper (Cu)	µg/L (ppb)	-	-	-	-	0.69	-	-	-	0.88
Iron (Fe)	µg/L (ppb)	-	-	-	-	9	-	-	-	46
Lead (Pb)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	-	1	-	-	-	1.2
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	533	-	-	-	725
Manganese (Mn)	µg/L (ppb)	-	-	-	-	3.39	-	-	-	249
Mercury (Hg)	µg/L (ppb)	-	-	-	-	<0.02	-	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	<0.04	-	-	-	<0.04
Nickel (Ni)	µg/L (ppb)	-	-	-	-	0.24	-	-	-	0.66
Phosphorus (P)	µg/L (ppb)	-	-	-	-	3	-	-	-	6
Potassium (K)	µg/L (ppb)	-	-	-	-	435	-	-	-	525
Selenium (Se)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	300	-	-	-	600
Silver (Ag)	µg/L (ppb)	-	-	-	-	<0.03	-	-	-	<0.03
Sodium (Na)	µg/L (ppb)	-	-	-	-	691	-	-	-	828
Strontium (Sr)	µg/L (ppb)	-	-	-	-	8.1	-	-	-	11.4
Thallium (Tl)	µg/L (ppb)	-	-	-	-	<0.03	-	-	-	<0.03
Tin (Sn)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	<0.1
Titanium (Ti)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	<0.1
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	<0.01	-	-	-	<0.01
Vanadium (V)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	-	-	<0.8	-	-	-	1

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		22-Feb-01	29-Mar-01	29-Mar-01	29-Mar-01	29-Mar-01	29-Mar-01	29-Mar-01	29-Mar-01	29-Mar-01
		13 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	2	17	15	14	13	11	10	9	8
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	4	0.5	1	1.5	2	2.5	2.5	2.5	3
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	7	-	-	-	-	6	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	7	-	-	-	-	7	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	<1	-	-	-	-	<1	-
Fluoride	mg/L (ppm)	-	-	<0.05	-	-	-	-	<0.05	-
Sulphate	mg/L (ppm)	-	-	1.1	-	-	-	-	1.1	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	<0.05	-	-	-	-	<0.05	-
Nitrate	mg/L (ppm)	-	-	<0.1	-	-	-	-	<0.1	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	<0.02	-	-	-	-	-	<0.02	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	4.2	-	-	-	-	4.9	-
Antimony (Sb)	µg/L (ppb)	-	-	<0.03	-	-	-	-	<0.03	-
Arsenic (As)	µg/L (ppb)	-	-	0.14	-	-	-	-	0.12	-
Barium (Ba)	µg/L (ppb)	-	-	1.75	-	-	-	-	2.84	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	0.4	-	-	-	-	1.37	-
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	0.05	-	-	-	-	0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	1190	-	-	-	-	1170	-
Chromium (Cr)	µg/L (ppb)	-	-	0.1	-	-	-	-	0.11	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	0.6	-	-	-	-	0.6	-
Iron (Fe)	µg/L (ppb)	-	-	13	-	-	-	-	28	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	0.9	-	-	-	-	0.8	-
Magnesium (Mg)	µg/L (ppb)	-	-	542	-	-	-	-	534	-
Manganese (Mn)	µg/L (ppb)	-	-	1.8	-	-	-	-	20.7	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	-	-	-	-	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	0.25	-	-	-	-	0.34	-
Phosphorus (P)	µg/L (ppb)	-	-	<2	-	-	-	-	<2	-
Potassium (K)	µg/L (ppb)	-	-	441	-	-	-	-	426	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	200	-	-	-	-	400	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Sodium (Na)	µg/L (ppb)	-	-	585	-	-	-	-	552	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		22-Feb-01	29-Mar-01	29-Mar-01	29-Mar-01	29-Mar-01	29-Mar-01	29-Mar-01	29-Mar-01	29-Mar-01
		13 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m
Strontium (Sr)	µg/L (ppb)	-	-	7	-	-	-	-	7.3	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.03	-	-	-	-	<0.03	-
Tin (Sn)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Titanium (Ti)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	1.1	-	-	-	-	<0.8	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	3.1	-	-	-	-	4.6	-
Antimony (Sb)	µg/L (ppb)	-	-	0.03	-	-	-	-	<0.03	-
Arsenic (As)	µg/L (ppb)	-	-	0.14	-	-	-	-	0.12	-
Barium (Ba)	µg/L (ppb)	-	-	1.89	-	-	-	-	2.39	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	0.59	-	-	-	-	0.45	-
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	0.05	-	-	-	-	0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-		-
Chromium (Cr)	µg/L (ppb)	-	-	0.07	-	-	-	-	0.1	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	0.8	-	-	-	-	<0.6	-
Iron (Fe)	µg/L (ppb)	-	-	9	-	-	-	-	12	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	0.9	-	-	-	-	0.8	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	0.4	-	-	-	-	7.6	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	-	-	-	-	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	0.24	-	-	-	-	0.32	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	200	-	-	-	-	300	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	6.9	-	-	-	-	7.4	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.03	-	-	-	-	<0.03	-
Tin (Sn)	µg/L (ppb)	-	-	0.1	-	-	-	-	<0.1	-
Titanium (Ti)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	<0.8	-	-	-	-	<0.8	-

[a] Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

[b] Data from JWEL did not specify whether TDS was calculated or filterable.

[c] Sampling depth. This note applies to all subsequent columns.

[d] No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		29-Mar-01	29-Mar-01	29-Mar-01	29-Mar-01	29-Mar-01	29-Apr-01	29-Apr-01	29-Apr-01	29-Apr-01
		10 m	11 m	12 m	13 m	14 m	2 m	3 m	4 m	5 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	4.5	4	3	2	0.5	19	15	14	12
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3	3	3.5	3.5	4	1	1.5	2	2.5
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	7	-	-	-	7	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	8	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	<1	-	-	-	1	-	-
Fluoride	mg/L (ppm)	-	-	<0.05	-	-	-	<0.05	-	-
Sulphate	mg/L (ppm)	-	-	1.1	-	-	-	0.9	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	<0.05	-	-	-	<0.05	-	-
Nitrate	mg/L (ppm)	-	-	0.2	-	-	-	<0.1	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	<0.02	-	-	<0.02	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	7.5	-	-	-	3.3	-	-
Antimony (Sb)	µg/L (ppb)	-	-	<0.03	-	-	-	0.11	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.14	-	-	-	0.16	-	-
Barium (Ba)	µg/L (ppb)	-	-	4.07	-	-	-	1.95	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	0.7	-	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	0.05	-	-	-	<0.02	-	-
Calcium (Ca)	µg/L (ppb)	-	-	1400	-	-	-	1220	-	-
Chromium (Cr)	µg/L (ppb)	-	-	0.14	-	-	-	0.78	-	-
Cobalt (Co)	µg/L (ppb)	-	-	0.5	-	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	0.6	-	-	-	0.55	-	-
Iron (Fe)	µg/L (ppb)	-	-	151	-	-	-	11	-	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	0.9	-	-	-	0.9	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	584	-	-	-	484	-	-
Manganese (Mn)	µg/L (ppb)	-	-	202	-	-	-	1.52	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	-	-	-	<0.04	-	-
Nickel (Ni)	µg/L (ppb)	-	-	0.65	-	-	-	0.63	-	-
Phosphorus (P)	µg/L (ppb)	-	-	<2	-	-	-	<2	-	-
Potassium (K)	µg/L (ppb)	-	-	459	-	-	-	433	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	600	-	-	-	300	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	-	-	-	0.88	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		29-Mar-01	29-Mar-01	29-Mar-01	29-Mar-01	29-Mar-01	29-Apr-01	29-Apr-01	29-Apr-01	29-Apr-01
		10 m	11 m	12 m	13 m	14 m	2 m	3 m	4 m	5 m
Sodium (Na)	µg/L (ppb)	-	-	586	-	-	-	540	-	-
Strontium (Sr)	µg/L (ppb)	-	-	8.6	-	-	-	8.2	-	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.03	-	-	-	<0.03	-	-
Tin (Sn)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	-	-
Titanium (Ti)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.01	-	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	<0.8	-	-	-	<0.8	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	3.9	-	-	-	2.7	-	-
Antimony (Sb)	µg/L (ppb)	-	-	<0.03	-	-	-	0.12	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.12	-	-	-	0.16	-	-
Barium (Ba)	µg/L (ppb)	-	-	2.58	-	-	-	2.13	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	1.38	-	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	0.05	-	-	-	<0.02	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	1420	-	-
Chromium (Cr)	µg/L (ppb)	-	-	0.09	-	-	-	4.2	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	0.6	-	-	-	0.75	-	-
Iron (Fe)	µg/L (ppb)	-	-	13	-	-	-	20	-	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	0.8	-	-	-	0.9	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	525	-	-
Manganese (Mn)	µg/L (ppb)	-	-	28.4	-	-	-	0.77	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	-	-	-	<0.04	-	-
Nickel (Ni)	µg/L (ppb)	-	-	0.34	-	-	-	2.47	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	6	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	429	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	400	-	-	-	<100	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	-	-	-	0.89	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	697	-	-
Strontium (Sr)	µg/L (ppb)	-	-	7.5	-	-	-	8.1	-	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.03	-	-	-	<0.03	-	-
Tin (Sn)	µg/L (ppb)	-	-	0.1	-	-	-	<0.1	-	-
Titanium (Ti)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.01	-	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	<0.8	-	-	-	<0.8	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		29-Apr-01	29-Apr-01	29-Apr-01	29-Apr-01	29-Apr-01	29-Apr-01	29-Apr-01	29-Apr-01	29-Apr-01
		6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m	14 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	11	10	6	5	4	2	1	1	0.5
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	2.5	3	3	3	3.5	3.5	4	4	4
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	6	-	-	-	7	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	1	-	-	-	1	-	-
Fluoride	mg/L (ppm)	-	-	<0.05	-	-	-	<0.05	-	-
Sulphate	mg/L (ppm)	-	-	0.8	-	-	-	0.6	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	<0.05	-	-	-	<0.05	-	-
Nitrate	mg/L (ppm)	-	-	<0.1	-	-	-	<0.1	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	<0.02	-	-	-	<0.02	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	4.7	-	-	-	6.4	-	-
Antimony (Sb)	µg/L (ppb)	-	-	0.05	-	-	-	0.07	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.13	-	-	-	0.15	-	-
Barium (Ba)	µg/L (ppb)	-	-	3.3	-	-	-	4.26	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	-	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	1	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.02	-	-	-	<0.02	-	-
Calcium (Ca)	µg/L (ppb)	-	-	1280	-	-	-	1410	-	-
Chromium (Cr)	µg/L (ppb)	-	-	0.22	-	-	-	0.3	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	1.2	-	-
Copper (Cu)	µg/L (ppb)	-	-	0.47	-	-	-	0.62	-	-
Iron (Fe)	µg/L (ppb)	-	-	31	-	-	-	261	-	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	0.8	-	-	-	0.9	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	480	-	-	-	548	-	-
Manganese (Mn)	µg/L (ppb)	-	-	34.4	-	-	-	378	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.04	-	-	-	<0.04	-	-
Nickel (Ni)	µg/L (ppb)	-	-	0.45	-	-	-	0.84	-	-
Phosphorus (P)	µg/L (ppb)	-	-	<2	-	-	-	<2	-	-
Potassium (K)	µg/L (ppb)	-	-	424	-	-	-	455	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	500	-	-	-	500	-	-
Silver (Ag)	µg/L (ppb)	-	-	0.87	-	-	-	0.87	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		29-Apr-01	29-Apr-01	29-Apr-01	29-Apr-01	29-Apr-01	29-Apr-01	29-Apr-01	29-Apr-01	29-Apr-01
		6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m	14 m
Sodium (Na)	µg/L (ppb)	-	-	518	-	-	-	532	-	-
Strontium (Sr)	µg/L (ppb)	-	-	8.8	-	-	-	9.9	-	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.03	-	-	-	<0.03	-	-
Tin (Sn)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	-	-
Titanium (Ti)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.01	-	-	-	<0.01	-	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	<0.8	-	-	-	0.9	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	3.1	-	-	-	3.4	-	-
Antimony (Sb)	µg/L (ppb)	-	-	0.16	-	-	-	0.17	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.14	-	-	-	0.14	-	-
Barium (Ba)	µg/L (ppb)	-	-	2.68	-	-	-	3.41	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	-	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.02	-	-	-	<0.02	-	-
Calcium (Ca)	µg/L (ppb)	-	-	1570	-	-	-	1850	-	-
Chromium (Cr)	µg/L (ppb)	-	-	0.28	-	-	-	0.21	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	0.5	-	-
Copper (Cu)	µg/L (ppb)	-	-	0.72	-	-	-	0.74	-	-
Iron (Fe)	µg/L (ppb)	-	-	9	-	-	-	37	-	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	0.9	-	-	-	1	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	555	-	-	-	657	-	-
Manganese (Mn)	µg/L (ppb)	-	-	9.24	-	-	-	225	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.04	-	-	-	<0.04	-	-
Nickel (Ni)	µg/L (ppb)	-	-	0.4	-	-	-	0.56	-	-
Phosphorus (P)	µg/L (ppb)	-	-	7	-	-	-	8	-	-
Potassium (K)	µg/L (ppb)	-	-	440	-	-	-	468	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	300	-	-	-	300	-	-
Silver (Ag)	µg/L (ppb)	-	-	0.88	-	-	-	0.87	-	-
Sodium (Na)	µg/L (ppb)	-	-	725	-	-	-	753	-	-
Strontium (Sr)	µg/L (ppb)	-	-	8.7	-	-	-	10.4	-	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.03	-	-	-	<0.03	-	-
Tin (Sn)	µg/L (ppb)	-	-	0.1	-	-	-	0.1	-	-
Titanium (Ti)	µg/L (ppb)	-	-	<0.1	-	-	-	0.1	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.01	-	-	-	<0.01	-	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	<0.8	-	-	-	0.9	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		29-May-01	29-May-01	29-May-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01
		3 m	8 m	12 m	0 m	1 m	2 m	2 m	3 m	4 m
Field Measured										
pH	pH Units	-	-	-	7.3	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	13.3	12.7	12.8		12.7	12.9
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	10.7	10.6	10.7		10.5	10.7
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	-	8.9	8.7	8.7		8.5	8.5
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	8	7	8	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	<0.1	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	<0.05	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	0.3	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	100		
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		29-May-01	29-May-01	29-May-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01
		3 m	8 m	12 m	0 m	1 m	2 m	2 m	3 m	4 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01
		5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	12.9	12.8	12.7	12.7	12.9	12.9	12.9	12.9	12.8
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	10.8	10.8	10.7	10.7	10.7	10.7	10.7	10.7	10.8
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	8.5	8.4	8.2	8.2	8	7.9	7.8	7.7	7.6
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)									
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01
		5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01
		0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m
Field Measured										
pH	pH Units	6.9								
Conductivity [(a)]	µS/cm	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.8
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	16.7	16.7	16.7	16.5	16.4	16.4	16.3	16.3	16.3
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	16.7	16.7	16.7	16.5	16.4	16.4	16.3	16.3	16.3
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-		-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	1.1	-	-	-	0.8	-	-	1.1
Alkalinity, Total	mg/L (ppm)	-	3.6	-	-	-	3.6	-	-	3.6
Hardness, Total	mg/L (ppm)	-	3.83	-	-	-	3.82	-	-	3.84
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-		-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-		-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	<10	-	-	-	<10	-	-	<10
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-		-	-	-
Turbidity	NTU	-	-	-	-	-		-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	0.7	-	-	-	0.5	-	-	0.5
Fluoride	mg/L (ppm)	-	0.03	-	-	-	<0.03	-	-	<0.03
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	0.005	-	-	-	0.012	-	-	0.005
Nitrate	mg/L (ppm)	-	<0.008	-	-	-	<0.008	-	-	<0.008
Nitrite	mg/L (ppm)	-	<0.008	-	-	-	<0.008	-	-	<0.008
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	0.22				0.17			0.13
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	0.01	-	-	-	0.014	-	-	0.01
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	3.1	-	-	-	3.2	-	-	3.4
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	4.8	-	-	-	5	-	-	4.7
Antimony (Sb)	µg/L (ppb)	-	0.63	-	-	-	0.69	-	-	0.44
Arsenic (As)	µg/L (ppb)	-	0.09	-	-	-	0.09	-	-	0.09
Barium (Ba)	µg/L (ppb)	-	1.59	-	-	-	1.62	-	-	1.61
Beryllium (Be)	µg/L (ppb)	-	<0.2	-	-	-	<0.2	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	<0.03	-	-	-	<0.03	-	-	<0.03
Boron (B)	µg/L (ppb)	-	2	-	-	-	2	-	-	2
Cadmium (Cd)	µg/L (ppb)	-	<0.05	-	-	-	<0.05	-	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	897	-	-	-	893	-	-	904
Chromium (Cr)	µg/L (ppb)	-	<0.06	-	-	-	<0.06	-	-	<0.06
Cobalt (Co)	µg/L (ppb)	-	0.2	-	-	-	0.3	-	-	0.2
Copper (Cu)	µg/L (ppb)	-	<0.6	-	-	-	<0.6	-	-	<0.6
Iron (Fe)	µg/L (ppb)	-	13	-	-	-	12	-	-	12
Lead (Pb)	µg/L (ppb)	-	<0.05	-	-	-	<0.05	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	<0.1	-	-	-	<0.1	-	-	<0.1
Magnesium (Mg)	µg/L (ppb)	-	387	-	-	-	385	-	-	385
Manganese (Mn)	µg/L (ppb)	-	4.5	-	-	-	4.6	-	-	4.7
Mercury (Hg)	µg/L (ppb)	-	<0.02	-	-	-	<0.02	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	<0.06	-	-	-	<0.06	-	-	<0.06
Nickel (Ni)	µg/L (ppb)	-	0.18	-	-	-	0.18	-	-	0.18
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	355	-	-	-	355	-	-	349
Selenium (Se)	µg/L (ppb)	-	<0.1	-	-	-	<0.1	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	0.16	-	-	-	0.16	-	-	0.16
Silicon (Si)	µg/L (ppb)	-	700	-	-	-	500	-	-	300
Silver (Ag)	µg/L (ppb)	-	<0.1	-	-	-	<0.1	-	-	<0.1

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01
		0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m
Sodium (Na)	µg/L (ppb)	-	473	-	-	-	475	-	-	507
Strontium (Sr)	µg/L (ppb)	-	5.9	-	-	-	5.8	-	-	5.8
Thallium (Tl)	µg/L (ppb)	-	<0.03	-	-	-	<0.03	-	-	<0.03
Tin (Sn)	µg/L (ppb)	-	<0.1	-	-	-	<0.1	-	-	<0.1
Titanium (Ti)	µg/L (ppb)	-	<0.1	-	-	-	<0.1	-	-	<0.1
Tungsten (W)	µg/L (ppb)	-	-	-	-	-		-	-	-
Uranium (U)	µg/L (ppb)	-	<0.05	-	-	-	<0.05	-	-	<0.05
Vanadium (V)	µg/L (ppb)	-	<0.05	-	-	-	<0.05	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	-	<0.8	-	-	-	<0.8	-	-	<0.8
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	0.16	-	-	-	0.16	-	-	0.16
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-		-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-		-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-		-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-		-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-		-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-		-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-		-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	20-Sep-01	20-Sep-01	20-Sep-01	20-Sep-01
		9 m	10 m	11 m	12 m	13 m	0 m	0 m	1 m	2 m
Field Measured										
pH	pH Units							7.2	-	-
Conductivity [(a)]	µS/cm	12.8	12.8	12.7	12.8	12.7	13.1	-	13	13.1
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	16.3	16.2	16.1	16.1	16.1	10.9	-	10.8	10.9
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	16.3	16.2	16.1	16.1	16.1	8.6	-	8.6	8.6
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	0.5	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	3.6	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	3.8	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	0.6	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	0.03	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	0.009	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	<0.008	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	0.008	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	0.17	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)				0.005	-	-	-	-	0.01
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	3.3	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	5.6	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	0.42	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.1	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	1.69	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	2	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	886	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.06	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	0.2	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	<0.6	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	15	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	0.08	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	385	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	5	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	0.03	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	0.19	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	358	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	0.17	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	300	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	20-Sep-01	20-Sep-01	20-Sep-01	20-Sep-01
		9 m	10 m	11 m	12 m	13 m	0 m	0 m	1 m	2 m
Sodium (Na)	µg/L (ppb)	-	-	-	467	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	5.8	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	<0.03	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	0.8	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-			
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	0.17	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		20-Sep-01	20-Sep-01	20-Sep-01	20-Sep-01	20-Sep-01	20-Sep-01	20-Sep-01	20-Sep-01	20-Sep-01
		2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm		13	13	13	13	12.9	12.9	12.9	12.9
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)		10.8	10.9	10.9	10.9	10.8	10.8	10.8	10.9
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	8.6	8.6	8.6	8.6	8.6	8.6	8.5	8.5
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	<0.005	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	<0.008	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	<0.008	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	0.16	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	250	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		20-Sep-01	20-Sep-01	20-Sep-01	20-Sep-01	20-Sep-01	20-Sep-01	20-Sep-01	20-Sep-01	20-Sep-01
		2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02
		1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	16.2	13.3	13.1	12.9	12.6	12.5	12	11.65	10.3
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	0.3	0.9	1.2	1.4	1.7	1.9	2.1	2.3	2.6
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02
		1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	17-Jan-02	17-Jan-02	17-Jan-02	17-Jan-02	12-Mar-02
		10 m	11 m	12 m	13 m	3 m	8 m	8 m duplicate	12 m	1 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	9.1	8	6.2	3.3	-	-	-	-	18.9
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	2.8	3.1	3.4	3.9	-	-	-	-	0.2
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions						-	-	-	-	-
pH	pH Units	-	-	-	-	6.2	6.3	6.3	6.1	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	17	16.5	16.6	17.3	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	7	8	8	8	-
Hardness, Total	mg/L (ppm)	-	-	-	-	5	5	6	6	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	8	9	9	9	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	<3	3	3	4	-
Turbidity	NTU	-	-	-	-	0.32	0.17	0.23	0.37	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	1.27	1.24	1.36	1.45	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	0.51	0.51	0.54	0.55	-
Potassium (K)	mg/L (ppm)	-	-	-	-	0.6	0.45	0.63	0.62	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	0.9	0.6	0.9	0.8	-
Bicarbonate	mg/L (ppm)	-	-	-	-	9	9	9	9	-
Carbonate	mg/L (ppm)	-	-	-	-	<5	<5	<5	<5	-
Chloride	mg/L (ppm)	-	-	-	-	<1	<1	<1	<1	-
Fluoride	mg/L (ppm)	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-
Sulphate	mg/L (ppm)	-	-	-	-	0.95	0.97	0.98	1.01	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	0.026	0.025	0.025	0.034	-
Nitrate	mg/L (ppm)	-	-	-	-	<0.006	0.008	0.008	0.053	-
Nitrite	mg/L (ppm)	-	-	-	-	-	<0.002	<0.002	<0.002	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	0.003	0.003	0.005	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	3.6	3.1	3.3	3.1	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	4.3	4.3	4.3	6.7	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	0.09	0.08	0.12	0.11	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	0.11	0.11	0.11	0.1	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	1.87	2.3	2.33	3.11	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	<0.2	<0.2	<0.2	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	<0.03	<0.03	<0.03	<0.03	-
Boron (B)	µg/L (ppb)	-	-	-	-	2	2	2	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	1,200	1,180	1,180	1,240	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	0.11	0.08	0.11	0.15	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	<0.6	<0.6	<0.6	<0.6	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	9	12	13	20	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	494	510	516	528	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	1.6	3.6	3.7	28.4	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	<0.02	<0.02	<0.02	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	0.07	<0.06	<0.06	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	0.13	0.15	0.15	0.24	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	294	439	447	249	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	100	200	200	300	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	17-Jan-02	17-Jan-02	17-Jan-02	17-Jan-02	12-Mar-02
		10 m	11 m	12 m	13 m	3 m	8 m	8 m duplicate	12 m	1 m
Silver (Ag)	µg/L (ppb)	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	472	588	596	427	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	7.1	7.5	7.5	8	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	4.1	1.3	1.4	2.9	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	2.6	2.7	2.8	4.3	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	0.09	0.13	0.15	0.1	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	0.17	0.11	0.15	0.15	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	1.89	2.21	2.22	2.54	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	<0.2	<0.2	<0.2	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	<0.03	<0.03	<0.03	<0.03	-
Boron (B)	µg/L (ppb)	-	-	-	-	2	2	2	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	1,270	1,240	1,360	1,450	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	0.15	0.11	0.14	0.17	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	<0.6	0.6	<0.6	0.6	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	<5	<5	<5	6	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	511	515	535	552	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	0.3	1	1.3	11.9	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	<0.02	<0.02	<0.02	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	<0.06	<0.06	<0.06	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	0.2	0.14	0.18	0.24	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	465	445	629	460	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	200	300	300	400	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	759	607	867	713	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	6.6	7.2	7.3	7.7	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	0.1	0.1	<0.1	0.1	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	<0.05	<0.05	<0.05	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	1	1.6	1.8	1.3	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02
		2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	15.49	13.3	12.28	11.46	10.85	9.84	8.75	7.47	5.75
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	0.7	1.2	1.6	1.9	2.2	2.5	2.7	3	3.3
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02
		2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake K1 12-Mar-02 11 m	Kennady Lake K1 12-Mar-02 12 m	Kennady Lake K1 12-Mar-02 13 m	Kennady Lake K1 13-Mar-02 3 m	Kennady Lake K1 13-Mar-02 8 m	Kennady Lake K1 13-Mar-02 8 m duplicate	Kennady Lake K1 13-Mar-02 12 m	Kennady Lake K1 29-Apr-02 1 m	Kennady Lake K1 29-Apr-02 2 m
Field Measured										
pH	pH Units	-	-	-	6.6				-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	4.71	3.11	1.39	-	-	-	-	18.81	17.03
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3.5	3.8	4	-	-	-	-	0.2	0.6
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	5.7	6.4	6.5	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	18.7	16.5	17.1	16.8	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	8	6	8	8	-	-
Hardness, Total	mg/L (ppm)	-	-	-	6	5	5	5	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	9	8	8	8	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	<3	<3	<3	<3	-	-
Turbidity	NTU	-	-	-	-	<0.1	<0.1	<0.1	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	1.3	1.2	1.21	1.2	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	0.55	0.49	0.49	0.5	-	-
Potassium (K)	mg/L (ppm)	-	-	-	0.46	0.41	0.41	0.42	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	0.6	0.5	0.5	0.5	-	-
Bicarbonate	mg/L (ppm)	-	-	-	10	8	8	10	-	-
Carbonate	mg/L (ppm)	-	-	-	<5	<5	<5	88	-	-
Chloride	mg/L (ppm)	-	-	-	<1	1	<1	<1	-	-
Fluoride	mg/L (ppm)	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
Sulphate	mg/L (ppm)	-	-	-	1.06	0.98	1	1.01	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	0.008	<0.005	<0.005	<0.005	-	-
Nitrate	mg/L (ppm)	-	-	-	<0.006	0.016	0.018	<0.006	-	-
Nitrite	mg/L (ppm)	-	-	-	0.002	0.002	0.003	0.002	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	<0.006	0.019	0.02	<0.006	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	0.003	0.003	0.004	0.004	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	4	3.4	3.5	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	3.5	3.4	3.5	3.2	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	0.24	0.16	0.21	0.23	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.16	0.13	0.13	0.14	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	2.17	2.38	2.39	2.21	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	<0.2	<0.2	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	<0.03	<0.03	<0.03	-	-
Boron (B)	µg/L (ppb)	-	-	-	2	2	2	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,300	1,200	1,210	1,200	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.06	<0.06	<0.06	<0.06	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	<0.1	<0.1	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	<0.6	0.8	0.9	<0.6	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	<5	5	6	<5	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	<0.1	<0.1	<0.1	<0.1	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	547	487	490	498	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	1.1	2.6	2.6	2.1	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	<0.02	<0.02	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	<0.06	<0.06	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	0.19	0.18	0.18	0.18	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	459	408	410	424	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	<0.1	<0.1	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	100	200	200	100	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake K1 12-Mar-02 11 m	Kennady Lake K1 12-Mar-02 12 m	Kennady Lake K1 12-Mar-02 13 m	Kennady Lake K1 13-Mar-02 3 m	Kennady Lake K1 13-Mar-02 8 m	Kennady Lake K1 13-Mar-02 8 m duplicate	Kennady Lake K1 13-Mar-02 12 m	Kennady Lake K1 29-Apr-02 1 m	Kennady Lake K1 29-Apr-02 2 m
Silver (Ag)	µg/L (ppb)	-	-	-	868.6	<0.1	<0.1	<0.1	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	606	523	525	542	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	8.6	8.1	8.2	8.1	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	1.4	5.1	5.5	0.5	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	1.8	<0.8	0.9	<0.8	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	2.8	2.9	3	2.9	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	0.17	0.14	0.19	0.15	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.16	0.13	0.13	0.14	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	1.8	2.31	2.32	1.78	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	<0.2	<0.2	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	<0.03	<0.03	<0.03	-	-
Boron (B)	µg/L (ppb)	-	-	-	2	2	2	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,420	1,290	1,380	1,340	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	0.08	0.07	0.08	<0.06	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	<0.1	<0.1	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	<0.6	1.2	1.3	0.7	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	<5	5	6	<5	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	<0.1	<0.1	<0.1	<0.1	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	560	493	507	539	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	0.4	1.4	1.8	0.6	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	<0.02	<0.02	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	<0.06	<0.06	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	0.26	0.18	0.23	0.23	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	484	419	562	458	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	<0.1	<0.1	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	200	300	300	200	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	<0.1	<0.1	<0.1	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	876	538	723	826	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	8.3	8	8	8.2	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	3.9	4.5	12	4.2	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	<0.05	<0.05	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	2	1.3	2	1.3	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02
		3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	13.93	12.33	11.14	10.27	9.53	8.17	5.86	4.4	2.9
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	^{o}C	1.3	1.7	2.1	2.4	2.6	2.9	3.2	3.4	3.7
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02
		3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		30-Apr-02	30-Apr-02	30-Apr-02	30-Apr-02	25-May-02	25-May-02	25-May-02	25-May-02	25-May-02
		3 m	8 m	8 m duplicate	12 m	1 m	2 m	3 m	4 m	5 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	17.23	16.53	14.16	12.18	10.88
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	-	-	0.2	0.7	1.2	1.9	2.3
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	6.5	6.4	6.4	6.4	-	-	6.4	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	18.8	16.7	17.2	19	-	-	18.7	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	8	8	8	8	-	-	7	-	-
Hardness, Total	mg/L (ppm)	6	5	5	6	-	-	6	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	9	9	9	10	-	-	9	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	8	<3	<3	<3	-	-	<3	-	-
Turbidity	NTU	0.4	-	-	<0.1	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	1.56	1.33	1.44	1.83	-	-	1.5	-	-
Magnesium (Mg)	mg/L (ppm)	0.61	0.55	0.56	0.64	-	-	0.66	-	-
Potassium (K)	mg/L (ppm)	0.64	0.45	0.59	0.46	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	0.9	0.6	0.8	0.7	-	-	1	-	-
Bicarbonate	mg/L (ppm)	10	9	9	10	-	-	9	-	-
Carbonate	mg/L (ppm)	<5	<5	<5	<5	-	-	<5	-	-
Chloride	mg/L (ppm)	<1	<1	<1	<1	-	-	<1	-	-
Fluoride	mg/L (ppm)	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	-	-
Sulphate	mg/L (ppm)	1.17	1.02	1.05	1.04	-	-	1.11	-	-
Nutrients										
Ammonia	mg/L (ppm)	0.031	<0.005	0.008	<0.005	-	-	0.055	-	-
Nitrate	mg/L (ppm)	<0.006	0.044	0.044	0.103	-	-	<0.006	-	-
Nitrite	mg/L (ppm)	<0.002	<0.002	<0.002	<0.002	-	-	<0.002	-	-
Nitrate + Nitrite	mg/L (ppm)	<0.006	0.044	0.044	0.103	-	-	<0.006	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.005	0.004	0.004	0.005	-	-	0.004	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	4.5	3.7	3.8	3.4	-	-	4.7	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	3.9	3.6	3.7	4.4	-	-	3.9	-	-
Antimony (Sb)	µg/L (ppb)	0.43	0.35	0.55	0.47	-	-	0.35	-	-
Arsenic (As)	µg/L (ppb)	0.16	0.12	0.12	0.12	-	-	0.17	-	-
Barium (Ba)	µg/L (ppb)	2.33	2.68	2.76	4.22	-	-	2.19	-	-
Beryllium (Be)	µg/L (ppb)	<0.2	<0.2	<0.2	<0.2	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	<0.03	<0.03	<0.03	<0.03	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	3	2	2	2	-	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	1,370	1,270	1,280	1,580	-	-	1,400	-	-
Chromium (Cr)	µg/L (ppb)	<0.06	<0.06	<0.06	<0.06	-	-	0.07	-	-
Cobalt (Co)	µg/L (ppb)	<0.1	<0.1	<0.1	0.5	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	0.7	<0.6	<0.6	<0.6	-	-	<0.6	-	-
Iron (Fe)	µg/L (ppb)	5	10	10	41	-	-	<5	-	-
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	-	-	0.3	-	-
Magnesium (Mg)	µg/L (ppb)	602	544	551	578	-	-	671	-	-
Manganese (Mn)	µg/L (ppb)	0.8	7	7	180	-	-	0.9	-	-
Mercury (Hg)	µg/L (ppb)	<0.02	<0.02	<0.02	<0.02	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.06	<0.06	<0.06	<0.06	-	-	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	0.24	0.23	0.24	0.52	-	-	0.28	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	515	443	447	450	-	-	520	-	-
Selenium (Se)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	100	200	200	500	-	-	100	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		30-Apr-02	30-Apr-02	30-Apr-02	30-Apr-02	25-May-02	25-May-02	25-May-02	25-May-02	25-May-02
		3 m	8 m	8 m duplicate	12 m	1 m	2 m	3 m	4 m	5 m
Silver (Ag)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-
Sodium (Na)	µg/L (ppb)	702	603	611	575	-	-	763	-	-
Strontium (Sr)	µg/L (ppb)	9	8.5	8.7	9.7	-	-	8.9	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	1.2	0.7	0.8	1	-	-	2	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	<0.8	<0.8	<0.8	<0.8	-	-	4.2	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	4.6	2.8	2.9	3.2	-	-	2.9	-	-
Antimony (Sb)	µg/L (ppb)	0.48	0.36	0.43	0.57	-	-	0.24	-	-
Arsenic (As)	µg/L (ppb)	0.16	0.12	0.12	0.12	-	-	0.17	-	-
Barium (Ba)	µg/L (ppb)	2.32	2.39	2.71	3.85	-	-	2.08	-	-
Beryllium (Be)	µg/L (ppb)	<0.2	<0.2	<0.2	<0.2	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	<0.03	<0.03	<0.03	<0.03	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	3	3	3	2	-	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	1,560	1,330	1,440	1,830	-	-	1,500	-	-
Chromium (Cr)	µg/L (ppb)	<0.06	<0.06	<0.06	<0.06	-	-	<0.06	-	-
Cobalt (Co)	µg/L (ppb)	<0.1	<0.1	<0.1	0.3	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	0.9	1.5	1.7	0.7	-	-	1.4	-	-
Iron (Fe)	µg/L (ppb)	<5	<5	<5	8	-	-	<5	-	-
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-
Magnesium (Mg)	µg/L (ppb)	614	552	559	643	-	-	664	-	-
Manganese (Mn)	µg/L (ppb)	0.5	2.2	3.3	129	-	-	0.5	-	-
Mercury (Hg)	µg/L (ppb)	<0.02	<0.02	<0.02	<0.02	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.06	<0.06	<0.06	<0.06	-	-	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	0.3	0.23	0.28	0.4	-	-	0.35	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	645	447	594	464	-	-	653	-	-
Selenium (Se)	µg/L (ppb)	<0.1	<0.1	<0.8	<0.1	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	200	300	400	600	-	-	200	-	-
Silver (Ag)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-
Sodium (Na)	µg/L (ppb)	902	620	811	717	-	-	951	-	-
Strontium (Sr)	µg/L (ppb)	8.9	8	8.7	9.9	-	-	8.3	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	2.6	3.5	4.8	1.1	-	-	4	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	3.1	1	1.3	1	-	-	<0.8	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		25-May-02	25-May-02	25-May-02	25-May-02	25-May-02	25-May-02	25-May-02	25-May-02	25-May-02
		6 m	7 m	8 m	8 m duplicate	9 m	10 m	11 m	12 m	13 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	9.98	9.01	7.78	-	5.45	3.65	1.96	1.23	0.2
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	2.5	2.8	-	-	3.3	3.6	3.8	3.9	4.2
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	6.2	6.2	-	-	-	6.1	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	18.1	18.3	-	-	-	20.3	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	7	7	-	-	-	7	-
Hardness, Total	mg/L (ppm)	-	-	6	7	-	-	-	7	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	9	9	-	-	-	10	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	<3	<3	-	-	-	<3	-
Turbidity	NTU	-	-	<0.1	0.11	-	-	-	0.23	-
Calcium (Ca)	mg/L (ppm)	-	-	1.4	1.54	-	-	-	1.76	-
Magnesium (Mg)	mg/L (ppm)	-	-	0.64	0.66	-	-	-	0.74	-
Potassium (K)	mg/L (ppm)	-	-	0.49	0.65	-	-	-	0.65	-
Sodium (Na)	mg/L (ppm)	-	-	0.7	0.9	-	-	-	0.9	-
Bicarbonate	mg/L (ppm)	-	-	9	9	-	-	-	9	-
Carbonate	mg/L (ppm)	-	-	<5	<5	-	-	-	<5	-
Chloride	mg/L (ppm)	-	-	<1	<1	-	-	-	<1	-
Fluoride	mg/L (ppm)	-	-	<0.05	<0.05	-	-	-	<0.05	-
Sulphate	mg/L (ppm)	-	-	1.02	1.02	-	-	-	1	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	0.034	0.035	-	-	-	0.038	-
Nitrate	mg/L (ppm)	-	-	0.036	0.036	-	-	-	0.104	-
Nitrite	mg/L (ppm)	-	-	<0.002	<0.002	-	-	-	<0.002	-
Nitrate + Nitrite	mg/L (ppm)	-	-	0.036	0.036	-	-	-	0.104	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	<0.001	0.005	-	-	-	0.005	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	3.7	3.9	-	-	-	3.5	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	3.8	4	-	-	-	4.6	-
Antimony (Sb)	µg/L (ppb)	-	-	0.1	0.12	-	-	-	0.2	-
Arsenic (As)	µg/L (ppb)	-	-	0.12	0.12	-	-	-	0.13	-
Barium (Ba)	µg/L (ppb)	-	-	2.6	2.66	-	-	-	4.17	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	<0.2	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	<0.03	-	-	-	<0.03	-
Boron (B)	µg/L (ppb)	-	-	1	1	-	-	-	<1	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	1,340	1,380	-	-	-	1,560	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.06	<0.06	-	-	-	0.06	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	0.8	-
Copper (Cu)	µg/L (ppb)	-	-	0.6	0.7	-	-	-	<0.6	-
Iron (Fe)	µg/L (ppb)	-	-	9	9	-	-	-	85	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	<0.1	-
Magnesium (Mg)	µg/L (ppb)	-	-	636	639	-	-	-	723	-
Manganese (Mn)	µg/L (ppb)	-	-	4.2	4.3	-	-	-	251	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	<0.02	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	<0.06	-	-	-	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	0.29	0.29	-	-	-	0.66	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	481	493	-	-	-	510	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	200	200	-	-	-	500	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		25-May-02	25-May-02	25-May-02	25-May-02	25-May-02	25-May-02	25-May-02	25-May-02	25-May-02
		6 m	7 m	8 m	8 m duplicate	9 m	10 m	11 m	12 m	13 m
Silver (Ag)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	<0.1	-
Sodium (Na)	µg/L (ppb)	-	-	713	725	-	-	-	709	-
Strontium (Sr)	µg/L (ppb)	-	-	8.5	8.6	-	-	-	9.7	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	3.3	3.4	-	-	-	0.7	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	<0.8	<0.8	-	-	-	<0.8	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	2.9	3	-	-	-	2.7	-
Antimony (Sb)	µg/L (ppb)	-	-	0.12	0.13	-	-	-	0.24	-
Arsenic (As)	µg/L (ppb)	-	-	0.13	0.13	-	-	-	0.12	-
Barium (Ba)	µg/L (ppb)	-	-	2.35	2.57	-	-	-	3.21	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	<0.2	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	<0.03	-	-	-	<0.03	-
Boron (B)	µg/L (ppb)	-	-	1	1	-	-	-	<1	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	1,400	1,540	-	-	-	1,760	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.06	<0.06	-	-	-	0.08	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	0.4	-
Copper (Cu)	µg/L (ppb)	-	-	0.8	0.9	-	-	-	0.6	-
Iron (Fe)	µg/L (ppb)	-	-	<5	<5	-	-	-	5	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	<0.1	-
Magnesium (Mg)	µg/L (ppb)	-	-	642	659	-	-	-	741	-
Manganese (Mn)	µg/L (ppb)	-	-	1.3	1.8	-	-	-	152	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	<0.02	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	<0.06	-	-	-	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	0.29	0.34	-	-	-	0.53	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	493	647	-	-	-	655	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	300	300	-	-	-	600	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	<0.1	-
Sodium (Na)	µg/L (ppb)	-	-	723	939	-	-	-	906	-
Strontium (Sr)	µg/L (ppb)	-	-	8.2	8.5	-	-	-	9.3	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	4.2	5.7	-	-	-	0.9	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	<0.8	<0.8	-	-	-	0.9	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		4-Jul-02	5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02
		1 m	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m
Field Measured										
pH	pH Units	-	-	8.1	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	13.9	14.2	12.7	12.6	12.7	12.6	12.6	12.6
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	11.2	11.2	11.2	11.3	11.2	11.2	11.3	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	11.4	11.3	11.2	11.2	11.2	11.2	11.2	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	11	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	4.5	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	12	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	<10	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	13.4	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	<0.5	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	<1	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	<1	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	<0.1	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	<0.2	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	<0.3	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	<0.3	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	<20	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	<1	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	<1	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	<1	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<2	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<50	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	<8	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.1	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	1,100	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<5	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.5	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	<5	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	25	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	<0.5	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	<20	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	440	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	3	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.05	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<5	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	<8	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	<100	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	530	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	<1	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		4-Jul-02	5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02
		1 m	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m
Sodium (Na)	µg/L (ppb)	-	-	550	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	7	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	0.1	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	<20	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	4	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.1	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	<5	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	54	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03
		1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	8 m duplicate
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	18.2	13.97	12.82	12.61	11.93	11.48	11.03	10.64	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	0.3	0.9	1.2	1.5	1.8	2.1	2.2	2.4	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	6.4	-	-	-	-	6.4	6.4
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	15.7	-	-	-	-	16.4	16.2
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	7	-	-	-	-	7	8
Hardness, Total	mg/L (ppm)	-	-	5	-	-	-	-	5	5
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	9	-	-	-	-	7	8
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	<3	-	-	-	-	<3	<3
Turbidity	NTU	-	-	<0.1	-	-	-	-	<0.1	<0.1
Calcium (Ca)	mg/L (ppm)	-	-	1.1	-	-	-	-	1.2	1.2
Magnesium (Mg)	mg/L (ppm)	-	-	0.5	-	-	-	-	0.5	0.5
Potassium (K)	mg/L (ppm)	-	-	0.8	-	-	-	-	0.5	0.5
Sodium (Na)	mg/L (ppm)	-	-	1	-	-	-	-	0.7	0.7
Bicarbonate	mg/L (ppm)	-	-	9	-	-	-	-	9	9
Carbonate	mg/L (ppm)	-	-	<5	-	-	-	-	<5	<5
Chloride	mg/L (ppm)	-	-	<1	-	-	-	-	<1	<1
Fluoride	mg/L (ppm)	-	-	<0.05	-	-	-	-	<0.005	<0.05
Sulphate	mg/L (ppm)	-	-	0.9	-	-	-	-	0.91	0.9
Nutrients										
Ammonia	mg/L (ppm)	-	-	0.012	-	-	-	-	0.01	0.01
Nitrate	mg/L (ppm)	-	-	<0.006	-	-	-	-	<0.006	<0.006
Nitrite	mg/L (ppm)	-	-	<0.002	-	-	-	-	<0.002	<0.002
Nitrate + Nitrite	mg/L (ppm)	-	-	<0.006	-	-	-	-	<0.006	<0.006
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	0.003	-	-	-	-	0.003	0.004
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	2.9	-	-	-	-	3	2.9
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	7.3	-	-	-	-	6.6	6.6
Antimony (Sb)	µg/L (ppb)	-	-	0.16	-	-	-	-	0.13	0.13
Arsenic (As)	µg/L (ppb)	-	-	0.07	-	-	-	-	0.06	0.06
Barium (Ba)	µg/L (ppb)	-	-	1.65	-	-	-	-	1.92	1.91
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	-	<0.2	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	-	-	-	-	<0.03	<0.03
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	-	2	2
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	971	-	-	-	-	1,010	1,020
Chromium (Cr)	µg/L (ppb)	-	-	<0.06	-	-	-	-	<0.06	<0.06
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	-	-	<0.6	-	-	-	-	1.6	1.7
Iron (Fe)	µg/L (ppb)	-	-	11	-	-	-	-	12	17
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	-	-	0.7	-	-	-	-	0.7	0.7
Magnesium (Mg)	µg/L (ppb)	-	-	423	-	-	-	-	436	432
Manganese (Mn)	µg/L (ppb)	-	-	0.6	-	-	-	-	2	2
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	-	<0.02	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	-	-	-	-	<0.06	<0.06
Nickel (Ni)	µg/L (ppb)	-	-	<0.06	-	-	-	-	0.17	0.16
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	327	-	-	-	-	329	326
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-		
Silicon (Si)	µg/L (ppb)	-	-	200	-	-	-	-	300	200

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03
		1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	8 m duplicate
Silver (Ag)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	<0.1
Sodium (Na)	µg/L (ppb)	-	-	532	-	-	-	-	524	516
Strontium (Sr)	µg/L (ppb)	-	-	6.1	-	-	-	-	6.3	6.7
Thallium (Tl)	µg/L (ppb)	-	-	0.7	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	3.2	4.4
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	1.2	-	-	-	-	<0.8	<0.8
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	5.9	-	-	-	-	5.9	6.2
Antimony (Sb)	µg/L (ppb)	-	-	0.15	-	-	-	-	0.19	0.16
Arsenic (As)	µg/L (ppb)	-	-	0.07	-	-	-	-	0.07	0.05
Barium (Ba)	µg/L (ppb)	-	-	1.61	-	-	-	-	1.88	1.97
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	-	<0.2	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	-	-	-	-	<0.03	<0.03
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	-	2	3
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	1,000	-	-	-	-	1,080	1,070
Chromium (Cr)	µg/L (ppb)	-	-	<0.06	-	-	-	-	<0.06	<0.06
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	-	-	<0.6	-	-	-	-	1	1.3
Iron (Fe)	µg/L (ppb)	-	-	<5	-	-	-	-	<5	<5
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	-	-	0.7	-	-	-	-	0.7	0.7
Magnesium (Mg)	µg/L (ppb)	-	-	423	-	-	-	-	428	428
Manganese (Mn)	µg/L (ppb)	-	-	0.2	-	-	-	-	1.1	1.1
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	-	<0.02	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	-	-	-	-	<0.06	<0.06
Nickel (Ni)	µg/L (ppb)	-	-	0.07	-	-	-	-	0.25	0.18
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	329	-	-	-	-	337	325
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	200	-	-	-	-	300	300
Silver (Ag)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	<0.1
Sodium (Na)	µg/L (ppb)	-	-	551	-	-	-	-	545	531
Strontium (Sr)	µg/L (ppb)	-	-	6	-	-	-	-	6.4	6.7
Thallium (Tl)	µg/L (ppb)	-	-	2.3	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	2.5	7
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	4.2	-	-	-	-	3	1.8

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03
		9 m	10 m	11 m	12 m	13 m	1 m	2 m	3 m	4 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	8.99	7.54	6.62	4.94	-	19.17	16.14	13.51	12.7
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	2.6	2.9	3.1	3.3	3.5	0.2	0.8	1.3	1.6
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	6.3	-	-	-	6.2	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	17.1	-	-	-	16.4	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	8	-	-	-	7	-
Hardness, Total	mg/L (ppm)	-	-	-	5	-	-	-	6	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	8	-	-	-	8	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	<3	-	-	-	<3	-
Turbidity	NTU	-	-	-	<0.1	-	-	-	<0.1	-
Calcium (Ca)	mg/L (ppm)	-	-	-	1.3	-	-	-	1.4	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	0.5	-	-	-	0.6	-
Potassium (K)	mg/L (ppm)	-	-	-	0.5	-	-	-	0.6	-
Sodium (Na)	mg/L (ppm)	-	-	-	0.6	-	-	-	0.9	-
Bicarbonate	mg/L (ppm)	-	-	-	9	-	-	-	9	-
Carbonate	mg/L (ppm)	-	-	-	<5	-	-	-	<5	-
Chloride	mg/L (ppm)	-	-	-	<1	-	-	-	<1	-
Fluoride	mg/L (ppm)	-	-	-	<0.05	-	-	-	<0.05	-
Sulphate	mg/L (ppm)	-	-	-	0.94	-	-	-	1.04	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	0.019	-	-	-	0.013	-
Nitrate	mg/L (ppm)	-	-	-	0.045	-	-	-	<0.006	-
Nitrite	mg/L (ppm)	-	-	-	<0.002	-	-	-	<0.002	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	0.046	-	-	-	<0.006	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	0.003	-	-	-	0.005	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	2.7	-	-	-	3.5	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	6.8	-	-	-	8.1	-
Antimony (Sb)	µg/L (ppb)	-	-	-	0.1	-	-	-	0.23	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.05	-	-	-	0.17	-
Barium (Ba)	µg/L (ppb)	-	-	-	2.69	-	-	-	1.95	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	-	-	-	<0.03	-
Boron (B)	µg/L (ppb)	-	-	-	2	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,130	-	-	-	1,170	-
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.06	-	-	-	<0.06	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	-	<0.6	3.69	-	-	<0.6	-
Iron (Fe)	µg/L (ppb)	-	-	-	25	-	-	-	9	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	-	0.7	-	-	-	0.9	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	453	-	-	-	509	-
Manganese (Mn)	µg/L (ppb)	-	-	-	22.5	-	-	-	0.6	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	-	-	-	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	-	0.23	-	-	-	0.18	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	340	-	-	-	412	-
Selenium (Se)	µg/L (ppb)	-	-	-	0.1	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-		-	-	-		-
Silicon (Si)	µg/L (ppb)	-	-	-	400	-	-	-	200	-
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	-	-	-	<0.1	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03
		9 m	10 m	11 m	12 m	13 m	1 m	2 m	3 m	4 m
Sodium (Na)	µg/L (ppb)	-	-	-	516	-	-	-	580	-
Strontium (Sr)	µg/L (ppb)	-	-	-	7.4	-	-	-	7.4	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	0.3	-	-	-	0.6	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	-	<0.8	-	-	-	1.9	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	5.8	-	-	-	6.7	-
Antimony (Sb)	µg/L (ppb)	-	-	-	0.1	-	-	-	0.09	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.05	-	-	-	0.13	-
Barium (Ba)	µg/L (ppb)	-	-	-	2.64	-	-	-	1.89	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	-	-	-	<0.03	-
Boron (B)	µg/L (ppb)	-	-	-	2	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,130	-	-	-	1,160	-
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.06	-	-	-	<0.06	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	-	<0.6	-	-	-	<0.6	-
Iron (Fe)	µg/L (ppb)	-	-	-	11	-	-	-	<5	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	-	0.7	-	-	-	0.9	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	451	-	-	-	517	-
Manganese (Mn)	µg/L (ppb)	-	-	-	20.2	-	-	-	0.2	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	-	-	-	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	-	0.29	-	-	-	0.27	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	337	-	-	-	412	-
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	400	-	-	-	200	-
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	-	-	-	<0.1	-
Sodium (Na)	µg/L (ppb)	-	-	-	532	-	-	-	598	-
Strontium (Sr)	µg/L (ppb)	-	-	-	7.4	-	-	-	7.3	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	2.6	-	-	-	1.5	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	-	1.5	-	-	-	3.1	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03
		5 m	6 m	7 m	8 m	8 m duplicate	9 m	10 m	11 m	12 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	12.02	11.28	10.6	9.62	-	7.99	6.64	5.68	3.9
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	1.8	2.1	2.3	2.5	-	2.8	3	3.3	3.5
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	6.3	6.2	-	-	-	6.3
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	16.5	16.3	-	-	-	17.3
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	7	7	-	-	-	7
Hardness, Total	mg/L (ppm)	-	-	-	6	6	-	-	-	6
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	8	8	-	-	-	8
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	<3	<3	-	-	-	<3
Turbidity	NTU	-	-	-	<0.1	<0.1	-	-	-	<0.1
Calcium (Ca)	mg/L (ppm)	-	-	-	1.3	1.3	-	-	-	1.4
Magnesium (Mg)	mg/L (ppm)	-	-	-	0.6	0.6	-	-	-	0.6
Potassium (K)	mg/L (ppm)	-	-	-	0.5	0.5	-	-	-	0.5
Sodium (Na)	mg/L (ppm)	-	-	-	0.6	0.6	-	-	-	0.6
Bicarbonate	mg/L (ppm)	-	-	-	9	9	-	-	-	9
Carbonate	mg/L (ppm)	-	-	-	<5	<5	-	-	-	<5
Chloride	mg/L (ppm)	-	-	-	<1	<1	-	-	-	<1
Fluoride	mg/L (ppm)	-	-	-	<0.05	<0.05	-	-	-	<0.05
Sulphate	mg/L (ppm)	-	-	-	0.98	0.99	-	-	-	1.02
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	0.011	0.014	-	-	-	<0.005
Nitrate	mg/L (ppm)	-	-	-	0.02	0.009	-	-	-	0.081
Nitrite	mg/L (ppm)	-	-	-	0.005	<0.002	-	-	-	<0.002
Nitrate + Nitrite	mg/L (ppm)	-	-	-	0.025	0.009	-	-	-	0.081
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	0.004	0.004	-	-	-	0.006
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	3.3	3.1	-	-	-	2.9
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	7.3	7.1	-	-	-	7.7
Antimony (Sb)	µg/L (ppb)	-	-	-	0.24	0.09	-	-	-	0.17
Arsenic (As)	µg/L (ppb)	-	-	-	0.11	0.11	-	-	-	0.11
Barium (Ba)	µg/L (ppb)	-	-	-	2.32	2.37	-	-	-	3.25
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	<0.2	-	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	<0.03	-	-	-	<0.03
Boron (B)	µg/L (ppb)	-	-	-	2	2	-	-	-	2
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	<0.05	-	-	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	-	1,140	1,180	-	-	-	1,230
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.06	<0.06	-	-	-	<0.06
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	<0.1	-	-	-	<0.1
Copper (Cu)	µg/L (ppb)	-	-	-	<0.6	0.7	-	-	-	<0.6
Iron (Fe)	µg/L (ppb)	-	-	-	15	14	-	-	-	29
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	<0.05	-	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	0.8	0.9	-	-	-	0.8
Magnesium (Mg)	µg/L (ppb)	-	-	-	500	507	-	-	-	526
Manganese (Mn)	µg/L (ppb)	-	-	-	3.2	3.2	-	-	-	42.2
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	<0.02	-	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	<0.06	-	-	-	<0.06
Nickel (Ni)	µg/L (ppb)	-	-	-	0.17	0.18	-	-	-	0.29
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	403	401	-	-	-	407
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	<0.1	-	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	200	200	-	-	-	400

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03
		5 m	6 m	7 m	8 m	8 m duplicate	9 m	10 m	11 m	12 m
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	<0.1	-	-	-	<0.1
Sodium (Na)	µg/L (ppb)	-	-	-	550	555	-	-	-	540
Strontium (Sr)	µg/L (ppb)	-	-	-	7.5	7.6	-	-	-	8.1
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	
Tin (Sn)	µg/L (ppb)	-	-	-	2	4.4	-	-	-	0.5
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	<0.05	-	-	-	<0.05
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	<0.05	-	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	-	<0.8	<0.8	-	-	-	<0.8
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	6.3	6.6	-	-	-	6.4
Antimony (Sb)	µg/L (ppb)	-	-	-	0.25	0.26	-	-	-	0.09
Arsenic (As)	µg/L (ppb)	-	-	-	0.12	0.12	-	-	-	0.11
Barium (Ba)	µg/L (ppb)	-	-	-	2.38	2.35	-	-	-	3.23
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	<0.2	-	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	<0.03	-	-	-	<0.03
Boron (B)	µg/L (ppb)	-	-	-	2	2	-	-	-	2
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	<0.05	-	-	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	-	1,180	1,200	-	-	-	1,280
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.06	<0.06	-	-	-	<0.06
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	<0.1	-	-	-	<0.1
Copper (Cu)	µg/L (ppb)	-	-	-	1.1	0.8	-	-	-	<0.6
Iron (Fe)	µg/L (ppb)	-	-	-	6	6	-	-	-	8
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	<0.05	-	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	0.8	0.8	-	-	-	0.8
Magnesium (Mg)	µg/L (ppb)	-	-	-	505	514	-	-	-	526
Manganese (Mn)	µg/L (ppb)	-	-	-	1.8	1.7	-	-	-	38.8
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	<0.02	-	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	<0.06	-	-	-	<0.06
Nickel (Ni)	µg/L (ppb)	-	-	-	0.2	0.27	-	-	-	0.38
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	415	413	-	-	-	410
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	<0.1	-	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	200	200	-	-	-	400
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	<0.1	-	-	-	<0.1
Sodium (Na)	µg/L (ppb)	-	-	-	557	576	-	-	-	557
Strontium (Sr)	µg/L (ppb)	-	-	-	7.5	7.7	-	-	-	8.2
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	4.5	3.2	-	-	-	0.6
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	<0.05	-	-	-	<0.05
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	<0.05	-	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	-	1.7	2.5	-	-	-	2.7

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03
		13 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	1.87	19.36	16.86	14.1	12.64	11.98	11.22	10.29	8.97
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3.7	0.2	0.8	1.3	1.7	2	2.2	2.4	2.6
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	6.4	-	-	-	-	6.3
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	18	-	-	-	-	16.7
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	7	-	-	-	-	7
Hardness, Total	mg/L (ppm)	-	-	-	6	-	-	-	-	5
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	8	-	-	-	-	7
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	3	-	-	-	-	<3
Turbidity	NTU	-	-	-	<0.1	-	-	-	-	<0.1
Calcium (Ca)	mg/L (ppm)	-	-	-	1.3	-	-	-	-	1.2
Magnesium (Mg)	mg/L (ppm)	-	-	-	0.6	-	-	-	-	0.5
Potassium (K)	mg/L (ppm)	-	-	-	0.6	-	-	-	-	0.5
Sodium (Na)	mg/L (ppm)	-	-	-	0.8	-	-	-	-	0.7
Bicarbonate	mg/L (ppm)	-	-	-	9	-	-	-	-	9
Carbonate	mg/L (ppm)	-	-	-	<5	-	-	-	-	<5
Chloride	mg/L (ppm)	-	-	-	<1	-	-	-	-	<1
Fluoride	mg/L (ppm)	-	-	-	<0.05	-	-	-	-	<0.05
Sulphate	mg/L (ppm)	-	-	-	1.03	-	-	-	-	0.94
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	0.014	-	-	-	-	0.015
Nitrate	mg/L (ppm)	-	-	-	0.042	-	-	-	-	0.02
Nitrite	mg/L (ppm)	-	-	-	<0.002	-	-	-	-	<0.002
Nitrate + Nitrite	mg/L (ppm)	-	-	-	0.042	-	-	-	-	0.022
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	<0.001	-	-	-	-	<0.001
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	3.5	-	-	-	-	3.1
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	8.3	-	-	-	-	7.5
Antimony (Sb)	µg/L (ppb)	-	-	-	0.05	-	-	-	-	0.05
Arsenic (As)	µg/L (ppb)	-	-	-	0.12	-	-	-	-	0.1
Barium (Ba)	µg/L (ppb)	-	-	-	2.04	-	-	-	-	2.36
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	-	-	-	-	<0.03
Boron (B)	µg/L (ppb)	-	-	-	2	-	-	-	-	2
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	-	1,230	-	-	-	-	1,160
Chromium (Cr)	µg/L (ppb)	-	-	-	0.07	-	-	-	-	<0.06
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Copper (Cu)	µg/L (ppb)	-	-	-	15.3	-	-	-	-	0.8
Iron (Fe)	µg/L (ppb)	-	-	-	7	-	-	-	-	10
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Magnesium (Mg)	µg/L (ppb)	-	-	-	556	-	-	-	-	509
Manganese (Mn)	µg/L (ppb)	-	-	-	0.5	-	-	-	-	27
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	-	-	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	-	-	-	-	<0.06
Nickel (Ni)	µg/L (ppb)	-	-	-	0.17	-	-	-	-	0.12
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	468	-	-	-	-	437
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	200	-	-	-	-	200
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03
		13 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m
Sodium (Na)	µg/L (ppb)	-	-	-	632	-	-	-	-	571
Strontium (Sr)	µg/L (ppb)	-	-	-	7.9	-	-	-	-	7.7
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	7.2	-	-	-	-	2.3
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	-	1.5	-	-	-	-	<0.8
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	7	-	-	-	-	6.4
Antimony (Sb)	µg/L (ppb)	-	-	-	0.05	-	-	-	-	0.04
Arsenic (As)	µg/L (ppb)	-	-	-	0.13	-	-	-	-	0.1
Barium (Ba)	µg/L (ppb)	-	-	-	2.04	-	-	-	-	2.36
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	-	-	-	-	<0.03
Boron (B)	µg/L (ppb)	-	-	-	2	-	-	-	-	2
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	-	1,200	-	-	-	-	1,170
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.06	-	-	-	-	0.07
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Copper (Cu)	µg/L (ppb)	-	-	-	16.7	-	-	-	-	1.9
Iron (Fe)	µg/L (ppb)	-	-	-	<5	-	-	-	-	<5
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Magnesium (Mg)	µg/L (ppb)	-	-	-	548	-	-	-	-	508
Manganese (Mn)	µg/L (ppb)	-	-	-	0.1	-	-	-	-	1.4
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	-	-	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	-	-	-	-	<0.06
Nickel (Ni)	µg/L (ppb)	-	-	-	0.015	-	-	-	-	0.15
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	450	-	-	-	-	435
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	200	-	-	-	-	300
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Sodium (Na)	µg/L (ppb)	-	-	-	621	-	-	-	-	561
Strontium (Sr)	µg/L (ppb)	-	-	-	7.9	-	-	-	-	7.6
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	17.4	-	-	-	-	105
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	-	2.2	-	-	-	-	1

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	13-Aug-03	13-Aug-03	13-Aug-03
		8 m duplicate	9 m	10 m	11 m	12 m	13 m	0 m	1 m	2 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [a]	µS/cm	-	-	-	-	-	-	11.1	11	11
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	7.34	5.94	4.59	-	0.94	9.02	9.02	9.02
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	2.9	3.1	3.3	-	3.8	14.4	14.4	14.4
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	6.3	-	-	-	-	-	7	-	-
Conductivity [a]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	17.5	-	-	-	-	-	13.5	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	7	-	-	-	-	-	<5	-	-
Hardness, Total	mg/L (ppm)	5	-	-	-	-	-	4	-	-
Total Dissolved Solids (TDS) [b]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	8	-	-	-	-	-	3	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	<3	-	-	-	-	-	-	-	-
Turbidity	NTU	<0.1	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	1.2	-	-	-	-	-	1	-	-
Magnesium (Mg)	mg/L (ppm)	0.5	-	-	-	-	-	0.4	-	-
Potassium (K)	mg/L (ppm)	0.6	-	-	-	-	-	0.4	-	-
Sodium (Na)	mg/L (ppm)	0.7	-	-	-	-	-	<1	-	-
Bicarbonate	mg/L (ppm)	9	-	-	-	-	-	<5	-	-
Carbonate	mg/L (ppm)	<5	-	-	-	-	-	<5	-	-
Chloride	mg/L (ppm)	<1	-	-	-	-	-	<1	-	-
Fluoride	mg/L (ppm)	<0.05	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	0.92	-	-	-	-	-	0.77	-	-
Nutrients										
Ammonia	mg/L (ppm)	0.015	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	0.025	-	-	-	-	-	<0.006	-	-
Nitrite	mg/L (ppm)	<0.002	-	-	-	-	-	<0.002	-	-
Nitrate + Nitrite	mg/L (ppm)	0.026	-	-	-	-	-	<0.006	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	<0.001	-	-	-	-	-	0.006	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	3.1	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	7.4	-	-	-	8.1	-	13.7	-	-
Antimony (Sb)	µg/L (ppb)	0.05	-	-	-	0.04	-	0.14	-	-
Arsenic (As)	µg/L (ppb)	0.09	-	-	-	0.09	-	0.18	-	-
Barium (Ba)	µg/L (ppb)	2.34	-	-	-	3.65	-	2.03	-	-
Beryllium (Be)	µg/L (ppb)	<0.2	-	-	-	<2	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	<0.03	-	-	-	<0.03	-	-	-	-
Boron (B)	µg/L (ppb)	2	-	-	-	2	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	<0.05	-	-	-	<0.05	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	1,160	-	-	-	1,370	-	1,010	-	-
Chromium (Cr)	µg/L (ppb)	<0.06	-	-	-	<0.06	-	<0.06	-	-
Cobalt (Co)	µg/L (ppb)	<0.1	-	-	-	0.2	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	1	-	-	-	<0.6	-	0.8	-	-
Iron (Fe)	µg/L (ppb)	10	-	-	-	34	-	23	-	-
Lead (Pb)	µg/L (ppb)	<0.05	-	-	-	<0.05	-	0.13	-	-
Lithium (Li)	µg/L (ppb)	<0.1	-	-	-	<0.1	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	512	-	-	-	546	-	497	-	-
Manganese (Mn)	µg/L (ppb)	2.7	-	-	-	90.9	-	3.8	-	-
Mercury (Hg)	µg/L (ppb)	<0.02	-	-	-	<0.02	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.06	-	-	-	<0.06	-	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	0.13	-	-	-	0.32	-	0.26	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	434	-	-	-	447	-	390	-	-
Selenium (Se)	µg/L (ppb)	<0.1	-	-	-	<0.1	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	200	-	-	-	400	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	13-Aug-03	13-Aug-03	13-Aug-03
		8 m duplicate	9 m	10 m	11 m	12 m	13 m	0 m	1 m	2 m
Silver (Ag)	µg/L (ppb)	<0.1	-	-	-	<0.1	-	<0.1	-	-
Sodium (Na)	µg/L (ppb)	572	-	-	-	569	-	586	-	-
Strontium (Sr)	µg/L (ppb)	7.6	-	-	-	8.7	-	6.4	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	3	-	-	-	1.3	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	-	-	-	<0.05	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	<0.05	-	-	-	<0.05	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	<0.8	-	-	-	<0.8	-	6.3	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	6.3	-	-	-	6.5	-	-	-	-
Antimony (Sb)	µg/L (ppb)	0.05	-	-	-	0.06	-	-	-	-
Arsenic (As)	µg/L (ppb)	1	-	-	-	0.09	-	-	-	-
Barium (Ba)	µg/L (ppb)	2.35	-	-	-	3.6	-	-	-	-
Beryllium (Be)	µg/L (ppb)	<0.2	-	-	-	<0.2	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	<0.03	-	-	-	<0.03	-	-	-	-
Boron (B)	µg/L (ppb)	2	-	-	-	2	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	<0.05	-	-	-	<0.05	-	-	-	-
Calcium (Ca)	µg/L (ppb)	1,170	-	-	-	1,340	-	-	-	-
Chromium (Cr)	µg/L (ppb)	<0.06	-	-	-	<0.06	-	-	-	-
Cobalt (Co)	µg/L (ppb)	<0.1	-	-	-	0.1	-	-	-	-
Copper (Cu)	µg/L (ppb)	1.9	-	-	-	<0.6	-	-	-	-
Iron (Fe)	µg/L (ppb)	<5	-	-	-	9	-	-	-	-
Lead (Pb)	µg/L (ppb)	<0.05	-	-	-	<0.05	-	-	-	-
Lithium (Li)	µg/L (ppb)	<0.1	-	-	-	<0.1	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	505	-	-	-	544	-	-	-	-
Manganese (Mn)	µg/L (ppb)	1.4	-	-	-	72.8	-	-	-	-
Mercury (Hg)	µg/L (ppb)	<0.02	-	-	-	<0.02	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.06	-	-	-	<0.06	-	-	-	-
Nickel (Ni)	µg/L (ppb)	0.13	-	-	-	0.28	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	426	-	-	-	451	-	-	-	-
Selenium (Se)	µg/L (ppb)	<0.1	-	-	-	<0.1	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	200	-	-	-	400	-	-	-	-
Silver (Ag)	µg/L (ppb)	<0.1	-	-	-	<0.1	-	-	-	-
Sodium (Na)	µg/L (ppb)	567	-	-	-	573	-	-	-	-
Strontium (Sr)	µg/L (ppb)	7.5	-	-	-	8.8	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	7	-	-	-	3.1	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	-	-	-	<0.05	-	-	-	-
Vanadium (V)	µg/L (ppb)	<0.05	-	-	-	<0.05	-	-	-	-
Zinc (Zn)	µg/L (ppb)	<0.8	-	-	-	<0.8	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03
		3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	11	11	11.1	11.1	11.1	11.1	11.1	11.1	11.1
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	9.05	9.07	9.06	9.06	9.02	9.02	9.03	9.04	9.06
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	6.8	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	12.6	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	<5	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	4	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	4	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	1	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	0.4	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	0.4	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	<1	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	<5	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	<5	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	1	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	<0.006	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	<0.002	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	<0.006	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	0.003	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	7.3	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	0.06	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	0.13	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	1.72	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	<0.2	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	2	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	930	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	<0.06	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	<0.6	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	15	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	480	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	3.3	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	<0.02	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	<0.06	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	0.18	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	350	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03
		3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	489	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	6.2	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	<0.8	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		13-Aug-03	13-Aug-03	13-Aug-03	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04
		12 m	13 m	14 m	1 m	2 m	3 m	4 m	5 m	6 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	11.1	11.1	11.1	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	9.08	9	9.02	18.8	16	14.7	14.4	13.9	13.3
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	14.4	14.4	14.4	0.2	0.7	1	1.3	1.5	1.7
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	6.8	-	-	6.8	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	13.8	-	-	16	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	<5	-	-	6	-	-	-
Hardness, Total	mg/L (ppm)	-	-	4	-	-	5	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	3	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	7	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	<3	-	-	-
Turbidity	NTU	-	-	-	-	-	<0.1	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	1	-	-	1.1	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	0.4	-	-	0.5	-	-	-
Potassium (K)	mg/L (ppm)	-	-	0.4	-	-	0.4	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	<1	-	-	<1	-	-	-
Bicarbonate	mg/L (ppm)	-	-	<5	-	-	7	-	-	-
Carbonate	mg/L (ppm)	-	-	<5	-	-	<5	-	-	-
Chloride	mg/L (ppm)	-	-	<1	-	-	<1	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	<0.05	-	-	-
Sulphate	mg/L (ppm)	-	-	0.46	-	-	0.9	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	0.013	-	-	-
Nitrate	mg/L (ppm)	-	-	<0.006	-	-	0.085	-	-	-
Nitrite	mg/L (ppm)	-	-	<0.002	-	-	0.002	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	<0.006	-	-	0.088	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	0.003	-	-	0.002	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	3	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	3	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	7.4	-	-	5.3	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	0.09	-	-	0.25	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.13	-	-	0.14	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	1.69	-	-	1.92	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	<0.2	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	<0.03	-	-	-
Boron (B)	µg/L (ppb)	-	-	2	-	-	2	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	-	<0.05	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	930	-	-	1,140	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.06	-	-	<0.06	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	<0.1	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	<0.6	-	-	311	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	16	-	-	6	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	<0.05	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	0.9	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	475	-	-	537	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	3.2	-	-	1	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	<0.02	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	-	-	<0.06	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	0.18	-	-	0.25	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	350	-	-	420	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	<0.1	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	100	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	-	-	<0.1	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		13-Aug-03	13-Aug-03	13-Aug-03	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04
		12 m	13 m	14 m	1 m	2 m	3 m	4 m	5 m	6 m
Sodium (Na)	µg/L (ppb)	-	-	483	-	-	584	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	6.1	-	-	7.4	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	5.9	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	<0.05	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	<0.05	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	<0.8	-	-	2.8	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	4	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	0.36	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	0.15	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	1.72	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	<0.2	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	<0.03	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	3	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	<0.05	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	1,420	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	0.07	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	<0.1	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	72.5	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	<5	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	<0.05	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	0.8	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	563	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	0.4	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	<0.02	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	<0.06	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	0.27	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	450	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	<0.1	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	200	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	<0.1	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	875	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	8	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	1.2	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	<0.05	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	<0.05	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	3.2	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	12-Mar-04
		7 m	8 m	8 m duplicate	9 m	10 m	11 m	12 m	13 m	1 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	12.6	11.8	-	9.6	9.3	7.6	6.7	4.6	19.7
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	2	2.1	-	2.5	2.5	2.9	3	3.4	0.2
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	6.5	6.5	-	-	-	6.6	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	15	15	-	-	-	15	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	<5	<5	-	-	-	<5	-	-
Hardness, Total	mg/L (ppm)	-	5	5	-	-	-	5	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	3	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	3	-	-	-	3	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	<3	<3	-	-	-	<3	-	-
Turbidity	NTU	-	<0.1	<0.1	-	-	-	<0.1	-	-
Calcium (Ca)	mg/L (ppm)	-	1.2	1.2	-	-	-	1.2	-	-
Magnesium (Mg)	mg/L (ppm)	-	0.5	0.5	-	-	-	0.5	-	-
Potassium (K)	mg/L (ppm)	-	0.5	0.4	-	-	-	0.5	-	-
Sodium (Na)	mg/L (ppm)	-	<1	<1	-	-	-	<1	-	-
Bicarbonate	mg/L (ppm)	-	5	<5	-	-	-	<5	-	-
Carbonate	mg/L (ppm)	-	<5	<5	-	-	-	<5	-	-
Chloride	mg/L (ppm)	-	<1	<1	-	-	-	<1	-	-
Fluoride	mg/L (ppm)	-	<0.05	<0.05	-	-	-	<0.05	-	-
Sulphate	mg/L (ppm)	-	0.9	0.9	-	-	-	0.9	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	0.013	0.015	-	-	-	0.012	-	-
Nitrate	mg/L (ppm)	-	0.018	0.017	-	-	-	<0.006	-	-
Nitrite	mg/L (ppm)	-	0.002	<0.002	-	-	-	<0.002	-	-
Nitrate + Nitrite	mg/L (ppm)	-	0.02	0.019	-	-	-	0.007	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	0.001	<0.001	-	-	-	0.002	-	-
Organics										-
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	3	3	-	-	-	4	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	3	3	-	-	-	8	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	5.1	5.3	-	-	-	5.3	-	-
Antimony (Sb)	µg/L (ppb)	-	0.23	0.31	-	-	-	0.16	-	-
Arsenic (As)	µg/L (ppb)	-	0.13	0.13	-	-	-	0.14	-	-
Barium (Ba)	µg/L (ppb)	-	2.19	2.1	-	-	-	1.92	-	-
Beryllium (Be)	µg/L (ppb)	-	<0.2	<0.2	-	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	<0.03	<0.03	-	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	-	2	2	-	-	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	1,160	1,130	-	-	-	1,120	-	-
Chromium (Cr)	µg/L (ppb)	-	<0.06	<0.06	-	-	-	0.07	-	-
Cobalt (Co)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	2.3	<0.6	-	-	-	<0.6	-	-
Iron (Fe)	µg/L (ppb)	-	7	8	-	-	-	6	-	-
Lead (Pb)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	0.8	0.8	-	-	-	0.8	-	-
Magnesium (Mg)	µg/L (ppb)	-	539	522	-	-	-	530	-	-
Manganese (Mn)	µg/L (ppb)	-	2.2	2.1	-	-	-	1.3	-	-
Mercury (Hg)	µg/L (ppb)	-	<0.02	<0.02	-	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	<0.06	<0.06	-	-	-	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	-	0.2	0.19	-	-	-	0.18	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	430	420	-	-	-	420	-	-
Selenium (Se)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	200	200	-	-	-	200	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	12-Mar-04
		7 m	8 m	8 m duplicate	9 m	10 m	11 m	12 m	13 m	1 m
Silver (Ag)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	<0.1	-	-
Sodium (Na)	µg/L (ppb)	-	578	550	-	-	-	575	-	-
Strontium (Sr)	µg/L (ppb)	-	7.5	7.5	-	-	-	7.3	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	2	2.3	-	-	-	3.3	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	<0.8	<0.8	-	-	-	<0.8	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	3.9	4.1	-	-	-	4.1	-	-
Antimony (Sb)	µg/L (ppb)	-	0.26	0.25	-	-	-	0.26	-	-
Arsenic (As)	µg/L (ppb)	-	0.13	0.14	-	-	-	0.14	-	-
Barium (Ba)	µg/L (ppb)	-	1.98	1.58	-	-	-	1.68	-	-
Beryllium (Be)	µg/L (ppb)	-	<0.2	<0.2	-	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	<0.03	<0.03	-	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	-	2	2	-	-	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	1,240	1,250	-	-	-	1,170	-	-
Chromium (Cr)	µg/L (ppb)	-	<0.06	0.06	-	-	-	0.07	-	-
Cobalt (Co)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	3.9	2.7	-	-	-	1.3	-	-
Iron (Fe)	µg/L (ppb)	-	<5	<5	-	-	-	<5	-	-
Lead (Pb)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	0.8	0.7	-	-	-	0.7	-	-
Magnesium (Mg)	µg/L (ppb)	-	530	530	-	-	-	540	-	-
Manganese (Mn)	µg/L (ppb)	-	0.9	0.6	-	-	-	0.4	-	-
Mercury (Hg)	µg/L (ppb)	-	<0.02	<0.02	-	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	<0.06	<0.06	-	-	-	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	-	0.19	0.2	-	-	-	0.18	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	430	450	-	-	-	430	-	-
Selenium (Se)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	200	200	-	-	-	200	-	-
Silver (Ag)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	<0.1	-	-
Sodium (Na)	µg/L (ppb)	-	598	847	-	-	-	591	-	-
Strontium (Sr)	µg/L (ppb)	-	7.7	7.4	-	-	-	7.4	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	2.3	0.4	-	-	-	0.4	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	1.3	0.9	-	-	-	1.2	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04
		2 m	3 m	4 m	5 m	6 m	7 m	8 m	8 m duplicate	9 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	16	13.4	12.9	12.1	11.5	10.3	9.6	-	7.9
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	0.6	1.1	1.5	1.8	2	2.3	2.5	-	2.7
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	6.7	-	-	-	-	6.7	6.7	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	18	-	-	-	-	16	16	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	<5	-	-	-	-	<5	<5	-
Hardness, Total	mg/L (ppm)	-	6	-	-	-	-	5	5	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	4	-	-	-	-	3	3	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	<3	-	-	-	-	<3	<3	-
Turbidity	NTU	-	0.2	-	-	-	-	0.2	0.2	-
Calcium (Ca)	mg/L (ppm)	-	1.5	-	-	-	-	1.3	1.3	-
Magnesium (Mg)	mg/L (ppm)	-	0.5	-	-	-	-	0.5	0.5	-
Potassium (K)	mg/L (ppm)	-	0.5	-	-	-	-	0.4	0.5	-
Sodium (Na)	mg/L (ppm)	-	<1	-	-	-	-	<1	<1	-
Bicarbonate	mg/L (ppm)	-	6	-	-	-	-	6	5	-
Carbonate	mg/L (ppm)	-	<5	-	-	-	-	<5	<5	-
Chloride	mg/L (ppm)	-	<1	-	-	-	-	<1	<1	-
Fluoride	mg/L (ppm)	-	<0.05	-	-	-	-	<0.05	<0.05	-
Sulphate	mg/L (ppm)	-	1.1	-	-	-	-	1	1	-
Nutrients										
Ammonia	mg/L (ppm)	-	0.021	-	-	-	-	0.019	0.019	-
Nitrate	mg/L (ppm)	-	<0.006	-	-	-	-	<0.006	<0.006	-
Nitrite	mg/L (ppm)	-	<0.002	-	-	-	-	<0.002	0.002	-
Nitrate + Nitrite	mg/L (ppm)	-	<0.006	-	-	-	-	<0.006	<0.006	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	0.007	-	-	-	-	0.007	0.008	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	4	-	-	-	-	4	4	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	4	-	-	-	-	4	4	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	5.6	-	-	-	-	5.2	5.1	-
Antimony (Sb)	µg/L (ppb)	-	0.11	-	-	-	-	0.23	0.12	-
Arsenic (As)	µg/L (ppb)	-	0.15	-	-	-	-	0.14	0.14	-
Barium (Ba)	µg/L (ppb)	-	2.19	-	-	-	-	2.04	2.05	-
Beryllium (Be)	µg/L (ppb)	-	<0.2	-	-	-	-	<0.2	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	<0.03	-	-	-	-	<0.03	<0.03	-
Boron (B)	µg/L (ppb)	-	3	-	-	-	-	2	2	-
Cadmium (Cd)	µg/L (ppb)	-	<0.05	-	-	-	-	<0.05	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	1,270	-	-	-	-	1,200	1,190	-
Chromium (Cr)	µg/L (ppb)	-	<0.06	-	-	-	-	<0.06	<0.06	-
Cobalt (Co)	µg/L (ppb)	-	<0.1	-	-	-	-	<0.1	<0.1	-
Copper (Cu)	µg/L (ppb)	-	<0.6	-	-	-	-	<0.6	<0.6	-
Iron (Fe)	µg/L (ppb)	-	7	-	-	-	-	<5	6	-
Lead (Pb)	µg/L (ppb)	-	<0.05	-	-	-	-	<0.05	<0.05	-
Lithium (Li)	µg/L (ppb)	-	1	-	-	-	-	0.9	0.9	-
Magnesium (Mg)	µg/L (ppb)	-	612	-	-	-	-	569	561	-
Manganese (Mn)	µg/L (ppb)	-	0.7	-	-	-	-	0.9	0.9	-
Mercury (Hg)	µg/L (ppb)	-	<0.02	-	-	-	-	<0.02	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	<0.06	-	-	-	-	<0.06	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	0.22	-	-	-	-	0.2	0.19	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	470	-	-	-	-	440	430	-
Selenium (Se)	µg/L (ppb)	-	<0.1	-	-	-	-	<0.1	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	100	-	-	-	-	100	100	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04
		2 m	3 m	4 m	5 m	6 m	7 m	8 m	8 m duplicate	9 m
Silver (Ag)	µg/L (ppb)	-	<0.1	-	-	-	-	<0.1	<0.1	-
Sodium (Na)	µg/L (ppb)	-	678	-	-	-	-	626	608	-
Strontium (Sr)	µg/L (ppb)	-	8.4	-	-	-	-	7.9	7.9	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	3	-	-	-	-	1.7	2	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	<0.05	-	-	-	-	<0.05	<0.05	-
Vanadium (V)	µg/L (ppb)	-	<0.05	-	-	-	-	<0.05	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	<0.8	-	-	-	-	<0.8	<0.8	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	4.4	-	-	-	-	4.5	4.3	-
Antimony (Sb)	µg/L (ppb)	-	0.23	-	-	-	-	0.11	0.13	-
Arsenic (As)	µg/L (ppb)	-	0.15	-	-	-	-	0.14	0.14	-
Barium (Ba)	µg/L (ppb)	-	2.17	-	-	-	-	2.02	2.08	-
Beryllium (Be)	µg/L (ppb)	-	<0.2	-	-	-	-	<0.2	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	<0.03	-	-	-	-	<0.03	<0.03	-
Boron (B)	µg/L (ppb)	-	2	-	-	-	-	2	2	-
Cadmium (Cd)	µg/L (ppb)	-	<0.05	-	-	-	-	<0.05	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	1,270	-	-	-	-	1,210	1,210	-
Chromium (Cr)	µg/L (ppb)	-	<0.06	-	-	-	-	<0.06	<0.06	-
Cobalt (Co)	µg/L (ppb)	-	<0.1	-	-	-	-	<0.1	<0.1	-
Copper (Cu)	µg/L (ppb)	-	0.6	-	-	-	-	<0.6	<0.6	-
Iron (Fe)	µg/L (ppb)	-	<5	-	-	-	-	6	<5	-
Lead (Pb)	µg/L (ppb)	-	<0.05	-	-	-	-	<0.05	<0.05	-
Lithium (Li)	µg/L (ppb)	-	1	-	-	-	-	0.8	0.9	-
Magnesium (Mg)	µg/L (ppb)	-	604	-	-	-	-	566	568	-
Manganese (Mn)	µg/L (ppb)	-	0.3	-	-	-	-	0.3	0.3	-
Mercury (Hg)	µg/L (ppb)	-	<0.02	-	-	-	-	<0.02	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	<0.06	-	-	-	-	<0.06	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	0.26	-	-	-	-	0.27	0.26	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	470	-	-	-	-	430	430	-
Selenium (Se)	µg/L (ppb)	-	<0.1	-	-	-	-	<0.1	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	100	-	-	-	-	100	100	-
Silver (Ag)	µg/L (ppb)	-	<0.1	-	-	-	-	<0.1	<0.1	-
Sodium (Na)	µg/L (ppb)	-	671	-	-	-	-	616	617	-
Strontium (Sr)	µg/L (ppb)	-	8.2	-	-	-	-	7.7	7.9	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	3	-	-	-	-	1.3	1.2	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	<0.05	-	-	-	-	<0.05	<0.05	-
Vanadium (V)	µg/L (ppb)	-	<0.05	-	-	-	-	<0.05	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	2.1	-	-	-	-	2.2	2.6	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04
		10 m	11 m	12 m	13 m	1 m	2 m	3m	4m	5m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	6.7	5.4	4.2	1.9	17.7	16.1	13.8	12.7	11.2
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	2.9	3.2	3.4	3.7	0.2	0.7	1.5	1.8	2.1
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	6.6	-	-	-	6.6	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	15	-	-	-	18	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	<5	-	-	-	<5	-	-
Hardness, Total	mg/L (ppm)	-	-	5	-	-	-	6	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	3	-	-	-	5	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	<3	-	-	-	<3	-	-
Turbidity	NTU	-	-	<0.1	-	-	-	0.1	-	-
Calcium (Ca)	mg/L (ppm)	-	-	1.2	-	-	-	1.4	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	0.5	-	-	-	0.6	-	-
Potassium (K)	mg/L (ppm)	-	-	0.5	-	-	-	0.5	-	-
Sodium (Na)	mg/L (ppm)	-	-	<1	-	-	-	<1	-	-
Bicarbonate	mg/L (ppm)	-	-	<5	-	-	-	<5	-	-
Carbonate	mg/L (ppm)	-	-	<5	-	-	-	<5	-	-
Chloride	mg/L (ppm)	-	-	<1	-	-	-	<1	-	-
Fluoride	mg/L (ppm)	-	-	<0.05	-	-	-	<0.05	-	-
Sulphate	mg/L (ppm)	-	-	0.9	-	-	-	1.1	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	0.012	-	-	-	0.009	-	-
Nitrate	mg/L (ppm)	-	-	<0.006	-	-	-	0.342	-	-
Nitrite	mg/L (ppm)	-	-	<0.002	-	-	-	<0.002	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	0.007	-	-	-	0.342	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	0.002	-	-	-	<0.001	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	4	-	-	-	3	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	8	-	-	-	4	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	5.3	-	-	-	4.2	-	-
Antimony (Sb)	µg/L (ppb)	-	-	0.16	-	-	-	0.04	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.14	-	-	-	0.17	-	-
Barium (Ba)	µg/L (ppb)	-	-	1.92	-	-	-	2.27	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	-	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	1,120	-	-	-	1,260	-	-
Chromium (Cr)	µg/L (ppb)	-	-	0.07	-	-	-	0.17	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	<0.6	-	-	-	1	-	-
Iron (Fe)	µg/L (ppb)	-	-	6	-	-	-	7	-	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	0.8	-	-	-	0.9	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	530	-	-	-	472	-	-
Manganese (Mn)	µg/L (ppb)	-	-	1.3	-	-	-	0.6	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	-	-	-	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	-	-	0.18	-	-	-	0.22	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	420	-	-	-	460	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	200	-	-	-	100	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04
		10 m	11 m	12 m	13 m	1 m	2 m	3m	4m	5m
Sodium (Na)	µg/L (ppb)	-	-	575	-	-	-	436	-	-
Strontium (Sr)	µg/L (ppb)	-	-	7.3	-	-	-	8.7	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	3.3	-	-	-	2.4	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	<0.8	-	-	-	1.2	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	4.1	-	-	-	4	-	-
Antimony (Sb)	µg/L (ppb)	-	-	0.26	-	-	-	0.03	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.14	-	-	-	0.16	-	-
Barium (Ba)	µg/L (ppb)	-	-	1.68	-	-	-	2.33	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	-	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	3	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	1,170	-	-	-	1,280	-	-
Chromium (Cr)	µg/L (ppb)	-	-	0.07	-	-	-	0.16	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	1.3	-	-	-	2.6	-	-
Iron (Fe)	µg/L (ppb)	-	-	<5	-	-	-	6	-	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	0.7	-	-	-	0.9	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	540	-	-	-	476	-	-
Manganese (Mn)	µg/L (ppb)	-	-	0.4	-	-	-	0.3	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	-	-	-	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	-	-	0.18	-	-	-	0.28	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	430	-	-	-	460	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	200	-	-	-	100	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	-	-
Sodium (Na)	µg/L (ppb)	-	-	591	-	-	-	544	-	-
Strontium (Sr)	µg/L (ppb)	-	-	7.4	-	-	-	8.8	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	0.4	-	-	-	5.1	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	1.2	-	-	-	9	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04
		6 m	7 m	8 m	8 m duplicate	9 m	10 m	11 m	12 m	13 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	9.6	8.3	7.4	-	6.3	5.5	4.3	2.3	0.9
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	2.4	2.6	2.8	2.5	3	3.2	3.4	3.7	3.9
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	6.6	6.6	-	-	-	6.5	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	16	16	-	-	-	19	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	<5	<5	-	-	-	5	-
Hardness, Total	mg/L (ppm)	-	-	6	5	-	-	-	7	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	4	3	-	-	-	7	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	3	<3	-	-	-	<3	-
Turbidity	NTU	-	-	<0.1	<0.1	-	-	-	0.1	-
Calcium (Ca)	mg/L (ppm)	-	-	1.3	1.3	-	-	-	1.7	-
Magnesium (Mg)	mg/L (ppm)	-	-	0.6	0.5	-	-	-	0.7	-
Potassium (K)	mg/L (ppm)	-	-	0.4	0.4	-	-	-	0.4	-
Sodium (Na)	mg/L (ppm)	-	-	<1	<1	-	-	-	<1	-
Bicarbonate	mg/L (ppm)	-	-	5	<5	-	-	-	7	-
Carbonate	mg/L (ppm)	-	-	<5	<5	-	-	-	<5	-
Chloride	mg/L (ppm)	-	-	<1	<1	-	-	-	<1	-
Fluoride	mg/L (ppm)	-	-	<0.05	<0.05	-	-	-	<0.05	-
Sulphate	mg/L (ppm)	-	-	1	1	-	-	-	1	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	<0.005	<0.005	-	-	-	<0.005	-
Nitrate	mg/L (ppm)	-	-	0.102	0.058	-	-	-	0.112	-
Nitrite	mg/L (ppm)	-	-	<0.002	<0.002	-	-	-	<0.002	-
Nitrate + Nitrite	mg/L (ppm)	-	-	0.103	0.059	-	-	-	0.112	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	0.002	0.002	-	-	-	0.002	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	3	3	-	-	-	3	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	3	4	-	-	-	3	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	4.1	4.3	-	-	-	4.3	-
Antimony (Sb)	µg/L (ppb)	-	-	0.09	<0.03	-	-	-	0.04	-
Arsenic (As)	µg/L (ppb)	-	-	0.11	0.11	-	-	-	0.12	-
Barium (Ba)	µg/L (ppb)	-	-	2.06	2.12	-	-	-	3.73	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	<0.2	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	<0.03	-	-	-	<0.03	-
Boron (B)	µg/L (ppb)	-	-	2	2	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	1,100	1,080	-	-	-	1,350	-
Chromium (Cr)	µg/L (ppb)	-	-	0.19	0.12	-	-	-	0.13	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	0.3	-
Copper (Cu)	µg/L (ppb)	-	-	1.2	<0.6	-	-	-	<0.6	-
Iron (Fe)	µg/L (ppb)	-	-	15	928	-	-	-	433	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	0.7	0.7	-	-	-	0.8	-
Magnesium (Mg)	µg/L (ppb)	-	-	465	463	-	-	-	559	-
Manganese (Mn)	µg/L (ppb)	-	-	2.6	2.5	-	-	-	134	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	<0.02	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	<0.06	-	-	-	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	0.19	0.21	-	-	-	0.41	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	390	370	-	-	-	430	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	200	200	-	-	-	500	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04
		6 m	7 m	8 m	8 m duplicate	9 m	10 m	11 m	12 m	13 m
Silver (Ag)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	<0.1	-
Sodium (Na)	µg/L (ppb)	-	-	443	443	-	-	-	486	-
Strontium (Sr)	µg/L (ppb)	-	-	7.1	7.2	-	-	-	9.1	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	2.6	3	-	-	-	0.5	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	<0.8	<0.8	-	-	-	1.9	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	3.5	3.7	-	-	-	3.2	-
Antimony (Sb)	µg/L (ppb)	-	-	0.04	<0.03	-	-	-	0.07	-
Arsenic (As)	µg/L (ppb)	-	-	0.12	0.12	-	-	-	0.12	-
Barium (Ba)	µg/L (ppb)	-	-	2.1	2.16	-	-	-	3.59	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	<0.2	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	<0.03	-	-	-	<0.03	-
Boron (B)	µg/L (ppb)	-	-	2	2	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	1,140	1,160	-	-	-	1,350	-
Chromium (Cr)	µg/L (ppb)	-	-	0.19	0.15	-	-	-	0.21	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	0.3	-
Copper (Cu)	µg/L (ppb)	-	-	5	2.9	-	-	-	0.6	-
Iron (Fe)	µg/L (ppb)	-	-	16	6	-	-	-	42	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	0.7	0.7	-	-	-	0.8	-
Magnesium (Mg)	µg/L (ppb)	-	-	470	472	-	-	-	550	-
Manganese (Mn)	µg/L (ppb)	-	-	1.4	1.5	-	-	-	119	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	<0.02	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	<0.06	-	-	-	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	0.21	0.25	-	-	-	0.41	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	390	400	-	-	-	410	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	200	200	-	-	-	500	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	<0.1	-
Sodium (Na)	µg/L (ppb)	-	-	451	461	-	-	-	484	-
Strontium (Sr)	µg/L (ppb)	-	-	7.1	7.5	-	-	-	8.9	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	10	3	-	-	-	1.3	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	1.2	3.9	-	-	-	0.9	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		6-May-04	6-May-04	6-May-04	6-May-04	6-May-04	6-May-04	6-May-04	6-May-04	6-May-04
		3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	9	9	9	8	9	9	9	11	10
Dissolved Oxygen (DO)	mg/L (ppm)	14.4	9.8	7.1	6.2	4.4	4.7	3.6	3.7	2.5
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	1.4	1.6	1.9	2.2	2.4	2.4	2.7	2.9	3.3
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		6-May-04	6-May-04	6-May-04	6-May-04	6-May-04	6-May-04	6-May-04	6-May-04	6-May-04
		3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1Outlet	K1	K1	K1	K1
		6-May-04	6-May-04	6-May-04	6-May-04	26-Jun-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04
		12 m	13 m	14 m	15 m	0 m	1 m	2 m	3 m	4 m
Field Measured										
pH	pH Units	-	-	-	-	6.4	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	12.33333333	-	-	-	-
Conductivity, Specific	µS/cm	11	13	50	18	-	12.9	12.9	12.9	12.8
Dissolved Oxygen (DO)	mg/L (ppm)	1.2	0.5	0.2	0.1	103.3	11.22	11.47	11.24	11.52
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3.6	3.8	4.2	4.5	17.80333333	8.3	7.2	6.5	6.2
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	8	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	6.08	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	23	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	27	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	<6	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	21.6	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	24	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	<2	-	-	-	-
Turbidity	NTU	-	-	-	-	2	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	0.5	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	<0.5	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	<0.5	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	2.9	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	33	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	<1	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	0.5	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	0.05	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	1.3	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	<0.1	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	<0.05	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	<0.05	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	<0.2	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	<0.02	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	12	-	-	-	-
Colour	TCU	-	-	-	-	30	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	<0.1	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	<0.002	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	4	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	4	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	<0.1	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	<20	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	0.4	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	<0.4	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	<5	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	<0.5	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	<10	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	<0.2	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	1,300	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	<0.9	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	<5	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	105	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	570	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	7.1	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	<500	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	<0.5	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	<0.6	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	<20	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	510	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	<10	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	96	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	<0.2	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1Outlet	K1	K1	K1	K1
		6-May-04	6-May-04	6-May-04	6-May-04	26-Jun-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04
		12 m	13 m	14 m	15 m	0 m	1 m	2 m	3 m	4 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	<2,000	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	0.2	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	5	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	17	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	<3	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	<4	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	990	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	<0.4	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	<2	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	65	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	430	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	4.1	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	<1	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	0.5	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	0.2	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	<5	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	400	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	<2	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	95	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	<1,000	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	<0.02	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	<0.5	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	<2	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04
		5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	15.7
Dissolved Oxygen (DO)	mg/L (ppm)	11.5	11.9	11.77	11.73	11.65	11.42	11.34	11.31	5.32
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	6	5.7	5.6	5.5	5.5	5.4	5.3	5.3	5.2
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04
		5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04
		1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	7.9	-	12.2	13	12.8	12.8	12.9	12.8	12.8
Dissolved Oxygen (DO)	mg/L (ppm)	12.48	12.76	12.74	11.63	11.88	11.93	11.35	11.48	11.98
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	9	6.4	6.2	6.2	6	5.9	5.9	5.8	5.6
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04	7-Jul-04
		1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		7-Jul-04	7-Jul-04	4-Aug-04	4-Aug-04	4-Aug-04	4-Aug-04	4-Aug-04	4-Aug-04	4-Aug-04
		10 m	11 m	0 m	0.5 m	1 m	2 m	3 m	4 m	5 m
Field Measured										
pH	pH Units	-	-	7.11	-	7.12	7.04	7.05	7.04	7.02
Conductivity [(a)]	µS/cm	-	-	10	-	-	-	-	-	-
Conductivity, Specific	µS/cm	12.8	18	12	-	12	12	12	12	12
Dissolved Oxygen (DO)	mg/L (ppm)	11.6	7.58	10.58	-	10.55	10.54	10.54	10.53	10.54
Dissolved Oxygen, saturation	%	-	-	103.8	-	103.1	103.1	103.1	103	103
Temperature	°C	5.5	5.5	14.58	-	14.44	14.41	14.35	14.34	14.31
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	8	8	8	8	8
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	5.69	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	14	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	<1	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	<6	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	<2	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	<2	-	-	-	-	-
Turbidity	NTU	-	-	-	1	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	0.6	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	<0.5	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	<0.5	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	1.1	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	<1	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	<1	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	1	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	0.07	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	1.6	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	<0.1	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	<0.05	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	<0.05	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	1.3	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	<0.02	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	13	-	-	-	-	-
Colour	TCU	-	-	-	15	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	<0.1	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	<0.002	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	3	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	<1	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	<0.1	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	<20	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	0.1	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	<0.4	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	<5	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.5	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	<10	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,700	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.9	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	<5	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	<50	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	0.1	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	930	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	4.9	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<500	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.5	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	10.1	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	<20	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	670	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	<10	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	145	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		7-Jul-04	7-Jul-04	4-Aug-04	4-Aug-04	4-Aug-04	4-Aug-04	4-Aug-04	4-Aug-04	4-Aug-04
		10 m	11 m	0 m	0.5 m	1 m	2 m	3 m	4 m	5 m
Sodium (Na)	µg/L (ppb)	-	-	-	<2,000	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	<2	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	14	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.2	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	<3	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	<4	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,200	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	0.5	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	<2	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	<20	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	0.26	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	580	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	1.2	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<1	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.3	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	2.9	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	11	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	440	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	<2	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	145	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	<1,000	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	0.07	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.5	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	5	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		4-Aug-04	4-Aug-04	4-Aug-04	4-Aug-04	4-Aug-04	4-Aug-04	4-Aug-04	4-Aug-04	4-Aug-04
		6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m	14 m
Field Measured										
pH	pH Units	7.05	7.07	7.07	7.09	7.07	7.05	7.07	7.07	7.07
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	12	12	-	12	12	12	12	12	12
Dissolved Oxygen (DO)	mg/L (ppm)	10.51	10.53	10.58	10.61	10.55	10.47	10.4	10.32	10.27
Dissolved Oxygen, saturation	%	102.5	102.3	102.1	101.4	100.6	99.5	98.6	98.1	97.1
Temperature	°C	14.15	14.04	-	13.27	13.12	13.02	12.92	12.82	12.82
Total Dissolved Solids (TDS)	mg/L (ppm)	8	8	8	8	8	8	8	8	8
Conventional Parameters and Major Ions										
pH	pH Units	-	-	5.67	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	16	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	<1	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	<6	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	28	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	<2	-	-	-	-	-	-
Turbidity	NTU	-	-	1	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	0.5	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	<0.5	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	<0.5	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	1	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	<1	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	<1	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	0.6	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	0.07	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	1.5	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	<0.1	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	<0.05	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	<0.05	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	0.5	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	<0.02	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	12	-	-	-	-	-	-
Colour	TCU	-	-	5	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	<0.1	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	<0.002	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	3	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	2	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	<0.1	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	<20	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	<0.1	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	<0.4	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	<5	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.5	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	<10	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.2	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	1,500	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.9	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	<5	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	<50	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	<0.1	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	910	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	4.6	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<500	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.5	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	7.2	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	<20	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	630	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	<10	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	129	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.2	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		4-Aug-04	4-Aug-04	4-Aug-04	4-Aug-04	4-Aug-04	4-Aug-04	4-Aug-04	4-Aug-04	4-Aug-04
		6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m	14 m
Sodium (Na)	µg/L (ppb)	-	-	<2,000	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.05	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	<0.1	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	<2	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	<10	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	<0.1	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.2	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	<3	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.1	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	<4	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	1,190	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	0.5	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.05	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	<2	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	<20	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	580	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	0.8	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<1	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.3	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	2.2	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	6	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	440	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	<2	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	137	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.05	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	<1,000	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	0.05	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	<0.5	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	4	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		4-Aug-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04
		15 m	0 m	1 m	2 m	3 m	4 m	4 m duplicate	5 m	6 m
Field Measured										
pH	pH Units	7.0	-	5.3	5.3	5.3	5.3	4.7	5.4	5.4
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	12	18	10	10	10	10	7	10	10
Dissolved Oxygen (DO)	mg/L (ppm)	9.58	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7
Dissolved Oxygen, saturation	%	89.5	89	89	89	89	89	89	89	89
Temperature	°C	12.64	4.5	7.2	7.2	7.2	7.2	7.3	7.2	7.2
Total Dissolved Solids (TDS)	mg/L (ppm)	8	-	7	7	7	7	7	7	7
Conventional Parameters and Major Ions										
pH	pH Units	5.62	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	15	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	6	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	<6	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	<2	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	<2	-	-	-	-	-	-	-	-
Turbidity	NTU	1	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	0.6	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	<0.5	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	<0.5	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	1	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	7	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	<1	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	0.6	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	0.06	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	1.4	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	<0.1	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	<0.05	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	<0.05	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	0.3	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	<0.02	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	10	-	-	-	-	-	-	-	-
Colour	TCU	5	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	<0.1	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	<0.002	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	3	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	2	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	<0.1	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	<20	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	<0.1	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	<0.4	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	<5	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	<0.5	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	<10	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	<0.2	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	1,300	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	<0.9	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	<0.1	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	<5	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	<50	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	<0.1	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	800	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	3.4	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	<500	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.5	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	5.5	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	<20	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	580	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	<10	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	109	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K1
		4-Aug-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04
		15 m	0 m	1 m	2 m	3 m	4 m	4 m duplicate	5 m	6 m
Silver (Ag)	µg/L (ppb)	<0.2	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	<2,000	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)		-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	<0.05	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	<0.1	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	<2	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	<10	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	<0.1	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	0.2	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	<3	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	<0.1	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	<4	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	<0.05	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	1,180	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	<0.4	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	<0.05	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	<2	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	<20	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	0.05	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	540	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	0.8	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	<1	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.3	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	1.8	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	<5	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	400	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	<2	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	124	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	<0.05	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	<1,000	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	0.03	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	<0.5	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	3	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K3
		12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	11-Jul-95
		7 m	8 m	9 m	10 m	11 m	12 m	13 m	14 m	1 m
Field Measured										
pH	pH Units	5.4	5.5	5.4	5.4	5.4	5.4	5.4	5.4	7.2
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	8.6
Conductivity, Specific	µS/cm	10	10	10	10	10	10	10	10	-
Dissolved Oxygen (DO)	mg/L (ppm)	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	-
Dissolved Oxygen, saturation	%	88	89	89	89	89	89	88	88	-
Temperature	°C	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	10.1
Total Dissolved Solids (TDS)	mg/L (ppm)	7	7	7	7	7	7	7	7	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	2.4
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K3
		12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	11-Jul-95
		7 m	8 m	9 m	10 m	11 m	12 m	13 m	14 m	1 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95
		2 m	3 m	4 m	5 m	6 m	Unknown	Unknown	Unknown	Unknown
Field Measured										
pH	pH Units	7.2	7.1	7.1	7.1	7.1	-	-	-	-
Conductivity [(a)]	µS/cm	8.6	8.6	8.6	8.6	8.6	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	10.1	10	10	10	10	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	2.9	3.2	3.2	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	3.7	3.5	3.7	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	<0.1	3	<0.1	-
Turbidity	NTU	17.6	17.5	17.2	17.9	12.4	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	<0.5	<0.5	<0.5	-
Fluoride	mg/L (ppm)	-	-	-	-	-	0.02	0.02	<0.02	-
Sulphate	mg/L (ppm)	-	-	-	-	-	<1	<1	<1	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	<0.005	<0.005	<0.005	-
Nitrate	mg/L (ppm)	-	-	-	-	-	<0.005	<0.005	<0.005	-
Nitrite	mg/L (ppm)	-	-	-	-	-	0.001	0.001	0.001	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	0.004	0.004	0.004	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	16
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.1
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.1
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	<10
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	<5
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	<100
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	<100
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.2
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	934
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	<15
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	<1
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	<10
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	<30
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	<1
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	<15
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	368
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	<5
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.05
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	<1
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	<1
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	<300
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	<2,000
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.5
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	62
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.1

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95	11-Jul-95
		2 m	3 m	4 m	5 m	6 m	Unknown	Unknown	Unknown	Unknown
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	<2,000
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	9
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	<100
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	<300
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	<100
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	<100
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.5
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	<30
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	<5
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	<5
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.1
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.1
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	<10
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	<5
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	<100
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	<100
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.2
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	915
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	<15
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	<1
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	<10
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	<30
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	<1
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	<15
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	346
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	<5
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.05
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	<1
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	<1
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	<300
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	<2,000
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.5
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	58
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.1
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	<2,000
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	9
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	<100
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	<300
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	<100
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	<100
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.5
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	<30
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	<5

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		11-Jul-95	11-Jul-95	27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95
		Unknown	Unknown	1 m	2 m	3 m	4 m	5 m	6 m	7 m
Field Measured										
pH	pH Units	-	-	6.9	7	7	6.9	6.9	6.9	6.9
Conductivity [(a)]	µS/cm	-	-	7.6	7.6	7.6	7.6	7.6	7.6	7.6
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	11.9	11.9	11.9	11.9	11.9	11.9	11.9
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	0	0	0	0	0	0	0
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	15	730	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	<0.1	<0.1	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	<0.1	<0.1	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	<10	<10	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	<5	<5	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	<100	<100	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	<100	<100	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	<0.2	<0.2	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	879	2,530	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	<15	<15	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	<1	<1	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	<10	<10	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	<30	<30	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	<1	<1	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	<15	<15	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	360	410	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	<5	<5	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	<0.05	<0.05	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	<1	<1	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	<1	<1	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	<300	<300	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	<2,000	<2,000	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	<0.5	<0.5	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	63	66	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	<0.1	<0.1	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		11-Jul-95	11-Jul-95	27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95
		Unknown	Unknown	1 m	2 m	3 m	4 m	5 m	6 m	7 m
Sodium (Na)	µg/L (ppb)	<2,000	<2,000	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	9	20	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	<100	<100	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	<300	<300	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	<100	<100	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	<100	<100	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.5	<0.5	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	<30	<30	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	<5	<5	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	5	<5	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	<0.1	<0.1	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	<0.1	<0.1	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	<10	<10	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	<5	<5	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	<100	<100	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	<100	<100	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	<0.2	<0.2	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	848	872	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	<15	<15	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	<1	<1	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	<10	<10	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	<30	<30	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	<1	<1	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	<15	<15	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	339	374	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	<5	<5	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	<0.05	<0.05	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	<1	<1	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	<1	<1	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	<300	<300	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	<2,000	<2,000	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	<0.5	<0.5	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	51	60	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	<0.1	<0.1	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	<2,000	<2,000	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	9	9	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	<100	<100	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	<300	<300	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	<100	<100	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	<100	<100	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.5	<0.5	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	<30	<30	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	<5	<5	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95	14-Sep-95	14-Sep-95	15-Sep-95	15-Sep-95	15-Sep-95
		Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	1 m	2 m	3 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	6.5	6.5	6.5
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	7.4	7.4	7.4
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	-	-	-	-	4.7	4.7	4.7
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	3.5	3.5	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	3.4	3.6	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	1	1	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	0	0	0
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	1	0.9	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	0.02	0.02	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	<1	<1	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	0.007	0.007	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	<0.005	<0.005	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	0.001	0.001	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.004	0.004	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	16	13	10	14	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	<0.1	<0.1	<0.1	<0.1	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	<0.1	<0.1	<0.1	<0.1	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	<10	<10	<10	<10	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<5	<5	<5	<5	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<100	<100	<100	<100	-	-	-
Boron (B)	µg/L (ppb)	-	-	<100	<100	<100	<100	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.2	<0.2	<0.2	<0.2	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	859	852	820	844	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<15	<15	<15	<15	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<1	<1	<1	<1	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	<10	<10	<10	<10	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	<30	<30	<30	<30	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	<1	<1	<1	<1	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	<15	<15	<15	<15	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	376	352	358	356	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	<5	<5	<5	<5	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<1	<1	<1	<1	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	<1	<1	<1	<1	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	<300	<300	<300	<300	-	-	-
Potassium (K)	µg/L (ppb)	-	-	<2,000	<2,000	<2,000	<2,000	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.5	<0.5	<0.5	<0.5	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	67	62	82	82	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	<0.1	<0.1	<0.1	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		27-Aug-95	27-Aug-95	27-Aug-95	27-Aug-95	14-Sep-95	14-Sep-95	15-Sep-95	15-Sep-95	15-Sep-95
		Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	1 m	2 m	3 m
Sodium (Na)	µg/L (ppb)	-	-	<2,000	<2,000	<2,000	<2,000	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	11	11	8	8	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	<100	<100	<100	<100	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	<300	<300	<300	<300	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	<100	<100	<100	<100	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	<100	<100	<100	<100	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.5	<0.5	<0.5	<0.5	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	<30	<30	<30	<30	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	<5	<5	<5	<5	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	<5	5	7	7	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	<0.1	<0.1	<0.1	<0.1	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	<0.1	<0.1	<0.1	<0.1	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	<10	<10	<10	<10	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<5	<5	<5	<5	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<100	<100	<100	<100	-	-	-
Boron (B)	µg/L (ppb)	-	-	<100	<100	<100	<100	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.2	<0.2	<0.2	<0.2	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	809	850	799	789	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<15	<15	<15	<15	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<1	<1	<1	<1	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	<10	<10	<10	<10	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	<30	<30	<30	<30	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	<1	<1	<1	<1	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	<15	<15	<15	<15	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	337	352	337	352	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	<5	<5	<5	<5	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<1	<1	<1	<1	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	<1	<1	<1	<1	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	<300	<300	<300	<300	-	-	-
Potassium (K)	µg/L (ppb)	-	-	<2,000	<2,000	<2,000	<2,000	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.5	<0.5	<0.5	<0.5	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	57	62	68	73	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	<0.1	<0.1	<0.1	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	<2,000	<2,000	<2,000	<2,000	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	11	9	8	8	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	<100	<100	<100	<100	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	<300	<300	<300	<300	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	<100	<100	<100	<100	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	<100	<100	<100	<100	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.5	<0.5	<0.5	<0.5	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	<30	<30	<30	<30	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	<5	<5	<5	<5	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		15-Sep-95	15-Sep-95	15-Sep-95	15-Sep-95	15-Sep-95	15-Sep-95	12-Apr-96	1-Jul-96	1-Jul-96
		4 m	5 m	6 m	7 m	Unknown	Unknown	0.5 m	1 m	1 m
Field Measured										
pH	pH Units	6.5	6.5	6.5	6.5	-	-	6.3	-	-
Conductivity [(a)]	µS/cm	7.4	7.4	7.4	7.4	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	4.7	4.7	4.7	4.7	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	5.8	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	3.4	3.4	6.7	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	17	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	<0.1	2	6	-	-
Turbidity	NTU	0	0	0	0	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	0.7	<0.5	1.2	-	-
Fluoride	mg/L (ppm)	-	-	-	-	0.03	0.03	0.05	-	-
Sulphate	mg/L (ppm)	-	-	-	-	1.2	1.3	2.1	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	0.005	0.006	0.02	-	-
Nitrate	mg/L (ppm)	-	-	-	-	<0.005	<0.005	<0.005	-	-
Nitrite	mg/L (ppm)	-	-	-	-	0.001	0.001	0.002	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	0.004	0.004	0.004	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	14	17	15
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	<0.1	<0.05	<0.05
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	0.2	0.1	0.1
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	<10	2.9	2.6
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	<5	<0.5	<0.5
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	<100	<0.5	<0.5
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	<100	2	2
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	<0.2	-0.05	-0.05
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	1,620	920	910
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	<15	<0.1	<0.1
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	<1	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	<10	1.4	0.5
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	<30	50	50
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	<1	0.07	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	<15	<1	<1
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	682	393	426
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	<5	3.9	3.6
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	<1	<0.05	<0.05
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	<1	<0.5	<0.5
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	<300	<300	<300
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	<2,000	<2,000	<2,000
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	<0.5	3	4
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	159	80	90
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	<0.1	<0.01	<0.01

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		15-Sep-95	15-Sep-95	15-Sep-95	15-Sep-95	15-Sep-95	15-Sep-95	12-Apr-96	1-Jul-96	1-Jul-96
		4 m	5 m	6 m	7 m	Unknown	Unknown	0.5 m	1 m	1 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	<2,000	<2,000	<2,000
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	10	8.2	13.3
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	<100	<0.05	<0.05
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	<300	0.8	0.5
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	<10	<10	<10
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	<100	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	<30	<0.1	<0.1
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	<5	2	<1
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		1-Jul-96	1-Jul-96	23-Aug-96	23-Aug-96	23-Aug-96	23-Aug-96	23-Aug-96	23-Aug-96	23-Aug-96
		1 m	5.5 m	1 m	1.5 m	2 m	3 m	4 m	5 m	5.5 m
Field Measured										
pH	pH Units	-	-	6.8	-	6.8	6.8	6.8	6.8	-
Conductivity [(a)]	µS/cm	-	-	8	-	8	8	8	8	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	12.3	-	12.3	12.2	12.2	12.2	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	3.7	-	-	-	-	4.2	-
Hardness, Total	mg/L (ppm)	-	-	3.9	-	-	-	-	3.9	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	<0.1	-	-	-	-	<0.1	-
Turbidity	NTU	-	-	0	-	0	0	0	0	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	<0.5	-	-	-	-	<0.5	-
Fluoride	mg/L (ppm)	-	-	0.04	-	-	-	-	0.04	-
Sulphate	mg/L (ppm)	-	-	<1	-	-	-	-	<1	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	0.06	-	-	-	-	0.01	-
Nitrate	mg/L (ppm)	-	-	<0.001	-	-	-	-	0.001	-
Nitrite	mg/L (ppm)	-	-	<0.005	-	-	-	-	<0.005	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	0.006	-	-	-	-	0.006	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	21	22	-	20	-	-	-	-	44
Antimony (Sb)	µg/L (ppb)	<0.05	<0.05	-	<0.05	-	-	-	-	<0.05
Arsenic (As)	µg/L (ppb)	0.1	0.1	-	0.06	-	-	-	-	0.1
Barium (Ba)	µg/L (ppb)	2.6	2.6	-	2.7	-	-	-	-	1.9
Beryllium (Be)	µg/L (ppb)	<0.5	<0.5	-	<0.5	-	-	-	-	<0.5
Bismuth (Bi)	µg/L (ppb)	<0.5	<0.5	-	<0.5	-	-	-	-	<0.5
Boron (B)	µg/L (ppb)	2	2	-	4	-	-	-	-	9
Cadmium (Cd)	µg/L (ppb)	-0.05	-0.05	-	<0.05	-	-	-	-	<0.05
Calcium (Ca)	µg/L (ppb)	910	870	-	880	-	-	-	-	950
Chromium (Cr)	µg/L (ppb)	<0.1	<0.1	-	<0.1	-	-	-	-	<0.1
Cobalt (Co)	µg/L (ppb)	<0.1	<0.1	-	<0.1	-	-	-	-	<0.1
Copper (Cu)	µg/L (ppb)	0.5	0.5	-	0.5	-	-	-	-	0.4
Iron (Fe)	µg/L (ppb)	50	30	-	20	-	-	-	-	20
Lead (Pb)	µg/L (ppb)	<0.05	0.07	-	<0.05	-	-	-	-	0.07
Lithium (Li)	µg/L (ppb)	<1	<1	-	3	-	-	-	-	6
Magnesium (Mg)	µg/L (ppb)	404	400	-	401	-	-	-	-	410
Manganese (Mn)	µg/L (ppb)	3.9	7.1	-	3.8	-	-	-	-	3.9
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.05	<0.05	-	<0.05	-	-	-	-	<0.05
Nickel (Ni)	µg/L (ppb)	<0.5	<0.5	-	1	-	-	-	-	0.2
Phosphorus (P)	µg/L (ppb)	<300	<300	-	<300	-	-	-	-	<300
Potassium (K)	µg/L (ppb)	<2,000	<2,000	-	<2,000	-	-	-	-	<2,000
Selenium (Se)	µg/L (ppb)	<1	<1	-	<0.01	-	-	-	-	<0.01
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	80	80	-	100	-	-	-	-	90
Silver (Ag)	µg/L (ppb)	<0.01	<0.01	-	<0.01	-	-	-	-	<0.01

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		1-Jul-96	1-Jul-96	23-Aug-96	23-Aug-96	23-Aug-96	23-Aug-96	23-Aug-96	23-Aug-96	23-Aug-96
		1 m	5.5 m	1 m	1.5 m	2 m	3 m	4 m	5 m	5.5 m
Sodium (Na)	µg/L (ppb)	<2,000	<2,000	-	<2,000	-	-	-	-	<2,000
Strontium (Sr)	µg/L (ppb)	11.3	10.3	-	5.9	-	-	-	-	5.2
Thallium (Tl)	µg/L (ppb)	<0.05	<0.05	-	<0.05	-	-	-	-	<0.05
Tin (Sn)	µg/L (ppb)	0.3	0.2	-	0.2	-	-	-	-	0.1
Titanium (Ti)	µg/L (ppb)	<10	<10	-	<10	-	-	-	-	<10
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	<0.1	<0.1	-	<0.1	-	-	-	-	<0.1
Zinc (Zn)	µg/L (ppb)	1	1	-	<1	-	-	-	-	<1
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		23-Aug-96	23-Aug-96	18-Sep-96	18-Sep-96	18-Sep-96	18-Sep-96	18-Sep-96	18-Sep-96	18-Sep-96
		6 m	7 m	1 m	1.5 m	2 m	3 m	4 m	5 m	5.5 m
Field Measured										
pH	pH Units	6.7	6.7	6.7	-	6.7	6.7	6.6	6.7	-
Conductivity [(a)]	µS/cm	8	8	8	-	8	8	8	8	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	10.7	-	10.6	10.6	10.6	10.6	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	12.2	12.2	10.8	-	10.8	10.8	10.8	10.8	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	3.8	-	-	-	-	4	-
Hardness, Total	mg/L (ppm)	-	-	3.5	-	-	-	-	3.7	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	2	-	-	-	-	1	-
Turbidity	NTU	0	0	0	-	0	0	0	0	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	<0.5	-	-	-	-	<0.5	-
Fluoride	mg/L (ppm)	-	-	<0.02	-	-	-	-	<0.02	-
Sulphate	mg/L (ppm)	-	-	<1	-	-	-	-	<1	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	<0.005	-	-	-	-	<0.005	-
Nitrate	mg/L (ppm)	-	-	0.001	-	-	-	-	0.001	-
Nitrite	mg/L (ppm)	-	-	<0.005	-	-	-	-	<0.005	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	0.005	-	-	-	-	0.005	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	22	-	-	-	-	18
Antimony (Sb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Arsenic (As)	µg/L (ppb)	-	-	-	0.1	-	-	-	-	0.1
Barium (Ba)	µg/L (ppb)	-	-	-	1.7	-	-	-	-	1.8
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.5	-	-	-	-	<0.5
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.5	-	-	-	-	<0.5
Boron (B)	µg/L (ppb)	-	-	-	4	-	-	-	-	4
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	-	890	-	-	-	-	930
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Copper (Cu)	µg/L (ppb)	-	-	-	0.4	-	-	-	-	0.4
Iron (Fe)	µg/L (ppb)	-	-	-	<10	-	-	-	-	10
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	2	-	-	-	-	2
Magnesium (Mg)	µg/L (ppb)	-	-	-	363	-	-	-	-	362
Manganese (Mn)	µg/L (ppb)	-	-	-	2.7	-	-	-	-	2.7
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Nickel (Ni)	µg/L (ppb)	-	-	-	0.2	-	-	-	-	0.2
Phosphorus (P)	µg/L (ppb)	-	-	-	<300	-	-	-	-	<300
Potassium (K)	µg/L (ppb)	-	-	-	<2,000	-	-	-	-	<2,000
Selenium (Se)	µg/L (ppb)	-	-	-	<1	-	-	-	-	<1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	110	-	-	-	-	100
Silver (Ag)	µg/L (ppb)	-	-	-	<0.01	-	-	-	-	<0.01

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		23-Aug-96	23-Aug-96	18-Sep-96	18-Sep-96	18-Sep-96	18-Sep-96	18-Sep-96	18-Sep-96	18-Sep-96
		6 m	7 m	1 m	1.5 m	2 m	3 m	4 m	5 m	5.5 m
Sodium (Na)	µg/L (ppb)	-	-	-	<2,000	-	-	-	-	<2,000
Strontium (Sr)	µg/L (ppb)	-	-	-	5	-	-	-	-	6
Thallium (Tl)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Tin (Sn)	µg/L (ppb)	-	-	-	0.1	-	-	-	-	0.1
Titanium (Ti)	µg/L (ppb)	-	-	-	<10	-	-	-	-	<10
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Zinc (Zn)	µg/L (ppb)	-	-	-	<1	-	-	-	-	<1
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		18-Sep-96	18-Sep-96	28-Nov-96	29-Nov-96	18-Jan-98	18-Jan-98	18-Jan-98	18-Jan-98	18-Jan-98
		6 m	6 m	0.5 m	0.5 m	0 m	1 m	2 m	2.5 m	3 m
Field Measured										
pH	pH Units	6.6	6.6	-	6.7	-	-	-	-	-
Conductivity [(a)]	µS/cm	8	8	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	10.6	10.5	-	-	-	-	-	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	10.8	10.7	-	-	0	0.1	2.5	3.3	3.6
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	6.4	-	6.3
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	16	-	13
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	4	-	-	-	5	-	4
Hardness, Total	mg/L (ppm)	-	-	-	5.3	-	-	5.2	-	4.4
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	12	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	<20	-	11
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	2	-	-	<1	-	<1
Turbidity	NTU	0	0	-	-	-	-	0.3	-	0.3
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	<0.5	<-	-	-	<0.5	-	<0.5
Fluoride	mg/L (ppm)	-	-	0.03	-	-	-	0.04	-	0.03
Sulphate	mg/L (ppm)	-	-	1	-	-	-	<1	-	<1
Nutrients										
Ammonia	mg/L (ppm)	-	-	0.009	-	-	-	0.016	-	0.02
Nitrate	mg/L (ppm)	-	-	<0.001	<-	-	-	<0.005	-	<0.005
Nitrite	mg/L (ppm)	-	-	<0.001	<-	-	-	<0.005	-	<0.005
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	0.003	-	-	-	<0.001	-	<0.001
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	6	-	-	-	9	-	6
Antimony (Sb)	µg/L (ppb)	-	-	<0.05	<-	-	-	<0.05	-	<0.05
Arsenic (As)	µg/L (ppb)	-	-	0.2	-	-	-	0.2	-	0.1
Barium (Ba)	µg/L (ppb)	-	-	2.5	-	-	-	2.27	-	1.8
Beryllium (Be)	µg/L (ppb)	-	-	<0.5	<-	-	-	<0.5	-	<0.5
Bismuth (Bi)	µg/L (ppb)	-	-	<0.5	<-	-	-	<0.5	-	<0.5
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	2	-	2
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	<-	-	-	<0.05	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	1,150	-	-	-	1,270	-	990
Chromium (Cr)	µg/L (ppb)	-	-	<0.5	<-	-	-	<0.5	-	<0.5
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	<-	-	-	<0.1	-	<0.1
Copper (Cu)	µg/L (ppb)	-	-	0.8	-	-	-	0.6	-	0.4
Iron (Fe)	µg/L (ppb)	-	-	<10	<-	-	-	<30	-	<30
Lead (Pb)	µg/L (ppb)	-	-	<0.05	<-	-	-	<0.05	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	<1	<-	-	-	<1	-	<1
Magnesium (Mg)	µg/L (ppb)	-	-	510	-	-	-	570	-	450
Manganese (Mn)	µg/L (ppb)	-	-	1.2	-	-	-	1.23	-	1.35
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	<0.01	-	<0.01
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.05	<-	-	-	<0.05	-	<0.05
Nickel (Ni)	µg/L (ppb)	-	-	0.2	-	-	-	0.3	-	0.2
Phosphorus (P)	µg/L (ppb)	-	-	<300	<-	-	-	<300	-	<300
Potassium (K)	µg/L (ppb)	-	-	<2,000	<-	-	-	460	-	350
Selenium (Se)	µg/L (ppb)	-	-	<1	<-	-	-	<1	-	<1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	120	-	-	-	160	-	130
Silver (Ag)	µg/L (ppb)	-	-	<0.01	<-	-	-	<0.01	-	<0.01

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		18-Sep-96	18-Sep-96	28-Nov-96	29-Nov-96	18-Jan-98	18-Jan-98	18-Jan-98	18-Jan-98	18-Jan-98
		6 m	6 m	0.5 m	0.5 m	0 m	1 m	2 m	2.5 m	3 m
Sodium (Na)	µg/L (ppb)	-	-	<2,000	<-	-	-	610	-	480
Strontium (Sr)	µg/L (ppb)	-	-	7.4	-	-	-	7.8	-	6.2
Thallium (Tl)	µg/L (ppb)	-	-	<0.05	<-	-	-	<0.05	-	<0.05
Tin (Sn)	µg/L (ppb)	-	-	<0.1	<-	-	-	<0.1	-	<0.1
Titanium (Ti)	µg/L (ppb)	-	-	<10	<-	-	-	<10	-	<10
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.01	<-	-	-	<0.01	-	<0.01
Vanadium (V)	µg/L (ppb)	-	-	<1	<-	-	-	<1	-	<1
Zinc (Zn)	µg/L (ppb)	-	-	2	-	-	-	<1	-	<1
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	6	-	5
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	<0.05
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	0.2	-	0.1
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	2.04	-	1.8
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	<0.5	-	<0.5
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	<0.5	-	<0.5
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	2	-	2
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	1,190	-	1,030
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	<0.5	-	<0.5
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	<0.1
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	0.5	-	0.5
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	<30	-	<30
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	<1	-	<1
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	530	-	440
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	0.23	-	0.44
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	<0.01	-	<0.01
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		18-Jan-98	18-Jan-98	18-Jan-98	18-Jan-98	18-Jan-98	18-Jan-98	18-Jan-98	18-Jan-98	18-Jan-98
		3.5 m	4 m	6 m	8 m	0 m	1 m	1.5 m	2 m	2.5 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	12.8	13.9	13.5	13.8	12.8
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3.9	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	6.2	6.3	6.1	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	12	13	14	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	4	4	4	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	4.45	4.46	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	11	-	<20	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	<1	-	<1	-	-	-	-	-
Turbidity	NTU	-	0.5	0.3	0.6	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	<0.5	<0.5	<0.5	-	-	-	-	-
Fluoride	mg/L (ppm)	-	0.03	0.03	0.03	-	-	-	-	-
Sulphate	mg/L (ppm)	-	1	<1	<1	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	0.015	<0.05	0.019	-	-	-	-	-
Nitrate	mg/L (ppm)	-	<0.005	-	0.02	-	-	-	-	-
Nitrite	mg/L (ppm)	-	<0.005	-	0.02	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	<0.001	<0.001	<0.001	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	7	8	7	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	<0.05	0.1	<0.05	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	0.1	1.96	0.1	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	1.78	<0.5	2.19	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	<0.5	<0.5	<0.5	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	<0.5	<0.5	<0.5	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	2	2	2	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	<0.05	<0.05	<0.05	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	1,010	1,360	1,080	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	<0.5	<0.5	<0.5	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	<0.1	<0.1	<0.1	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	0.4	0.5	0.5	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	<30	40	<30	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	<0.05	<0.05	<0.05	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	<1	<1	<1	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	410	450	470	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	1.7	3.07	6	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	<0.01	<0.01	<0.01	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	<0.05	<0.05	<0.05	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	0.2	0.2	0.2	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	<300	<300	<300	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	350	360	370	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	<1	<1	<1	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	140	160	170	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	<0.01	<0.01	<0.01	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		18-Jan-98	18-Jan-98	18-Jan-98	18-Jan-98	18-Jan-98	18-Jan-98	18-Jan-98	18-Jan-98	18-Jan-98
		3.5 m	4 m	6 m	8 m	0 m	1 m	1.5 m	2 m	2.5 m
Sodium (Na)	µg/L (ppb)	-	460	460	480	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	6.1	6.5	6.6	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	<0.05	<0.05	<0.05	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	<0.1	<0.1	<0.1	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	<10	<10	<10	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	<0.01	<0.01	<0.01	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	<1	<1	<1	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	<1	<1	1	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	5	5	5	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	<0.05	<0.05	<0.05	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	0.1	0.1	0.1	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	1.73	2.06	2.2	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	<0.5	<0.5	<0.5	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	<0.5	<0.5	<0.5	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	2	2	2	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	<0.05	<0.05	<0.05	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	1,010	1,030	1,050	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	<0.5	<0.5	<0.5	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	<0.1	<0.1	<0.1	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	0.5	0.4	0.4	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	<30	<30	<30	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	<0.05	<0.05	<0.05	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	<1	<1	<1	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	450	460	450	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	0.34	0.57	1.83	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	<0.01	<0.01	<0.01	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		18-Jan-98	18-Jan-98	Mar-98 [d]	Mar-98 [d]	Mar-98 [d]	Mar-98 [d]	16-Aug-98	16-Aug-98	16-Aug-98
		3 m	3.5 m	2 m	4 m	8 m	12 m	0 m	1 m	2 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [a]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	11.8	10.8	-	-	-	-	9.5	9.4	9.4
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	-	-	-	-	14.9	14.9	14.9
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	6.4	6.4	6.3	6.3	-	-	-
Conductivity [a]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	22	14	15	21	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	5	4	5	5	-	-	-
Hardness, Total	mg/L (ppm)	-	-	5.66	4.28	4.98	5.54	-	-	-
Total Dissolved Solids (TDS) [b]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	22	<10	14	13	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	<1	<1	<1	<1	-	-	-
Turbidity	NTU	-	-	0.2	0.2	0.4	0.5	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	0.8	0.5	<0.5	0.8	-	-	-
Fluoride	mg/L (ppm)	-	-	0.04	0.03	0.03	0.03	-	-	-
Sulphate	mg/L (ppm)	-	-	2	2	1	1	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	0.03	0.029	0.027	0.035	-	-	-
Nitrate	mg/L (ppm)	-	-	0.005	0.005	0.01	0.04	-	-	-
Nitrite	mg/L (ppm)	-	-	0.005	0.005	0.01	0.04	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	0.002	<0.001	0.001	0.002	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	8	9	8	7	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.2	0.1	0.1	0.1	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	2.56	2.31	3.02	3.52	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.5	<0.5	<0.5	<0.5	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.5	<0.5	<0.5	<0.5	-	-	-
Boron (B)	µg/L (ppb)	-	-	2	2	2	2	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	1,330	990	1,250	1,330	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.5	<0.5	<0.5	<0.5	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	<0.1	<0.1	<0.1	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	0.8	0.6	0.5	0.5	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	<30	<30	70	130	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	<1	<1	<1	<1	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	590	470	520	540	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	1	1.67	32.3	93.9	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.01	<0.01	<0.01	<0.01	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	0.3	0.2	0.3	0.4	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	<300	<300	<300	<300	-	-	-
Potassium (K)	µg/L (ppb)	-	-	510	400	410	420	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	<1	<1	<1	<1	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	170	150	240	370	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.01	<0.01	<0.01	<0.01	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		18-Jan-98	18-Jan-98	Mar-98 [d]	Mar-98 [d]	Mar-98 [d]	Mar-98 [d]	16-Aug-98	16-Aug-98	16-Aug-98
		3 m	3.5 m	2 m	4 m	8 m	12 m	0 m	1 m	2 m
Sodium (Na)	µg/L (ppb)	-	-	620	470	490	490	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	8.2	6.7	7.6	8.4	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	<0.1	<0.1	<0.1	<0.1	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	<10	<10	<10	<10	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.01	<0.01	<0.01	<0.01	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	<1	<1	<1	<1	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	14	7	6	4	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	7	6	5	4	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	0.06	<0.05	<0.05	0.08	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.2	0.1	0.1	0.1	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	2.53	2.2	2.92	3.41	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.5	<0.5	<0.5	<0.5	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.5	<0.5	<0.5	<0.5	-	-	-
Boron (B)	µg/L (ppb)	-	-	2	2	2	2	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	1,310	980	1,220	1,360	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.5	<0.5	<0.5	<0.5	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	<0.1	<0.1	<0.1	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	0.8	0.5	0.5	0.4	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	<30	<30	<30	<30	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	0.06	<0.05	<0.05	<0.05	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	1	<1	<1	<1	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	580	440	470	520	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	0.36	0.61	25.6	0.81	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.01	<0.01	<0.01	<0.01	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

[a] Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

[b] Data from JWEL did not specify whether TDS was calculated or filterable.

[c] Sampling depth. This note applies to all subsequent columns.

[d] No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		16-Aug-98	16-Aug-98	16-Aug-98	16-Aug-98	16-Aug-98	16-Aug-98	16-Aug-98	16-Aug-98	16-Aug-98
		3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	9.4	9.5	9.5	9.5	9.6	9.6	9.6	9.6	9.6
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9	14.9
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		16-Aug-98	16-Aug-98	16-Aug-98	16-Aug-98	16-Aug-98	16-Aug-98	16-Aug-98	16-Aug-98	16-Aug-98
		3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		16-Aug-98	16-Aug-98	13-Mar-99	13-Mar-99	13-Mar-99	13-Mar-99	13-Mar-99	13-Mar-99	13-Mar-99
		12 m	13 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	9.6	9.6	14.1	11.4	10.6	9.6	9	8.4	8
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	14.8	14.7	1.6	2.3	2.4	2.6	2.8	2.9	2.9
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	5	-	6.3	-	6	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	27	-	17	-	13	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	<1	-	3	-	4	-	-
Hardness, Total	mg/L (ppm)	-	-	6.05	-	4.72	-	5.02	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	22	-	<20	-	<20	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	<1	-	<1	-	<1	-	-
Turbidity	NTU	-	-	0.6	-	1.1	-	0.6	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	6.3	-	1.4	-	0.5	-	-
Fluoride	mg/L (ppm)	-	-	0.06	-	0.04	-	0.05	-	-
Sulphate	mg/L (ppm)	-	-	<1	-	<1	-	<1	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	0.03	-	0.031	-	0.024	-	-
Nitrate	mg/L (ppm)	-	-	0.03	-	0.008	-	0.02	-	-
Nitrite	mg/L (ppm)	-	-	0.03	-	0.008	-	0.02	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	0.003	-	0.003	-	0.002	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	11	-	8	-	9	-	-
Antimony (Sb)	µg/L (ppb)	-	-	<0.05	-	<0.05	-	<0.05	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.2	-	0.2	-	0.1	-	-
Barium (Ba)	µg/L (ppb)	-	-	2.38	-	2.19	-	2.07	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.5	-	<0.5	-	<0.5	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.5	-	<0.5	-	<0.5	-	-
Boron (B)	µg/L (ppb)	-	-	3	-	2	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	<0.05	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	1,470	-	1,390	-	1,160	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.5	-	<0.5	-	<0.5	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	<0.1	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	1.2	-	0.7	-	0.6	-	-
Iron (Fe)	µg/L (ppb)	-	-	<30	-	<30	-	<30	-	-
Lead (Pb)	µg/L (ppb)	-	-	0.48	-	0.14	-	0.11	-	-
Lithium (Li)	µg/L (ppb)	-	-	1	-	1	-	<1	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	600	-	600	-	500	-	-
Manganese (Mn)	µg/L (ppb)	-	-	1.9	-	1.54	-	2.32	-	-
Mercury (Hg)	µg/L (ppb)	-	-	0.01	-	<0.01	-	<0.01	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.05	-	<0.05	-	<0.05	-	-
Nickel (Ni)	µg/L (ppb)	-	-	0.3	-	0.3	-	0.4	-	-
Phosphorus (P)	µg/L (ppb)	-	-	<300	-	<300	-	<300	-	-
Potassium (K)	µg/L (ppb)	-	-	<2,000	-	<2,000	-	<2,000	-	-
Selenium (Se)	µg/L (ppb)	-	-	<1	-	<1	-	<1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	260	-	220	-	200	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.01	-	<0.01	-	<0.01	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		16-Aug-98	16-Aug-98	13-Mar-99	13-Mar-99	13-Mar-99	13-Mar-99	13-Mar-99	13-Mar-99	13-Mar-99
		12 m	13 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m
Sodium (Na)	µg/L (ppb)	-	-	<2,000	-	<2,000	-	<2,000	-	-
Strontium (Sr)	µg/L (ppb)	-	-	9.8	-	8.6	-	7.2	-	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.05	-	<0.05	-	<0.05	-	-
Tin (Sn)	µg/L (ppb)	-	-	<0.1	-	<0.1	-	<0.1	-	-
Titanium (Ti)	µg/L (ppb)	-	-	<10	-	<10	-	<10	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	0.01	-	0.01	-	0.01	-	-
Vanadium (V)	µg/L (ppb)	-	-	<1	-	<1	-	<1	-	-
Zinc (Zn)	µg/L (ppb)	-	-	12	-	6	-	5	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	9	-	5	-	6	-	-
Antimony (Sb)	µg/L (ppb)	-	-	<0.05	-	<0.05	-	<0.05	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.2	-	0.1	-	0.1	-	-
Barium (Ba)	µg/L (ppb)	-	-	2.27	-	1.8	-	2.4	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.5	-	<0.5	-	<0.5	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.5	-	<0.5	-	<0.5	-	-
Boron (B)	µg/L (ppb)	-	-	3	-	2	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	<0.05	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	1,430	-	1,120	-	1,160	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.5	-	<0.5	-	<0.5	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	<0.1	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	0.8	-	0.5	-	0.5	-	-
Iron (Fe)	µg/L (ppb)	-	-	<30	-	<30	-	<30	-	-
Lead (Pb)	µg/L (ppb)	-	-	0.23	-	<0.05	-	0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	1	-	<1	-	<1	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	600	-	500	-	500	-	-
Manganese (Mn)	µg/L (ppb)	-	-	0.65	-	0.36	-	0.84	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.01	-	<0.01	-	<0.01	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.05	-	<0.05	-	<0.05	-	-
Nickel (Ni)	µg/L (ppb)	-	-	0.4	-	0.2	-	0.3	-	-
Phosphorus (P)	µg/L (ppb)	-	-	<300	-	<300	-	<300	-	-
Potassium (K)	µg/L (ppb)	-	-	<2,000	-	<2,000	-	<2,000	-	-
Selenium (Se)	µg/L (ppb)	-	-	<1	-	<1	-	<1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	220	-	190	-	230	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.01	-	<0.01	-	<0.01	-	-
Sodium (Na)	µg/L (ppb)	-	-	<2,000	-	<2,000	-	<2,000	-	-
Strontium (Sr)	µg/L (ppb)	-	-	8.9	-	7	-	7.5	-	-
Thallium (Tl)	µg/L (ppb)	-	-	0.08	-	<0.05	-	<0.05	-	-
Tin (Sn)	µg/L (ppb)	-	-	<0.1	-	<0.1	-	<0.1	-	-
Titanium (Ti)	µg/L (ppb)	-	-	<10	-	<10	-	<10	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	0.01	-	0.01	-	0.01	-	-
Vanadium (V)	µg/L (ppb)	-	-	<1	-	<1	-	<1	-	-
Zinc (Zn)	µg/L (ppb)	-	-	12	-	3	-	3	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		13-Mar-99	13-Mar-99	13-Mar-99	13-Mar-99	13-Mar-99	16-May-99	16-May-99	16-May-99	16-May-99
		9 m	10 m	11 m	12 m	12 m	1 m	2 m	3 m	4 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	7.7	7.2	6.1	4.2	6.1	13.4	14.9	15	14.4
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3	3.1	3.1	3.2	3.1	0.2	1.2	2.2	2.5
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	6.2	-	-	6.2	6.1	-	6.4	-	6.2
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	15	16	-	15	-	14
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	4	-	-	5	5	-	5	-	4
Hardness, Total	mg/L (ppm)	5.39	-	-	5.6	6	-	5.82	-	5.34
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	<20	-	-	<20	<20	-	13	-	18
Total Suspended Solids (TSS)	mg/L (ppm)	<1	-	-	3	1	-	<3	-	<3
Turbidity	NTU	0.9	-	-	1.6	1.9	-	0.4	-	0.3
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	0.6	-	-	2	0.9	-	1.1	-	1.2
Fluoride	mg/L (ppm)	0.04	-	-	0.04	0.03	-	0.04	-	0.04
Sulphate	mg/L (ppm)	1	-	-	<1	<1	-	<1	-	<1
Nutrients										
Ammonia	mg/L (ppm)	0.02	-	-	0.01	0.01	-	0.01	-	<0.005
Nitrate	mg/L (ppm)	0.03	-	-	0.03	0.03	-	0.2	-	0.01
Nitrite	mg/L (ppm)	0.03	-	-	-	-	-	0.2	-	0.01
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.003	-	-	0.003	0.003	-	0.003	-	0.006
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	9	-	-	50	4.8	-	6	-	6
Antimony (Sb)	µg/L (ppb)	<0.05	-	-	0.05	<0.05	-	<0.05	-	<0.05
Arsenic (As)	µg/L (ppb)	0.1	-	-	0.1	0.1	-	0.1	-	0.1
Barium (Ba)	µg/L (ppb)	2.51	-	-	4.2	0.4	-	2.39	-	2.21
Beryllium (Be)	µg/L (ppb)	<0.5	-	-	<0.5	<0.5	-	<0.5	-	<0.5
Bismuth (Bi)	µg/L (ppb)	<0.5	-	-	<0.5	<0.5	-	<0.5	-	<0.5
Boron (B)	µg/L (ppb)	2	-	-	2	2	-	2	-	1
Cadmium (Cd)	µg/L (ppb)	<0.05	-	-	<0.05	<0.05	-	<0.05	-	<0.05
Calcium (Ca)	µg/L (ppb)	1,190	-	-	1,460	1,530	-	1,400	-	1,230
Chromium (Cr)	µg/L (ppb)	<0.5	-	-	<0.5	<0.5	-	<0.5	-	<0.5
Cobalt (Co)	µg/L (ppb)	<0.1	-	-	0.1	<0.1	-	<0.1	-	<0.1
Copper (Cu)	µg/L (ppb)	0.5	-	-	0.5	0.5	-	0.6	-	0.5
Iron (Fe)	µg/L (ppb)	<30	-	-	90	110	-	<30	-	<30
Lead (Pb)	µg/L (ppb)	<0.05	-	-	0.1	0.6	-	<0.05	-	0.05
Lithium (Li)	µg/L (ppb)	<1	-	-	1	<1	-	<1	-	<1
Magnesium (Mg)	µg/L (ppb)	500	-	-	700	800	-	580	-	550
Manganese (Mn)	µg/L (ppb)	4.53	-	-	23.6	25.2	-	1.31	-	1.38
Mercury (Hg)	µg/L (ppb)	<0.01	-	-	<0.01	<0.01	-	<0.01	-	<0.01
Molybdenum (Mo)	µg/L (ppb)	<0.05	-	-	<0.05	<0.05	-	<0.05	-	<0.05
Nickel (Ni)	µg/L (ppb)	0.3	-	-	<0.05	1.7	-	0.2	-	0.2
Phosphorus (P)	µg/L (ppb)	<300	-	-	<300	<300	-	<300	-	<300
Potassium (K)	µg/L (ppb)	<2,000	-	-	<2,000	<2,000	-	490	-	420
Selenium (Se)	µg/L (ppb)	<1	-	-	<1	<1	-	<1	-	<1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	250	-	-	530	570	-	210	-	180
Silver (Ag)	µg/L (ppb)	<0.01	-	-	<0.01	<0.01	-	<0.01	-	<0.01

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		13-Mar-99	13-Mar-99	13-Mar-99	13-Mar-99	13-Mar-99	16-May-99	16-May-99	16-May-99	16-May-99
		9 m	10 m	11 m	12 m	12 m	1 m	2 m	3 m	4 m
Sodium (Na)	µg/L (ppb)	<2,000	-	-	<2,000	<2,000	-	630	-	570
Strontium (Sr)	µg/L (ppb)	7.5	-	-	9.6	9.5	-	8.5	-	7.8
Thallium (Tl)	µg/L (ppb)	<0.05	-	-	<0.05	<0.05	-	<0.05	-	<0.05
Tin (Sn)	µg/L (ppb)	<0.1	-	-	<0.1	<0.1	-	<0.1	-	<0.1
Titanium (Ti)	µg/L (ppb)	<10	-	-	<10	<10	-	<10	-	<10
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.01	-	-	0.01	0.01	-	0.01	-	0.01
Vanadium (V)	µg/L (ppb)	<1	-	-	<1	<1	-	<1	-	<1
Zinc (Zn)	µg/L (ppb)	3	-	-	3	2	-	6	-	5
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	5	-	-	6	8	-	5	-	5
Antimony (Sb)	µg/L (ppb)	<0.05	-	-	0.05	<0.05	-	<0.05	-	<0.05
Arsenic (As)	µg/L (ppb)	0.1	-	-	0.1	0.1	-	0.1	-	0.1
Barium (Ba)	µg/L (ppb)	3.01	-	-	0.3	0.2	-	2.34	-	2.14
Beryllium (Be)	µg/L (ppb)	<0.5	-	-	<0.5	<0.5	-	<0.5	-	<0.5
Bismuth (Bi)	µg/L (ppb)	<0.5	-	-	<0.5	<0.5	-	<0.5	-	<0.5
Boron (B)	µg/L (ppb)	2	-	-	2	2	-	2	-	1
Cadmium (Cd)	µg/L (ppb)	<0.05	-	-	<0.05	<0.05	-	<0.05	-	<0.05
Calcium (Ca)	µg/L (ppb)	1,270	-	-	1,320	1,430	-	1,340	-	1,260
Chromium (Cr)	µg/L (ppb)	<0.5	-	-	<0.5	<0.5	-	<0.5	-	<0.5
Cobalt (Co)	µg/L (ppb)	<0.1	-	-	<0.1	<0.1	-	<0.1	-	<0.1
Copper (Cu)	µg/L (ppb)	0.5	-	-	0.5	0.4	-	0.5	-	0.5
Iron (Fe)	µg/L (ppb)	<30	-	-	<30	<30	-	<30	-	<30
Lead (Pb)	µg/L (ppb)	<0.05	-	-	<0.05	<0.05	-	<0.05	-	<0.05
Lithium (Li)	µg/L (ppb)	<1	-	-	<1	<1	-	<1	-	<1
Magnesium (Mg)	µg/L (ppb)	500	-	-	600	600	-	600	-	530
Manganese (Mn)	µg/L (ppb)	2.65	-	-	4.5	17.8	-	0.8	-	0.57
Mercury (Hg)	µg/L (ppb)	<0.01	-	-	<0.01	<0.01	-	<0.01	-	<0.01
Molybdenum (Mo)	µg/L (ppb)	<0.05	-	-	<0.05	<0.05	-	-	-	-
Nickel (Ni)	µg/L (ppb)	0.3	-	-	0.4	0.5	-	-	-	-
Phosphorus (P)	µg/L (ppb)	<300	-	-	<300	<300	-	-	-	-
Potassium (K)	µg/L (ppb)	<2,000	-	-	<2,000	<2,000	-	-	-	-
Selenium (Se)	µg/L (ppb)	<1	-	-	<1	<1	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	280	-	-	300	370	-	-	-	-
Silver (Ag)	µg/L (ppb)	<0.01	-	-	<0.01	<0.01	-	-	-	-
Sodium (Na)	µg/L (ppb)	<2,000	-	-	<2,000	<2,000	-	-	-	-
Strontium (Sr)	µg/L (ppb)	8.3	-	-	8.6	9.6	-	-	-	-
Thallium (Tl)	µg/L (ppb)	0.05	-	-	<0.05	<0.05	-	-	-	-
Tin (Sn)	µg/L (ppb)	<0.1	-	-	<0.1	<0.1	-	-	-	-
Titanium (Ti)	µg/L (ppb)	<10	-	-	<10	<10	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	0.01	-	-	<0.01	<0.01	-	-	-	-
Vanadium (V)	µg/L (ppb)	<1	-	-	<1	<1	-	-	-	-
Zinc (Zn)	µg/L (ppb)	2	-	-	3	2	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		16-May-99	16-May-99	16-May-99	16-May-99	16-May-99	17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99
		5 m	6 m	7 m	8 m	9 m	3 m	4 m	5 m	6 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	12	10.8	8	7.9	7	9.9	9.8	9.6	9.6
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	2.8	2.9	3	3.1	3.2	13.8	13.6	13.6	13.6
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	6.1	-	-	-	6.5	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	15	-	-	-	11	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	5	-	-	-	4	-
Hardness, Total	mg/L (ppm)	-	-	-	5.88	-	-	-	4.16	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	12	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	<3	-	-	-	<3	-
Turbidity	NTU	-	-	-	0.5	-	-	-	0.5	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	0.9	-	-	-	0.6	-
Fluoride	mg/L (ppm)	-	-	-	0.04	-	-	-	0.04	-
Sulphate	mg/L (ppm)	-	-	-	<1	-	-	-	<1	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	<0.005	-	-	-	0.01	-
Nitrate	mg/L (ppm)	-	-	-	0.03	-	-	-	<0.005	-
Nitrite	mg/L (ppm)	-	-	-	0.03	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	0.005	-	-	-	0.005	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	17	-	-	-	11	-
Antimony (Sb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.05	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.1	-	-	-	0.1	-
Barium (Ba)	µg/L (ppb)	-	-	-	4.1	-	-	-	2.16	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.5	-	-	-	<0.5	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.5	-	-	-	<0.5	-
Boron (B)	µg/L (ppb)	-	-	-	2	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,440	-	-	-	970	-
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.5	-	-	-	<0.5	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	-	0.4	-	-	-	0.4	-
Iron (Fe)	µg/L (ppb)	-	-	-	30	-	-	-	<30	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	-	<1	-	-	-	<1	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	610	-	-	-	421	-
Manganese (Mn)	µg/L (ppb)	-	-	-	19.3	-	-	-	4.22	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.01	-	-	-	<0.01	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.05	-
Nickel (Ni)	µg/L (ppb)	-	-	-	0.7	-	-	-	0.3	-
Phosphorus (P)	µg/L (ppb)	-	-	-	<300	-	-	-	<300	-
Potassium (K)	µg/L (ppb)	-	-	-	450	-	-	-	360	-
Selenium (Se)	µg/L (ppb)	-	-	-	<1	-	-	-	<1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	410	-	-	-	120	-
Silver (Ag)	µg/L (ppb)	-	-	-	<0.01	-	-	-	<0.01	-
Sodium (Na)	µg/L (ppb)	-	-	-	560	-	-	-	460	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		16-May-99	16-May-99	16-May-99	16-May-99	16-May-99	17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99
		5 m	6 m	7 m	8 m	9 m	3 m	4 m	5 m	6 m
Strontium (Sr)	µg/L (ppb)	-	-	-	9.3	-	-	-	6.5	-
Thallium (Tl)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.05	-
Tin (Sn)	µg/L (ppb)	-	-	-	<0.1	-	-	-	<0.1	-
Titanium (Ti)	µg/L (ppb)	-	-	-	<10	-	-	-	<10	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	0.01	-	-	-	<0.01	-
Vanadium (V)	µg/L (ppb)	-	-	-	<1	-	-	-	<1	-
Zinc (Zn)	µg/L (ppb)	-	-	-	6	-	-	-	<1	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	5	-	-	-	6	-
Antimony (Sb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.05	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.1	-	-	-	<0.1	-
Barium (Ba)	µg/L (ppb)	-	-	-	3.91	-	-	-	2.06	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.5	-	-	-	<0.5	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.5	-	-	-	<0.5	-
Boron (B)	µg/L (ppb)	-	-	-	2	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,380	-	-	-	970	-
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.5	-	-	-	<0.5	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	-	0.4	-	-	-	0.4	-
Iron (Fe)	µg/L (ppb)	-	-	-	<30	-	-	-	<30	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	-	<1	-	-	-	<1	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	590	-	-	-	420	-
Manganese (Mn)	µg/L (ppb)	-	-	-	5.17	-	-	-	0.19	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.01	-	-	-	<0.01	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	0.3	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	<300	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	350	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	<1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	100	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	<0.01	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	460	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	6.5	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	<10	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	<0.01	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	<1	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	6	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99
		7 m	8 m	9 m	10 m	11 m	12 m	13 m	14 m	15 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	9.5	9.4	9.4	9.5	9.9	9.7	9.5	9.3	9.2
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	13.6	13.5	13.5	12.8	10.6	8.8	8.1	7.8	7.6
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	6.6	-	6.4	-	-	6.2	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	11	-	11	-	-	11	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	3	-	3	-	-	4	-
Hardness, Total	mg/L (ppm)	-	-	4.22	-	4.19	-	-	4.23	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	<3	-	<3	-	-	<3	-
Turbidity	NTU	-	-	0.4	-	0.5	-	-	0.4	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	0.6	-	0.6	-	-	0.7	-
Fluoride	mg/L (ppm)	-	-	0.04	-	0.04	-	-	0.04	-
Sulphate	mg/L (ppm)	-	-	<1	-	<1	-	-	<1	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	0.007	-	0.008	-	-	0.01	-
Nitrate	mg/L (ppm)	-	-	<0.005	-	<0.005	-	-	<0.005	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	0.004	-	0.005	-	-	0.008	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	11	-	12	-	-	12	-
Antimony (Sb)	µg/L (ppb)	-	-	<0.05	-	<0.05	-	-	<0.05	-
Arsenic (As)	µg/L (ppb)	-	-	0.1	-	0.1	-	-	0.1	-
Barium (Ba)	µg/L (ppb)	-	-	2.12	-	2.51	-	-	2.73	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.5	-	<0.5	-	-	<0.5	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.5	-	<0.5	-	-	<0.5	-
Boron (B)	µg/L (ppb)	-	-	2	-	2	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	<0.05	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	980	-	990	-	-	980	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.5	-	<0.5	-	-	<0.5	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	<0.1	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	0.4	-	0.4	-	-	0.4	-
Iron (Fe)	µg/L (ppb)	-	-	<30	-	<30	-	-	<30	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	<0.05	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	<1	-	<1	-	-	<1	-
Magnesium (Mg)	µg/L (ppb)	-	-	419	-	429	-	-	429	-
Manganese (Mn)	µg/L (ppb)	-	-	4.24	-	3.86	-	-	3.88	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.01	-	<0.01	-	-	<0.01	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.05	-	<0.05	-	-	<0.05	-
Nickel (Ni)	µg/L (ppb)	-	-	0.3	-	0.3	-	-	0.3	-
Phosphorus (P)	µg/L (ppb)	-	-	<300	-	<300	-	-	<300	-
Potassium (K)	µg/L (ppb)	-	-	360	-	360	-	-	360	-
Selenium (Se)	µg/L (ppb)	-	-	<1	-	<1	-	-	<1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	110	-	140	-	-	140	-
Silver (Ag)	µg/L (ppb)	-	-	<0.01	-	<0.01	-	-	<0.01	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99
		7 m	8 m	9 m	10 m	11 m	12 m	13 m	14 m	15 m
Sodium (Na)	µg/L (ppb)	-	-	460	-	460	-	-	470	-
Strontium (Sr)	µg/L (ppb)	-	-	6.6	-	6.8	-	-	7	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.05	-	<0.05	-	-	<0.05	-
Tin (Sn)	µg/L (ppb)	-	-	<0.1	-	<0.1	-	-	<0.1	-
Titanium (Ti)	µg/L (ppb)	-	-	<10	-	<10	-	-	<10	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.01	-	<0.01	-	-	<0.01	-
Vanadium (V)	µg/L (ppb)	-	-	<1	-	<1	-	-	<1	-
Zinc (Zn)	µg/L (ppb)	-	-	<1	-	<1	-	-	<1	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	5	-	6	-	-	7	-
Antimony (Sb)	µg/L (ppb)	-	-	<0.05	-	<0.05	-	-	<0.05	-
Arsenic (As)	µg/L (ppb)	-	-	<0.1	-	<0.1	-	-	<0.1	-
Barium (Ba)	µg/L (ppb)	-	-	2.07	-	2.4	-	-	2.66	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.5	-	<0.5	-	-	<0.5	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.5	-	<0.5	-	-	<0.5	-
Boron (B)	µg/L (ppb)	-	-	2	-	2	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	<0.05	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	990	-	990	-	-	990	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.5	-	<0.5	-	-	<0.5	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	<0.1	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	0.4	-	0.4	-	-	0.4	-
Iron (Fe)	µg/L (ppb)	-	-	<30	-	<30	-	-	<30	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	<0.05	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	<1	-	<1	-	-	<1	-
Magnesium (Mg)	µg/L (ppb)	-	-	424	-	418	-	-	427	-
Manganese (Mn)	µg/L (ppb)	-	-	0.15	-	0.21	-	-	0.27	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.01	-	<0.01	-	-	<0.01	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.05	-	<0.05	-	-	<0.05	-
Nickel (Ni)	µg/L (ppb)	-	-	0.2	-	0.2	-	-	0.3	-
Phosphorus (P)	µg/L (ppb)	-	-	<300	-	<300	-	-	<300	-
Potassium (K)	µg/L (ppb)	-	-	350	-	360	-	-	370	-
Selenium (Se)	µg/L (ppb)	-	-	<1	-	<1	-	-	<1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	90	-	100	-	-	110	-
Silver (Ag)	µg/L (ppb)	-	-	<0.01	-	<0.01	-	-	<0.01	-
Sodium (Na)	µg/L (ppb)	-	-	460	-	460	-	-	480	-
Strontium (Sr)	µg/L (ppb)	-	-	6.6	-	6.7	-	-	7	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.05	-	<0.05	-	-	<0.05	-
Tin (Sn)	µg/L (ppb)	-	-	<0.1	-	<0.1	-	-	<0.1	-
Titanium (Ti)	µg/L (ppb)	-	-	<10	-	<10	-	-	<10	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.01	-	<0.01	-	-	<0.01	-
Vanadium (V)	µg/L (ppb)	-	-	<1	-	<1	-	-	<1	-
Zinc (Zn)	µg/L (ppb)	-	-	2	-	3	-	-	5	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99
		16 m	17 m	18 m	18.6 m	0 m	1 m	2 m	3 m	4 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	8.9	8.7	8.4	8.1	12.1	11.8	11.8	11.8	11.8
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	7.5	7.4	7.3	7.3	13.9	13.9	13.9	13.9	13.9
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	6.1	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	11	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	3	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	4.28	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	<3	-	-	-	-	-	-	-
Turbidity	NTU	-	0.5	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	0.7	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	0.04	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	<1	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	0.015	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	<0.005	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	0.007	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	14	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	<0.05	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	0.1	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	3.38	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	<0.5	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	<0.5	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	2	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	<0.05	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	100	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	<0.5	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	<0.1	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	0.4	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	<30	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	<0.05	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	<1	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	445	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	5.5	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	<0.01	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	<0.05	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	0.3	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	<300	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	370	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	<1	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	170	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	<0.01	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		17-Jul-99	17-Jul-99	17-Jul-99	17-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99
		16 m	17 m	18 m	18.6 m	0 m	1 m	2 m	3 m	4 m
Sodium (Na)	µg/L (ppb)	-	460	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	7.3	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	<0.05	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	<0.1	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	<10	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	<0.01	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	<1	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	<1	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	8	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	<0.05	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	<0.1	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	3.36	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	<0.5	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	<0.5	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	2	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	<0.05	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	100	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	<0.5	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	<0.1	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	0.4	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	<30	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	<0.05	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	<1	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	434	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	0.64	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	<0.01	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	<0.05	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	0.4	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	<300	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	380	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	<1	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	150	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	<0.01	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	470	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	7.2	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	<0.05	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	<0.1	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	<10	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	<0.01	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	<0.01	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	<1	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	9	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		21-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99
		5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	11.8	11.8	11.7	11.7	11.7	11.7	11.6	11.5	11.5
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	13.9	13.9	13.9	13.9	13.9	13.9	13.7	13.5	13.3
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		21-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99
		5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		21-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01
		14 m	15 m	16 m	17 m	18 m	2 m	3 m	4 m	5 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	11.4	11.3	11.1	10.6	10.1	14.7	13.6	12.8	11.1
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	13.2	13.1	13	12.7	12.3	0.5	1.7	2.2	2.8
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	5.9	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	15	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	6	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	5	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	7	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	0.21	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	<1	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	<0.05	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	0.8	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	<0.05	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	<0.1	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	<0.1	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	<0.02	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	4.2	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	0.2	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	0.15	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	2.06	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	<0.02	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	1,110	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	0.13	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	0.42	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	10	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	1	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	476	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	2.32	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	<0.04	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	0.19	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	<2	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	399	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	300	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	<0.03	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		21-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99	21-Jul-99	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01
		14 m	15 m	16 m	17 m	18 m	2 m	3 m	4 m	5 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	546	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	7.5	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	<0.03	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	<0.01	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	7.8	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	2.9	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	0.17	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	0.12	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	2.22	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	<0.02	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	1,300	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	<0.06	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	0.77	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	<5	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	1.1	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	533	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	0.52	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	<0.04	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	0.24	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	2	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	424	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	200	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	<0.03	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	717	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	7.8	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	<0.03	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	<0.01	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	3.4	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01
		6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m	14 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	10.2	9.5	8.5	7.9	7.5	6.4	5.5	4.8	3.4
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3	3.1	3.2	3.3	3.3	3.4	3.5	3.6	3.7
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	6.2	-	-	-	-	6.1	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	15	-	-	-	-	16	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	6	-	-	-	-	7	-
Hardness, Total	mg/L (ppm)	-	-	5	-	-	-	-	6	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	7	-	-	-	-	8	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	0.12	-	-	-	-	0.13	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	<1	-	-	-	-	<1	-
Fluoride	mg/L (ppm)	-	-	<0.05	-	-	-	-	<0.05	-
Sulphate	mg/L (ppm)	-	-	1	-	-	-	-	1	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	<0.05	-	-	-	-	<0.05	-
Nitrate	mg/L (ppm)	-	-	<0.1	-	-	-	-	<0.1	-
Nitrite	mg/L (ppm)	-	-	<0.1	-	-	-	-	<0.1	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	<0.02	-	-	-	-	<0.02	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	4.2	-	-	-	-	5.2	-
Antimony (Sb)	µg/L (ppb)	-	-	0.27	-	-	-	-	0.23	-
Arsenic (As)	µg/L (ppb)	-	-	0.11	-	-	-	-	0.16	-
Barium (Ba)	µg/L (ppb)	-	-	3.14	-	-	-	-	4.67	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	-	-	-	-	<0.03	-
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.02	-	-	-	-	<0.02	-
Calcium (Ca)	µg/L (ppb)	-	-	1,140	-	-	-	-	1,370	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.06	-	-	-	-	0.18	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	-	0.2	-
Copper (Cu)	µg/L (ppb)	-	-	0.38	-	-	-	-	0.42	-
Iron (Fe)	µg/L (ppb)	-	-	29	-	-	-	-	104	-
Lead (Pb)	µg/L (ppb)	-	-	0.05	-	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	1	-	-	-	-	1.1	-
Magnesium (Mg)	µg/L (ppb)	-	-	487	-	-	-	-	570	-
Manganese (Mn)	µg/L (ppb)	-	-	19.5	-	-	-	-	116	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.04	-	-	-	-	<0.04	-
Nickel (Ni)	µg/L (ppb)	-	-	0.33	-	-	-	-	0.61	-
Phosphorus (P)	µg/L (ppb)	-	-	<2	-	-	-	-	<2	-
Potassium (K)	µg/L (ppb)	-	-	390	-	-	-	-	467	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	-	0.2	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	400	-	-	-	-	500	-
Silver (Ag)	µg/L (ppb)	-	-	<0.03	-	-	-	-	<0.03	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01
		6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m	14 m
Sodium (Na)	µg/L (ppb)	-	-	680	-	-	-	-	580	-
Strontium (Sr)	µg/L (ppb)	-	-	8	-	-	-	-	10.2	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.03	-	-	-	-	<0.03	-
Tin (Sn)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Titanium (Ti)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.01	-	-	-	-	<0.01	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	3.2	-	-	-	-	0.9	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	2.8	-	-	-	-	2.9	-
Antimony (Sb)	µg/L (ppb)	-	-	0.09	-	-	-	-	0.27	-
Arsenic (As)	µg/L (ppb)	-	-	0.14	-	-	-	-	0.15	-
Barium (Ba)	µg/L (ppb)	-	-	2.82	-	-	-	-	3.86	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	-	-	-	-	<0.03	-
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.02	-	-	-	-	<0.02	-
Calcium (Ca)	µg/L (ppb)	-	-	1,380	-	-	-	-	1,640	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.06	-	-	-	-	<0.06	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	0.57	-	-	-	-	0.64	-
Iron (Fe)	µg/L (ppb)	-	-	<5	-	-	-	-	16	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	1	-	-	-	-	1.1	-
Magnesium (Mg)	µg/L (ppb)	-	-	549	-	-	-	-	632	-
Manganese (Mn)	µg/L (ppb)	-	-	5.46	-	-	-	-	57.3	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.04	-	-	-	-	<0.04	-
Nickel (Ni)	µg/L (ppb)	-	-	0.29	-	-	-	-	0.47	-
Phosphorus (P)	µg/L (ppb)	-	-	<2	-	-	-	-	3	-
Potassium (K)	µg/L (ppb)	-	-	406	-	-	-	-	479	-
Selenium (Se)	µg/L (ppb)	-	-	0.1	-	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	300	-	-	-	-	300	-
Silver (Ag)	µg/L (ppb)	-	-	<0.03	-	-	-	-	<0.03	-
Sodium (Na)	µg/L (ppb)	-	-	495	-	-	-	-	765	-
Strontium (Sr)	µg/L (ppb)	-	-	8.2	-	-	-	-	10.3	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.03	-	-	-	-	<0.03	-
Tin (Sn)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Titanium (Ti)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.01	-	-	-	-	<0.01	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	1.2	-	-	-	-	2.3	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		22-Feb-01	28-Mar-01	28-Mar-01	28-Mar-01	28-Mar-01	28-Mar-01	28-Mar-01	28-Mar-01	28-Mar-01
		15 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	2.5	14.3	13.2	11.5	9.8	8.2	6.8	5.9	5.6
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3.7	1.8	2	2.5	2.9	3.2	3.4	3.4	3.5
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	6.2	-	-	-	-	6	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	17	-	-	-	-	17	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	5	-	-	-	-	7	-
Hardness, Total	mg/L (ppm)	-	-	5	-	-	-	-	5	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	6	-	-	-	-	7	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	2.4	-	-	-	-	2.7	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	<1	-	-	-	-	<1	-
Fluoride	mg/L (ppm)	-	-	<0.05	-	-	-	-	<0.05	-
Sulphate	mg/L (ppm)	-	-	1	-	-	-	-	0.7	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	<0.05	-	-	-	-	<0.05	-
Nitrate	mg/L (ppm)	-	-	<0.1	-	-	-	-	<0.1	-
Nitrite	mg/L (ppm)	-	-	<0.1	-	-	-	-	<0.1	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	<0.02	-	-	-	-	<0.02	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	4.3	-	-	-	-	5.3	-
Antimony (Sb)	µg/L (ppb)	-	-	0.03	-	-	-	-	0.05	-
Arsenic (As)	µg/L (ppb)	-	-	0.14	-	-	-	-	0.13	-
Barium (Ba)	µg/L (ppb)	-	-	2.35	-	-	-	-	3.55	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	0.67	-	-	-	-	1.77	-
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	0.05	-	-	-	-	0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	1,260	-	-	-	-	1,340	-
Chromium (Cr)	µg/L (ppb)	-	-	0.11	-	-	-	-	0.11	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	0.6	-	-	-	-	0.6	-
Iron (Fe)	µg/L (ppb)	-	-	10	-	-	-	-	38	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	0.9	-	-	-	-	0.9	-
Magnesium (Mg)	µg/L (ppb)	-	-	569	-	-	-	-	596	-
Manganese (Mn)	µg/L (ppb)	-	-	2.6	-	-	-	-	26.6	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	-	-	-	-	0.09	-
Nickel (Ni)	µg/L (ppb)	-	-	0.23	-	-	-	-	0.45	-
Phosphorus (P)	µg/L (ppb)	-	-	<2	-	-	-	-	10	-
Potassium (K)	µg/L (ppb)	-	-	454	-	-	-	-	463	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	500	-	-	-	-	600	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	-	-	-	-	0.1	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		22-Feb-01	28-Mar-01	28-Mar-01	28-Mar-01	28-Mar-01	28-Mar-01	28-Mar-01	28-Mar-01	28-Mar-01
		15 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m
Sodium (Na)	µg/L (ppb)	-	-	596	-	-	-	-	602	-
Strontium (Sr)	µg/L (ppb)	-	-	7.7	-	-	-	-	8.4	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.03	-	-	-	-	<0.03	-
Tin (Sn)	µg/L (ppb)	-	-	<0.1	-	-	-	-	0.2	-
Titanium (Ti)	µg/L (ppb)	-	-	<0.1	-	-	-	-	0.2	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	12.2	-	-	-	-	3.1	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	3.5	-	-	-	-	3.1	-
Antimony (Sb)	µg/L (ppb)	-	-	0.03	-	-	-	-	<0.03	-
Arsenic (As)	µg/L (ppb)	-	-	0.13	-	-	-	-	0.13	-
Barium (Ba)	µg/L (ppb)	-	-	2.22	-	-	-	-	3.1	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	1.55	-	-	-	-	0.82	-
Boron (B)	µg/L (ppb)	-	-	3	-	-	-	-	3	-
Cadmium (Cd)	µg/L (ppb)	-	-	0.05	-	-	-	-	0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	0.08	-	-	-	-	0.09	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	0.7	-	-	-	-	0.7	-
Iron (Fe)	µg/L (ppb)	-	-	5	-	-	-	-	12	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	1	-	-	-	-	0.9	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	0.8	-	-	-	-	12.4	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	-	-	-	-	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	0.26	-	-	-	-	0.45	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	200	-	-	-	-	400	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	7.5	-	-	-	-	8.7	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.03	-	-	-	-	<0.03	-
Tin (Sn)	µg/L (ppb)	-	-	0.2	-	-	-	-	0.2	-
Titanium (Ti)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	2.2	-	-	-	-	<0.8	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		28-Mar-01	28-Mar-01	28-Mar-01	28-Mar-01	28-Mar-01	28-Mar-01	28-Apr-01	28-Apr-01	28-Apr-01
		10 m	11 m	12 m	13 m	14 m	15 m	2 m	3 m	4 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	5.1	4.2	3.7	3.1	2.2	1.2	-	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3.6	3.6	3.7	3.7	3.8	3.8	0.8	1.8	2.5
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	5.9	-	-	-	6.3	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	20	-	-	-	20	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	8	-	-	-	7	-
Hardness, Total	mg/L (ppm)	-	-	-	6	-	-	-	5	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	9	-	-	-	9	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	1.1	-	-	-	<0.1	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	<1	-	-	-	1	-
Fluoride	mg/L (ppm)	-	-	-	<0.05	-	-	-	<0.05	-
Sulphate	mg/L (ppm)	-	-	-	1.2	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	<0.05	-	-	-	<0.05	-
Nitrate	mg/L (ppm)	-	-	-	0.2	-	-	-	<0.1	-
Nitrite	mg/L (ppm)	-	-	-	0.2	-	-	-	<0.1	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	<0.02	-	-	-	<0.02	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	8.8	-	-	-	4.1	-
Antimony (Sb)	µg/L (ppb)	-	-	-	<0.03	-	-	-	0.1	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.14	-	-	-	0.16	-
Barium (Ba)	µg/L (ppb)	-	-	-	5.22	-	-	-	2.42	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	0.88	-	-	-	<0.03	-
Boron (B)	µg/L (ppb)	-	-	-	2	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	0.05	-	-	-	<0.02	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,540	-	-	-	1,390	-
Chromium (Cr)	µg/L (ppb)	-	-	-	0.36	-	-	-	0.21	-
Cobalt (Co)	µg/L (ppb)	-	-	-	0.4	-	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	-	0.6	-	-	-	0.54	-
Iron (Fe)	µg/L (ppb)	-	-	-	150	-	-	-	14	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	-	0.9	-	-	-	1	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	715	-	-	-	550	-
Manganese (Mn)	µg/L (ppb)	-	-	-	156	-	-	-	1.92	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	-	-	-	<0.04	-
Nickel (Ni)	µg/L (ppb)	-	-	-	0.95	-	-	-	0.36	-
Phosphorus (P)	µg/L (ppb)	-	-	-	9	-	-	-	<2	-
Potassium (K)	µg/L (ppb)	-	-	-	501	-	-	-	484	-
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	800	-	-	-	300	-
Silver (Ag)	µg/L (ppb)	-	-	-	0.1	-	-	-	0.87	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		28-Mar-01	28-Mar-01	28-Mar-01	28-Mar-01	28-Mar-01	28-Mar-01	28-Apr-01	28-Apr-01	28-Apr-01
		10 m	11 m	12 m	13 m	14 m	15 m	2 m	3 m	4 m
Sodium (Na)	µg/L (ppb)	-	-	-	646	-	-	-	606	-
Strontium (Sr)	µg/L (ppb)	-	-	-	9.4	-	-	-	9.4	-
Thallium (Tl)	µg/L (ppb)	-	-	-	<0.03	-	-	-	<0.03	-
Tin (Sn)	µg/L (ppb)	-	-	-	<0.1	-	-	-	<0.1	-
Titanium (Ti)	µg/L (ppb)	-	-	-	0.4	-	-	-	<0.1	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.01	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	-	2.8	-	-	-	1.8	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	2.7	-	-	-	3.3	-
Antimony (Sb)	µg/L (ppb)	-	-	-	0.04	-	-	-	0.2	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.13	-	-	-	0.15	-
Barium (Ba)	µg/L (ppb)	-	-	-	3.91	-	-	-	2.53	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	1.97	-	-	-	<0.03	-
Boron (B)	µg/L (ppb)	-	-	-	2	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	0.05	-	-	-	<0.02	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	1,740	-
Chromium (Cr)	µg/L (ppb)	-	-	-	0.1	-	-	-	0.27	-
Cobalt (Co)	µg/L (ppb)	-	-	-	0.2	-	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	-	0.6	-	-	-	0.81	-
Iron (Fe)	µg/L (ppb)	-	-	-	16	-	-	-	9	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	-	0.9	-	-	-	1.1	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	641	-
Manganese (Mn)	µg/L (ppb)	-	-	-	96.4	-	-	-	0.95	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	-	-	-	<0.04	-
Nickel (Ni)	µg/L (ppb)	-	-	-	0.62	-	-	-	0.39	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	8	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	510	-
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	400	-	-	-	<100	-
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	-	-	-	0.87	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	864	-
Strontium (Sr)	µg/L (ppb)	-	-	-	9.3	-	-	-	9.6	-
Thallium (Tl)	µg/L (ppb)	-	-	-	<0.03	-	-	-	<0.03	-
Tin (Sn)	µg/L (ppb)	-	-	-	0.1	-	-	-	0.1	-
Titanium (Ti)	µg/L (ppb)	-	-	-	<0.1	-	-	-	<0.1	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.01	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	-	1.2	-	-	-	1	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		28-Apr-01	28-Apr-01	28-Apr-01	28-Apr-01	28-Apr-01	28-Apr-01	28-Apr-01	28-Apr-01	28-Apr-01
		5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3	3.2	3.5	3.5	3.5	3.6	3.7	3.7	3.7
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	6	-	-	-	-	6.2
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	21	-	-	-	-	26
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	7	-	-	-	-	9
Hardness, Total	mg/L (ppm)	-	-	-	6	-	-	-	-	8
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	8	-	-	-	-	9
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	<0.1	-	-	-	-	<0.1
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	<1	-	-	-	-	<1
Fluoride	mg/L (ppm)	-	-	-	<0.05	-	-	-	-	<0.05
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	<0.05	-	-	-	-	0.06
Nitrate	mg/L (ppm)	-	-	-	<0.1	-	-	-	-	<0.1
Nitrite	mg/L (ppm)	-	-	-	<0.1	-	-	-	-	<0.1
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	<0.02	-	-	-	-	<0.02
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	8	-	-	-	-	25.5
Antimony (Sb)	µg/L (ppb)	-	-	-	0.13	-	-	-	-	0.13
Arsenic (As)	µg/L (ppb)	-	-	-	0.12	-	-	-	-	0.18
Barium (Ba)	µg/L (ppb)	-	-	-	4.68	-	-	-	-	8.13
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	-	-	-	-	<0.03
Boron (B)	µg/L (ppb)	-	-	-	2	-	-	-	-	2
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.02	-	-	-	-	<0.02
Calcium (Ca)	µg/L (ppb)	-	-	-	1,460	-	-	-	-	2,030
Chromium (Cr)	µg/L (ppb)	-	-	-	0.36	-	-	-	-	0.63
Cobalt (Co)	µg/L (ppb)	-	-	-	0.1	-	-	-	-	0.8
Copper (Cu)	µg/L (ppb)	-	-	-	0.53	-	-	-	-	0.47
Iron (Fe)	µg/L (ppb)	-	-	-	84	-	-	-	-	226
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	0.9	-	-	-	-	1
Magnesium (Mg)	µg/L (ppb)	-	-	-	560	-	-	-	-	771
Manganese (Mn)	µg/L (ppb)	-	-	-	69.3	-	-	-	-	241
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	-	-	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.04	-	-	-	-	<0.04
Nickel (Ni)	µg/L (ppb)	-	-	-	0.81	-	-	-	-	2.18
Phosphorus (P)	µg/L (ppb)	-	-	-	<2	-	-	-	-	<2
Potassium (K)	µg/L (ppb)	-	-	-	457	-	-	-	-	505
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	600	-	-	-	-	800
Silver (Ag)	µg/L (ppb)	-	-	-	0.88	-	-	-	-	0.87

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		28-Apr-01	28-Apr-01	28-Apr-01	28-Apr-01	28-Apr-01	28-Apr-01	28-Apr-01	28-Apr-01	28-Apr-01
		5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Sodium (Na)	µg/L (ppb)	-	-	-	533	-	-	-	-	560
Strontium (Sr)	µg/L (ppb)	-	-	-	10.5	-	-	-	-	11.5
Thallium (Tl)	µg/L (ppb)	-	-	-	<0.03	-	-	-	-	<0.03
Tin (Sn)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Titanium (Ti)	µg/L (ppb)	-	-	-	0.2	-	-	-	-	1
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.01	-	-	-	-	<0.01
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	-	<0.8	-	-	-	-	<0.8
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	2.6	-	-	-	-	3
Antimony (Sb)	µg/L (ppb)	-	-	-	0.15	-	-	-	-	0.06
Arsenic (As)	µg/L (ppb)	-	-	-	0.13	-	-	-	-	0.14
Barium (Ba)	µg/L (ppb)	-	-	-	3.1	-	-	-	-	5.86
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	-	-	-	-	<0.03
Boron (B)	µg/L (ppb)	-	-	-	2	-	-	-	-	3
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.02	-	-	-	-	<0.02
Calcium (Ca)	µg/L (ppb)	-	-	-	1,680	-	-	-	-	2,220
Chromium (Cr)	µg/L (ppb)	-	-	-	0.18	-	-	-	-	0.23
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	0.3
Copper (Cu)	µg/L (ppb)	-	-	-	0.72	-	-	-	-	0.65
Iron (Fe)	µg/L (ppb)	-	-	-	13	-	-	-	-	6
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	0.9	-	-	-	-	1
Magnesium (Mg)	µg/L (ppb)	-	-	-	581	-	-	-	-	748
Manganese (Mn)	µg/L (ppb)	-	-	-	16.5	-	-	-	-	148
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	-	-	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.04	-	-	-	-	<0.04
Nickel (Ni)	µg/L (ppb)	-	-	-	0.42	-	-	-	-	1
Phosphorus (P)	µg/L (ppb)	-	-	-	7	-	-	-	-	8
Potassium (K)	µg/L (ppb)	-	-	-	456	-	-	-	-	506
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	300	-	-	-	-	400
Silver (Ag)	µg/L (ppb)	-	-	-	0.89	-	-	-	-	0.87
Sodium (Na)	µg/L (ppb)	-	-	-	706	-	-	-	-	754
Strontium (Sr)	µg/L (ppb)	-	-	-	9.8	-	-	-	-	13
Thallium (Tl)	µg/L (ppb)	-	-	-	<0.03	-	-	-	-	<0.03
Tin (Sn)	µg/L (ppb)	-	-	-	0.1	-	-	-	-	0.1
Titanium (Ti)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	0.1
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.01	-	-	-	-	<0.01
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	-	0.8	-	-	-	-	<0.8

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		28-Apr-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01
		14 m	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m
Field Measured										
pH	pH Units	-	7.6	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	13	13	13	13	13	13	13	13
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	10.5	10.4	10.3	10.4	10.4	10.4	10.5	10.2
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3.7	9.1	9.1	9	9	9	9	8.9	8.9
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	<0.05	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	<0.1	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	<0.05	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	0.6	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	0.2	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		28-Apr-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01
		14 m	0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	6-Aug-01	6-Aug-01	6-Aug-01
		8 m	9 m	10 m	11 m	12 m	13 m	0 m	1 m	2 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	7.1	-	-
Conductivity [(a)]	µS/cm	13	13	13	13	13	13	13	13	13
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	10.5	10.4	10.5	10.4	10.5	10.6	16.5	16.4	16.4
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	8.9	8.8	8.1	8	7.6	7.4	16.5	16.4	16.4
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	1.1	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	3.8	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	4	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	<10	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	3	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	0.6	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	0.03	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	0.6	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	0.01	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	<0.008	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	<0.008	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	0.2	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	0.03	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	3.3	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	5.5	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	0.65	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	0.09	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	1.8	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	<0.03	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	928	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	<0.06	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	0.2	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	0.6	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	17	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	396	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	4.6	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	0.19	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	360	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	600	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	30-Jun-01	6-Aug-01	6-Aug-01	6-Aug-01
		8 m	9 m	10 m	11 m	12 m	13 m	0 m	1 m	2 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	481	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	6.1	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	<0.03	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	1.1	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	2	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	0.18	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01
		3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	13	13	13	13	13	13	13	13	13
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	16.3	16.3	16.3	16.3	16.3	16.2	16.2	16.2	16.2
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	16.3	16.3	16.3	16.3	16.3	16.2	16.2	16.2	16.2
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	1	-	-	-	-	1.1	-
Alkalinity, Total	mg/L (ppm)	-	-	3.6	-	-	-	-	3.6	-
Hardness, Total	mg/L (ppm)	-	-	4	-	-	-	-	4	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	<10	-	-	-	-	<10	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	3	-	-	-	-	4	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	0.5	-	-	-	-	0.5	-
Fluoride	mg/L (ppm)	-	-	0.03	-	-	-	-	0.03	-
Sulphate	mg/L (ppm)	-	-	0.7	-	-	-	-	0.7	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	0.006	-	-	-	-	0.01	-
Nitrate	mg/L (ppm)	-	-	<0.008	-	-	-	-	<0.008	-
Nitrite	mg/L (ppm)	-	-	<0.008	-	-	-	-	<0.008	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	0.3	-	-	-	-	0.3	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	0.006	-	-	-	-	0.008	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	4	-	-	-	-	4	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	5.4	-	-	-	-	5.6	-
Antimony (Sb)	µg/L (ppb)	-	-	0.91	-	-	-	-	0.63	-
Arsenic (As)	µg/L (ppb)	-	-	0.09	-	-	-	-	0.1	-
Barium (Ba)	µg/L (ppb)	-	-	1.8	-	-	-	-	1.6	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	-	-	-	-	<0.03	-
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	910	-	-	-	-	923	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.06	-	-	-	-	<0.06	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	-	0.2	-
Copper (Cu)	µg/L (ppb)	-	-	<0.6	-	-	-	-	<0.6	-
Iron (Fe)	µg/L (ppb)	-	-	17	-	-	-	-	29	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	-	0.08	-
Lithium (Li)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Magnesium (Mg)	µg/L (ppb)	-	-	395	-	-	-	-	398	-
Manganese (Mn)	µg/L (ppb)	-	-	4.6	-	-	-	-	4.8	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	-	-	-	-	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	0.2	-	-	-	-	0.2	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	373	-	-	-	-	370	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	400	-	-	-	-	200	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01
		3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m
Sodium (Na)	µg/L (ppb)	-	-	487	-	-	-	-	489	-
Strontium (Sr)	µg/L (ppb)	-	-	6.1	-	-	-	-	6.2	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.03	-	-	-	-	<0.03	-
Tin (Sn)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Titanium (Ti)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	-	0.3	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	-	0.3	-
Zinc (Zn)	µg/L (ppb)	-	-	<0.8	-	-	-	-	0.3	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	0.18	-	-	-	-	0.17	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	18-Sep-01	18-Sep-01	18-Sep-01	18-Sep-01	18-Sep-01
		12 m	13 m	14 m	15 m	0 m	1 m	2 m	3 m	4 m
Field Measured										
pH	pH Units	-	-	-	-	7.5	-	-	-	-
Conductivity [(a)]	µS/cm	13	13	13	14	13	13	13	13	13
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	16.1	16	14.4	13.7	11	11	11	10	10
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	16.1	16	14.4	13.7	9.5	9.6	9.6	9.6	9.6
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	1.2	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	3.7	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	4	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	<10	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	<3	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	0.5	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	0.03	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	0.7	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	0.01	-	-	-	<0.005	-	-
Nitrate	mg/L (ppm)	-	-	<0.008	-	-	-	<0.008	-	-
Nitrite	mg/L (ppm)	-	-	<0.008	-	-	-	<0.008	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	0.2	-	-	-	0.2	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	0.01	-	-	-	0.01	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	3	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	8.4	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	0.5	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.1	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	1.8	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	940	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.06	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	0.3	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	<0.6	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	<5	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	<0.1	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	407	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	7.1	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	0.05	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	0.3	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	381	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	0.3	-	-
Silicon (Si)	µg/L (ppb)	-	-	200	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		6-Aug-01	6-Aug-01	6-Aug-01	6-Aug-01	18-Sep-01	18-Sep-01	18-Sep-01	18-Sep-01	18-Sep-01
		12 m	13 m	14 m	15 m	0 m	1 m	2 m	3 m	4 m
Sodium (Na)	µg/L (ppb)	-	-	492	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	6.4	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.03	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	<0.1	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	<0.1	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	1.9	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	0.22	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		18-Sep-01	18-Sep-01	18-Sep-01	18-Sep-01	18-Sep-01	18-Sep-01	18-Sep-01	18-Sep-01	18-Sep-01
		5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	13	13	13	13	13	13	13	13	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	10	10	10	10	10	10	10	11	10
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	9.6	9.6	9.6	9.6	9.5	9.5	9.5	9.5	9.5
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		18-Sep-01	18-Sep-01	18-Sep-01	18-Sep-01	18-Sep-01	18-Sep-01	18-Sep-01	18-Sep-01	18-Sep-01
		5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02
		1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	17.8	15.8	13.8	13.1	12.5	12.1	11.5	11.1	10.4
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	0.3	0.8	1.5	1.8	2.2	2.3	2.5	2.6	2.7
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	6.3	-	-	-	-	6.3	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	17	-	-	-	-	17	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	8	-	-	-	-	8	-
Hardness, Total	mg/L (ppm)	-	-	6	-	-	-	-	5	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	10	-	-	-	-	10	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	<3	-
Turbidity	NTU	-	-	0.27	-	-	-	-	0.37	-
Calcium (Ca)	mg/L (ppm)	-	-	1.38	-	-	-	-	1.26	-
Magnesium (Mg)	mg/L (ppm)	-	-	0.54	-	-	-	-	0.53	-
Potassium (K)	mg/L (ppm)	-	-	0.63	-	-	-	-	0.44	-
Sodium (Na)	mg/L (ppm)	-	-	0.9	-	-	-	-	0.6	-
Bicarbonate	mg/L (ppm)	-	-	9	-	-	-	-	9	-
Carbonate	mg/L (ppm)	-	-	<5	-	-	-	-	<5	-
Chloride	mg/L (ppm)	-	-	1	-	-	-	-	1	-
Fluoride	mg/L (ppm)	-	-	<0.05	-	-	-	-	<0.05	-
Sulphate	mg/L (ppm)	-	-	1	-	-	-	-	1	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	0.029	-	-	-	-	0.031	-
Nitrate	mg/L (ppm)	-	-	<0.006	-	-	-	-	0.014	-
Nitrite	mg/L (ppm)	-	-	<0.002	-	-	-	-	<0.002	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	0.003	-	-	-	-	0.006	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	3.2	-	-	-	-	3.3	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	4.4	-	-	-	-	5.2	-
Antimony (Sb)	µg/L (ppb)	-	-	0.12	-	-	-	-	0.12	-
Arsenic (As)	µg/L (ppb)	-	-	0.11	-	-	-	-	0.1	-
Barium (Ba)	µg/L (ppb)	-	-	2.16	-	-	-	-	2.67	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	-	-	-	-	<0.03	-
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	1,160	-	-	-	-	1,200	-
Chromium (Cr)	µg/L (ppb)	-	-	0.07	-	-	-	-	0.09	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	<0.6	-	-	-	-	<0.6	-
Iron (Fe)	µg/L (ppb)	-	-	9	-	-	-	-	14	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Magnesium (Mg)	µg/L (ppb)	-	-	530	-	-	-	-	524	-
Manganese (Mn)	µg/L (ppb)	-	-	1.5	-	-	-	-	3.8	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	-	-	-	-	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	0.15	-	-	-	-	0.19	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	339	-	-	-	-	439	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	200	-	-	-	-	200	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02
		1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m
Sodium (Na)	µg/L (ppb)	-	-	467	-	-	-	-	601	-
Strontium (Sr)	µg/L (ppb)	-	-	7.6	-	-	-	-	7.8	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	1.2	-	-	-	-	1.4	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	2.8	-	-	-	-	3.1	-
Antimony (Sb)	µg/L (ppb)	-	-	0.11	-	-	-	-	0.21	-
Arsenic (As)	µg/L (ppb)	-	-	0.17	-	-	-	-	0.1	-
Barium (Ba)	µg/L (ppb)	-	-	2.06	-	-	-	-	2.55	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	-	-	-	-	<0.03	-
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	1,370	-	-	-	-	1,260	-
Chromium (Cr)	µg/L (ppb)	-	-	0.13	-	-	-	-	0.11	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	0.6	-	-	-	-	<0.6	-
Iron (Fe)	µg/L (ppb)	-	-	<5	-	-	-	-	<5	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Magnesium (Mg)	µg/L (ppb)	-	-	542	-	-	-	-	525	-
Manganese (Mn)	µg/L (ppb)	-	-	0.4	-	-	-	-	0.8	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	-	-	-	-	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	0.21	-	-	-	-	0.17	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	457	-	-	-	-	438	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	200	-	-	-	-	300	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Sodium (Na)	µg/L (ppb)	-	-	733	-	-	-	-	585	-
Strontium (Sr)	µg/L (ppb)	-	-	7.3	-	-	-	-	7.7	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	0.2	-	-	-	-	<0.1	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	2.7	-	-	-	-	2.2	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02
		10 m	11 m	12 m	13 m	14 m	15 m	16 m	17 m	18 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	10.3	9.4	8.7	8.1	7.2	6.2	4.1	2.4	1
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	2.8	2.9	3.1	3.2	3.3	3.4	3.5	3.6	3.7
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	6.2	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	18	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	8	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	6	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	11	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	<3	-	-	-	-	-
Turbidity	NTU	-	-	-	1.5	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	1.48	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	0.59	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	0.63	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	0.9	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	10	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	<5	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	1	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	<0.05	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	1.04	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	0.029	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	0.024	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	<0.002	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	0.005	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	3	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	5.6	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	0.14	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.1	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	3.3	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	2	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,310	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	0.1	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	<0.6	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	32	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	563	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	25.9	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	0.22	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	293	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	300	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02
		10 m	11 m	12 m	13 m	14 m	15 m	16 m	17 m	18 m
Sodium (Na)	µg/L (ppb)	-	-	-	489	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	8.5	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	1.8	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	3.4	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	0.15	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.13	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	2.76	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	2	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,480	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	0.11	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	0.6	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	6	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	589	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	11.5	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	0.26	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	595	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	400	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	713	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	8.1	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	0.1	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	1.4	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02
		1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	16.2	15.2	11.9	10.8	9.9	9.2	8.8	8.3	8
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	0.2	0.7	1.7	2.2	2.5	2.7	2.8	1.7	3
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	6.5	-	-	-	-	6.5	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	21	-	-	-	-	18	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	8	-	-	-	-	8	-
Hardness, Total	mg/L (ppm)	-	-	6	-	-	-	-	5	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	10	-	-	-	-	10	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	<3	-	-	-	-	<3	-
Turbidity	NTU	-	-	0.22	-	-	-	-	0.22	-
Calcium (Ca)	mg/L (ppm)	-	-	1.55	-	-	-	-	1.31	-
Magnesium (Mg)	mg/L (ppm)	-	-	0.57	-	-	-	-	0.57	-
Potassium (K)	mg/L (ppm)	-	-	0.54	-	-	-	-	0.54	-
Sodium (Na)	mg/L (ppm)	-	-	0.7	-	-	-	-	0.7	-
Bicarbonate	mg/L (ppm)	-	-	10	-	-	-	-	10	-
Carbonate	mg/L (ppm)	-	-	<5	-	-	-	-	<5	-
Chloride	mg/L (ppm)	-	-	1	-	-	-	-	<1	-
Fluoride	mg/L (ppm)	-	-	<0.05	-	-	-	-	<0.05	-
Sulphate	mg/L (ppm)	-	-	1.29	-	-	-	-	1.29	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	<0.005	-	-	-	-	<0.005	-
Nitrate	mg/L (ppm)	-	-	<0.006	-	-	-	-	<0.006	-
Nitrite	mg/L (ppm)	-	-	0.006	-	-	-	-	0.006	-
Nitrate + Nitrite	mg/L (ppm)	-	-	0.006	-	-	-	-	0.006	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	0.004	-	-	-	-	0.004	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	4.3	-	-	-	-	4.3	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	4.3	-	-	-	-	23	-
Antimony (Sb)	µg/L (ppb)	-	-	0.12	-	-	-	-	0.15	-
Arsenic (As)	µg/L (ppb)	-	-	0.18	-	-	-	-	0.14	-
Barium (Ba)	µg/L (ppb)	-	-	3.02	-	-	-	-	3.5	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	-	-	-	-	<0.03	-
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	1,550	-	-	-	-	1,310	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.06	-	-	-	-	0.1	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	0.6	-	-	-	-	<0.6	-
Iron (Fe)	µg/L (ppb)	-	-	<5	-	-	-	-	5	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Magnesium (Mg)	µg/L (ppb)	-	-	573	-	-	-	-	573	-
Manganese (Mn)	µg/L (ppb)	-	-	1.8	-	-	-	-	1.8	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	-	-	-	-	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	0.24	-	-	-	-	0.24	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	545	-	-	-	-	545	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	200	-	-	-	-	200	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02
		1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m
Sodium (Na)	µg/L (ppb)	-	-	697	-	-	-	-	697	-
Strontium (Sr)	µg/L (ppb)	-	-	10.6	-	-	-	-	10.6	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	11.2	-	-	-	-	11.2	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	1.8	-	-	-	-	1.8	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	3	-	-	-	-	2.7	-
Antimony (Sb)	µg/L (ppb)	-	-	0.19	-	-	-	-	0.17	-
Arsenic (As)	µg/L (ppb)	-	-	0.18	-	-	-	-	0.13	-
Barium (Ba)	µg/L (ppb)	-	-	2.92	-	-	-	-	3.13	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	-	-	-	-	<0.03	-
Boron (B)	µg/L (ppb)	-	-	3	-	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	1,770	-	-	-	-	1,370	-
Chromium (Cr)	µg/L (ppb)	-	-	0.13	-	-	-	-	<0.06	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	1	-	-	-	-	0.8	-
Iron (Fe)	µg/L (ppb)	-	-	<5	-	-	-	-	5	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Magnesium (Mg)	µg/L (ppb)	-	-	593	-	-	-	-	593	-
Manganese (Mn)	µg/L (ppb)	-	-	0.8	-	-	-	-	0.8	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	-	-	-	-	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	0.3	-	-	-	-	0.3	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	676	-	-	-	-	676	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	300	-	-	-	-	300	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Sodium (Na)	µg/L (ppb)	-	-	897	-	-	-	-	897	-
Strontium (Sr)	µg/L (ppb)	-	-	10.3	-	-	-	-	10.3	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	51.1	-	-	-	-	51.1	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	3.6	-	-	-	-	3.6	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		12-Mar-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02
		10 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	7.8	16.2	16.7	13	11	9.2	8.1	7.1	6.4
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3.2	0.2	0.4	1.6	2.2	2.6	2.9	3.1	3.2
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	6.5	-	-	-	-	6.4
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	22	-	-	-	-	18
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	8	-	-	-	-	8
Hardness, Total	mg/L (ppm)	-	-	-	7	-	-	-	-	6
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	10	-	-	-	-	9
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	<3	-	-	-	-	<3
Turbidity	NTU	-	-	-	0.11	-	-	-	-	<0.1
Calcium (Ca)	mg/L (ppm)	-	-	-	2.14	-	-	-	-	1.77
Magnesium (Mg)	mg/L (ppm)	-	-	-	0.76	-	-	-	-	0.62
Potassium (K)	mg/L (ppm)	-	-	-	0.78	-	-	-	-	0.6
Sodium (Na)	mg/L (ppm)	-	-	-	1.1	-	-	-	-	0.8
Bicarbonate	mg/L (ppm)	-	-	-	10	-	-	-	-	9
Carbonate	mg/L (ppm)	-	-	-	<5	-	-	-	-	<5
Chloride	mg/L (ppm)	-	-	-	<1	-	-	-	-	<1
Fluoride	mg/L (ppm)	-	-	-	<0.05	-	-	-	-	<0.05
Sulphate	mg/L (ppm)	-	-	-	1.41	-	-	-	-	1.1
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	0.015	-	-	-	-	<0.005
Nitrate	mg/L (ppm)	-	-	-	0.011	-	-	-	-	0.045
Nitrite	mg/L (ppm)	-	-	-	<0.002	-	-	-	-	<0.002
Nitrate + Nitrite	mg/L (ppm)	-	-	-	0.011	-	-	-	-	0.045
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	0.004	-	-	-	-	0.004
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	52	-	-	-	-	3.8
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	4.7	-	-	-	-	8.2
Antimony (Sb)	µg/L (ppb)	-	-	-	0.29	-	-	-	-	0.26
Arsenic (As)	µg/L (ppb)	-	-	-	0.17	-	-	-	-	0.12
Barium (Ba)	µg/L (ppb)	-	-	-	3.31	-	-	-	-	3.52
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	-	-	-	-	<0.03
Boron (B)	µg/L (ppb)	-	-	-	3	-	-	-	-	3
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	-	1,810	-	-	-	-	1,560
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.06	-	-	-	-	<0.06
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Copper (Cu)	µg/L (ppb)	-	-	-	0.6	-	-	-	-	<0.6
Iron (Fe)	µg/L (ppb)	-	-	-	9	-	-	-	-	22
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	0.3	-	-	-	-	<0.1
Magnesium (Mg)	µg/L (ppb)	-	-	-	704	-	-	-	-	583
Manganese (Mn)	µg/L (ppb)	-	-	-	1.9	-	-	-	-	20.7
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	-	-	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	-	-	-	-	<0.06
Nickel (Ni)	µg/L (ppb)	-	-	-	0.27	-	-	-	-	0.35
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	591	-	-	-	-	461
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	200	-	-	-	-	300
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		12-Mar-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02
		10 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m
Sodium (Na)	µg/L (ppb)	-	-	-	803	-	-	-	-	604
Strontium (Sr)	µg/L (ppb)	-	-	-	11.1	-	-	-	-	9.4
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	1.2	-	-	-	-	0.7
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	-	<0.8	-	-	-	-	<0.8
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	3.7	-	-	-	-	2.9
Antimony (Sb)	µg/L (ppb)	-	-	-	0.14	-	-	-	-	0.29
Arsenic (As)	µg/L (ppb)	-	-	-	0.19	-	-	-	-	0.13
Barium (Ba)	µg/L (ppb)	-	-	-	3.15	-	-	-	-	3.04
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	-	-	-	-	<0.03
Boron (B)	µg/L (ppb)	-	-	-	3	-	-	-	-	2
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	-	2,140	-	-	-	-	1,770
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.06	-	-	-	-	<0.06
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Copper (Cu)	µg/L (ppb)	-	-	-	1.1	-	-	-	-	0.8
Iron (Fe)	µg/L (ppb)	-	-	-	8	-	-	-	-	5
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	0.4	-	-	-	-	<0.1
Magnesium (Mg)	µg/L (ppb)	-	-	-	759	-	-	-	-	616
Manganese (Mn)	µg/L (ppb)	-	-	-	1	-	-	-	-	10.2
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	-	-	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	-	-	-	-	<0.06
Nickel (Ni)	µg/L (ppb)	-	-	-	0.35	-	-	-	-	0.33
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	781	-	-	-	-	603
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	300	-	-	-	-	400
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Sodium (Na)	µg/L (ppb)	-	-	-	1,080	-	-	-	-	818
Strontium (Sr)	µg/L (ppb)	-	-	-	11.2	-	-	-	-	9.4
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	2	-	-	-	-	4.1
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	-	0.9	-	-	-	-	1.4

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		29-Apr-02	29-Apr-02	29-Apr-02	25-May-02	25-May-02	25-May-02	25-May-02	25-May-02	25-May-02
		8 m	9 m	10 m	1 m	2 m	3 m	4 m	5 m	6 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	6	5.6	14.1	15.5	13.1	10.7	8.8	7.3
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	3.3	3.3	0.2	0.9	1.9	2.5	2.9	3.2
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	6.4	-	-	-	-	6.6	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	18	-	-	-	-	22	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	8	-	-	-	-	8	-	-	-
Hardness, Total	mg/L (ppm)	6	-	-	-	-	8	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	9	-	-	-	-	11	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	<3	-	-	-	-	<3	-	-	-
Turbidity	NTU	<0.1	-	-	-	-	0.41	-	-	-
Calcium (Ca)	mg/L (ppm)	1.62	-	-	-	-	1.81	-	-	-
Magnesium (Mg)	mg/L (ppm)	0.6	-	-	-	-	0.85	-	-	-
Potassium (K)	mg/L (ppm)	0.46	-	-	-	-	0.7	-	-	-
Sodium (Na)	mg/L (ppm)	0.6	-	-	-	-	1.2	-	-	-
Bicarbonate	mg/L (ppm)	9	-	-	-	-	10	-	-	-
Carbonate	mg/L (ppm)	<5	-	-	-	-	<5	-	-	-
Chloride	mg/L (ppm)	<1	-	-	-	-	<1	-	-	-
Fluoride	mg/L (ppm)	<0.05	-	-	-	-	<0.05	-	-	-
Sulphate	mg/L (ppm)	1.1	-	-	-	-	1.3	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	<0.005	-	-	-	-	0.05	-	-	-
Nitrate	mg/L (ppm)	0.045	-	-	-	-	0.007	-	-	-
Nitrite	mg/L (ppm)	<0.002	-	-	-	-	<0.002	-	-	-
Nitrate + Nitrite	mg/L (ppm)	0.045	-	-	-	-	0.007	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.003	-	-	-	-	0.005	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	3.8	-	-	-	-	11	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	7.4	-	-	-	-	4.6	-	-	-
Antimony (Sb)	µg/L (ppb)	0.24	-	-	-	-	0.11	-	-	-
Arsenic (As)	µg/L (ppb)	0.12	-	-	-	-	0.17	-	-	-
Barium (Ba)	µg/L (ppb)	3.55	-	-	-	-	2.71	-	-	-
Beryllium (Be)	µg/L (ppb)	<0.2	-	-	-	-	<0.2	-	-	-
Bismuth (Bi)	µg/L (ppb)	<0.03	-	-	-	-	<0.03	-	-	-
Boron (B)	µg/L (ppb)	2	-	-	-	-	1	-	-	-
Cadmium (Cd)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Calcium (Ca)	µg/L (ppb)	1,580	-	-	-	-	1,670	-	-	-
Chromium (Cr)	µg/L (ppb)	<0.06	-	-	-	-	<0.06	-	-	-
Cobalt (Co)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	-
Copper (Cu)	µg/L (ppb)	<0.6	-	-	-	-	<0.6	-	-	-
Iron (Fe)	µg/L (ppb)	23	-	-	-	-	<5	-	-	-
Lead (Pb)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Lithium (Li)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	-
Magnesium (Mg)	µg/L (ppb)	590	-	-	-	-	819	-	-	-
Manganese (Mn)	µg/L (ppb)	20.9	-	-	-	-	0.9	-	-	-
Mercury (Hg)	µg/L (ppb)	<0.02	-	-	-	-	<0.02	-	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.06	-	-	-	-	<0.06	-	-	-
Nickel (Ni)	µg/L (ppb)	0.34	-	-	-	-	0.3	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	462	-	-	-	-	628	-	-	-
Selenium (Se)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	300	-	-	-	-	200	-	-	-
Silver (Ag)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		29-Apr-02	29-Apr-02	29-Apr-02	25-May-02	25-May-02	25-May-02	25-May-02	25-May-02	25-May-02
		8 m	9 m	10 m	1 m	2 m	3 m	4 m	5 m	6 m
Sodium (Na)	µg/L (ppb)	610	-	-	-	-	919	-	-	-
Strontium (Sr)	µg/L (ppb)	9.5	-	-	-	-	9.9	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	1.1	-	-	-	-	0.7	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Vanadium (V)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Zinc (Zn)	µg/L (ppb)	<0.8	-	-	-	-	<0.8	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	2.7	-	-	-	-	3.7	-	-	-
Antimony (Sb)	µg/L (ppb)	0.18	-	-	-	-	0.1	-	-	-
Arsenic (As)	µg/L (ppb)	0.12	-	-	-	-	0.17	-	-	-
Barium (Ba)	µg/L (ppb)	3.46	-	-	-	-	2.18	-	-	-
Beryllium (Be)	µg/L (ppb)	<0.2	-	-	-	-	<0.2	-	-	-
Bismuth (Bi)	µg/L (ppb)	<0.03	-	-	-	-	<0.03	-	-	-
Boron (B)	µg/L (ppb)	2	-	-	-	-	2	-	-	-
Cadmium (Cd)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Calcium (Ca)	µg/L (ppb)	1,620	-	-	-	-	1,810	-	-	-
Chromium (Cr)	µg/L (ppb)	<0.06	-	-	-	-	<0.06	-	-	-
Cobalt (Co)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	-
Copper (Cu)	µg/L (ppb)	0.7	-	-	-	-	0.7	-	-	-
Iron (Fe)	µg/L (ppb)	6	-	-	-	-	<5	-	-	-
Lead (Pb)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Lithium (Li)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	-
Magnesium (Mg)	µg/L (ppb)	598	-	-	-	-	846	-	-	-
Manganese (Mn)	µg/L (ppb)	14.1	-	-	-	-	0.6	-	-	-
Mercury (Hg)	µg/L (ppb)	<0.02	-	-	-	-	<0.02	-	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.06	-	-	-	-	<0.06	-	-	-
Nickel (Ni)	µg/L (ppb)	0.32	-	-	-	-	0.36	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	462	-	-	-	-	666	-	-	-
Selenium (Se)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	300	-	-	-	-	200	-	-	-
Silver (Ag)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	-
Sodium (Na)	µg/L (ppb)	631	-	-	-	-	1,170	-	-	-
Strontium (Sr)	µg/L (ppb)	9.9	-	-	-	-	9.7	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	4	-	-	-	-	1.7	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Vanadium (V)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Zinc (Zn)	µg/L (ppb)	4	-	-	-	-	0.8	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		25-May-02	25-May-02	25-May-02	25-May-02	4-Jul-02	5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02
		7 m	8 m	8 m duplicate	9 m	1 m	0 m	1 m	2 m	3 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	8.2	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	13	13	13
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	6.8	6	-	6	-	11.5	11.5	11.5	11.4
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3.3	3.4	-	3.4	-	11.2	11.1	11.1	11.1
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	6.1	6.2	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	19	19	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	7	7	-	-	-	11	-	-
Hardness, Total	mg/L (ppm)	-	8	8	-	-	-	4.4	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	10	10	-	-	-	12	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	<10	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	<3	<3	-	-	-	-	-	-
Turbidity	NTU	-	0.66	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	1.84	1.73	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	0.81	0.81	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	0.8	0.6	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	1.2	0.9	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	9	9	-	-	-	13.4	-	-
Carbonate	mg/L (ppm)	-	<5	<5	-	-	-	<0.5	-	-
Chloride	mg/L (ppm)	-	<1	<1	-	-	-	<1	-	-
Fluoride	mg/L (ppm)	-	<0.05	<0.05	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	1.2	1.2	-	-	-	<1	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	0.05	0.041	-	-	-	<0.1	-	-
Nitrate	mg/L (ppm)	-	0.017	0.016	-	-	-	<0.2	-	-
Nitrite	mg/L (ppm)	-	<0.002	<0.002	-	-	-	<0.3	-	-
Nitrate + Nitrite	mg/L (ppm)	-	0.017	0.016	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	0.3	-	-
Phosphorus, Total	mg/L (ppm)	-	0.01	<0.001	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	4.5	4.5	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	5.5	5.1	-	-	-	<20	-	-
Antimony (Sb)	µg/L (ppb)	-	0.33	0.39	-	-	-	<1	-	-
Arsenic (As)	µg/L (ppb)	-	0.16	0.16	-	-	-	<1	-	-
Barium (Ba)	µg/L (ppb)	-	2.73	2.7	-	-	-	2	-	-
Beryllium (Be)	µg/L (ppb)	-	<0.2	<0.2	-	-	-	<2	-	-
Bismuth (Bi)	µg/L (ppb)	-	<0.03	<0.03	-	-	-	<50	-	-
Boron (B)	µg/L (ppb)	-	2	2	-	-	-	<8	-	-
Cadmium (Cd)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	<0.1	-	-
Calcium (Ca)	µg/L (ppb)	-	1,660	1,660	-	-	-	1,090	-	-
Chromium (Cr)	µg/L (ppb)	-	<0.06	<0.06	-	-	-	<5	-	-
Cobalt (Co)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	<0.5	-	-
Copper (Cu)	µg/L (ppb)	-	0.8	0.6	-	-	-	8	-	-
Iron (Fe)	µg/L (ppb)	-	5	6	-	-	-	22	-	-
Lead (Pb)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	<0.5	-	-
Lithium (Li)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	<20	-	-
Magnesium (Mg)	µg/L (ppb)	-	796	796	-	-	-	430	-	-
Manganese (Mn)	µg/L (ppb)	-	1.2	1.3	-	-	-	3	-	-
Mercury (Hg)	µg/L (ppb)	-	<0.02	<0.02	-	-	-	<0.05	-	-
Molybdenum (Mo)	µg/L (ppb)	-	<0.06	<0.06	-	-	-	<5	-	-
Nickel (Ni)	µg/L (ppb)	-	0.33	0.31	-	-	-	<8	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	<100	-	-	-	-
Potassium (K)	µg/L (ppb)	-	621	619	-	-	-	490	-	-
Selenium (Se)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	<1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	200	200	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		25-May-02	25-May-02	25-May-02	25-May-02	4-Jul-02	5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02
		7 m	8 m	8 m duplicate	9 m	1 m	0 m	1 m	2 m	3 m
Silver (Ag)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	<0.1	-	-
Sodium (Na)	µg/L (ppb)	-	886	882	-	-	-	570	-	-
Strontium (Sr)	µg/L (ppb)	-	9.5	9.4	-	-	-	7	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	-
Tin (Sn)	µg/L (ppb)	-	2.6	1.5	-	-	-	<20	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	<3	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	<0.1	-	-
Vanadium (V)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	<5	-	-
Zinc (Zn)	µg/L (ppb)	-	3.6	2.9	-	-	-	63	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	3.8	3.8	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	0.41	0.44	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	0.16	0.16	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	2.47	2.72	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	<0.2	<0.2	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	<0.03	<0.03	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	1	2	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	1,840	1,730	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	0.06	<0.06	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	1.1	1.1	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	<5	9	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	810	807	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	0.9	1	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	<0.02	<0.02	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	<0.06	<0.06	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	0.37	0.34	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	796	626	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	300	200	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	1,150	902	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	9.1	9.6	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	4.6	7.3	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	2	3.2	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03
		4 m	5 m	6 m	7 m	1 m	2 m	3 m	4 m	5 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	13	13	13	13	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	11.4	11.4	11.5	11.3	20.2	16.3	15.1	13.7	12.9
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	11	11	11	10.9	0.2	1	1.5	2	2.3
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	6.4	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	17	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	8	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	6	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	10	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	<3	-	-
Turbidity	NTU	-	-	-	-	-	-	<0.1	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	1.3	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	0.6	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	0.8	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	1.1	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	9	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	<5	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	<1	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	<0.05	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	1	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	0.014	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	0.014	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	<0.002	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	0.015	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	0.003	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	3.5	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	7.4	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	0.05	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	0.08	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	1.95	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	1,100	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	<0.06	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	0.8	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	10	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	0.8	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	477	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	0.9	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	0.16	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	358	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	200	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03
		4 m	5 m	6 m	7 m	1 m	2 m	3 m	4 m	5 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	579	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	7.3	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	2.9	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	<0.8	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	6.3	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	0.05	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	0.08	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	1.94	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	1,120	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	<0.06	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	0.9	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	<5	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	0.8	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	479	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	0.3	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	0.28	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	360	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	200	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	614	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	7.4	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	6.4	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	2.5	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03
		6 m	7 m	8 m	8 m duplicate	9 m	10 m	11 m	12 m	13 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	11.8	11	10.5	-	10	9.3	8.4	7.2	6.4
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	2.5	2.7	2.8	-	2.8	2.9	3	3.2	3.3
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	6.5	6.5	-	-	-	-	6.3
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	17	17	-	-	-	-	18
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	8	8	-	-	-	-	7
Hardness, Total	mg/L (ppm)	-	-	6	6	-	-	-	-	6
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	8	8	-	-	-	-	8
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	<3	<3	-	-	-	-	<3
Turbidity	NTU	-	-	<0.1	<0.1	-	-	-	-	<0.1
Calcium (Ca)	mg/L (ppm)	-	-	1.3	1.3	-	-	-	-	1.4
Magnesium (Mg)	mg/L (ppm)	-	-	0.6	0.6	-	-	-	-	0.6
Potassium (K)	mg/L (ppm)	-	-	0.5	0.5	-	-	-	-	0.4
Sodium (Na)	mg/L (ppm)	-	-	0.7	0.7	-	-	-	-	0.6
Bicarbonate	mg/L (ppm)	-	-	9	9	-	-	-	-	9
Carbonate	mg/L (ppm)	-	-	<5	<5	-	-	-	-	<5
Chloride	mg/L (ppm)	-	-	<1	<1	-	-	-	-	<1
Fluoride	mg/L (ppm)	-	-	<0.05	<0.05	-	-	-	-	<0.05
Sulphate	mg/L (ppm)	-	-	0.9	0.9	-	-	-	-	1
Nutrients										
Ammonia	mg/L (ppm)	-	-	0.016	0.017	-	-	-	-	0.019
Nitrate	mg/L (ppm)	-	-	0.012	0.014	-	-	-	-	0.028
Nitrite	mg/L (ppm)	-	-	<0.002	<0.002	-	-	-	-	<0.002
Nitrate + Nitrite	mg/L (ppm)	-	-	0.014	0.015	-	-	-	-	0.03
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	0.003	0.003	-	-	-	-	0.003
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	3	3	-	-	-	-	3
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	6.8	6.7	-	-	-	-	6.6
Antimony (Sb)	µg/L (ppb)	-	-	0.05	0.07	-	-	-	-	0.05
Arsenic (As)	µg/L (ppb)	-	-	0.05	0.05	-	-	-	-	0.05
Barium (Ba)	µg/L (ppb)	-	-	2.44	2.45	-	-	-	-	3.2
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	<0.2	-	-	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	<0.03	-	-	-	-	<0.03
Boron (B)	µg/L (ppb)	-	-	2	2	-	-	-	-	2
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	1,120	1,140	-	-	-	-	1,160
Chromium (Cr)	µg/L (ppb)	-	-	<0.06	<0.06	-	-	-	-	<0.06
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	<0.1
Copper (Cu)	µg/L (ppb)	-	-	<0.6	<0.6	-	-	-	-	<0.6
Iron (Fe)	µg/L (ppb)	-	-	21	29	-	-	-	-	30
Lead (Pb)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	0.8	0.7	-	-	-	-	0.7
Magnesium (Mg)	µg/L (ppb)	-	-	469	459	-	-	-	-	496
Manganese (Mn)	µg/L (ppb)	-	-	5.4	5.4	-	-	-	-	24.5
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	<0.02	-	-	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	<0.06	-	-	-	-	<0.06
Nickel (Ni)	µg/L (ppb)	-	-	0.22	0.24	-	-	-	-	0.34
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	341	335	-	-	-	-	333
Selenium (Se)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	300	300	-	-	-	-	300

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03
		6 m	7 m	8 m	8 m duplicate	9 m	10 m	11 m	12 m	13 m
Silver (Ag)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	<0.1
Sodium (Na)	µg/L (ppb)	-	-	527	529	-	-	-	-	530
Strontium (Sr)	µg/L (ppb)	-	-	7.2	7	-	-	-	-	7.7
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	0.7	0.7	-	-	-	-	0.5
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	-	<0.05
Vanadium (V)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	<0.8	<0.8	-	-	-	-	<0.8
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	5.4	5.6	-	-	-	-	5.5
Antimony (Sb)	µg/L (ppb)	-	-	0.05	0.05	-	-	-	-	0.05
Arsenic (As)	µg/L (ppb)	-	-	0.06	0.06	-	-	-	-	0.05
Barium (Ba)	µg/L (ppb)	-	-	2.44	2.4	-	-	-	-	3.09
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	<0.2	-	-	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	<0.03	-	-	-	-	<0.03
Boron (B)	µg/L (ppb)	-	-	2	2	-	-	-	-	2
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	1,090	1,080	-	-	-	-	1,240
Chromium (Cr)	µg/L (ppb)	-	-	<0.06	<0.06	-	-	-	-	<0.06
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	<0.1
Copper (Cu)	µg/L (ppb)	-	-	1.8	2.2	-	-	-	-	0.7
Iron (Fe)	µg/L (ppb)	-	-	8	7	-	-	-	-	11
Lead (Pb)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	0.7	0.7	-	-	-	-	0.7
Magnesium (Mg)	µg/L (ppb)	-	-	459	462	-	-	-	-	497
Manganese (Mn)	µg/L (ppb)	-	-	2.8	2.8	-	-	-	-	19.7
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	<0.02	-	-	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	<0.06	-	-	-	-	<0.06
Nickel (Ni)	µg/L (ppb)	-	-	0.22	0.32	-	-	-	-	0.4
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	338	342	-	-	-	-	339
Selenium (Se)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	200	300	-	-	-	-	300
Silver (Ag)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	<0.1
Sodium (Na)	µg/L (ppb)	-	-	543	543	-	-	-	-	537
Strontium (Sr)	µg/L (ppb)	-	-	7.2	7.1	-	-	-	-	7.8
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	2.4	2.5	-	-	-	-	1.6
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	-	<0.05
Vanadium (V)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	<0.8	1.5	-	-	-	-	1.4

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		7-Feb-03	7-Feb-03	7-Feb-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03
		14 m	15 m	16 m	1 m	2 m	3 m	4 m	5 m	6 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	5.3	4.3	3.2	19.1	15.6	13.9	12.3	10.9	9.9
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3.4	3.4	3.5	0.2	0.8	1.5	2	2.4	2.7
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	6.4	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	18	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	8	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	6	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	9	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	<3	-	-	-
Turbidity	NTU	-	-	-	-	-	<0.1	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	1.5	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	0.6	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	0.6	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	0.8	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	9	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	<5	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	<1	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	<0.05	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	1.1	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	0.011	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	<0.006	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	0.002	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	<0.006	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	0.005	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	4	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	8.1	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	0.13	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	0.14	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	2.35	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	<0.2	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	<0.03	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	2	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	<0.05	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	1,280	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	<0.06	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	<0.1	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	<0.6	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	9	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	<0.05	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	1	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	553	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	1	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	<0.02	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	<0.06	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	0.2	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	445	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	<0.1	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	200	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	<0.1	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		7-Feb-03	7-Feb-03	7-Feb-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03
		14 m	15 m	16 m	1 m	2 m	3 m	4 m	5 m	6 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	631	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	8.3	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	1.5	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	<0.05	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	<0.05	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	<0.8	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	7.2	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	0.09	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	0.14	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	2.32	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	<0.2	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	<0.03	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	3	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	<0.05	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	1,320	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	<0.06	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	<0.1	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	0.7	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	5	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	<0.05	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	1	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	559	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	0.4	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	<0.02	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	<0.06	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	0.3	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	441	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	<0.1	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	200	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	<0.1	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	649	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	8.4	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	7.2	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	<0.05	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	<0.05	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	3	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03
		7 m	8 m	8 m duplicate	9 m	10 m	11 m	12 m	13 m	14 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	8.4	7.7	-	7.4	6.7	6	5.3	4.4	3.5
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	2.8	2.9	-	3	3.1	3.2	3.3	3.4	3.5
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	6.4	6.4	-	-	-	-	6.2	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	17	18	-	-	-	-	23	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	7	7	-	-	-	-	8	-
Hardness, Total	mg/L (ppm)	-	6	6	-	-	-	-	6	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	8	8	-	-	-	-	9	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	<3	<3	-	-	-	-	<3	-
Turbidity	NTU	-	<0.1	<0.1	-	-	-	-	<0.1	-
Calcium (Ca)	mg/L (ppm)	-	1.4	1.4	-	-	-	-	1.6	-
Magnesium (Mg)	mg/L (ppm)	-	0.6	0.6	-	-	-	-	0.6	-
Potassium (K)	mg/L (ppm)	-	0.5	0.5	-	-	-	-	0.4	-
Sodium (Na)	mg/L (ppm)	-	0.7	0.7	-	-	-	-	0.7	-
Bicarbonate	mg/L (ppm)	-	9	9	-	-	-	-	9	-
Carbonate	mg/L (ppm)	-	<5	<5	-	-	-	-	<5	-
Chloride	mg/L (ppm)	-	<1	<1	-	-	-	-	<1	-
Fluoride	mg/L (ppm)	-	<0.05	<0.05	-	-	-	-	<0.05	-
Sulphate	mg/L (ppm)	-	1.1	1.1	-	-	-	-	1	-
Nutrients										
Ammonia	mg/L (ppm)	-	0.011	0.012	-	-	-	-	0.006	-
Nitrate	mg/L (ppm)	-	<0.006	<0.006	-	-	-	-	0.058	-
Nitrite	mg/L (ppm)	-	0.002	<0.002	-	-	-	-	<0.002	-
Nitrate + Nitrite	mg/L (ppm)	-	<0.006	<0.006	-	-	-	-	0.058	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	0.005	0.005	-	-	-	-	0.006	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	4	4	-	-	-	-	3	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	7.9	8.2	-	-	-	-	7.9	-
Antimony (Sb)	µg/L (ppb)	-	0.12	0.1	-	-	-	-	0.22	-
Arsenic (As)	µg/L (ppb)	-	0.13	0.13	-	-	-	-	0.16	-
Barium (Ba)	µg/L (ppb)	-	2.41	2.41	-	-	-	-	3.98	-
Beryllium (Be)	µg/L (ppb)	-	<0.2	<0.2	-	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	<0.03	<0.03	-	-	-	-	<0.03	-
Boron (B)	µg/L (ppb)	-	2	2	-	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	1,240	1,250	-	-	-	-	1,380	-
Chromium (Cr)	µg/L (ppb)	-	<0.06	<0.06	-	-	-	-	<0.06	-
Cobalt (Co)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	-	0.1	-
Copper (Cu)	µg/L (ppb)	-	0.8	<0.6	-	-	-	-	<0.6	-
Iron (Fe)	µg/L (ppb)	-	11	12	-	-	-	-	45	-
Lead (Pb)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	0.9	0.9	-	-	-	-	0.8	-
Magnesium (Mg)	µg/L (ppb)	-	537	533	-	-	-	-	563	-
Manganese (Mn)	µg/L (ppb)	-	1.7	1.7	-	-	-	-	49.2	-
Mercury (Hg)	µg/L (ppb)	-	<0.02	<0.02	-	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	<0.06	<0.06	-	-	-	-	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	0.2	0.2	-	-	-	-	0.1	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	438	428	-	-	-	-	432	-
Selenium (Se)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	200	200	-	-	-	-	400	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03
		7 m	8 m	8 m duplicate	9 m	10 m	11 m	12 m	13 m	14 m
Silver (Ag)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	-	<0.1	-
Sodium (Na)	µg/L (ppb)	-	610	611	-	-	-	-	582	-
Strontium (Sr)	µg/L (ppb)	-	8.1	8.1	-	-	-	-	9.3	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	1.9	1.8	-	-	-	-	0.7	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	<0.8	<0.8	-	-	-	-	<0.8	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	6.9	6.9	-	-	-	-	5.6	-
Antimony (Sb)	µg/L (ppb)	-	0.11	0.1	-	-	-	-	0.41	-
Arsenic (As)	µg/L (ppb)	-	0.13	0.13	-	-	-	-	0.11	-
Barium (Ba)	µg/L (ppb)	-	2.46	2.4	-	-	-	-	3.78	-
Beryllium (Be)	µg/L (ppb)	-	<0.2	<0.2	-	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	<0.03	<0.03	-	-	-	-	<0.03	-
Boron (B)	µg/L (ppb)	-	2	2	-	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	1,280	1,270	-	-	-	-	1,350	-
Chromium (Cr)	µg/L (ppb)	-	<0.06	<0.06	-	-	-	-	0.07	-
Cobalt (Co)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	-	0.1	-
Copper (Cu)	µg/L (ppb)	-	<0.6	<0.6	-	-	-	-	<0.6	-
Iron (Fe)	µg/L (ppb)	-	5	12	-	-	-	-	11	-
Lead (Pb)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	0.9	0.9	-	-	-	-	0.8	-
Magnesium (Mg)	µg/L (ppb)	-	543	534	-	-	-	-	552	-
Manganese (Mn)	µg/L (ppb)	-	0.8	0.8	-	-	-	-	42.7	-
Mercury (Hg)	µg/L (ppb)	-	<0.02	<0.02	-	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	<0.06	<0.06	-	-	-	-	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	0.21	0.29	-	-	-	-	0.15	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	438	421	-	-	-	-	421	-
Selenium (Se)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	200	200	-	-	-	-	400	-
Silver (Ag)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	-	<0.1	-
Sodium (Na)	µg/L (ppb)	-	618	624	-	-	-	-	583	-
Strontium (Sr)	µg/L (ppb)	-	8.2	8.2	-	-	-	-	9.1	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	3.9	2.4	-	-	-	-	1.8	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	0.9	2.4	-	-	-	-	2.6	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		5-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03
		15 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	2.7	16.4	15.6	13.8	11.8	10.3	9	8	7.2
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3.6	0.2	1	1.7	2.1	2.5	2.8	2.9	3
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	6.4	-	-	-	-	6.3
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	19	-	-	-	-	18
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	8	-	-	-	-	7
Hardness, Total	mg/L (ppm)	-	-	-	6	-	-	-	-	6
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	9	-	-	-	-	8
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	<3	-	-	-	-	3
Turbidity	NTU	-	-	-	<0.1	-	-	-	-	<0.1
Calcium (Ca)	mg/L (ppm)	-	-	-	1.4	-	-	-	-	1.4
Magnesium (Mg)	mg/L (ppm)	-	-	-	0.6	-	-	-	-	0.6
Potassium (K)	mg/L (ppm)	-	-	-	0.6	-	-	-	-	0.6
Sodium (Na)	mg/L (ppm)	-	-	-	0.8	-	-	-	-	0.8
Bicarbonate	mg/L (ppm)	-	-	-	9	-	-	-	-	9
Carbonate	mg/L (ppm)	-	-	-	<5	-	-	-	-	<5
Chloride	mg/L (ppm)	-	-	-	<1	-	-	-	-	<1
Fluoride	mg/L (ppm)	-	-	-	<0.05	-	-	-	-	<0.05
Sulphate	mg/L (ppm)	-	-	-	1.1	-	-	-	-	1
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	0.014	-	-	-	-	0.009
Nitrate	mg/L (ppm)	-	-	-	0.008	-	-	-	-	0.028
Nitrite	mg/L (ppm)	-	-	-	<0.002	-	-	-	-	<0.002
Nitrate + Nitrite	mg/L (ppm)	-	-	-	0.009	-	-	-	-	0.029
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	0.001	-	-	-	-	0.001
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	4	-	-	-	-	3
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	8.6	-	-	-	-	7.4
Antimony (Sb)	µg/L (ppb)	-	-	-	0.06	-	-	-	-	0.06
Arsenic (As)	µg/L (ppb)	-	-	-	0.12	-	-	-	-	0.1
Barium (Ba)	µg/L (ppb)	-	-	-	2.57	-	-	-	-	3.15
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	0.03	-	-	-	-	<0.03
Boron (B)	µg/L (ppb)	-	-	-	3	-	-	-	-	2
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	-	1,630	-	-	-	-	1,300
Chromium (Cr)	µg/L (ppb)	-	-	-	0.06	-	-	-	-	<0.06
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Copper (Cu)	µg/L (ppb)	-	-	-	<0.6	-	-	-	-	<0.6
Iron (Fe)	µg/L (ppb)	-	-	-	9	-	-	-	-	17
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Magnesium (Mg)	µg/L (ppb)	-	-	-	606	-	-	-	-	554
Manganese (Mn)	µg/L (ppb)	-	-	-	1	-	-	-	-	9
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	-	-	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	-	-	-	-	<0.06
Nickel (Ni)	µg/L (ppb)	-	-	-	0.16	-	-	-	-	0.23
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	505	-	-	-	-	451
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	200	-	-	-	-	200
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		5-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03
		15 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m
Sodium (Na)	µg/L (ppb)	-	-	-	695	-	-	-	-	588
Strontium (Sr)	µg/L (ppb)	-	-	-	9	-	-	-	-	8.5
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	1.6	-	-	-	-	0.7
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	-	<0.8	-	-	-	-	<0.8
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	7.7	-	-	-	-	6.1
Antimony (Sb)	µg/L (ppb)	-	-	-	0.06	-	-	-	-	0.07
Arsenic (As)	µg/L (ppb)	-	-	-	0.13	-	-	-	-	0.09
Barium (Ba)	µg/L (ppb)	-	-	-	2.64	-	-	-	-	3.04
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	-	-	-	-	<0.03
Boron (B)	µg/L (ppb)	-	-	-	3	-	-	-	-	2
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	-	1,460	-	-	-	-	1,270
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.06	-	-	-	-	<0.06
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Copper (Cu)	µg/L (ppb)	-	-	-	1.4	-	-	-	-	0.6
Iron (Fe)	µg/L (ppb)	-	-	-	<5	-	-	-	-	6
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Magnesium (Mg)	µg/L (ppb)	-	-	-	610	-	-	-	-	539
Manganese (Mn)	µg/L (ppb)	-	-	-	0.5	-	-	-	-	6
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	-	-	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	-	-	-	-	<0.06
Nickel (Ni)	µg/L (ppb)	-	-	-	0.17	-	-	-	-	0.23
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	512	-	-	-	-	435
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	200	-	-	-	-	300
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Sodium (Na)	µg/L (ppb)	-	-	-	708	-	-	-	-	577
Strontium (Sr)	µg/L (ppb)	-	-	-	9	-	-	-	-	8.3
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	5.1	-	-	-	-	2.4
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	-	1.1	-	-	-	-	<0.8

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03
		8 m	9 m	10 m	11 m	12 m	13 m	14 m	15 m	16 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	6.5	5.9	5.4	4.3	3.8	2.7	1.7	0.7
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	3.1	3.2	3.3	3.4	3.5	3.6	3.6	3.7
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	6.3	-	-	-	-	6.3	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	18	-	-	-	-	19	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	8	-	-	-	-	8	-	-	-
Hardness, Total	mg/L (ppm)	6	-	-	-	-	7	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	8	-	-	-	-	9	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	<3	-	-	-	-	3	-	-	-
Turbidity	NTU	<0.1	-	-	-	-	<0.1	-	-	-
Calcium (Ca)	mg/L (ppm)	1.3	-	-	-	-	1.6	-	-	-
Magnesium (Mg)	mg/L (ppm)	0.6	-	-	-	-	0.7	-	-	-
Potassium (K)	mg/L (ppm)	0.6	-	-	-	-	0.6	-	-	-
Sodium (Na)	mg/L (ppm)	0.7	-	-	-	-	0.8	-	-	-
Bicarbonate	mg/L (ppm)	9	-	-	-	-	9	-	-	-
Carbonate	mg/L (ppm)	<5	-	-	-	-	<5	-	-	-
Chloride	mg/L (ppm)	<1	-	-	-	-	<1	-	-	-
Fluoride	mg/L (ppm)	<0.05	-	-	-	-	<0.05	-	-	-
Sulphate	mg/L (ppm)	1	-	-	-	-	1	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	0.009	-	-	-	-	0.007	-	-	-
Nitrate	mg/L (ppm)	0.031	-	-	-	-	0.065	-	-	-
Nitrite	mg/L (ppm)	<0.002	-	-	-	-	<0.002	-	-	-
Nitrate + Nitrite	mg/L (ppm)	0.032	-	-	-	-	0.066	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	<0.001	-	-	-	-	0.001	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	3	-	-	-	-	3	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	7.4	-	-	-	-	7.2	-	-	-
Antimony (Sb)	µg/L (ppb)	0.07	-	-	-	-	0.05	-	-	-
Arsenic (As)	µg/L (ppb)	0.09	-	-	-	-	0.09	-	-	-
Barium (Ba)	µg/L (ppb)	3.09	-	-	-	-	4.26	-	-	-
Beryllium (Be)	µg/L (ppb)	<0.2	-	-	-	-	<0.2	-	-	-
Bismuth (Bi)	µg/L (ppb)	<0.03	-	-	-	-	<0.03	-	-	-
Boron (B)	µg/L (ppb)	2	-	-	-	-	2	-	-	-
Cadmium (Cd)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Calcium (Ca)	µg/L (ppb)	1,300	-	-	-	-	1,470	-	-	-
Chromium (Cr)	µg/L (ppb)	<0.06	-	-	-	-	<0.06	-	-	-
Cobalt (Co)	µg/L (ppb)	<0.1	-	-	-	-	0.2	-	-	-
Copper (Cu)	µg/L (ppb)	<0.6	-	-	-	-	<0.6	-	-	-
Iron (Fe)	µg/L (ppb)	24	-	-	-	-	78	-	-	-
Lead (Pb)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Lithium (Li)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	-
Magnesium (Mg)	µg/L (ppb)	547	-	-	-	-	595	-	-	-
Manganese (Mn)	µg/L (ppb)	8.8	-	-	-	-	82.8	-	-	-
Mercury (Hg)	µg/L (ppb)	<0.02	-	-	-	-	<0.02	-	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.06	-	-	-	-	<0.06	-	-	-
Nickel (Ni)	µg/L (ppb)	0.24	-	-	-	-	0.36	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	449	-	-	-	-	451	-	-	-
Selenium (Se)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	300	-	-	-	-	500	-	-	-
Silver (Ag)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03
		8 m	9 m	10 m	11 m	12 m	13 m	14 m	15 m	16 m
Sodium (Na)	µg/L (ppb)	588	-	-	-	-	590	-	-	-
Strontium (Sr)	µg/L (ppb)	8.3	-	-	-	-	9.8	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	2	-	-	-	-	3.4	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Vanadium (V)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Zinc (Zn)	µg/L (ppb)	<0.8	-	-	-	-	<0.8	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	6.3	-	-	-	-	5.2	-	-	-
Antimony (Sb)	µg/L (ppb)	0.05	-	-	-	-	0.14	-	-	-
Arsenic (As)	µg/L (ppb)	0.09	-	-	-	-	0.09	-	-	-
Barium (Ba)	µg/L (ppb)	3.06	-	-	-	-	4.15	-	-	-
Beryllium (Be)	µg/L (ppb)	<0.2	-	-	-	-	<0.2	-	-	-
Bismuth (Bi)	µg/L (ppb)	<0.03	-	-	-	-	<0.03	-	-	-
Boron (B)	µg/L (ppb)	2	-	-	-	-	2	-	-	-
Cadmium (Cd)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Calcium (Ca)	µg/L (ppb)	1,310	-	-	-	-	1,490	-	-	-
Chromium (Cr)	µg/L (ppb)	<0.06	-	-	-	-	<0.06	-	-	-
Cobalt (Co)	µg/L (ppb)	<0.1	-	-	-	-	0.2	-	-	-
Copper (Cu)	µg/L (ppb)	0.7	-	-	-	-	<0.6	-	-	-
Iron (Fe)	µg/L (ppb)	7	-	-	-	-	12	-	-	-
Lead (Pb)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Lithium (Li)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	-
Magnesium (Mg)	µg/L (ppb)	547	-	-	-	-	596	-	-	-
Manganese (Mn)	µg/L (ppb)	6.1	-	-	-	-	76.3	-	-	-
Mercury (Hg)	µg/L (ppb)	<0.02	-	-	-	-	<0.02	-	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.06	-	-	-	-	<0.06	-	-	-
Nickel (Ni)	µg/L (ppb)	0.23	-	-	-	-	0.39	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	445	-	-	-	-	447	-	-	-
Selenium (Se)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	300	-	-	-	-	400	-	-	-
Silver (Ag)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	-
Sodium (Na)	µg/L (ppb)	589	-	-	-	-	591	-	-	-
Strontium (Sr)	µg/L (ppb)	8.3	-	-	-	-	9.8	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	2.9	-	-	-	-	4.2	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Vanadium (V)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Zinc (Zn)	µg/L (ppb)	<0.8	-	-	-	-	<0.8	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03
		0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	11	11	11	11	11	11	11	11	11
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	8.9	8.9	8.9	8.9	8.5	8.7	8.7	8.8	8.8
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	14.3	14.3	14.3	14.3	14.3	14.2	14.2	14.2	14.2
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	6.9	-	-	-	-	-	6.8	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	13	-	-	-	-	-	12	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	<5	-	-	-	-	-	<5	-	-
Hardness, Total	mg/L (ppm)	5	-	-	-	-	-	5	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	3	-	-	-	-	-	3	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	1	-	-	-	-	-	1	-	-
Magnesium (Mg)	mg/L (ppm)	0.5	-	-	-	-	-	0.5	-	-
Potassium (K)	mg/L (ppm)	0.4	-	-	-	-	-	0.4	-	-
Sodium (Na)	mg/L (ppm)	<1	-	-	-	-	-	<1	-	-
Bicarbonate	mg/L (ppm)	<5	-	-	-	-	-	<5	-	-
Carbonate	mg/L (ppm)	<5	-	-	-	-	-	<5	-	-
Chloride	mg/L (ppm)	<1	-	-	-	-	-	<1	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	0.8	-	-	-	-	-	0.8	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	<0.006	-	-	-	-	-	<0.006	-	-
Nitrite	mg/L (ppm)	<0.002	-	-	-	-	-	<0.002	-	-
Nitrate + Nitrite	mg/L (ppm)	<0.006	-	-	-	-	-	<0.006	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.003	-	-	-	-	-	0.003	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	8.1	-	-	-	-	-	8.2	-	-
Antimony (Sb)	µg/L (ppb)	0.13	-	-	-	-	-	0.09	-	-
Arsenic (As)	µg/L (ppb)	0.13	-	-	-	-	-	0.13	-	-
Barium (Ba)	µg/L (ppb)	1.78	-	-	-	-	-	1.8	-	-
Beryllium (Be)	µg/L (ppb)	<0.2	-	-	-	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	2	-	-	-	-	-	2	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	<0.05	-	-	-	-	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	910	-	-	-	-	-	940	-	-
Chromium (Cr)	µg/L (ppb)	<0.06	-	-	-	-	-	<0.06	-	-
Cobalt (Co)	µg/L (ppb)	<0.1	-	-	-	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	<0.6	-	-	-	-	-	<0.6	-	-
Iron (Fe)	µg/L (ppb)	22	-	-	-	-	-	21	-	-
Lead (Pb)	µg/L (ppb)	<0.05	-	-	-	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	469	-	-	-	-	-	485	-	-
Manganese (Mn)	µg/L (ppb)	3.8	-	-	-	-	-	3.8	-	-
Mercury (Hg)	µg/L (ppb)	<0.02	-	-	-	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.06	-	-	-	-	-	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	0.2	-	-	-	-	-	0.2	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	350	-	-	-	-	-	360	-	-
Selenium (Se)	µg/L (ppb)	<0.1	-	-	-	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	<0.1	-	-	-	-	-	<0.1	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03
		0 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m
Sodium (Na)	µg/L (ppb)	481	-	-	-	-	-	496	-	-
Strontium (Sr)	µg/L (ppb)	5.9	-	-	-	-	-	6.2	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	-	-	-	-	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	<0.05	-	-	-	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	1	-	-	-	-	-	1.1	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04
		9 m	10 m	11 m	12 m	0 m duplicate	1 m	2 m	3 m	4 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	11	11	11	11	13	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	8.7	8.8	8.8	8.9	-	16.9	14.9	12.2	11.8
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	14.2	14.2	14.3	14.3	-	0.3	0.8	1.5	1.8
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	6.8	6.9	-	6.7	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	13	-	-	18	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	<5	<5	-	<5	-	-
Hardness, Total	mg/L (ppm)	-	-	-	4	5	-	6	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	3	3	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	4	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	<3	-	-
Turbidity	NTU	-	-	-	-	-	-	<0.1	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	1	1.1	-	1.4	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	0.4	0.5	-	0.6	-	-
Potassium (K)	mg/L (ppm)	-	-	-	0.4	0.4	-	0.5	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	<1	<1	-	<1	-	-
Bicarbonate	mg/L (ppm)	-	-	-	<5	<5	-	6	-	-
Carbonate	mg/L (ppm)	-	-	-	<5	<5	-	<5	-	-
Chloride	mg/L (ppm)	-	-	-	<1	<1	-	<1	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	<0.05	-	-
Sulphate	mg/L (ppm)	-	-	-	0.7	0.8	-	1.1	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	0.018	-	-
Nitrate	mg/L (ppm)	-	-	-	<0.006	<0.006	-	0.025	-	-
Nitrite	mg/L (ppm)	-	-	-	<0.002	<0.002	-	<0.002	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	<0.006	<0.006	-	0.026	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	0.003	0.003	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	4	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	4	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	8.6	7.6	-	6.6	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	0.07	0.08	-	0.36	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.13	0.12	-	0.16	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	1.9	1.9	-	2.33	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	<0.2	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	2	2	-	<0.03	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	<0.05	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	930	930	-	1,310	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.06	<0.06	-	<0.06	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	<0.1	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	<0.6	<0.6	-	1.3	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	24	16	-	6	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	<0.05	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	0.9	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	482	477	-	596	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	3.9	3.2	-	0.9	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	<0.02	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	<0.06	-	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	0.2	0.2	-	0.25	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	2	-	-
Potassium (K)	µg/L (ppb)	-	-	-	360	350	-	500	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	<0.1	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	200	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04
		9 m	10 m	11 m	12 m	0 m duplicate	1 m	2 m	3 m	4 m
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	<0.1	-	<0.1	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	497	485	-	700	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	6.2	6.1	-	8.7	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	1.6	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	<0.05	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	<0.05	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	<0.8	1.5	-	<0.8	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	5.2	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	0.33	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	0.16	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	2.55	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	3	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	1,490	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	<0.06	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	1.6	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	<5	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	0.9	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	633	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	1	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	0.31	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	500	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	200	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	822	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	8.6	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	1.5	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	1.7	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04
		5 m	6 m	6 m duplicate	7 m	1 m	2 m	3 m	4 m	5 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	10.7	10.2	-	9.5	16.8	12.5	10.6	10	9.1
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	2.1	2.3	-	2.5	0.2	0.9	1.5	1.9	2.2
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	6.6	6.6	-	-	-	6.6	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	16	16	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	<5	<5	-	-	-	<5	-	-
Hardness, Total	mg/L (ppm)	-	5	5	-	-	-	6	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	3	3	-	-	-	3	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	<3	<3	-	-	-	<3	-	-
Turbidity	NTU	-	<0.1	<0.1	-	-	-	<0.1	-	-
Calcium (Ca)	mg/L (ppm)	-	1.2	1.2	-	-	-	1.3	-	-
Magnesium (Mg)	mg/L (ppm)	-	0.5	0.5	-	-	-	0.6	-	-
Potassium (K)	mg/L (ppm)	-	0.4	0.4	-	-	-	0.5	-	-
Sodium (Na)	mg/L (ppm)	-	<1	<1	-	-	-	<1	-	-
Bicarbonate	mg/L (ppm)	-	5	6	-	-	-	6	-	-
Carbonate	mg/L (ppm)	-	<5	<5	-	-	-	<5	-	-
Chloride	mg/L (ppm)	-	<1	<1	-	-	-	<1	-	-
Fluoride	mg/L (ppm)	-	<0.05	<0.05	-	-	-	<0.05	-	-
Sulphate	mg/L (ppm)	-	0.9	0.9	-	-	-	1	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	0.006	0.007	-	-	-	0.013	-	-
Nitrate	mg/L (ppm)	-	<0.006	<0.006	-	-	-	<0.006	-	-
Nitrite	mg/L (ppm)	-	<0.002	<0.002	-	-	-	0.003	-	-
Nitrate + Nitrite	mg/L (ppm)	-	<0.006	<0.006	-	-	-	<0.006	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	3	3	-	-	-	4	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	4	3	-	-	-	7	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	6	5.8	-	-	-	5.7	-	-
Antimony (Sb)	µg/L (ppb)	-	0.29	0.23	-	-	-	0.19	-	-
Arsenic (As)	µg/L (ppb)	-	0.13	0.13	-	-	-	0.14	-	-
Barium (Ba)	µg/L (ppb)	-	2.33	2.31	-	-	-	2.2	-	-
Beryllium (Be)	µg/L (ppb)	-	<0.2	<0.2	-	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	<0.03	<0.03	-	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	-	2	2	-	-	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	1,160	1,130	-	-	-	1,210	-	-
Chromium (Cr)	µg/L (ppb)	-	<0.06	<0.06	-	-	-	0.09	-	-
Cobalt (Co)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	<0.6	<0.6	-	-	-	<0.6	-	-
Iron (Fe)	µg/L (ppb)	-	11	11	-	-	-	9	-	-
Lead (Pb)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	0.8	0.8	-	-	-	0.8	-	-
Magnesium (Mg)	µg/L (ppb)	-	547	547	-	-	-	532	-	-
Manganese (Mn)	µg/L (ppb)	-	2.6	2.7	-	-	-	1.2	-	-
Mercury (Hg)	µg/L (ppb)	-	<0.02	<0.02	-	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	<0.06	<0.06	-	-	-	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	-	0.2	0.22	-	-	-	0.22	-	-
Phosphorus (P)	µg/L (ppb)	-	2	2	-	-	-	3	-	-
Potassium (K)	µg/L (ppb)	-	420	410	-	-	-	440	-	-
Selenium (Se)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	200	200	-	-	-	200	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04
		5 m	6 m	6 m duplicate	7 m	1 m	2 m	3 m	4 m	5 m
Silver (Ag)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	<0.1	-	-
Sodium (Na)	µg/L (ppb)	-	583	587	-	-	-	621	-	-
Strontium (Sr)	µg/L (ppb)	-	7.6	7.5	-	-	-	7.9	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	1.2	1.2	-	-	-	2.8	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	0.9	<0.8	-	-	-	<0.8	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	4.3	4.4	-	-	-	4.2	-	-
Antimony (Sb)	µg/L (ppb)	-	0.19	0.11	-	-	-	0.31	-	-
Arsenic (As)	µg/L (ppb)	-	0.13	0.13	-	-	-	0.14	-	-
Barium (Ba)	µg/L (ppb)	-	2.16	2.24	-	-	-	1.91	-	-
Beryllium (Be)	µg/L (ppb)	-	<0.2	<0.2	-	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	<0.03	<0.03	-	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	-	2	2	-	-	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	1,360	1,410	-	-	-	1,260	-	-
Chromium (Cr)	µg/L (ppb)	-	<0.06	<0.06	-	-	-	0.11	-	-
Cobalt (Co)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	0.8	0.8	-	-	-	<0.6	-	-
Iron (Fe)	µg/L (ppb)	-	<5	5	-	-	-	<5	-	-
Lead (Pb)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	0.7	0.7	-	-	-	0.8	-	-
Magnesium (Mg)	µg/L (ppb)	-	576	562	-	-	-	538	-	-
Manganese (Mn)	µg/L (ppb)	-	0.8	1	-	-	-	0.4	-	-
Mercury (Hg)	µg/L (ppb)	-	<0.02	<0.02	-	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	<0.06	<0.06	-	-	-	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	-	0.3	0.27	-	-	-	0.2	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	590	570	-	-	-	430	-	-
Selenium (Se)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	200	300	-	-	-	200	-	-
Silver (Ag)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	<0.1	-	-
Sodium (Na)	µg/L (ppb)	-	846	838	-	-	-	638	-	-
Strontium (Sr)	µg/L (ppb)	-	7.5	7.7	-	-	-	7.9	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	0.9	1.1	-	-	-	1.5	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	1	1.1	-	-	-	1	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04
		6 m	7 m	8 m	8 m duplicate	9 m	1 m	2 m	3 m	4 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	9.9	8.8	8.1	-	7.5	19	16.8	12.8	11.3
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	2.3	2.5	2.5	-	2.6	0.2	0.7	1.6	2.1
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	6.6	6.6	-	-	6.8	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	22	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	5	<5	-	-	6	-	-
Hardness, Total	mg/L (ppm)	-	-	6	5	-	-	7	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	6	3	-	-	8	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	<3	<3	-	-	<3	-	-
Turbidity	NTU	-	-	<0.1	<0.1	-	-	0.1	-	-
Calcium (Ca)	mg/L (ppm)	-	-	1.3	1.2	-	-	1.7	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	0.6	0.6	-	-	0.6	-	-
Potassium (K)	mg/L (ppm)	-	-	0.5	0.5	-	-	0.7	-	-
Sodium (Na)	mg/L (ppm)	-	-	<1	<1	-	-	<1	-	-
Bicarbonate	mg/L (ppm)	-	-	6	6	-	-	7	-	-
Carbonate	mg/L (ppm)	-	-	<5	<5	-	-	<5	-	-
Chloride	mg/L (ppm)	-	-	<1	<1	-	-	<1	-	-
Fluoride	mg/L (ppm)	-	-	<0.05	<0.05	-	-	<0.05	-	-
Sulphate	mg/L (ppm)	-	-	0.9	0.9	-	-	1.5	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	0.013	0.014	-	-	0.023	-	-
Nitrate	mg/L (ppm)	-	-	0.02	0.018	-	-	<0.006	-	-
Nitrite	mg/L (ppm)	-	-	0.003	0.004	-	-	<0.002	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	0.023	0.022	-	-	<0.006	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	4	3	-	-	5	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	6	3	-	-	5	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	6.2	6.2	-	-	7.4	-	-
Antimony (Sb)	µg/L (ppb)	-	-	0.27	0.14	-	-	0.09	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.14	0.14	-	-	0.2	-	-
Barium (Ba)	µg/L (ppb)	-	-	2.34	2.29	-	-	3.03	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	<0.2	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	<0.03	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	-	-	2	2	-	-	3	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	1,240	1,200	-	-	1,690	-	-
Chromium (Cr)	µg/L (ppb)	-	-	0.09	0.08	-	-	<0.06	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	1	0.7	-	-	0.8	-	-
Iron (Fe)	µg/L (ppb)	-	-	14	10	-	-	6	-	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	0.9	0.8	-	-	1.2	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	553	530	-	-	760	-	-
Manganese (Mn)	µg/L (ppb)	-	-	2	1.9	-	-	0.8	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	<0.02	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	<0.06	-	-	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	-	-	0.23	0.22	-	-	0.3	-	-
Phosphorus (P)	µg/L (ppb)	-	-	2	3	-	-	3	-	-
Potassium (K)	µg/L (ppb)	-	-	480	440	-	-	670	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	200	200	-	-	200	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04
		6 m	7 m	8 m	8 m duplicate	9 m	1 m	2 m	3 m	4 m
Silver (Ag)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	<0.1	-	-
Sodium (Na)	µg/L (ppb)	-	-	628	616	-	-	905	-	-
Strontium (Sr)	µg/L (ppb)	-	-	8	7.9	-	-	11.1	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	4.1	4.5	-	-	3.9	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	1.9	1.5	-	-	1.3	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	4.5	4	-	-	6.3	-	-
Antimony (Sb)	µg/L (ppb)	-	-	0.26	0.37	-	-	0.16	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.15	0.14	-	-	0.2	-	-
Barium (Ba)	µg/L (ppb)	-	-	1.84	2.26	-	-	3	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	<0.2	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	<0.03	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	-	-	2	2	-	-	3	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	1,350	1,200	-	-	1,720	-	-
Chromium (Cr)	µg/L (ppb)	-	-	0.14	0.12	-	-	<0.06	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	0.8	1	-	-	0.9	-	-
Iron (Fe)	µg/L (ppb)	-	-	<5	<5	-	-	<5	-	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	0.8	0.8	-	-	1.2	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	582	531	-	-	764	-	-
Manganese (Mn)	µg/L (ppb)	-	-	0.5	0.6	-	-	0.5	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	<0.02	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	<0.06	-	-	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	-	-	0.25	0.2	-	-	0.35	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	480	430	-	-	670	-	-
Selenium (Se)	µg/L (ppb)	-	-	0.1	<0.1	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	200	200	-	-	200	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	<0.1	-	-
Sodium (Na)	µg/L (ppb)	-	-	1,020	627	-	-	912	-	-
Strontium (Sr)	µg/L (ppb)	-	-	8.2	8	-	-	11.4	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	3.2	1.6	-	-	1.4	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	1.6	2.7	-	-	3	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04
		5 m	6 m	6 m duplicate	7 m	8 m	1 m	2 m	3 m	4 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	10.2	9.5	-	8.8	8.2	19.3	16.8	12.9	11.3
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	2.4	2.6	-	2.8	2.9	0.2	0.6	1.6	2.1
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	6.7	6.7	-	-	-	-	6.7	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	18	18	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	5	5	-	-	-	-	5	-
Hardness, Total	mg/L (ppm)	-	6	6	-	-	-	-	6	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	8	8	-	-	-	-	8	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	<3	<3	-	-	-	-	<3	-
Turbidity	NTU	-	0.1	0.1	-	-	-	-	0.15	-
Calcium (Ca)	mg/L (ppm)	-	1.4	1.5	-	-	-	-	1.6	-
Magnesium (Mg)	mg/L (ppm)	-	0.5	0.5	-	-	-	-	0.6	-
Potassium (K)	mg/L (ppm)	-	0.5	0.6	-	-	-	-	0.7	-
Sodium (Na)	mg/L (ppm)	-	<1	<1	-	-	-	-	<1	-
Bicarbonate	mg/L (ppm)	-	6	7	-	-	-	-	6	-
Carbonate	mg/L (ppm)	-	<5	<5	-	-	-	-	<5	-
Chloride	mg/L (ppm)	-	1	1	-	-	-	-	1	-
Fluoride	mg/L (ppm)	-	<0.05	<0.05	-	-	-	-	<0.05	-
Sulphate	mg/L (ppm)	-	1.1	1.2	-	-	-	-	1.2	-
Nutrients										
Ammonia	mg/L (ppm)	-	0.016	0.018	-	-	-	-	0.021	-
Nitrate	mg/L (ppm)	-	<0.006	0.007	-	-	-	-	<0.006	-
Nitrite	mg/L (ppm)	-	<0.002	<0.002	-	-	-	-	<0.002	-
Nitrate + Nitrite	mg/L (ppm)	-	0.007	0.008	-	-	-	-	<0.006	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	4	4	-	-	-	-	4	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	4	4	-	-	-	-	4	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	6.3	6.5	-	-	-	-	6.9	-
Antimony (Sb)	µg/L (ppb)	-	0.08	0.11	-	-	-	-	0.15	-
Arsenic (As)	µg/L (ppb)	-	0.16	0.15	-	-	-	-	0.16	-
Barium (Ba)	µg/L (ppb)	-	2.56	2.51	-	-	-	-	2.63	-
Beryllium (Be)	µg/L (ppb)	-	<0.2	<0.2	-	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	<0.03	<0.03	-	-	-	-	<0.03	-
Boron (B)	µg/L (ppb)	-	2	2	-	-	-	-	2	-
Cadmium (Cd)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	1,340	1,340	-	-	-	-	1,440	-
Chromium (Cr)	µg/L (ppb)	-	<0.06	<0.06	-	-	-	-	<0.06	-
Cobalt (Co)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	0.6	0.6	-	-	-	-	0.6	-
Iron (Fe)	µg/L (ppb)	-	9	<5	-	-	-	-	6	-
Lead (Pb)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	1	0.9	-	-	-	-	1.1	-
Magnesium (Mg)	µg/L (ppb)	-	636	631	-	-	-	-	687	-
Manganese (Mn)	µg/L (ppb)	-	1.4	1.4	-	-	-	-	0.9	-
Mercury (Hg)	µg/L (ppb)	-	<0.02	<0.02	-	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	<0.06	<0.06	-	-	-	-	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	0.25	0.25	-	-	-	-	0.25	-
Phosphorus (P)	µg/L (ppb)	-	4	3	-	-	-	-	4	-
Potassium (K)	µg/L (ppb)	-	500	490	-	-	-	-	520	-
Selenium (Se)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	200	200	-	-	-	-	200	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04
		5 m	6 m	6 m duplicate	7 m	8 m	1 m	2 m	3 m	4 m
Silver (Ag)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	-	<0.1	-
Sodium (Na)	µg/L (ppb)	-	683	675	-	-	-	-	754	-
Strontium (Sr)	µg/L (ppb)	-	8.8	8.8	-	-	-	-	9.6	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	1.5	3.9	-	-	-	-	1	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	<0.8	0.8	-	-	-	-	<0.8	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	5.3	4.9	-	-	-	-	5.7	-
Antimony (Sb)	µg/L (ppb)	-	0.14	0.19	-	-	-	-	0.15	-
Arsenic (As)	µg/L (ppb)	-	0.15	0.15	-	-	-	-	0.17	-
Barium (Ba)	µg/L (ppb)	-	2.6	2.57	-	-	-	-	2.7	-
Beryllium (Be)	µg/L (ppb)	-	<0.2	<0.2	-	-	-	-	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	<0.03	<0.03	-	-	-	-	<0.03	-
Boron (B)	µg/L (ppb)	-	3	2	-	-	-	-	3	-
Cadmium (Cd)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	1,360	1,360	-	-	-	-	1,540	-
Chromium (Cr)	µg/L (ppb)	-	<0.06	<0.06	-	-	-	-	<0.06	-
Cobalt (Co)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	0.7	0.8	-	-	-	-	0.8	-
Iron (Fe)	µg/L (ppb)	-	<5	9	-	-	-	-	<5	-
Lead (Pb)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	1	0.9	-	-	-	-	1	-
Magnesium (Mg)	µg/L (ppb)	-	634	630	-	-	-	-	668	-
Manganese (Mn)	µg/L (ppb)	-	0.6	0.6	-	-	-	-	0.5	-
Mercury (Hg)	µg/L (ppb)	-	<0.02	<0.02	-	-	-	-	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	<0.06	<0.06	-	-	-	-	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	0.27	0.27	-	-	-	-	0.35	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	490	480	-	-	-	-	540	-
Selenium (Se)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	-	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	200	200	-	-	-	-	200	-
Silver (Ag)	µg/L (ppb)	-	<0.1	<0.1	-	-	-	-	<0.1	-
Sodium (Na)	µg/L (ppb)	-	685	680	-	-	-	-	787	-
Strontium (Sr)	µg/L (ppb)	-	8.8	8.9	-	-	-	-	9.9	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	1	1.4	-	-	-	-	1.6	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	<0.05	<0.05	-	-	-	-	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	2.5	2.5	-	-	-	-	2.4	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04
		5 m	6 m	7 m	8 m	8 m duplicate	9 m	10 m	11 m	12 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	10	8.9	8	7.2	-	6.9	6.3	5.7	5.4
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	2.4	2.6	2.8	2.8	-	2.9	3	3.1	3.2
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	6.5	6.5	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	5	5	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	6	6	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	7	7	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	<3	<3	-	-	-	-
Turbidity	NTU	-	-	-	0.3	0.3	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	1.5	1.5	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	0.5	0.5	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	0.5	0.5	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	<1	<1	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	6	6	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	<5	<5	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	<1	<1	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	<0.05	<0.05	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	1	1	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	0.019	0.02	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	0.021	0.027	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	<0.002	<0.002	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	0.022	0.028	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	3	3	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	3	4	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	12.7	11.4	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	0.17	0.2	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.12	0.12	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	3.27	3.36	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	<0.2	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	<0.03	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	2	2	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	<0.05	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,350	1,320	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.06	<0.06	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	<0.1	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	0.7	0.8	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	30	<5	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	<0.05	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	0.8	0.8	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	619	603	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	10.1	10.3	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	<0.02	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	<0.06	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	0.46	0.47	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	4	4	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	420	420	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	<0.1	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	300	300	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04
		5 m	6 m	7 m	8 m	8 m duplicate	9 m	10 m	11 m	12 m
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	<0.1	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	601	604	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	8.7	8.6	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	2.4	3.3	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	<0.05	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	<0.05	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	<0.8	<0.8	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	4.9	5.1	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	0.17	0.16	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.13	0.12	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	3.15	3.22	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	<0.2	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	<0.03	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	2	2	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	<0.05	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,360	1,390	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.06	<0.06	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	<0.1	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	<0.6	0.7	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	<5	27	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	<0.05	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	0.9	0.9	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	592	602	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	5.9	6.1	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	<0.02	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	<0.06	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	0.42	0.42	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	420	420	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	<0.1	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	300	300	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	<0.1	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	616	625	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	8.7	8.7	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	3.7	3.1	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	<0.05	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	<0.05	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	2.6	2.7	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	4-May-04	4-May-04	4-May-04	4-May-04	4-May-04
		13 m	14 m	15 m	16 m	3 m	4 m	5 m	6 m	7 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	<0.6	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	11	18	18	10	11
Dissolved Oxygen (DO)	mg/L (ppm)	5.3	5	5.2	5.2	13.6	9.5	8.8	7.6	7.4
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3.3	3.3	3.3	3.2	1.6	2.9	2.5	2.7	2.9
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	6.5	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	6	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	8	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	8	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	3	-	-	-	-	-	-	-	-
Turbidity	NTU	1.5	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	2	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	0.8	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	0.6	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	<1	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	8	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	<5	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	<1	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	<0.05	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	1.1	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	0.008	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	0.068	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	<0.002	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	0.068	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	<0.6	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	3	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	3	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	51.3	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	0.16	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	0.14	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	6.37	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	<0.2	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	<0.03	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	3	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	<0.05	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	1,780	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	0.6	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	0.3	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	<0.6	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	9	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	<0.05	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	0.9	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	821	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	72.7	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	<0.02	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.06	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	1.83	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	5	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	480	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	<0.1	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	400	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	<0.1	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	4-May-04	4-May-04	4-May-04	4-May-04	4-May-04
		13 m	14 m	15 m	16 m	3 m	4 m	5 m	6 m	7 m
Sodium (Na)	µg/L (ppb)	625	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	11.1	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	0.8	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	0.12	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	<0.8	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	6	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	0.15	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	0.12	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	5.49	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	<0.2	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	<0.03	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	3	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	<0.05	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	2,160	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	<0.06	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	0.1	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	<0.6	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	131	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	<0.05	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	1	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	676	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	59.6	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	<0.02	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.06	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	0.71	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	480	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	<0.1	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	600	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	<0.1	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	653	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	10.6	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	0.4	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	<0.05	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	3.9	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		4-May-04	4-May-04	4-May-04	4-May-04	4-May-04	4-May-04	4-May-04	4-May-04	4-May-04
		8 m	9 m	10 m	11 m	12 m	13 m	14 m	15 m	16 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	19	19	19	20	21	14	16	20	28
Dissolved Oxygen (DO)	mg/L (ppm)	3.4	3.7	3.3	3.2	2.3	1.7	1.4	1	0
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3	3	3.1	3.2	3.3	3.2	3.3	3.4	3.5
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		4-May-04	4-May-04	4-May-04	4-May-04	4-May-04	4-May-04	4-May-04	4-May-04	4-May-04
		8 m	9 m	10 m	11 m	12 m	13 m	14 m	15 m	16 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake K3 4-May-04 17 m	Kennady Lake K3 5-May-04 1 m	Kennady Lake K3 5-May-04 2 m	Kennady Lake K3 5-May-04 3 m	Kennady Lake K3 5-May-04 4 m	Kennady Lake K3 5-May-04 5 m	Kennady Lake K3 5-May-04 6 m	Kennady Lake K3 5-May-04 6 m duplicate	Kennady Lake K3 5-May-04 7 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	36	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	5.2	16.5	16.5	12.3	11.8	10.4	7.6	-	6.9
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3.5	0.2	0.5	1.9	2.4	2.8	3	-	3.1
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	6.8	-	-	-	6.7	6.7	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	22	-	-	-	19	18	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	6	-	-	-	5	5	-
Hardness, Total	mg/L (ppm)	-	-	8	-	-	-	7	7	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	8	-	-	-	7	7	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	<3	-	-	-	<3	<3	-
Turbidity	NTU	-	-	0.1	-	-	-	0.15	0.15	-
Calcium (Ca)	mg/L (ppm)	-	-	1.8	-	-	-	1.5	1.5	-
Magnesium (Mg)	mg/L (ppm)	-	-	0.8	-	-	-	0.7	0.7	-
Potassium (K)	mg/L (ppm)	-	-	0.6	-	-	-	0.4	0.5	-
Sodium (Na)	mg/L (ppm)	-	-	<1	-	-	-	<1	<1	-
Bicarbonate	mg/L (ppm)	-	-	8	-	-	-	7	6	-
Carbonate	mg/L (ppm)	-	-	<5	-	-	-	<5	<5	-
Chloride	mg/L (ppm)	-	-	<1	-	-	-	<1	<1	-
Fluoride	mg/L (ppm)	-	-	<0.05	-	-	-	<0.05	<0.05	-
Sulphate	mg/L (ppm)	-	-	1.3	-	-	-	1.1	1.1	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	0.015	-	-	-	<0.005	<0.005	-
Nitrate	mg/L (ppm)	-	-	<0.006	-	-	-	0.021	0.023	-
Nitrite	mg/L (ppm)	-	-	<0.002	-	-	-	<0.002	<0.002	-
Nitrate + Nitrite	mg/L (ppm)	-	-	<0.006	-	-	-	0.021	0.023	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	4	-	-	-	4	4	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	5	-	-	-	4	4	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	6.7	-	-	-	7.8	8.1	-
Antimony (Sb)	µg/L (ppb)	-	-	0.06	-	-	-	0.08	0.04	-
Arsenic (As)	µg/L (ppb)	-	-	0.19	-	-	-	0.14	0.14	-
Barium (Ba)	µg/L (ppb)	-	-	2.95	-	-	-	3.16	3.13	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	<0.2	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	-	-	-	<0.03	<0.03	-
Boron (B)	µg/L (ppb)	-	-	3	-	-	-	2	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	1,640	-	-	-	1,410	1,390	-
Chromium (Cr)	µg/L (ppb)	-	-	0.1	-	-	-	0.19	0.15	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	0.6	-	-	-	0.7	<0.6	-
Iron (Fe)	µg/L (ppb)	-	-	9	-	-	-	19	77	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	1.1	-	-	-	0.9	0.9	-
Magnesium (Mg)	µg/L (ppb)	-	-	696	-	-	-	625	618	-
Manganese (Mn)	µg/L (ppb)	-	-	0.8	-	-	-	3.6	3.6	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	<0.02	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	-	-	-	<0.06	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	0.31	-	-	-	0.42	0.37	-
Phosphorus (P)	µg/L (ppb)	-	-	<1	-	-	-	<1	<1	-
Potassium (K)	µg/L (ppb)	-	-	590	-	-	-	470	460	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	200	-	-	-	300	300	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		4-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04
		17 m	1 m	2 m	3 m	4 m	5 m	6 m	6 m duplicate	7 m
Silver (Ag)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	<0.1	-
Sodium (Na)	µg/L (ppb)	-	-	715	-	-	-	575	562	-
Strontium (Sr)	µg/L (ppb)	-	-	11	-	-	-	9.4	9.3	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	0.4	-	-	-	1.3	2.5	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	2	-	-	-	<0.8	1.4	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	6	-	-	-	4.3	4	-
Antimony (Sb)	µg/L (ppb)	-	-	0.11	-	-	-	0.09	0.04	-
Arsenic (As)	µg/L (ppb)	-	-	0.2	-	-	-	0.14	0.13	-
Barium (Ba)	µg/L (ppb)	-	-	3.01	-	-	-	3.14	3.02	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	-	-	-	<0.2	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	-	-	-	<0.03	<0.03	-
Boron (B)	µg/L (ppb)	-	-	3	-	-	-	2	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	1,780	-	-	-	1,470	1,380	-
Chromium (Cr)	µg/L (ppb)	-	-	0.17	-	-	-	0.18	0.09	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	0.9	-	-	-	0.9	0.6	-
Iron (Fe)	µg/L (ppb)	-	-	7	-	-	-	<5	5	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	1.2	-	-	-	0.9	0.9	-
Magnesium (Mg)	µg/L (ppb)	-	-	729	-	-	-	596	573	-
Manganese (Mn)	µg/L (ppb)	-	-	0.7	-	-	-	1.2	1	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	-	-	-	<0.02	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	-	-	-	<0.06	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	0.38	-	-	-	0.32	0.32	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	620	-	-	-	480	440	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	200	-	-	-	300	300	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	-	-	-	<0.1	<0.1	-
Sodium (Na)	µg/L (ppb)	-	-	825	-	-	-	588	565	-
Strontium (Sr)	µg/L (ppb)	-	-	11.8	-	-	-	9.7	9.3	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	1.6	-	-	-	5.3	1.5	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	-	-	-	<0.05	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	5.6	-	-	-	2.6	1.7	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake K3 5-May-04 8 m	Kennady Lake K3 5-May-04 1 m	Kennady Lake K3 5-May-04 2 m	Kennady Lake K3 5-May-04 3 m	Kennady Lake K3 5-May-04 4 m	Kennady Lake K3 5-May-04 5 m	Kennady Lake K3 5-May-04 6 m	Kennady Lake K3 5-May-04 7 m	Kennady Lake K3 5-May-04 8 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	6.6	17.2	17.2	14	11.8	10.3	8.9	6.8	6.2
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3.2	0.2	0.6	1.8	2.5	2.8	3	3.1	3.2
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	6.8	-	-	-	-	6.6
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	6	-	-	-	-	6
Hardness, Total	mg/L (ppm)	-	-	-	8	-	-	-	-	7
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	8	-	-	-	-	8
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	<3	-	-	-	-	<3
Turbidity	NTU	-	-	-	0.1	-	-	-	-	0.2
Calcium (Ca)	mg/L (ppm)	-	-	-	1.8	-	-	-	-	1.7
Magnesium (Mg)	mg/L (ppm)	-	-	-	0.8	-	-	-	-	0.7
Potassium (K)	mg/L (ppm)	-	-	-	0.6	-	-	-	-	0.4
Sodium (Na)	mg/L (ppm)	-	-	-	<1	-	-	-	-	<1
Bicarbonate	mg/L (ppm)	-	-	-	7	-	-	-	-	7
Carbonate	mg/L (ppm)	-	-	-	<5	-	-	-	-	<5
Chloride	mg/L (ppm)	-	-	-	<1	-	-	-	-	<1
Fluoride	mg/L (ppm)	-	-	-	<0.05	-	-	-	-	<0.05
Sulphate	mg/L (ppm)	-	-	-	1.3	-	-	-	-	1.1
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	0.01	-	-	-	-	<0.005
Nitrate	mg/L (ppm)	-	-	-	0.007	-	-	-	-	0.053
Nitrite	mg/L (ppm)	-	-	-	<0.002	-	-	-	-	<0.002
Nitrate + Nitrite	mg/L (ppm)	-	-	-	0.007	-	-	-	-	0.053
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	4	-	-	-	-	3
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	4	-	-	-	-	3
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	5.5	-	-	-	-	8.1
Antimony (Sb)	µg/L (ppb)	-	-	-	0.1	-	-	-	-	0.07
Arsenic (As)	µg/L (ppb)	-	-	-	0.17	-	-	-	-	0.13
Barium (Ba)	µg/L (ppb)	-	-	-	2.89	-	-	-	-	3.54
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	-	-	-	-	<0.03
Boron (B)	µg/L (ppb)	-	-	-	3	-	-	-	-	3
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	-	1,490	-	-	-	-	1,350
Chromium (Cr)	µg/L (ppb)	-	-	-	0.16	-	-	-	-	0.19
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Copper (Cu)	µg/L (ppb)	-	-	-	1.6	-	-	-	-	0.8
Iron (Fe)	µg/L (ppb)	-	-	-	10	-	-	-	-	34
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	1.1	-	-	-	-	0.8
Magnesium (Mg)	µg/L (ppb)	-	-	-	636	-	-	-	-	571
Manganese (Mn)	µg/L (ppb)	-	-	-	1	-	-	-	-	16.9
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	-	-	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	-	-	-	-	<0.06
Nickel (Ni)	µg/L (ppb)	-	-	-	0.26	-	-	-	-	0.48
Phosphorus (P)	µg/L (ppb)	-	-	-	2	-	-	-	-	1
Potassium (K)	µg/L (ppb)	-	-	-	530	-	-	-	-	420
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	200	-	-	-	-	400
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04
		8 m	1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m
Sodium (Na)	µg/L (ppb)	-	-	-	693	-	-	-	-	509
Strontium (Sr)	µg/L (ppb)	-	-	-	10.5	-	-	-	-	9
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	1.9	-	-	-	-	1.5
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	-	1.2	-	-	-	-	0.9
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	4.3	-	-	-	-	3.4
Antimony (Sb)	µg/L (ppb)	-	-	-	0.05	-	-	-	-	0.05
Arsenic (As)	µg/L (ppb)	-	-	-	0.16	-	-	-	-	0.12
Barium (Ba)	µg/L (ppb)	-	-	-	2.78	-	-	-	-	3.46
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	-	-	-	-	<0.03
Boron (B)	µg/L (ppb)	-	-	-	3	-	-	-	-	3
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	-	1,390	-	-	-	-	1,340
Chromium (Cr)	µg/L (ppb)	-	-	-	0.09	-	-	-	-	0.12
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Copper (Cu)	µg/L (ppb)	-	-	-	1.1	-	-	-	-	0.8
Iron (Fe)	µg/L (ppb)	-	-	-	<5	-	-	-	-	5
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	1	-	-	-	-	0.8
Magnesium (Mg)	µg/L (ppb)	-	-	-	613	-	-	-	-	548
Manganese (Mn)	µg/L (ppb)	-	-	-	0.6	-	-	-	-	7.4
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	-	-	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	-	-	-	-	<0.06
Nickel (Ni)	µg/L (ppb)	-	-	-	0.25	-	-	-	-	0.37
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	500	-	-	-	-	420
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	200	-	-	-	-	400
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	<0.1
Sodium (Na)	µg/L (ppb)	-	-	-	644	-	-	-	-	501
Strontium (Sr)	µg/L (ppb)	-	-	-	9.8	-	-	-	-	8.9
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	1.2	-	-	-	-	5.3
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	-	1.3	-	-	-	-	1.3

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04
		8 m duplicate	9 m	10 m	11 m	12 m	13 m	14 m	15 m	16 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	5.6	5.4	5.2	5	4.5	3.6	2.8	2.2
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	3.2	3.3	3.4	3.4	3.4	3.5	3.5	3.6
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	6.6	-	-	-	-	6.8	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	5	-	-	-	-	8	-	-	-
Hardness, Total	mg/L (ppm)	7	-	-	-	-	10	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	7	-	-	-	-	10	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	<3	-	-	-	-	<3	-	-	-
Turbidity	NTU	0.25	-	-	-	-	0.65	-	-	-
Calcium (Ca)	mg/L (ppm)	1.7	-	-	-	-	2.5	-	-	-
Magnesium (Mg)	mg/L (ppm)	0.7	-	-	-	-	1	-	-	-
Potassium (K)	mg/L (ppm)	0.4	-	-	-	-	0.6	-	-	-
Sodium (Na)	mg/L (ppm)	<1	-	-	-	-	<1	-	-	-
Bicarbonate	mg/L (ppm)	7	-	-	-	-	9	-	-	-
Carbonate	mg/L (ppm)	<5	-	-	-	-	<5	-	-	-
Chloride	mg/L (ppm)	<1	-	-	-	-	<1	-	-	-
Fluoride	mg/L (ppm)	<0.05	-	-	-	-	<0.05	-	-	-
Sulphate	mg/L (ppm)	1.1	-	-	-	-	1.1	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	<0.005	-	-	-	-	0.009	-	-	-
Nitrate	mg/L (ppm)	0.055	-	-	-	-	0.088	-	-	-
Nitrite	mg/L (ppm)	<0.002	-	-	-	-	<0.002	-	-	-
Nitrate + Nitrite	mg/L (ppm)	0.055	-	-	-	-	0.088	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	3	-	-	-	-	3	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	3	-	-	-	-	3	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	8.9	-	-	-	-	22.6	-	-	-
Antimony (Sb)	µg/L (ppb)	<0.03	-	-	-	-	0.07	-	-	-
Arsenic (As)	µg/L (ppb)	0.12	-	-	-	-	0.14	-	-	-
Barium (Ba)	µg/L (ppb)	3.54	-	-	-	-	7.46	-	-	-
Beryllium (Be)	µg/L (ppb)	<0.2	-	-	-	-	<0.2	-	-	-
Bismuth (Bi)	µg/L (ppb)	<0.03	-	-	-	-	<0.03	-	-	-
Boron (B)	µg/L (ppb)	3	-	-	-	-	7	-	-	-
Cadmium (Cd)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Calcium (Ca)	µg/L (ppb)	1,310	-	-	-	-	2,020	-	-	-
Chromium (Cr)	µg/L (ppb)	0.16	-	-	-	-	0.26	-	-	-
Cobalt (Co)	µg/L (ppb)	<0.1	-	-	-	-	0.2	-	-	-
Copper (Cu)	µg/L (ppb)	0.7	-	-	-	-	<0.6	-	-	-
Iron (Fe)	µg/L (ppb)	33	-	-	-	-	99	-	-	-
Lead (Pb)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Lithium (Li)	µg/L (ppb)	0.8	-	-	-	-	1	-	-	-
Magnesium (Mg)	µg/L (ppb)	560	-	-	-	-	828	-	-	-
Manganese (Mn)	µg/L (ppb)	17.5	-	-	-	-	103	-	-	-
Mercury (Hg)	µg/L (ppb)	<0.02	-	-	-	-	<0.02	-	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.06	-	-	-	-	<0.06	-	-	-
Nickel (Ni)	µg/L (ppb)	0.47	-	-	-	-	1.34	-	-	-
Phosphorus (P)	µg/L (ppb)	<1	-	-	-	-	<1	-	-	-
Potassium (K)	µg/L (ppb)	410	-	-	-	-	480	-	-	-
Selenium (Se)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	400	-	-	-	-	700	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04	5-May-04
		8 m duplicate	9 m	10 m	11 m	12 m	13 m	14 m	15 m	16 m
Silver (Ag)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	-
Sodium (Na)	µg/L (ppb)	497	-	-	-	-	578	-	-	-
Strontium (Sr)	µg/L (ppb)	8.9	-	-	-	-	12.7	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	1.4	-	-	-	-	0.3	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Vanadium (V)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Zinc (Zn)	µg/L (ppb)	0.8	-	-	-	-	<0.8	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	3.9	-	-	-	-	3.8	-	-	-
Antimony (Sb)	µg/L (ppb)	0.09	-	-	-	-	0.09	-	-	-
Arsenic (As)	µg/L (ppb)	0.13	-	-	-	-	0.14	-	-	-
Barium (Ba)	µg/L (ppb)	3.52	-	-	-	-	7.1	-	-	-
Beryllium (Be)	µg/L (ppb)	<0.2	-	-	-	-	<0.2	-	-	-
Bismuth (Bi)	µg/L (ppb)	<0.03	-	-	-	-	<0.03	-	-	-
Boron (B)	µg/L (ppb)	3	-	-	-	-	7	-	-	-
Cadmium (Cd)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Calcium (Ca)	µg/L (ppb)	1,380	-	-	-	-	2,050	-	-	-
Chromium (Cr)	µg/L (ppb)	0.14	-	-	-	-	0.18	-	-	-
Cobalt (Co)	µg/L (ppb)	<0.1	-	-	-	-	0.2	-	-	-
Copper (Cu)	µg/L (ppb)	0.8	-	-	-	-	<0.6	-	-	-
Iron (Fe)	µg/L (ppb)	9	-	-	-	-	9	-	-	-
Lead (Pb)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Lithium (Li)	µg/L (ppb)	0.8	-	-	-	-	0.9	-	-	-
Magnesium (Mg)	µg/L (ppb)	562	-	-	-	-	746	-	-	-
Manganese (Mn)	µg/L (ppb)	7.5	-	-	-	-	81.9	-	-	-
Mercury (Hg)	µg/L (ppb)	<0.02	-	-	-	-	<0.02	-	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.06	-	-	-	-	<0.06	-	-	-
Nickel (Ni)	µg/L (ppb)	0.38	-	-	-	-	1	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	430	-	-	-	-	490	-	-	-
Selenium (Se)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	400	-	-	-	-	600	-	-	-
Silver (Ag)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	-
Sodium (Na)	µg/L (ppb)	518	-	-	-	-	591	-	-	-
Strontium (Sr)	µg/L (ppb)	9.2	-	-	-	-	12.9	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	2.3	-	-	-	-	1.1	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Vanadium (V)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	-
Zinc (Zn)	µg/L (ppb)	1.4	-	-	-	-	2.6	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		8-Jul-04	8-Jul-04	8-Jul-04	8-Jul-04	8-Jul-04	8-Jul-04	8-Jul-04	8-Jul-04	8-Jul-04
		1 m	2 m	3 m	4 m	5 m	6 m	7 m	8m	9m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	13	13	12	12	12	12	13	13	13
Dissolved Oxygen (DO)	mg/L (ppm)	10.8	10.6	10.1	10.5	10.3	9.5	11.1	11.5	11.3
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	9	7.9	7.5	7.4	7.3	7.1	6.9	6.8	6.6
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		8-Jul-04	8-Jul-04	8-Jul-04	8-Jul-04	8-Jul-04	8-Jul-04	8-Jul-04	8-Jul-04	8-Jul-04
		1 m	2 m	3 m	4 m	5 m	6 m	7 m	8m	9m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		8-Jul-04	8-Jul-04	5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04
		10 m	11 m	0 m	0.5 m	1 m	2 m	3 m	4 m	5 m
Field Measured										
pH	pH Units	-	-	7.3	-	7.3	7.3	7.3	7.2	7.3
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	13	-	12	-	12	12	12	12	12
Dissolved Oxygen (DO)	mg/L (ppm)	10.9	11.5	10.4	-	10.4	10.4	10.4	10.4	10.4
Dissolved Oxygen, saturation	%	-	-	101	-	101	101	101	101	101
Temperature	°C	6.6	6.4	14	-	14	14	14	14	14
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	8	-	8	8	8	8	8
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	6.2	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	15	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	7	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	<6	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	24	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	<2	-	-	-	-	-
Turbidity	NTU	-	-	-	1	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	0.5	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	<0.5	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	<0.5	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	0.8	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	9	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	<1	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	0.6	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	0.06	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	1.2	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	<0.1	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	<0.05	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	<0.05	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	0.7	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	0.02	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	11	-	-	-	-	-
Colour	TCU	-	-	-	10	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	0.2	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	<0.002	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	4	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	4	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	<0.1	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	<20	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	<0.4	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	<5	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.5	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	<10	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,700	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.9	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	<5	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	<50	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	930	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	6	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<500	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.5	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	3	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	5	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	680	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	<10	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	153	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		8-Jul-04	8-Jul-04	5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04
		10 m	11 m	0 m	0.5 m	1 m	2 m	3 m	4 m	5 m
Sodium (Na)	µg/L (ppb)	-	-	-	<2,000	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	<2	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	<10	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.2	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	<3	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	<4	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,160	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.4	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	<2	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	<20	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	560	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	1.4	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<1	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.3	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	2	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	20	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	410	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	<2	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	117	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	<1,000	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	<0.02	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.5	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	5	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04
		6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m	14 m
Field Measured										
pH	pH Units	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	12	12	12	12	12	12	12	12	14
Dissolved Oxygen (DO)	mg/L (ppm)	10.4	10.4	10.4	10.5	10.4	10.4	10.4	-	10.8
Dissolved Oxygen, saturation	%	101	101	101	100	100	99	99	-	91
Temperature	°C	14	14	14	13.5	13.2	13.1	12.8	11.3	7.5
Total Dissolved Solids (TDS)	mg/L (ppm)	8	8	8	8	8	8	8	-	9
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	5.7	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	16	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	2	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	<6	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	8	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	12	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	<2	-
Turbidity	NTU	-	-	-	-	-	-	-	1	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	0.6	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	<0.5	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	<0.5	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	0.9	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	3	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	<1	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	0.6	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	0.06	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	1.4	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	<0.1	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	<0.05	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	<0.05	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	0.5	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	<0.02	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	12	-
Colour	TCU	-	-	-	-	-	-	-	5	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	<0.1	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	<0.002	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	2	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	2	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	<0.1	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	<20	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	<0.4	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	11	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	<0.5	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	<10	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	<0.2	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	1,600	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	<0.9	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	<5	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	<50	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	930	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	7.2	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	<500	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	<0.5	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	4.1	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	<20	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	690	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	<10	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	175	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	<0.2	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04
		6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m	14 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	<2,000	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	<2	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	170	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	0.2	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	5	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	<4	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	1,790	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	1.6	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	0.24	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	<2	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	119	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	1,080	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	2.5	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	<1	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	<0.3	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	2.2	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	187	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	560	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	<2	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	149	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	<1,000	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	<0.02	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	<0.5	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	4	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04
		15 m	16 m	17 m	18 m	0 m	1 m	2 m	3 m	4 m
Field Measured										
pH	pH Units	7.2	7.2	7.2	7	4.9	5.1	5.2	5.2	5.2
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	14	14	14	14	10	10	10	10	10
Dissolved Oxygen (DO)	mg/L (ppm)	10.8	10.7	10.5	-	10.9	10.9	10.9	10.9	10.9
Dissolved Oxygen, saturation	%	89	88	87	-	90	89	90	89	90
Temperature	°C	7.1	6.9	6.8	6.7	7	7	7	7	7
Total Dissolved Solids (TDS)	mg/L (ppm)	9	9	9	10	9	7	7	7	7
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	5.7	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	18	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	5	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	<6	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	9	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	<2	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	<2	-	-	-	-	-
Turbidity	NTU	-	-	-	1	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	0.6	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	<0.5	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	<0.5	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	1.1	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	6	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	<1	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	0.6	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	0.07	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	1.5	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	<0.1	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	<0.05	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	<0.05	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	0.6	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	0.03	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	15	-	-	-	-	-
Colour	TCU	-	-	-	10	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	<0.1	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	<0.002	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	3	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	2	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	<0.1	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	<20	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	0.4	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	<0.4	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	<5	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.5	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	<10	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,800	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.9	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	<5	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	<50	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	870	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	12.4	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<500	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.5	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	2.7	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	<20	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	650	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	<10	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	244	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		5-Aug-04	5-Aug-04	5-Aug-04	5-Aug-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04
		15 m	16 m	17 m	18 m	0 m	1 m	2 m	3 m	4 m
Sodium (Na)	µg/L (ppb)	-	-	-	<2,000	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	<2	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	<10	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.2	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	3	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	<4	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,360	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	0.5	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	<2	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	<20	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	670	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	3	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<1	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.3	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	1.4	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	<5	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	440	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	<2	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	180	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	<1,000	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	<0.02	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.5	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	3	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04
		5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Field Measured										
pH	pH Units	5.2	5.3	5.2	5.3	5.3	5.3	5.3	5.3	5.4
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	10	10	10	10	10	10	10	10	10
Dissolved Oxygen (DO)	mg/L (ppm)	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.8
Dissolved Oxygen, saturation	%	90	90	90	90	90	90	90	90	90
Temperature	°C	7	7	7	7	7	7	7	7	7
Total Dissolved Solids (TDS)	mg/L (ppm)	7	7	7	7	7	7	7	7	7
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04
		5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K5	K5	K5	K5
		12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	11-Jul-95	11-Jul-95	11-Jul-95	23-Aug-95
		14 m	15 m	16 m	17 m	18 m	Unknown	Unknown	Unknown	1 m
Field Measured										
pH	pH Units	5.5	5.4	5.4	5.4	5.4	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	10	10	10	10	10	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	10.9	10.9	10.9	10.9	10.9	-	-	-	-
Dissolved Oxygen, saturation	%	90	90	90	90	90	-	-	-	-
Temperature	°C	7	7	7	7	7	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	7	7	7	7	7	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	3.3			-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	3.47	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	<1	-	-	5.3
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	<0.5	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	0.03	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	<1	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	<0.005	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	<0.005	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	0.001	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	0.005	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	20	22	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	<0.1	<0.1	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	<0.1	<0.1	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	<10	<10	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	<5	<5	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	<100	<100	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	<100	<100	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	<0.2	<0.2	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	835	841	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	<15	<15	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	<1	<1	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	<10	<10	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	38	38	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	<1	<1	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	<15	<15	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	364	360	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	<5	<5	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	<0.05	<0.05	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	<1	<1	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	<1	<1	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	<300	<300	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	<2,000	<2,000	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	<0.5	<0.5	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	60	59	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	<0.1	<0.1	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K5	K5	K5	K5
		12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	12-Sep-04	11-Jul-95	11-Jul-95	11-Jul-95	23-Aug-95
		14 m	15 m	16 m	17 m	18 m	Unknown	Unknown	Unknown	1 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	<2,000	<2,000	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	9	9	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	<100	<100	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	<300	<300	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	<100	<100	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	<100	<100	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	<0.5	<0.5	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	<30	<30	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	<5	<5	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	10	8	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	<0.1	<0.1	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	<0.1	<0.1	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	<10	<10	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	<5	<5	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	<100	<100	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	<100	<100	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	<0.2	<0.2	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	812	801	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	<15	<15	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	<1	<1	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	<10	<10	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	<30	<30	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	<1	<1	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	<15	<15	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	355	356	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	<5	<5	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	<0.05	<0.05	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	<1	<1	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	<1	<1	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	<300	<300	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	<2,000	<2,000	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	<0.5	<0.5	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	63	50	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	<0.1	<0.1	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	<2,000	<2,000	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	9	9	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	<100	<100	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	<300	<300	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	<100	<100	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	<100	<100	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	<0.5	<0.5	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	<30	<30	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	<5	<5	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		23-Aug-95	23-Aug-95	27-Aug-95	28-Aug-95	28-Aug-95	14-Sep-95	14-Sep-95	14-Sep-95	14-Sep-95
		2 m	3 m	Unknown	1 m	2 m	Unknown	Unknown	Unknown	Unknown
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	3.7	3.7	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	3.65	3.63	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	5.3	5.3	-	5	5	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	3	27	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	<0.5	<0.5	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	0.03	0.03	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	1.3	1.3	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	0.012	0.007	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	<0.005	<0.005	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	0.001	0.001	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	0.005	0.004	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	23	-	-	-	-	21	19
Antimony (Sb)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	<0.1
Arsenic (As)	µg/L (ppb)	-	-	0.1	-	-	-	-	<0.1	<0.1
Barium (Ba)	µg/L (ppb)	-	-	<10	-	-	-	-	<10	<10
Beryllium (Be)	µg/L (ppb)	-	-	<0.5	-	-	-	-	<5	<5
Bismuth (Bi)	µg/L (ppb)	-	-	<0.5	-	-	-	-	<100	<100
Boron (B)	µg/L (ppb)	-	-	<100	-	-	-	-	<100	<100
Cadmium (Cd)	µg/L (ppb)	-	-	<0.2	-	-	-	-	<0.2	<0.2
Calcium (Ca)	µg/L (ppb)	-	-	868	-	-	-	-	887	856
Chromium (Cr)	µg/L (ppb)	-	-	<0.5	-	-	-	-	<15	<15
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<1	<1
Copper (Cu)	µg/L (ppb)	-	-	<10	-	-	-	-	<10	<10
Iron (Fe)	µg/L (ppb)	-	-	57	-	-	-	-	54	40
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<1	<1
Lithium (Li)	µg/L (ppb)	-	-	<15	-	-	-	-	<15	<15
Magnesium (Mg)	µg/L (ppb)	-	-	397	-	-	-	-	400	398
Manganese (Mn)	µg/L (ppb)	-	-	<5	-	-	-	-	<5	<5
Mercury (Hg)	µg/L (ppb)	-	-	<0.01	-	-	-	-	<0.05	<0.05
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<1	<1
Nickel (Ni)	µg/L (ppb)	-	-	0.3	-	-	-	-	<1	<1
Phosphorus (P)	µg/L (ppb)	-	-	<300	-	-	-	-	<300	<300
Potassium (K)	µg/L (ppb)	-	-	<2,000	-	-	-	-	<2,000	<2,000
Selenium (Se)	µg/L (ppb)	-	-	<1	-	-	-	-	<0.5	<0.5
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	118	-	-	-	-	158	165
Silver (Ag)	µg/L (ppb)	-	-	<0.01	-	-	-	-	<0.1	<0.1

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		23-Aug-95	23-Aug-95	27-Aug-95	28-Aug-95	28-Aug-95	14-Sep-95	14-Sep-95	14-Sep-95	14-Sep-95
		2 m	3 m	Unknown	1 m	2 m	Unknown	Unknown	Unknown	Unknown
Sodium (Na)	µg/L (ppb)	-	-	490	-	-	-	-	<2000	<2000
Strontium (Sr)	µg/L (ppb)	-	-	11	-	-	-	-	9	8
Thallium (Tl)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<100	<100
Tin (Sn)	µg/L (ppb)	-	-	<300	-	-	-	-	<300	<300
Titanium (Ti)	µg/L (ppb)	-	-	<10	-	-	-	-	<100	<100
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	<100	<100
Uranium (U)	µg/L (ppb)	-	-	<0.5	-	-	-	-	<0.5	<0.5
Vanadium (V)	µg/L (ppb)	-	-	<30	-	-	-	-	<30	<30
Zinc (Zn)	µg/L (ppb)	-	-	7	-	-	-	-	<5	<5
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	8	-	-	-	-	12	11
Antimony (Sb)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.1	<0.1
Arsenic (As)	µg/L (ppb)	-	-	0.1	-	-	-	-	<0.1	<0.1
Barium (Ba)	µg/L (ppb)	-	-	1.95	-	-	-	-	<10	<10
Beryllium (Be)	µg/L (ppb)	-	-	<0.5	-	-	-	-	<5	<5
Bismuth (Bi)	µg/L (ppb)	-	-	<0.5	-	-	-	-	<100	<100
Boron (B)	µg/L (ppb)	-	-	2	-	-	-	-	<100	<100
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<0.2	<0.2
Calcium (Ca)	µg/L (ppb)	-	-	950	-	-	-	-	814	820
Chromium (Cr)	µg/L (ppb)	-	-	<0.5	-	-	-	-	<15	<15
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<1	<1
Copper (Cu)	µg/L (ppb)	-	-	0.5	-	-	-	-	<10	<10
Iron (Fe)	µg/L (ppb)	-	-	<30	-	-	-	-	<30	<30
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<1	<1
Lithium (Li)	µg/L (ppb)	-	-	<1	-	-	-	-	<15	<15
Magnesium (Mg)	µg/L (ppb)	-	-	410	-	-	-	-	389	359
Manganese (Mn)	µg/L (ppb)	-	-	0.44	-	-	-	-	<5	<5
Mercury (Hg)	µg/L (ppb)	-	-	<0.01	-	-	-	-	<0.05	<0.05
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<1	<1
Nickel (Ni)	µg/L (ppb)	-	-	0.3	-	-	-	-	<1	<1
Phosphorus (P)	µg/L (ppb)	-	-	<300	-	-	-	-	<300	<300
Potassium (K)	µg/L (ppb)	-	-	370	-	-	-	-	<2,000	<2,000
Selenium (Se)	µg/L (ppb)	-	-	<1	-	-	-	-	<0.5	<0.5
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	110	-	-	-	-	139	136
Silver (Ag)	µg/L (ppb)	-	-	<0.01	-	-	-	-	<0.1	<0.1
Sodium (Na)	µg/L (ppb)	-	-	<2,000	-	-	-	-	<2,000	<2,000
Strontium (Sr)	µg/L (ppb)	-	-	10	-	-	-	-	8	8
Thallium (Tl)	µg/L (ppb)	-	-	<0.05	-	-	-	-	<100	<100
Tin (Sn)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<300	<300
Titanium (Ti)	µg/L (ppb)	-	-	<10	-	-	-	-	<100	<100
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	<100	<100
Uranium (U)	µg/L (ppb)	-	-	0.01	-	-	-	-	<0.5	<0.5
Vanadium (V)	µg/L (ppb)	-	-	<1	-	-	-	-	<30	<30
Zinc (Zn)	µg/L (ppb)	-	-	7	-	-	-	-	<5	<5

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		15-Sep-95	15-Sep-95	12-Apr-96	1-Jul-96	4-Jul-96	4-Jul-96	4-Jul-96	23-Aug-96	23-Aug-96
		1 m	2 m	0.5 m	1.75 m	1 m	2 m	3 m	1 m	2 m
Field Measured										
pH	pH Units	6.39	6.36	6.16	-	-	-	-	6.72	6.77
Conductivity [(a)]	µS/cm	7.9	7.9	-	-	-	-	-	8.2	8.3
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	12.53	12.49	-	-	-	-	-	10.39	10.35
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3.32	3.32	-	-	-	-	-	10.63	10.61
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	9	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	10	-	-	-	-	3.97	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	5	5	27	-	5.8	5.8	5.8	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	<5	-	-	-	-	1	-
Turbidity	NTU	51.7	52.5	-	-	-	-	-	0	0
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	1.5	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	0.05	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	3.3	<0.05	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	0.042	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	0.024	-	-	-	-	-	0.001
Nitrite	mg/L (ppm)	-	-	0.002	-	-	-	-	-	<0.005
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	0.006	-	-	-	-	-	0.006
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	12	15	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	<0.1	<0.05	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.3	0.15	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	<10	1.99	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<5	<0.5	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<100	<0.5	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	<100	2	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.2	<0.05	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	2,400	800	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<15	<0.1	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<1	<0.1	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	<10	0.6	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	47	<50	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	<1	<0.05	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	<15	<1	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	1,020	382	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	9	4.54	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.05	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<1	<0.05	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	<1	0.3	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	<300	<300	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	<2,000	<2,000	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.5	<1	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	451	70	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	<0.01	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		15-Sep-95	15-Sep-95	12-Apr-96	1-Jul-96	4-Jul-96	4-Jul-96	4-Jul-96	23-Aug-96	23-Aug-96
		1 m	2 m	0.5 m	1.75 m	1 m	2 m	3 m	1 m	2 m
Sodium (Na)	µg/L (ppb)	-	-	<2,000	<2,000	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	9	10.3	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	<100	<0.05	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	<300	0.4	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	<10	<10	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	<100	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	<30	<0.1	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	6	<1	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		23-Aug-96	19-Sep-96	19-Sep-96	19-Sep-96	28-Nov-96	29-Nov-96	18-Jan-98	18-Jan-98	18-Jan-98
		3 m	1 m	1.5 m	2 m	0.5 m	0.5 m	1.5 m	2 m	2.5 m
Field Measured										
pH	pH Units	6.73	6.6	-	6.6	-	6.71	-	-	-
Conductivity [(a)]	µS/cm	8.2	8.6	-	8.6	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	10.38	10.6	-	10.45	-	-	-	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	10.46	11.85	-	11.8	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	5	-	-	-	-
Hardness, Total	mg/L (ppm)	-	3.57	-	-	-	6.24	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	0.0055	-	0.0055	-	11	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	1	-	-	-
Turbidity	NTU	0	0	-	0	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	0.6	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	0.05	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	1	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	<0.005	-	0.006	-	-	-
Nitrate	mg/L (ppm)	-	-	-	0.001	-	<0.001	-	-	-
Nitrite	mg/L (ppm)	-	-	-	<0.005	-	0.005	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	0.002	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	0.006	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	5	15	-	13
Antimony (Sb)	µg/L (ppb)	-	-	<0.05	-	-	<0.05	<0.05	-	<0.05
Arsenic (As)	µg/L (ppb)	-	-	0.14	-	-	0.2	0.2	-	0.2
Barium (Ba)	µg/L (ppb)	-	-	1.61	-	-	2.25	3.14	-	2.72
Beryllium (Be)	µg/L (ppb)	-	-	<0.5	-	-	<0.5	<0.5	-	<0.5
Bismuth (Bi)	µg/L (ppb)	-	-	<0.5	-	-	<0.5	<0.5	-	<0.5
Boron (B)	µg/L (ppb)	-	-	5	-	-	2	3	-	2
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	-	<0.05	<0.05	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	850	-	-	1,230	170	-	1,570
Chromium (Cr)	µg/L (ppb)	-	-	<0.1	-	-	<0.5	<0.5		<0.5
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	<0.1	<0.1	-	<0.1
Copper (Cu)	µg/L (ppb)	-	-	0.5	-	-	0.7	1.2	-	0.9
Iron (Fe)	µg/L (ppb)	-	-	20	-	-	<10	<30	-	<30
Lead (Pb)	µg/L (ppb)	-	-	<0.05	-	-	0.58	0.09	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	2	-	-	<1	1	-	1
Magnesium (Mg)	µg/L (ppb)	-	-	384	-	-	530	780	-	710
Manganese (Mn)	µg/L (ppb)	-	-	2.69	-	-	1.19	2.15	-	2.62
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	0.02	-	0.01
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.05	-	-	<0.05	<0.05	-	<0.05
Nickel (Ni)	µg/L (ppb)	-	-	0.2	-	-	0.2	0.4	-	0.3
Phosphorus (P)	µg/L (ppb)	-	-	<300	-	-	<300	<300	-	<300
Potassium (K)	µg/L (ppb)	-	-	<2,000	-	-	<2,000	670	-	510
Selenium (Se)	µg/L (ppb)	-	-	<1	-	-	<1	<1	-	<1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	130	-	-	120	270	-	290
Silver (Ag)	µg/L (ppb)	-	-	<0.01	-	-	<0.01	<0.01	-	<0.01

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		23-Aug-96	19-Sep-96	19-Sep-96	19-Sep-96	28-Nov-96	29-Nov-96	18-Jan-98	18-Jan-98	18-Jan-98
		3 m	1 m	1.5 m	2 m	0.5 m	0.5 m	1.5 m	2 m	2.5 m
Sodium (Na)	µg/L (ppb)	-	-	<2,000	-	-	<2,000	890	-	700
Strontium (Sr)	µg/L (ppb)	-	-	5.9	-	-	7.4	10.9	-	9
Thallium (Tl)	µg/L (ppb)	-	-	<0.05	-	-	<0.05	<0.05	-	<0.05
Tin (Sn)	µg/L (ppb)	-	-	<0.1	-	-	<0.1	0.3	-	<0.1
Titanium (Ti)	µg/L (ppb)	-	-	<10	-	-	<10	<10	-	<10
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	<0.01	0.02	-	0.01
Vanadium (V)	µg/L (ppb)	-	-	<0.1	-	-	<1	<1	-	<1
Zinc (Zn)	µg/L (ppb)	-	-	<1	-	-	2	6	-	2
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	32	-	-	-	-	11	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	0.31	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	0.2	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	3.48	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	<0.5	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	<0.5	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	3	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	1,890	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	<0.5	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-		<0.1	
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	0.8	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	<30	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	1	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	830	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	3.96	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	<0.01	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	0.4	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	<300	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	650	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	<1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	300	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	<0.01	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	880	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	11.8	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	<10	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	0.01	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	<1	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	5	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		18-Jan-98	18-Jan-98	1-Mar-98	1-Mar-98	16-Aug-98	16-Aug-98	16-Aug-98	16-Aug-98	16-Aug-98
		3 m	3 m	2 m	3 m	0 m	1 m	2 m	3 m	4 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	9.6	9.6	9.6	9.6	9.6
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	-	-	14.5	14.5	14.5	14.5	14.5
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	20	14	15	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	<0.05	0.05	0.09	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	0.2	0.2	0.2	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	2.17	3.65	3.92	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	<0.5	<0.5	<0.5	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	<0.5	<0.5	<0.5	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	1	3	3	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	<0.05	<0.05	<0.05	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	1,075	2,120	2,005	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)		<0.5	<0.5	<0.5	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	<0.1	<0.1	<0.1	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	0.8	1.2	0.9	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	<30	<30	35	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	<0.05	0.08	<0.05	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	1	<1	<1	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	480	860	885	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	3.66	6.18	8.58	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	0.01	0.01	<0.01	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	<0.05	<0.05	<0.05	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	0.3	0.4	0.4	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	<300	<300	<300	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	390	660	650	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	<1	<1	<1	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	180	310	310	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	<0.01	<0.01	<0.01	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		18-Jan-98	18-Jan-98	1-Mar-98	1-Mar-98	16-Aug-98	16-Aug-98	16-Aug-98	16-Aug-98	16-Aug-98
		3 m	3 m	2 m	3 m	0 m	1 m	2 m	3 m	4 m
Sodium (Na)	µg/L (ppb)	-	650	890	890	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	69	12	12.5	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	<0.05	<0.05	<0.05	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	<0.1	0.1	<0.1	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	<10	<10	<10	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	0.01	0.02	0.02	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	<1	<1	<1	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	5	6	5	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	10	11	14	15	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	<0.05	<0.05	0.05	0.09	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	0.2	0.2	0.2	0.2	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	3.69	3.94	3.65	3.92	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-
Boron (B)	µg/L (ppb)	3	3	3	3	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	1,920	2,070	2,120	2,005	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	0.7	0.8	1.2	0.9	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	<30	<30	<30	35	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	0.08	<0.05	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	1	1	<1	<1	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	850	890	860	885	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	6	5.26	6.18	8.58	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	<0.01	<0.01	0.01	<0.01	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	0.4	0.4	0.4	0.4	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	<300	<300	<300	<300	-	-	-	-	-
Potassium (K)	µg/L (ppb)	610	650	660	650	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	<1	<1	<1	<1	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	300	300	310	310	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	850	900	890	890	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	12	12.8	12	12.5	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	<0.1	<0.1	0.1	<0.1	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	<10	<10	<10	<10	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	0.01	0.01	0.02	0.02	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	<1	<1	<1	<1	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	3	4	6	5	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	29-Mar-01	29-Mar-01	29-Mar-01	29-Mar-01	29-Mar-01
		5.5 m	5.5 m duplicate	6 m	7 m	2 m	3 m	4 m	5 m	5.5 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	6.8	-	14.8	13.6	12.1	8.3	
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	3.7	3.9	1.6	2.4	3.1	3.5	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	6.2	6.2	-	-	-	6.2	-	-	6
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	17.7	18	-	-	-	18.1	-	-	19.7
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	10	-	-	-
Alkalinity, Total	mg/L (ppm)	7	7				7	-	-	8
Hardness, Total	mg/L (ppm)	6	6	-	-	-	5	-	-	6
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	8	8	-	-	-	8	-	-	8
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	0.11	<0.1	-	-	-	0.46	-	-	0.31
Calcium (Ca)	mg/L (ppm)	-	1.5	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	0.6	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	0.5	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	<1	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)		9				-	-	-	-
Carbonate	mg/L (ppm)	-	<5	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	<1	<1	-	-	-	<1	-	-	<1
Fluoride	mg/L (ppm)	<0.05	<0.05	-	-	-	<0.05	-	-	<0.05
Sulphate	mg/L (ppm)	0.9	0.7	-	-	-	1.3	-	-	1
Nutrients										
Ammonia	mg/L (ppm)	<0.05	<0.05				<0.05	-	-	<0.05
Nitrate	mg/L (ppm)	0.05	<0.1	-	-	-	<0.1	-	-	<0.1
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	<0.1	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	<0.02	-	-	-	-	<0.02	-	-	0.07
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	5.7	4.7	-	-	-	6.9	-	-	4.5
Antimony (Sb)	µg/L (ppb)	0.25	0.26	-	-	-	<0.03	-	-	0.03
Arsenic (As)	µg/L (ppb)	0.16	0.14	-	-	-	0.16	-	-	0.15
Barium (Ba)	µg/L (ppb)	0.39	3.5	-	-	-	2.36	-	-	4.47
Beryllium (Be)	µg/L (ppb)	<0.2	<0.2	-	-	-	<0.2	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	<0.03	<0.03	-	-	-	1.14	-	-	2.26
Boron (B)	µg/L (ppb)	2	2	-	-	-	2	-	-	2
Cadmium (Cd)	µg/L (ppb)	<0.02	<0.02	-	-	-	0.05	-	-	0.05
Calcium (Ca)	µg/L (ppb)	1,490	1,350	-	-	-	1,240	-	-	1,760
Chromium (Cr)	µg/L (ppb)	<0.06	<0.06	-	-	-	0.14	-	-	0.13
Cobalt (Co)	µg/L (ppb)	<0.1	0.1	-	-	-	<0.1	-	-	0.8
Copper (Cu)	µg/L (ppb)	0.55	0.48	-	-	-	0.6	-	-	0.6
Iron (Fe)	µg/L (ppb)	69	69	-	-	-	15	-	-	122
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	-	-	-	<0.05	-	-	<0.05
Lithium (Li)	µg/L (ppb)	1.4	1.2	-	-	-	1	-	-	0.9
Magnesium (Mg)	µg/L (ppb)	611	541	-	-	-	622	-	-	679
Manganese (Mn)	µg/L (ppb)	82.3	71.7	-	-	-	1.6	-	-	207
Mercury (Hg)	µg/L (ppb)	<0.02	<0.02	-	-	-	<0.02	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	<0.04	<0.04	-	-	-	<0.06	-	-	<0.06
Nickel (Ni)	µg/L (ppb)	0.43	0.36	-	-	-	0.28	-	-	0.48
Phosphorus (P)	µg/L (ppb)	<2	<2	-	-	-	9	-	-	7
Potassium (K)	µg/L (ppb)	506	453	-	-	-	487	-	-	516
Selenium (Se)	µg/L (ppb)	<0.1	0.1	-	-	-	<0.1	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	500	400	-	-	-	600	-	-	700

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		22-Feb-01	22-Feb-01	22-Feb-01	22-Feb-01	29-Mar-01	29-Mar-01	29-Mar-01	29-Mar-01	29-Mar-01
		5.5 m	5.5 m duplicate	6 m	7 m	2 m	3 m	4 m	5 m	5.5 m
Silver (Ag)	µg/L (ppb)	<0.03	<0.03	-	-	-	<0.1	-	-	0.2
Sodium (Na)	µg/L (ppb)	658	595	-	-	-	712	-	-	663
Strontium (Sr)	µg/L (ppb)	10.7	9.6	-	-	-	7.9	-	-	10.6
Thallium (Tl)	µg/L (ppb)	<0.03	<0.03	-	-	-	<0.03	-	-	<0.03
Tin (Sn)	µg/L (ppb)	<0.1	<0.1	-	-	-	0.1	-	-	<0.1
Titanium (Ti)	µg/L (ppb)	<0.1	<0.1	-	-	-	<0.1	-	-	<0.1
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.01	<0.01	-	-	-	<0.05	-	-	<0.05
Vanadium (V)	µg/L (ppb)	<0.05	<0.05	-	-	-	<0.05	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	0.8	1.9	-	-	-	11	-	-	1.4
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	2.8	2.4	-	-	-	5.6	-	-	3.2
Antimony (Sb)	µg/L (ppb)	0.19	0.17	-	-	-	0.04	-	-	<0.03
Arsenic (As)	µg/L (ppb)	0.11	0.11	-	-	-	0.16	-	-	0.14
Barium (Ba)	µg/L (ppb)	2.53	2.2	-	-	-	2.3	-	-	3.72
Beryllium (Be)	µg/L (ppb)	<0.2	<0.2	-	-	-	<0.2	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	<0.03	<0.03	-	-	-	1.81	-	-	1.1
Boron (B)	µg/L (ppb)	2	1	-	-	-	2	-	-	2
Cadmium (Cd)	µg/L (ppb)	<0.02	<0.02	-	-	-	0.05	-	-	0.05
Calcium (Ca)	µg/L (ppb)	1,200	1,080	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	<0.06	<0.06	-	-	-	0.15	-	-	0.11
Cobalt (Co)	µg/L (ppb)	<0.1	<0.1	-	-	-	<0.1	-	-	0.3
Copper (Cu)	µg/L (ppb)	0.51	0.47	-	-	-	0.8	-	-	0.7
Iron (Fe)	µg/L (ppb)	9	9	-	-	-	10	-	-	6
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	-	-	-	<0.05	-	-	<0.05
Lithium (Li)	µg/L (ppb)	1	0.8	-	-	-	1	-	-	1
Magnesium (Mg)	µg/L (ppb)	465	421	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	32.4	29	-	-	-	0.7	-	-	107
Mercury (Hg)	µg/L (ppb)	<0.02	<0.02	-	-	-	<0.02	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	<0.04	<0.04	-	-	-	0.3	-	-	<0.06
Nickel (Ni)	µg/L (ppb)	0.24	0.22	-	-	-	0.31	-	-	0.46
Phosphorus (P)	µg/L (ppb)	<2	<2	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	358	302	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	<0.1	<0.1	-	-	-	<0.1	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	200	200	-	-	-	200	-	-	500
Silver (Ag)	µg/L (ppb)	<0.03	<0.03	-	-	-	<0.1	-	-	<0.1
Sodium (Na)	µg/L (ppb)	588	507	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	7.5	6.7	-	-	-	8	-	-	10.7
Thallium (Tl)	µg/L (ppb)	0.14	0.05	-	-	-	<0.03	-	-	<0.03
Tin (Sn)	µg/L (ppb)	<0.1	<0.1	-	-	-	0.2	-	-	0.1
Titanium (Ti)	µg/L (ppb)	<0.1	<0.1	-	-	-	<0.1	-	-	0.2
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.01	<0.01	-	-	-	<0.05	-	-	<0.05
Vanadium (V)	µg/L (ppb)	<0.05	<0.05	-	-	-	<0.05	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	2	<0.8	-	-	-	1.4	-	-	0.9

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		29-Mar-01	29-Mar-01	29-Mar-01	28-Apr-01	28-Apr-01	28-Apr-01	28-Apr-01	28-Apr-01	28-Apr-01
		5.5 m duplicate	6 m	7 m	2 m	3 m	4 m	5 m	5.5 m	5.5 m duplicate
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)		6.2	3	16.4	14.1	11.6	7	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	3.7	4.1	1.2	2.4	3.1	3.6	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	6	-	-	-	6.3	-	-	6.1	6.1
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	21.1	-	-	-	22	-	-	20.3	21.3
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	8	-	-	-	7	-	-	8	8
Hardness, Total	mg/L (ppm)	7	-	-	-	6	-	-	6	6
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	9	-	-	-	7	-	-	8	9
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	0.33	-	-	-	<0.1	-	-	<0.1	<0.1
Calcium (Ca)	mg/L (ppm)	1.7	-	-	-	-	-	-	-	1.6
Magnesium (Mg)	mg/L (ppm)	0.6	-	-	-	-	-	-	-	0.6
Potassium (K)	mg/L (ppm)	0.5	-	-	-	-	-	-	-	0.4
Sodium (Na)	mg/L (ppm)	<1	-	-	-	-	-	-	-	<1
Bicarbonate	mg/L (ppm)	10	-	-	-	-	-	-	-	10
Carbonate	mg/L (ppm)	<5	-	-	-	-	-	-	-	<5
Chloride	mg/L (ppm)	<1	-	-	-	<1	-	-	<1	<1
Fluoride	mg/L (ppm)	<0.05	-	-	-	<0.05	-	-	<0.05	<0.05
Sulphate	mg/L (ppm)	1.1	-	-	-	0.8	-	-	0.5	1
Nutrients										
Ammonia	mg/L (ppm)	<0.05	-	-	-	<0.05	-	-	<0.05	<0.05
Nitrate	mg/L (ppm)	0.1	-	-	-	<0.1	-	-	<0.1	<0.1
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	0.1	-	-	-	-	-	-	-	0.1
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	<0.02	-	-	<0.02	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	5.2	-	-	-	6	-	-	4.6	4.6
Antimony (Sb)	µg/L (ppb)	<0.03	-	-	-	0.08	-	-	0.04	0.14
Arsenic (As)	µg/L (ppb)	0.15	-	-	-	0.17	-	-	0.16	0.18
Barium (Ba)	µg/L (ppb)	3.89	-	-	-	2.48	-	-	3.98	4.37
Beryllium (Be)	µg/L (ppb)	<0.2	-	-	-	<0.2	-	-	<0.2	<0.2
Bismuth (Bi)	µg/L (ppb)	1.89	-	-	-	<0.03	-	-	<0.03	<0.03
Boron (B)	µg/L (ppb)	2	-	-	-	2	-	-	1	2
Cadmium (Cd)	µg/L (ppb)	<0.05	-	-	-	<0.02	-	-	<0.02	<0.02
Calcium (Ca)	µg/L (ppb)	1,620	-	-	-	1,490	-	-	1,770	1,850
Chromium (Cr)	µg/L (ppb)	0.1	-	-	-	0.39	-	-	0.46	0.18
Cobalt (Co)	µg/L (ppb)	0.3	-	-	-	<0.1	-	-	0.2	0.4
Copper (Cu)	µg/L (ppb)	<0.6	-	-	-	0.64	-	-	0.53	0.53
Iron (Fe)	µg/L (ppb)	68	-	-	-	15	-	-	117	171
Lead (Pb)	µg/L (ppb)	<0.05	-	-	-	<0.05	-	-	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	1	-	-	-	1.1	-	-	1.1	1.1
Magnesium (Mg)	µg/L (ppb)	679	-	-	-	593	-	-	617	634
Manganese (Mn)	µg/L (ppb)	135	-	-	-	1.69	-	-	92.3	111
Mercury (Hg)	µg/L (ppb)	<0.02	-	-	-	<0.02	-	-	<0.02	<0.02
Molybdenum (Mo)	µg/L (ppb)	0.07	-	-	-	<0.04	-	-	<0.04	<0.04
Nickel (Ni)	µg/L (ppb)	0.44	-	-	-	0.5	-	-	0.58	0.51
Phosphorus (P)	µg/L (ppb)	<20	-	-	-	<2	-	-	<2	<20
Potassium (K)	µg/L (ppb)	499	-	-	-	509	-	-	514	527
Selenium (Se)	µg/L (ppb)	<0.1	-	-	-	<0.1	-	-	<0.1	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	600	-	-	-	500	-	-	500	600

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		29-Mar-01	29-Mar-01	29-Mar-01	28-Apr-01	28-Apr-01	28-Apr-01	28-Apr-01	28-Apr-01	28-Apr-01
		5.5 m duplicate	6 m	7 m	2 m	3 m	4 m	5 m	5.5 m	5.5 m duplicate
Silver (Ag)	µg/L (ppb)	0.1	-	-	-	0.87	-	-	0.87	0.88
Sodium (Na)	µg/L (ppb)	680	-	-	-	680	-	-	648	659
Strontium (Sr)	µg/L (ppb)	10	-	-	-	8.7	-	-	10.4	11.2
Thallium (Tl)	µg/L (ppb)	<0.03	-	-	-	<0.03	-	-	<0.03	<0.03
Tin (Sn)	µg/L (ppb)	<0.1	-	-	-	<0.1	-	-	<0.1	<0.1
Titanium (Ti)	µg/L (ppb)	<0.1	-	-	-	<0.1	-	-	<0.1	0.1
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	-	-	-	<0.01	-	-	<0.01	<0.01
Vanadium (V)	µg/L (ppb)	<0.05	-	-	-	<0.05	-	-	<0.05	<0.05
Zinc (Zn)	µg/L (ppb)	<0.8	-	-	-	3.1	-	-	2.3	1.5
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	5	-	-	2.8	2.8
Antimony (Sb)	µg/L (ppb)	-	-	-	-	0.13	-	-	0.15	0.06
Arsenic (As)	µg/L (ppb)	-	-	-	-	0.19	-	-	0.16	0.17
Barium (Ba)	µg/L (ppb)	-	-	-	-	2.55	-	-	3.64	3.68
Beryllium (Be)	µg/L (ppb)	-	-	-	-	<0.2	-	-	<0.2	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	<0.03	-	-	<0.03	<0.03
Boron (B)	µg/L (ppb)	-	-	-	-	2	-	-	2	2
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	<0.02	-	-	<0.02	<0.02
Calcium (Ca)	µg/L (ppb)	-	-	-	-	1,750	-	-	2,190	2,150
Chromium (Cr)	µg/L (ppb)	-	-	-	-	0.31	-	-	0.4	0.16
Cobalt (Co)	µg/L (ppb)		-	-	-	<0.1	-	-	0.1	0.1
Copper (Cu)	µg/L (ppb)	-	-	-	-	0.94	-	-	0.8	0.79
Iron (Fe)	µg/L (ppb)	-	-	-	-	10	-	-	11	12
Lead (Pb)	µg/L (ppb)	-	-	-	-	<0.05	-	-	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	-	1.1	-	-	1.2	1.2
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	643	-	-	739	707
Manganese (Mn)	µg/L (ppb)	-	-	-	-	0.82	-	-	55.6	55.8
Mercury (Hg)	µg/L (ppb)	-	-	-	-	<0.02	-	-	<0.02	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	<0.04	-	-	<0.04	<0.04
Nickel (Ni)	µg/L (ppb)	-	-	-	-	0.46	-	-	0.53	0.44
Phosphorus (P)	µg/L (ppb)	-	-	-	-	8	-	-	9	8
Potassium (K)	µg/L (ppb)	-	-	-	-	513	-	-	544	533
Selenium (Se)	µg/L (ppb)	-	-	-	-	<0.1	-	-	<0.1	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	400	-	-	-	300	-	-	400	400
Silver (Ag)	µg/L (ppb)	-	-	-	-	0.87	-	-	0.87	0.88
Sodium (Na)	µg/L (ppb)	-	-	-	-	860	-	-	878	842
Strontium (Sr)	µg/L (ppb)	-	-	-	-	8.8	-	-	11	10.9
Thallium (Tl)	µg/L (ppb)	-	-	-	-	<0.03	-	-	<0.03	<0.03
Tin (Sn)	µg/L (ppb)	-	-	-	-	0.1	-	-	0.1	0.1
Titanium (Ti)	µg/L (ppb)		-	-	-	<0.1	-	-	<0.1	<0.1
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	<0.01	-	-	<0.01	<0.01
Vanadium (V)	µg/L (ppb)	-	-	-	-	<0.05	-	-	<0.05	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	-	-	1.9	-	-	1.1	2.3

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		28-Apr-01	28-Apr-01	8-Aug-01	8-Aug-01	8-Aug-01	8-Aug-01	8-Aug-01	8-Aug-01	8-Aug-01
		6 m	7 m	0 m	1 m	2 m	3 m	4 m	5 m	6 m
Field Measured										
pH	pH Units	-	-	7	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	13.3	13.3	13.3	13.4	13.6	13.6	13.6
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	5.1	3.6	9.2	9.2	9.2	9.2	9.2	9.2	9.2
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3.8	4	15.4	15.5	15.5	15.5	15.5	15.5	15.5
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	3.6	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	4	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	<10	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	<3	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	0.6	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	<0.03	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	0.7	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	<0.005	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	<0.008	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	0.14	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	0.008	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	7.8	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	0.47	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.11	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	1.83	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	2	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	938	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.06	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	0.3	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	<0.6	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	41	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	402	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	4.5	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	0.23	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	8.5	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	390	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	300	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		28-Apr-01	28-Apr-01	8-Aug-01	8-Aug-01	8-Aug-01	8-Aug-01	8-Aug-01	8-Aug-01	8-Aug-01
		6 m	7 m	0 m	1 m	2 m	3 m	4 m	5 m	6 m
Sodium (Na)	µg/L (ppb)	-	-	-	518	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	6.3	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	<0.03	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	<0.8	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		8-Aug-01	8-Aug-01	8-Aug-01	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02
		7 m	8 m	9 m	1 m	2 m	3 m	4 m	5 m	5 m duplicate
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	13.6	13.6	13.5	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	9.2	9.2	9.2	19.4	17.1	16.5	15.2	13.8	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	15.3	15.3	14.9	0.5	1.8	2.5	2.9	3.3	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	6.3	-	6.2	6.3
Conductivity [(a)]	µS/cm	-	-	-	-	-	17.5	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	19	18.8
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	3.6	-	-	-	8	-	8	8
Hardness, Total	mg/L (ppm)	-	3.93	-	-	-	6	-	7	7
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	9	-	10	11
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	<10	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	<3	-	-	-	4	-	<3	<3
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	1.33	-	1.62	1.72
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	0.53	-	0.63	0.67
Potassium (K)	mg/L (ppm)	-	-	-	-	-	0.72	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	1	-	1	1.1
Bicarbonate	mg/L (ppm)	-	-	-	-	-	10	-	10	10
Carbonate	mg/L (ppm)	-	-	-	-	-	<5	-	<5	<5
Chloride	mg/L (ppm)	-	0.5	-	-	-	<1	-	<1	1
Fluoride	mg/L (ppm)	-	<0.03	-	-	-	<0.05	-	<0.05	<0.05
Sulphate	mg/L (ppm)	-	0.7	-	-	-	1.03	-	1.05	1.02
Nutrients										
Ammonia	mg/L (ppm)	-	0.007	-	-	-	0.028	-	0.035	0.035
Nitrate	mg/L (ppm)	-	<0.008	-	-	-	<0.006	-	0.014	0.016
Nitrite	mg/L (ppm)	-	-	-	-	-	<0.002	-	<0.002	<0.002
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	0.32	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	0.013	-	-	-	0.005	-	0.005	0.004
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	7.9	-	-	-	6.1	-	6.5	6.5
Antimony (Sb)	µg/L (ppb)	-	0.48	-	-	-	0.11	-	0.11	0.12
Arsenic (As)	µg/L (ppb)	-	0.11	-	-	-	0.13	-	0.12	0.13
Barium (Ba)	µg/L (ppb)	-	1.84	-	-	-	2.1	-	3.09	3.12
Beryllium (Be)	µg/L (ppb)	-	<0.2	-	-	-	<0.2	-	<0.2	<0.2
Bismuth (Bi)	µg/L (ppb)	-	<0.03	-	-	-	<0.03	-	<0.03	<0.03
Boron (B)	µg/L (ppb)	-	2	-	-	-	2	-	2	2
Cadmium (Cd)	µg/L (ppb)	-	<0.05	-	-	-	<0.05	-	<0.05	<0.05
Calcium (Ca)	µg/L (ppb)	-	916	-	-	-	1,180	-	1,400	1,410
Chromium (Cr)	µg/L (ppb)	-	<0.06	-	-	-	0.1	-	0.13	0.14
Cobalt (Co)	µg/L (ppb)	-	0.3	-	-	-	<0.1	-	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	-	<0.6	-	-	-	<0.6	-	<0.6	<0.6
Iron (Fe)	µg/L (ppb)	-	40	-	-	-	13	-	34	36
Lead (Pb)	µg/L (ppb)	-	0.13	-	-	-	<0.05	-	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	-	<0.1	-	-	-	<0.1	-	<0.1	<0.1
Magnesium (Mg)	µg/L (ppb)	-	399	-	-	-	536	-	596	604
Manganese (Mn)	µg/L (ppb)	-	4.6	-	-	-	1.5	-	20.6	27.3
Mercury (Hg)	µg/L (ppb)	-	0.07	-	-	-	<0.02	-	<0.02	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	<0.06	-	-	-	<0.06	-	<0.06	<0.06
Nickel (Ni)	µg/L (ppb)	-	0.23	-	-	-	0.19	-	0.25	0.26
Phosphorus (P)	µg/L (ppb)	-	13.5	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	390	-	-	-	236	-	497	281
Selenium (Se)	µg/L (ppb)	-	<0.1	-	-	-	<0.1	-	<0.1	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	300	-	-	-	200	-	300	300

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		8-Aug-01	8-Aug-01	8-Aug-01	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02	16-Jan-02
		7 m	8 m	9 m	1 m	2 m	3 m	4 m	5 m	5 m duplicate
Silver (Ag)	µg/L (ppb)	-	<0.1	-	-	-	<0.1	-	<0.1	<0.1
Sodium (Na)	µg/L (ppb)	-	503	-	-	-	548	-	531	515
Strontium (Sr)	µg/L (ppb)	-	6.2	-	-	-	7.4	-	8.9	8.9
Thallium (Tl)	µg/L (ppb)	-	<0.03	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	<0.1	-	-	-	<0.1	-	<0.1	<0.1
Titanium (Ti)	µg/L (ppb)	-	<0.1	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	<0.05	-	-	-	<0.05	-	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	-	<0.05	-	-	-	<0.05	-	<0.05	<0.05
Zinc (Zn)	µg/L (ppb)	-	1.3	-	-	-	1.7	-	2	1.9
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	4.4	-	4.6	4.7
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	0.14	-	0.13	0.16
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	0.16	-	0.15	0.15
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	2.06	-	2.72	3
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	<0.2	-	<0.2	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	<0.03	-	<0.03	<0.03
Boron (B)	µg/L (ppb)	-	-	-	-	-	2	-	2	2
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	<0.05	-	<0.05	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	1,330	-	1,650	1,840
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	0.14	-	0.11	0.17
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	<0.1	-	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	0.8	-	0.7	1
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	<5	-	12	13
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	<0.05	-	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	<0.1	-	<0.1	<0.1
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	530	-	627	701
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	0.5	-	9.9	12.2
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	<0.02	-	<0.02	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	<0.06	-	<0.06	<0.06
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	0.18	-	0.28	0.27
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	611	-	426	665
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	<0.1	-	<0.1	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	200	-	300	400
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	<0.1	-	<0.1	<0.1
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	878	-	809	996
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	6.9	-	8.6	8.9
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	0.2	-	0.2	0.2
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	<0.05	-	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	<0.05	-	<0.05	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	1.9	-	1.7	2.3

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		16-Jan-02	16-Jan-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02
		6 m	7 m	1 m	2 m	3 m	4 m	5.5 m	5.5 m duplicate	6 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	12.2	8.6	18.83	15.95	13.33	11.11	6.9	-	5.79
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3.6	3.9	0.2	1.3	2.4	3.2	3.6	-	3.8
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	6.5	-	6.5	6.5	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	19.5	-	18.6	19.3	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	8	-	8	8	-
Hardness, Total	mg/L (ppm)	-	-	-	-	6	-	6	6	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	9	-	10	10	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	<3	-	<3	<3	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	1.39	-	1.33	1.34	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	0.58	-	0.55	0.55	-
Potassium (K)	mg/L (ppm)	-	-	-	-	0.48	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	0.7	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	10	-	10	10	-
Carbonate	mg/L (ppm)	-	-	-	-	<5	-	<5	<5	-
Chloride	mg/L (ppm)	-	-	-	-	<1	-	1	1	-
Fluoride	mg/L (ppm)	-	-	-	-	<0.05	-	<0.05	<0.05	-
Sulphate	mg/L (ppm)	-	-	-	-	1.19	-	1.09	1.09	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	0.013	-	0.012	0.008	-
Nitrate	mg/L (ppm)	-	-	-	-	<0.006	-	<0.006	<0.006	-
Nitrite	mg/L (ppm)	-	-	-	-	<0.002	-	<0.002	<0.002	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	<0.006	-	<0.006	<0.006	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	0.002	-	0.002	0.002	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	5.3	-	5.2	5.4	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	0.25	-	0.17	0.31	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	0.18	-	0.16	0.16	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	2.55	-	2.68	2.66	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	<0.2	-	<0.2	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	<0.03	-	<0.03	<0.03	-
Boron (B)	µg/L (ppb)	-	-	-	-	2	-	2	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	<0.05	-	<0.05	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	1,390	-	1,330	1,340	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	0.06	-	<0.06	<0.06	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	<0.1	-	<0.1	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	0.6	-	<0.6	0.9	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	<5	-	<5	<5	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	<0.05	-	<0.05	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	<0.1	-	<0.1	<0.1	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	580	-	550	550	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	1.3	-	4.5	2.9	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	<0.02	-	<0.02	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	<0.06	-	<0.06	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	0.27	-	0.26	0.26	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	480	-	455	450	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	<0.1	-	<0.1	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	200	-	200	200	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		16-Jan-02	16-Jan-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02	12-Mar-02
		6 m	7 m	1 m	2 m	3 m	4 m	5.5 m	5.5 m duplicate	6 m
Silver (Ag)	µg/L (ppb)	-	-	-	-	<0.1	-	<0.1	<0.1	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	667	-	624	616	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	9.4	-	9.1	9.1	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	1.7	-	1.3	3.8	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	<0.05	-	<0.05	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	<0.05	-	<0.05	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	<0.8	-	1	1.2	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	4.4	-	4.5	4	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	0.24	-	0.24	0.3	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	0.19	-	0.16	0.16	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	2.06	-	2.1	2.58	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	<0.2	-	<0.2	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	<0.03	-	<0.03	<0.03	-
Boron (B)	µg/L (ppb)	-	-	-	-	2	-	2	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	<0.05	-	<0.05	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	1,550	-	1,420	1,410	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	0.1	-	0.1	0.06	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	<0.1	-	<0.1	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	0.7	-	0.9	0.9	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	<5	-	<5	<5	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	<0.05	-	<0.05	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	<0.1	-	<0.1	<0.1	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	568	-	571	569	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	0.6	-	1.4	2.2	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	<0.02	-	<0.02	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	<0.06	-	<0.06	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	0.29	-	0.29	0.27	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	516	-	470	454	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	<0.1	-	<0.1	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	200	-	200	200	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	<0.1	-	<0.1	<0.1	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	963	-	844	643	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	9.6	-	9	9.5	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	2.6	-	3.2	2.4	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	<0.05	-	<0.05	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	<0.05	-	<0.05	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	1.4	-	1.5	2.4	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake K5 12-Mar-02 7 m	Kennady Lake K5 29-Apr-02 1 m	Kennady Lake K5 29-Apr-02 2 m	Kennady Lake K5 29-Apr-02 3 m	Kennady Lake K5 29-Apr-02 4 m	Kennady Lake K5 29-Apr-02 5 m	Kennady Lake K5 29-Apr-02 5 m duplicate	Kennady Lake K5 29-Apr-02 6 m	Kennady Lake K5 29-Apr-02 7 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	3.79	17.91	17.11	13.45	10.86	5.91	-	3.13	3.72
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	4	0.2	0.9	2.4	3.1	3.7	-	3.9	4
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	6.6	-	6.4	6.5	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	20.5	-	18.8	19.3	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	8	-	8	8	-	-
Hardness, Total	mg/L (ppm)	-	-	-	7	-	6	7	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	10	-	10	11	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	<3	-	<3	<3	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	1.88	-	1.62	1.74	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	0.78	-	0.61	0.64	-	-
Potassium (K)	mg/L (ppm)	-	-	-	0.79	-	0.49	0.52	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	1.2	-	0.7	1	-	-
Bicarbonate	mg/L (ppm)	-	-	-	10	-	10	10	-	-
Carbonate	mg/L (ppm)	-	-	-	<5	-	<5	<5	-	-
Chloride	mg/L (ppm)	-	-	-	<1	-	<1	1	-	-
Fluoride	mg/L (ppm)	-	-	-	<0.05	-	<0.05	<0.05	-	-
Sulphate	mg/L (ppm)	-	-	-	1.35	-	1.1	1.1	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	0.033	-	0.013	0.01	-	-
Nitrate	mg/L (ppm)	-	-	-	0.008	-	0.062	0.051	-	-
Nitrite	mg/L (ppm)	-	-	-	<0.002	-	<0.002	<0.002	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	0.008	-	0.062	0.051	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	0.003	-	0.003	0.004	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	6.8	-	5.1	5.1	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	0.23	-	0.27	0.25	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.19	-	0.14	0.15	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	2.76	-	3.03	3.1	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	<0.2	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	-	<0.03	<0.03	-	-
Boron (B)	µg/L (ppb)	-	-	-	3	-	2	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	<0.05	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,680	-	1,550	1,640	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	0.24	-	<0.06	<0.06	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	<0.1	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	0.7	-	<0.6	<0.6	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	8	-	14	13	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	<0.05	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	0.2	-	<0.1	<0.1	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	765	-	604	615	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	1.2	-	24.7	25.2	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	-	<0.02	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	-	<0.06	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	0.37	-	0.37	0.33	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	632	-	479	490	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	-	<0.1	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	100	-	200	200	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		12-Mar-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02	29-Apr-02
		7 m	1 m	2 m	3 m	4 m	5 m	5 m duplicate	6 m	7 m
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	-	<0.1	<0.1	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	962	-	683	693	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	10	-	9.3	9.6	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	1.1	-	1	0.9	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	<0.05	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	<0.05	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	2.5	-	<0.8	<0.8	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	6	-	4	4.2	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	0.24	-	0.3	0.27	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.2	-	0.14	0.16	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	2.63	-	2.83	2.35	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	<0.2	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	-	<0.03	<0.03	-	-
Boron (B)	µg/L (ppb)	-	-	-	3	-	2	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	<0.05	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,880	-	1,620	1,740	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	0.08	-	<0.06	<0.06	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	<0.1	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	1.5	-	4.3	3	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	<5	-	<5	5	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	<0.05	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	0.2	-	<0.1	<0.1	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	779	-	644	609	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	0.7	-	19.4	12.7	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	0.02	-	<0.02	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	-	<0.06	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	0.36	-	0.34	0.38	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	788	-	486	515	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	-	<0.1	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	300	-	300	300	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	-	<0.1	<0.1	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	1,170	-	695	1,020	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	9.7	-	9.4	9.5	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	3.5	-	4.4	5.4	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	<0.05	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	<0.05	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	1.4	-	1.7	2.4	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		25-May-02	25-May-02	25-May-02	25-May-02	25-May-02	25-May-02	25-May-02	26-May-02	26-May-02
		1 m	2 m	3 m	4 m	5 m	6 m	7 m	3 m	5 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	15.35	14.7	12.55	8.75	4.87	2.1	2.15	-	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	0.2	1.5	2.6	3.4	3.8	4.1	4.1	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	6.3	6.2
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	21.4	21.6
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	8	8
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	8	7
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	11	10
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	<3	<3
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	1.74	1.55
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	0.83	0.76
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	0.61	0.54
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	1,050	0.8
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	9	9
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	<5	<5
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	<1	<1
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	<0.05	<0.05
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	1.34	1.11
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	0.062	0.044
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	0.02	0.055
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	<0.002	<0.002
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	0.02	0.055
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	<0.001	<0.001
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	6.5	5.5
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	0.2	0.27
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	0.18	0.14
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	2.5	2.69
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	<0.2	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	<0.03	<0.03
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	1	<1
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	1,550	1,530
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	<0.06	<0.06
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	0.6	<0.6
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	5	9
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	0.2	<0.1
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	786	752
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	1.2	12.1
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	<0.02	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	<0.06	<0.06
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	0.34	0.34
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	602	544
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	200	200
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	<0.1

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		25-May-02	25-May-02	25-May-02	25-May-02	25-May-02	25-May-02	25-May-02	26-May-02	26-May-02
		1 m	2 m	3 m	4 m	5 m	6 m	7 m	3 m	5 m
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	926	830
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	9.1	8.8
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	1	0.5
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	<0.8	<0.8
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	6	4.6
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	0.24	0.27
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	0.18	0.15
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	2.7	2.5
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	<0.2	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	<0.03	<0.03
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	1	<1
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	1,740	1,550
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	<0.06	<0.06
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	2.4	1
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	<5	<5
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	<0.1
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	826	755
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	1.2	5.6
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	<0.02	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	<0.06	<0.06
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	0.34	0.34
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	611	540
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	200	200
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	<0.1
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	1,050	840
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	9.2	8.7
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	4.9	3.3
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	0.8	0.9

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		26-May-02	4-Jul-02	5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02
		5 m duplicate	1 m	0 m	1 m	2 m	3 m	4 m	5 m	6 m
Field Measured										
pH	pH Units	-	-	-	8.3	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	13.6	13.5	13.4	13.2	13.2	13	13.1
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	11.6	11.4	11.4	11.3	11.4	11.1	11.4
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	10.9	10.9	10.9	10.9	10.8	10.8	10.8
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	6.3	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	19.1	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	8	-	-	10	-	-	-	-	-
Hardness, Total	mg/L (ppm)	7	-	-	4.4	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	10	-	-	11	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	<10	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	3	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	1.63	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	0.79	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	0.58	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	1.1	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	9	-	-	12.2	-	-	-	-	-
Carbonate	mg/L (ppm)	<5	-	-	<0.5	-	-	-	-	-
Chloride	mg/L (ppm)	<1	-	-	<1	-	-	-	-	-
Fluoride	mg/L (ppm)	<0.05	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	1.11	-	-	<1	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	0.06	-	-	<0.1	-	-	-	-	-
Nitrate	mg/L (ppm)	0.041	-	-	<0.2	-	-	-	-	-
Nitrite	mg/L (ppm)	<0.002	-	-	<0.3	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	0.041	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	<0.3	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	<0.001	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	6	-	-	<20	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	0.57	-	-	<1	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	0.15	-	-	<1	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	2.58	-	-	2	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	<0.2	-	-	<2	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	<0.03	-	-	<50	-	-	-	-	-
Boron (B)	µg/L (ppb)	<1	-	-	<8	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	<0.05	-	-	<0.1	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	1,510	-	-	1,070	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	<0.06	-	-	<5	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	<0.1	-	-	<0.5	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	1.1	-	-	<5	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	7	-	-	48	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	<0.05	-	-	<0.5	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	<0.1	-	-	<20	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	752	-	-	440	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	7.2	-	-	3	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	<0.02	-	-	<0.05	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.06	-	-	<5	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	0.34	-	-	<8	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	<100	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	548	-	-	480	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	<0.1	-	-	<1	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	200	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		26-May-02	4-Jul-02	5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02	5-Aug-02
		5 m duplicate	1 m	0 m	1 m	2 m	3 m	4 m	5 m	6 m
Silver (Ag)	µg/L (ppb)	<0.1	-	-	<0.1	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	835	-	-	510	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	8.6	-	-	7	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	<0.1	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	4.4	-	-	<20	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	<3	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	-	-	<0.1	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	<0.05	-	-	<5	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	<0.8	-	-	38	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	4.9	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	0.44	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	0.15	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	2.05	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	<0.2	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	<0.03	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	<1	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	<0.05	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	1,630	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	<0.06	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	<0.1	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	0.9	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	<5	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	<0.05	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	<0.1	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	786	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	3.6	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	<0.02	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.06	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	0.39	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	575	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	<0.1	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	200	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	<0.1	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	1,110	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	8.6	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	3.4	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	<0.05	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	0.8	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake K5 5-Aug-02 7 m	Kennady Lake K5 7-Feb-03 1 m	Kennady Lake K5 7-Feb-03 2 m	Kennady Lake K5 7-Feb-03 3 m	Kennady Lake K5 7-Feb-03 4 m	Kennady Lake K5 7-Feb-03 5 m	Kennady Lake K5 7-Feb-03 6 m	Kennady Lake K5 7-Feb-03 6 m duplicate	Kennady Lake K5 5-Mar-03 1 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	13	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	11.1	19	14.9	12.7	11	9.3	7.7	-	21.3
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	10.7	0.3	1.4	2.1	2.6	2.9	3.3	-	0.2
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	6.5	-	-	6.3	6.3	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	17.5	-	-	17.6	17.6	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	8	-	-	7	8	-
Hardness, Total	mg/L (ppm)	-	-	-	6	-	-	6	6	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	8	-	-	8	10	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	<3	-	-	<3	<3	-
Turbidity	NTU	-	-	-	<0.1	-	-	<0.1	<0.1	-
Calcium (Ca)	mg/L (ppm)	-	-	-	1.4	-	-	1.3	1.3	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	0.6	-	-	0.6	0.6	-
Potassium (K)	mg/L (ppm)	-	-	-	0.6	-	-	0.6	0.8	-
Sodium (Na)	mg/L (ppm)	-	-	-	1	-	-	0.7	1.1	-
Bicarbonate	mg/L (ppm)	-	-	-	9	-	-	9	9	-
Carbonate	mg/L (ppm)	-	-	-	<5	-	-	<5	<5	-
Chloride	mg/L (ppm)	-	-	-	<1	-	-	<1	<1	-
Fluoride	mg/L (ppm)	-	-	-	<0.05	-	-	<0.05	<0.05	-
Sulphate	mg/L (ppm)	-	-	-	1	-	-	0.9	1	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	0.019	-	-	0.008	0.014	-
Nitrate	mg/L (ppm)	-	-	-	<0.006	-	-	0.031	0.027	-
Nitrite	mg/L (ppm)	-	-	-	0.002	-	-	<0.002	0.002	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	<0.006	-	-	0.032	0.029	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	0.003	-	-	0.004	0.003	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	4	-	-	4	3	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	10.5	-	-	9.8	9.6	-
Antimony (Sb)	µg/L (ppb)	-	-	-	0.12	-	-	0.1	0.12	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.08	-	-	0.05	0.07	-
Barium (Ba)	µg/L (ppb)	-	-	-	1.89	-	-	2.28	2.25	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	-	<0.2	<0.2	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	-	-	<0.03	<0.03	-
Boron (B)	µg/L (ppb)	-	-	-	2	-	-	2	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	<0.05	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,100	-	-	1,130	1,090	-
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.06	-	-	<0.06	<0.06	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	<0.1	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	-	<0.6	-	-	<0.6	<0.6	-
Iron (Fe)	µg/L (ppb)	-	-	-	14	-	-	25	27	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	<0.05	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	-	0.8	-	-	0.8	0.8	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	496	-	-	499	494	-
Manganese (Mn)	µg/L (ppb)	-	-	-	0.7	-	-	10.5	10.9	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	-	-	<0.02	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	-	-	<0.06	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	-	0.22	-	-	0.28	0.26	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	351	-	-	341	332	-
Selenium (Se)	µg/L (ppb)	-	-	-	0.1	-	-	<0.1	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	300	-	-	300	300	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		5-Aug-02	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	7-Feb-03	5-Mar-03
		7 m	1 m	2 m	3 m	4 m	5 m	6 m	6 m duplicate	1 m
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	-	-	<0.1	<0.1	-
Sodium (Na)	µg/L (ppb)	-	-	-	607	-	-	579	573	-
Strontium (Sr)	µg/L (ppb)	-	-	-	6.9	-	-	7	7.1	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	0.7	-	-	4.4	3.1	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	<0.05	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	-	<0.05	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	-	<0.8	-	-	<8	<0.8	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	9.4	-	-	8.6	8.8	-
Antimony (Sb)	µg/L (ppb)	-	-	-	0.09	-	-	0.1	0.09	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.08	-	-	0.06	0.06	-
Barium (Ba)	µg/L (ppb)	-	-	-	1.83	-	-	2.25	2.34	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.2	-	-	<0.2	<2	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.03	-	-	<0.03	<0.03	-
Boron (B)	µg/L (ppb)	-	-	-	2	-	-	2	2	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	<0.05	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,160	-	-	1,160	1,190	-
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.06	-	-	<0.06	<0.06	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	<0.1	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	-	<0.6	-	-	4.1	4.5	-
Iron (Fe)	µg/L (ppb)	-	-	-	9	-	-	11	10	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	<0.05	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	-	0.8	-	-	0.8	0.8	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	499	-	-	503	494	-
Manganese (Mn)	µg/L (ppb)	-	-	-	0.2	-	-	8.9	9.5	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.02	-	-	<0.02	<0.02	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.06	-	-	<0.06	<0.06	-
Nickel (Ni)	µg/L (ppb)	-	-	-	0.25	-	-	0.34	0.3	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	347	-	-	346	340	-
Selenium (Se)	µg/L (ppb)	-	-	-	<0.1	-	-	<0.1	<0.1	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	300	-	-	300	300	-
Silver (Ag)	µg/L (ppb)	-	-	-	<0.1	-	-	<0.1	<0.1	-
Sodium (Na)	µg/L (ppb)	-	-	-	610	-	-	598	583	-
Strontium (Sr)	µg/L (ppb)	-	-	-	7	-	-	7.2	7.2	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	6.6	-	-	5.5	3.3	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	<0.05	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.05	-	-	<0.05	<0.05	-
Zinc (Zn)	µg/L (ppb)	-	-	-	1.8	-	-	4.3	10.8	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03
		2 m	3 m	4 m	5 m	6 m	6 m duplicate	1 m	2 m	3 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	16.1	13.4	11.1	9.5	7.4	-	18.2	16.1	13.1
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	1.4	2.2	2.7	3	3.3	-	0.2	1	2.1
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	6.4	-	-	6.4	6.3	-	-	6.5
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	18	-	-	19	19	-	-	19
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	7	-	-	8	8	-	-	8
Hardness, Total	mg/L (ppm)	-	7	-	-	7	7	-	-	0.7
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	8	-	-	9	9	-	-	10
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	<3	-	-	<3	<3	-	-	<3
Turbidity	NTU	-	<0.1	-	-	<0.1	<0.1	-	-	<0.1
Calcium (Ca)	mg/L (ppm)	-	2	-	-	1.5	1.5	-	-	1.4
Magnesium (Mg)	mg/L (ppm)	-	0.7	-	-	0.7	0.7	-	-	0.7
Potassium (K)	mg/L (ppm)	-	0.6	-	-	0.5	0.5	-	-	0.6
Sodium (Na)	mg/L (ppm)	-	0.8	-	-	0.7	0.8	-	-	1
Bicarbonate	mg/L (ppm)	-	9	-	-	9	9	-	-	9
Carbonate	mg/L (ppm)	-	<5	-	-	<5	<5	-	-	<5
Chloride	mg/L (ppm)	-	<1	-	-	<1	<1	-	-	<1
Fluoride	mg/L (ppm)	-	<0.05	-	-	<0.05	<0.05	-	-	0.7
Sulphate	mg/L (ppm)	-	1.2	-	-	1.1	1.1	-	-	1.1
Nutrients										
Ammonia	mg/L (ppm)	-	0.02	-	-	0.015	0.016	-	-	0.021
Nitrate	mg/L (ppm)	-	<0.006	-	-	0.014	0.014	-	-	<0.006
Nitrite	mg/L (ppm)	-	<0.002	-	-	<0.002	<0.002	-	-	0.003
Nitrate + Nitrite	mg/L (ppm)	-	<0.006	-	-	0.014	0.014	-	-	0.007
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	0.005	-	-	0.005	0.005	-	-	0.001
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	4	-	-	4	4	-	-	3
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	11.6	-	-	10.3	10.1	-	-	11.9
Antimony (Sb)	µg/L (ppb)	-	0.13	-	-	0.13	0.23	-	-	0.05
Arsenic (As)	µg/L (ppb)	-	0.15	-	-	0.12	0.13	-	-	0.13
Barium (Ba)	µg/L (ppb)	-	2.15	-	-	2.84	2.84	-	-	2.29
Beryllium (Be)	µg/L (ppb)	-	<0.2	-	-	<0.2	<0.2	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	<0.03	-	-	<0.03	<0.03	-	-	<0.03
Boron (B)	µg/L (ppb)	-	2	-	-	2	2	-	-	2
Cadmium (Cd)	µg/L (ppb)	-	<0.05	-	-	<0.05	<0.05	-	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	1,270	-	-	1,330	1,330	-	-	1,350
Chromium (Cr)	µg/L (ppb)	-	<0.06	-	-	<0.06	<0.06	-	-	<0.06
Cobalt (Co)	µg/L (ppb)	-	<0.1	-	-	<0.1	<0.1	-	-	<0.1
Copper (Cu)	µg/L (ppb)	-	<0.6	-	-	0.9	0.9	-	-	0.9
Iron (Fe)	µg/L (ppb)	-	14	-	-	36	35	-	-	9
Lead (Pb)	µg/L (ppb)	-	<0.05	-	-	<0.05	<0.05	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	0.9	-	-	0.9	0.9	-	-	<0.1
Magnesium (Mg)	µg/L (ppb)	-	557	-	-	564	570	-	-	601
Manganese (Mn)	µg/L (ppb)	-	0.8	-	-	15.4	15.6	-	-	0.8
Mercury (Hg)	µg/L (ppb)	-	<0.02	-	-	<0.02	<0.02	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	<0.06	-	-	<0.06	<0.06	-	-	<0.06
Nickel (Ni)	µg/L (ppb)	-	0.24	-	-	0.29	0.28	-	-	0.19
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	432	-	-	426	435	-	-	477
Selenium (Se)	µg/L (ppb)	-	<0.1	-	-	<0.1	<0.1	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	300	-	-	400	400	-	-	300

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	5-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03
		2 m	3 m	4 m	5 m	6 m	6 m duplicate	1 m	2 m	3 m
Silver (Ag)	µg/L (ppb)	-	<0.1	-	-	<0.1	<0.1	-	-	<0.1
Sodium (Na)	µg/L (ppb)	-	659	-	-	641	649	-	-	722
Strontium (Sr)	µg/L (ppb)	-	8.1	-	-	8.6	8.6	-	-	8.6
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	0.5	-	-	3.9	3.9	-	-	4.6
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	<0.05	-	-	<0.05	<0.05	-	-	<0.05
Vanadium (V)	µg/L (ppb)	-	<0.05	-	-	<0.05	<0.05	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	-	0.8	-	-	<0.8	<0.8	-	-	1.1
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	10.5	-	-	9	8.7	-	-	11.3
Antimony (Sb)	µg/L (ppb)	-	0.17	-	-	0.2	0.15	-	-	0.06
Arsenic (As)	µg/L (ppb)	-	0.15	-	-	0.12	0.13	-	-	0.13
Barium (Ba)	µg/L (ppb)	-	2.12	-	-	2.85	2.89	-	-	2.28
Beryllium (Be)	µg/L (ppb)	-	<0.2	-	-	<0.2	<0.2	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	<0.03	-	-	<0.03	<0.03	-	-	<0.03
Boron (B)	µg/L (ppb)	-	2	-	-	2	2	-	-	2
Cadmium (Cd)	µg/L (ppb)	-	<0.05	-	-	<0.05	<0.05	-	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	1,270	-	-	1,360	1,370	-	-	1,380
Chromium (Cr)	µg/L (ppb)	-	<0.06	-	-	<0.06	<0.06	-	-	<0.06
Cobalt (Co)	µg/L (ppb)	-	<0.1	-	-	<0.1	<0.1	-	-	<0.1
Copper (Cu)	µg/L (ppb)	-	0.6	-	-	0.9	1	-	-	0.9
Iron (Fe)	µg/L (ppb)	-	6	-	-	13	19	-	-	5
Lead (Pb)	µg/L (ppb)	-	<0.05	-	-	<0.05	<0.05	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	0.9	-	-	0.9	0.9	-	-	<0.1
Magnesium (Mg)	µg/L (ppb)	-	557	-	-	570	574	-	-	604
Manganese (Mn)	µg/L (ppb)	-	0.4	-	-	14.2	14.2	-	-	0.4
Mercury (Hg)	µg/L (ppb)	-	<0.02	-	-	<0.02	<0.02	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	<0.06	-	-	<0.06	<0.06	-	-	<0.06
Nickel (Ni)	µg/L (ppb)	-	0.31	-	-	0.38	0.3	-	-	0.21
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	429	-	-	439	436	-	-	485
Selenium (Se)	µg/L (ppb)	-	<0.1	-	-	<0.1	<0.1	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	300	-	-	400	400	-	-	300
Silver (Ag)	µg/L (ppb)	-	<0.1	-	-	<0.1	<0.1	-	-	<0.1
Sodium (Na)	µg/L (ppb)	-	673	-	-	657	646	-	-	723
Strontium (Sr)	µg/L (ppb)	-	8	-	-	8.7	8.7	-	-	8.5
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	3.2	-	-	1.9	2.8	-	-	18.6
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	<0.05	-	-	<0.05	<0.05	-	-	<0.05
Vanadium (V)	µg/L (ppb)	-	<0.05	-	-	<0.05	<0.05	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	-	1.5	-	-	3.7	2.2	-	-	1.1

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03
		4 m	5 m	6 m	6 m duplicate	0 m	1 m	2 m	3 m	4 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	11	11	11	11	11
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	10.7	7.5	5.9	-	9.6	9.6	9.6	9.6	9.6
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	2.7	3.2	3.4	-	13.9	13.9	13.8	13.9	13.9
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	6.4	6.4	6.9	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	20	21	13	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	8	8	<5	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	7	7	5	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	9	9	3	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	<3	<3	-	-	-	-	-
Turbidity	NTU	-	-	<0.1	<0.1	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	1.6	1.6	1	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	0.7	0.7	0.5	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	0.6	0.7	0.4	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	0.9	0.8	<1	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	9	10	<5	-	-	-	-
Carbonate	mg/L (ppm)	-	-	<5	<5	<5	-	-	-	-
Chloride	mg/L (ppm)	-	-	<1	<1	<1	-	-	-	-
Fluoride	mg/L (ppm)	-	-	<0.05	<0.05	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	1.1	1.1	0.8	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	0.013	0.012	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	0.036	0.035	<0.006	-	-	-	-
Nitrite	mg/L (ppm)	-	-	<0.002	<0.002	<0.002	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	0.037	0.036	<0.006	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	0.001	0.001	0.003	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	4	4	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	9.8	9.7	10.2	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	0.17	0.09	0.16	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.11	0.11	0.14	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	3.3	3.31	1.89	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	<0.2	<0.2	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	<0.03	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	2	2	2	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	<0.05	<0.05	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	1,500	1,510	920	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.06	0.22	<0.06	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	0.1	0.1	<0.1	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	0.8	0.7	<0.6	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	66	68	44	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	<0.05	<0.05	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	634	633	489	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	42.1	41.6	3.7	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	<0.02	<0.02	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	<0.06	<0.06	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	0.31	0.31	0.23	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	493	498	370	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	<0.1	<0.1	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	400	500	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		21-Mar-03	21-Mar-03	21-Mar-03	21-Mar-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03
		4 m	5 m	6 m	6 m duplicate	0 m	1 m	2 m	3 m	4 m
Silver (Ag)	µg/L (ppb)	-	-	<0.1	<0.1	<0.1	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	702	702	530	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	9.8	9.7	6.2	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	3.9	3.1	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	<0.05	<0.05	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	<0.05	<0.05	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	<0.8	<0.8	<0.8	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	8.1	8.2	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	0.13	0.2	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.11	0.11	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	3.22	3.27	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	<0.2	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	<0.03	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	2	2	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	1,510	1,490	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.06	<0.06	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	0.1	0.1	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	0.8	0.7	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	17	15	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	626	626	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	38.5	38.5	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	<0.02	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	<0.06	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	0.8	0.28	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	481	486	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	400	400	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	694	695	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	9.5	9.6	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	7	14.6	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	0.9	<0.8	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	29-Jan-04	29-Jan-04	29-Jan-04
		4.5 m	5 m	6 m	7 m	8 m	9 m	1 m	2 m	3 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	11	11	12	11	11	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	9.5	9.5	9.3	9.3	9.4	20	13.9	11.9
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	-	13.8	13.9	14	13.8	13.8	0.2	1.5	2.2
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	6.8	-	-	-	-	6.8	-	-	6.7
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	13	-	-	-	-	13	-	-	20
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	<5	-	-	-	-	<5	-	-	<5
Hardness, Total	mg/L (ppm)	5	-	-	-	-	5	-	-	0.7
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	3	-	-	-	-	3	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	4
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	<3
Turbidity	NTU	-	-	-	-	-	-	-	-	<0.1
Calcium (Ca)	mg/L (ppm)	1	-	-	-	-	1	-	-	1.5
Magnesium (Mg)	mg/L (ppm)	0.5	-	-	-	-	0.5	-	-	0.7
Potassium (K)	mg/L (ppm)	0.4	-	-	-	-	0.4	-	-	0.6
Sodium (Na)	mg/L (ppm)	<1	-	-	-	-	<1	-	-	<1
Bicarbonate	mg/L (ppm)	<5	-	-	-	-	<5	-	-	6
Carbonate	mg/L (ppm)	<5	-	-	-	-	<5	-	-	<5
Chloride	mg/L (ppm)	<1	-	-	-	-	<1	-	-	<1
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	1
Sulphate	mg/L (ppm)	0.8	-	-	-	-	0.8	-	-	1.2
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	0.025
Nitrate	mg/L (ppm)	<0.006	-	-	-	-	<0.006	-	-	0.008
Nitrite	mg/L (ppm)	<0.002	-	-	-	-	<0.002	-	-	0.003
Nitrate + Nitrite	mg/L (ppm)	<0.006	-	-	-	-	<0.006	-	-	0.011
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.005	-	-	-	-	0.004	-	-	0.003
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	5
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	9.6	-	-	-	-	10	-	-	10.1
Antimony (Sb)	µg/L (ppb)	0.09	-	-	-	-	0.11	-	-	0.31
Arsenic (As)	µg/L (ppb)	0.14	-	-	-	-	0.15	-	-	0.19
Barium (Ba)	µg/L (ppb)	1.83	-	-	-	-	1.8	-	-	2.35
Beryllium (Be)	µg/L (ppb)	<0.2	-	-	-	-	<0.2	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.03
Boron (B)	µg/L (ppb)	2	-	-	-	-	2	-	-	2
Cadmium (Cd)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	<0.05
Calcium (Ca)	µg/L (ppb)	930	-	-	-	-	940	-	-	1,400
Chromium (Cr)	µg/L (ppb)	<0.06	-	-	-	-	<0.06	-	-	0.07
Cobalt (Co)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	<0.1
Copper (Cu)	µg/L (ppb)	<0.6	-	-	-	-	<0.6	-	-	1
Iron (Fe)	µg/L (ppb)	42	-	-	-	-	41	-	-	12
Lead (Pb)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	1.1
Magnesium (Mg)	µg/L (ppb)	491	-	-	-	-	496	-	-	675
Manganese (Mn)	µg/L (ppb)	3.5	-	-	-	-	3.5	-	-	1
Mercury (Hg)	µg/L (ppb)	<0.02	-	-	-	-	<0.02	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	<0.06	-	-	-	-	<0.06	-	-	<0.06
Nickel (Ni)	µg/L (ppb)	0.22	-	-	-	-	0.21	-	-	0.3
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	380	-	-	-	-	380	-	-	540
Selenium (Se)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	300
Silver (Ag)	µg/L (ppb)	<0.1	-	-	-	-	<0.1	-	-	<0.1

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	13-Aug-03	29-Jan-04	29-Jan-04	29-Jan-04
		4.5 m	5 m	6 m	7 m	8 m	9 m	1 m	2 m	3 m
Sodium (Na)	µg/L (ppb)	533	-	-	-	-	542	-	-	844
Strontium (Sr)	µg/L (ppb)	6.2	-	-	-	-	6.2	-	-	9.4
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	5.5
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	<0.05
Vanadium (V)	µg/L (ppb)	<0.05	-	-	-	-	<0.05	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	<0.8	-	-	-	-	<0.8	-	-	2.2
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	8.5
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	0.29
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	0.19
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	2
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.03
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	3
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	1,550
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	0.09
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.1
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	0.7
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	<5
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	1.1
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	706
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	0.5
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.02
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.06
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	0.36
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	580
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	300
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.1
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	1,160
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	9.2
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	1.5
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.05
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	<0.05
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	1.5

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04
		4 m	5 m	6 m	6 m duplicate	1 m	2 m	3 m	4 m	5 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	10.3	9.5	8.5	-	19	16.6	13	10.1	8.5
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	2.6	2.9	3.2	-	0.2	1.1	2.2	2.8	3.2
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	6.6	6.5	-	-	6.7	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	16	16	-	-	19	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	<5	<5	-	-	<5	-	-
Hardness, Total	mg/L (ppm)	-	-	5	5	-	-	6	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	3	3	-	-	5	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	<3	<3	-	-	<3	-	-
Turbidity	NTU	-	-	<0.1	<0.1	-	-	0.1	-	-
Calcium (Ca)	mg/L (ppm)	-	-	1.2	1.2	-	-	1.5	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	0.6	0.6	-	-	0.6	-	-
Potassium (K)	mg/L (ppm)	-	-	0.5	0.4	-	-	0.6	-	-
Sodium (Na)	mg/L (ppm)	-	-	<1	<1	-	-	<1	-	-
Bicarbonate	mg/L (ppm)	-	-	5	5	-	-	6	-	-
Carbonate	mg/L (ppm)	-	-	<5	<5	-	-	<5	-	-
Chloride	mg/L (ppm)	-	-	<1	<1	-	-	1	-	-
Fluoride	mg/L (ppm)	-	-	<0.05	<0.05	-	-	<0.05	-	-
Sulphate	mg/L (ppm)	-	-	0.9	0.9	-	-	1.2	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	0.021	0.022	-	-	0.029	-	-
Nitrate	mg/L (ppm)	-	-	<0.006	<0.006	-	-	<0.006	-	-
Nitrite	mg/L (ppm)	-	-	0.002	0.003	-	-	<0.002	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	<0.006	<0.006	-	-	<0.006	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	0.002	0.003	-	-	0.004	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	3	3	-	-	5	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	4	4	-	-	5	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	9.1	8.9	-	-	9.3	-	-
Antimony (Sb)	µg/L (ppb)	-	-	0.33	0.31	-	-	0.18	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.14	0.14	-	-	0.18	-	-
Barium (Ba)	µg/L (ppb)	-	-	2.05	2.03	-	-	2.37	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	<0.2	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	<0.03	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	-	-	2	2	-	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	1,160	1,140	-	-	1,400	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.06	<0.06	-	-	<0.06	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	0.8	1	-	-	0.7	-	-
Iron (Fe)	µg/L (ppb)	-	-	12	14	-	-	5	-	-
Lead (Pb)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	0.9	0.8	-	-	1.1	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	556	552	-	-	630	-	-
Manganese (Mn)	µg/L (ppb)	-	-	2.1	2.1	-	-	1.1	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	<0.02	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	<0.06	-	-	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	-	-	0.25	0.25	-	-	0.27	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	430	410	-	-	510	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	200	200	-	-	200	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		29-Jan-04	29-Jan-04	29-Jan-04	29-Jan-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04	12-Mar-04
		4 m	5 m	6 m	6 m duplicate	1 m	2 m	3 m	4 m	5 m
Silver (Ag)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	<0.1	-	-
Sodium (Na)	µg/L (ppb)	-	-	634	621	-	-	777	-	-
Strontium (Sr)	µg/L (ppb)	-	-	7.5	7.3	-	-	9	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	5	2	-	-	8.3	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	<0.8	0.8	-	-	<0.8	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	7	6.8	-	-	9.2	-	-
Antimony (Sb)	µg/L (ppb)	-	-	0.32	0.26	-	-	0.81	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.15	0.15	-	-	0.19	-	-
Barium (Ba)	µg/L (ppb)	-	-	1.68	1.63	-	-	2.54	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.2	<0.2	-	-	<0.2	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	<0.03	<0.03	-	-	<0.03	-	-
Boron (B)	µg/L (ppb)	-	-	2	2	-	-	2	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	1,330	1,260	-	-	1,480	-	-
Chromium (Cr)	µg/L (ppb)	-	-	0.08	<0.06	-	-	<0.06	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	0.9	1	-	-	2.2	-	-
Iron (Fe)	µg/L (ppb)	-	-	<5	<5	-	-	9	-	-
Lead (Pb)	µg/L (ppb)	-	-	0.07	<0.05	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	0.8	0.8	-	-	1.1	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	555	546	-	-	659	-	-
Manganese (Mn)	µg/L (ppb)	-	-	1	0.7	-	-	0.8	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.02	<0.02	-	-	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.06	<0.06	-	-	<0.06	-	-
Nickel (Ni)	µg/L (ppb)	-	-	0.26	0.28	-	-	0.37	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	460	450	-	-	540	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	<0.1	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	200	200	-	-	200	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.1	<0.1	-	-	<0.1	-	-
Sodium (Na)	µg/L (ppb)	-	-	918	928	-	-	837	-	-
Strontium (Sr)	µg/L (ppb)	-	-	7.6	7.4	-	-	9.5	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	3.4	5.5	-	-	3.8	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	-	<0.05	<0.05	-	-	<0.05	-	-
Zinc (Zn)	µg/L (ppb)	-	-	1.2	0.8	-	-	2.2	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.
(b) Data from JWEL did not specify whether TDS was calculated or filterable.
(c) Sampling depth. This note applies to all subsequent columns.
(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		12-Mar-04	12-Mar-04	05-May-04	05-May-04	05-May-04	05-May-04	05-May-04	05-May-04	05-May-04
		6 m	6 m duplicate	1 m	2 m	3 m	4 m	5 m	6 m	6 m duplicate
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	6.8	-	18.4	16	12.6	9.7	5.8	4.7	-
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	3.5	-	0.2	1	2.5	3.1	3.5	3.8	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	6.5	6.5	-	-	6.8	-	-	6.6	6.6
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	17	17	-	-	21	-	-	18	19
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	<5	<5	-	-	6	-	-	5	5
Hardness, Total	mg/L (ppm)	6	6	-	-	8	-	-	7	7
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	5	5	-	-	8	-	-	7	7
Total Suspended Solids (TSS)	mg/L (ppm)	<3	<3	-	-	<3	-	-	<3	<3
Turbidity	NTU	0.1	0.1	-	-	0.1	-	-	0.1	0.1
Calcium (Ca)	mg/L (ppm)	1.4	1.4	-	-	1.7	-	-	1.5	1.5
Magnesium (Mg)	mg/L (ppm)	0.5	0.5	-	-	0.8	-	-	0.7	0.7
Potassium (K)	mg/L (ppm)	0.5	0.5	-	-	0.5	-	-	0.4	0.4
Sodium (Na)	mg/L (ppm)	<1	<1	-	-	<1	-	-	<1	<1
Bicarbonate	mg/L (ppm)	5	6	-	-	7	-	-	7	7
Carbonate	mg/L (ppm)	<5	<5	-	-	<5	-	-	<5	<5
Chloride	mg/L (ppm)	1	1	-	-	<1	-	-	<1	<1
Fluoride	mg/L (ppm)	<0.05	<0.05	-	-	<0.05	-	-	<0.05	<0.05
Sulphate	mg/L (ppm)	1	1	-	-	1.3	-	-	1.1	1.1
Nutrients										
Ammonia	mg/L (ppm)	0.026	0.025	-	-	0.017	-	-	<0.005	<0.005
Nitrate	mg/L (ppm)	0.019	0.026	-	-	<0.006	-	-	0.032	0.03
Nitrite	mg/L (ppm)	<0.002	<0.002	-	-	<0.002	-	-	<0.002	<0.002
Nitrate + Nitrite	mg/L (ppm)	0.02	0.027	-	-	<0.006	-	-	0.032	0.03
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.004	0.003	-	-	<0.001	-	-	<0.001	<0.001
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	4	4	-	-	5	-	-	5	4
Organic Carbon, Total (TOC)	mg/L (ppm)	4	4	-	-	5	-	-	4	4
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	8.3	8.4	-	-	9.5	-	-	6	6.4
Antimony (Sb)	µg/L (ppb)	0.18	0.16	-	-	<0.03	-	-	0.16	0.04
Arsenic (As)	µg/L (ppb)	0.15	0.14	-	-	0.2	-	-	0.14	0.14
Barium (Ba)	µg/L (ppb)	2.38	2.3	-	-	2.71	-	-	2.41	2.67
Beryllium (Be)	µg/L (ppb)	<0.2	<0.2	-	-	<0.2	-	-	<0.2	<0.2
Bismuth (Bi)	µg/L (ppb)	<0.03	<0.03	-	-	<0.03	-	-	<0.03	<0.03
Boron (B)	µg/L (ppb)	2	2	-	-	3	-	-	2	2
Cadmium (Cd)	µg/L (ppb)	<0.05	<0.05	-	-	<0.05	-	-	<0.05	<0.05
Calcium (Ca)	µg/L (ppb)	1,220	1,240	-	-	1,600	-	-	1,270	1,330
Chromium (Cr)	µg/L (ppb)	<0.06	<0.06	-	-	0.12	-	-	0.11	0.11
Cobalt (Co)	µg/L (ppb)	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	1.2	0.9	-	-	0.8	-	-	0.9	0.7
Iron (Fe)	µg/L (ppb)	11	12	-	-	11	-	-	19	21
Lead (Pb)	µg/L (ppb)	0.2	<0.05	-	-	<0.05	-	-	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	0.9	0.9	-	-	1.2	-	-	1	0.9
Magnesium (Mg)	µg/L (ppb)	547	604	-	-	710	-	-	553	595
Manganese (Mn)	µg/L (ppb)	2.8	3.1	-	-	1.1	-	-	6.9	8.1
Mercury (Hg)	µg/L (ppb)	<0.02	<0.02	-	-	<0.02	-	-	<0.02	<0.02
Molybdenum (Mo)	µg/L (ppb)	<0.06	<0.06	-	-	<0.06	-	-	<0.06	<0.06
Nickel (Ni)	µg/L (ppb)	0.25	0.24	-	-	0.35	-	-	0.3	0.3
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	430	430	-	-	580	-	-	420	450
Selenium (Se)	µg/L (ppb)	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	200	200	-	-	300	-	-	300	300

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		12-Mar-04	12-Mar-04	05-May-04	05-May-04	05-May-04	05-May-04	05-May-04	05-May-04	05-May-04
		6 m	6 m duplicate	1 m	2 m	3 m	4 m	5 m	6 m	6 m duplicate
Silver (Ag)	µg/L (ppb)	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1
Sodium (Na)	µg/L (ppb)	658	658	-	-	875	-	-	587	607
Strontium (Sr)	µg/L (ppb)	7.9	7.9	-	-	10.7	-	-	8.6	8.9
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	4	3.9	-	-	0.9	-	-	2.4	2.6
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	<0.05	-	-	<0.05	-	-	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	<0.05	<0.05	-	-	<0.05	-	-	<0.05	<0.05
Zinc (Zn)	µg/L (ppb)	1.1	<0.8	-	-	3.1	-	-	1.5	1.2
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	7.5	7.3	-	-	8.7	-	-	5.2	5.8
Antimony (Sb)	µg/L (ppb)	0.16	0.15	-	-	0.07	-	-	<0.03	0.06
Arsenic (As)	µg/L (ppb)	0.15	0.14	-	-	0.21	-	-	0.14	0.14
Barium (Ba)	µg/L (ppb)	2.35	2.24	-	-	2.77	-	-	2.45	2.73
Beryllium (Be)	µg/L (ppb)	<0.2	<0.2	-	-	<0.2	-	-	<0.2	<0.2
Bismuth (Bi)	µg/L (ppb)	<0.03	<0.03	-	-	<0.03	-	-	<0.03	<0.03
Boron (B)	µg/L (ppb)	2	2	-	-	3	-	-	2	2
Cadmium (Cd)	µg/L (ppb)	<0.05	<0.05	-	-	<0.05	-	-	<0.05	<0.05
Calcium (Ca)	µg/L (ppb)	1,270	1,250	-	-	1,650	-	-	1,270	1,380
Chromium (Cr)	µg/L (ppb)	<0.06	<0.06	-	-	0.13	-	-	0.13	0.13
Cobalt (Co)	µg/L (ppb)	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	1	0.9	-	-	2.4	-	-	0.8	0.8
Iron (Fe)	µg/L (ppb)	5	<5	-	-	6	-	-	6	6
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	-	-	<0.05	-	-	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	0.9	0.9	-	-	1.2	-	-	0.9	1
Magnesium (Mg)	µg/L (ppb)	554	594	-	-	729	-	-	554	605
Manganese (Mn)	µg/L (ppb)	2.1	2.1	-	-	1	-	-	4.5	5.4
Mercury (Hg)	µg/L (ppb)	<0.02	<0.02	-	-	<0.02	-	-	<0.02	<0.02
Molybdenum (Mo)	µg/L (ppb)	<0.06	<0.06	-	-	<0.06	-	-	<0.06	<0.06
Nickel (Ni)	µg/L (ppb)	0.34	0.35	-	-	0.38	-	-	0.32	0.37
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	430	430	-	-	610	-	-	430	460
Selenium (Se)	µg/L (ppb)	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	200	200	-	-	300	-	-	300	300
Silver (Ag)	µg/L (ppb)	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1
Sodium (Na)	µg/L (ppb)	678	682	-	-	895	-	-	709	619
Strontium (Sr)	µg/L (ppb)	8	7.9	-	-	10.9	-	-	8.3	9.1
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	3.2	2.3	-	-	3.9	-	-	2.8	2.7
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	<0.05	-	-	<0.05	-	-	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	<0.05	<0.05	-	-	<0.05	-	-	<0.05	<0.05
Zinc (Zn)	µg/L (ppb)	2.5	2.4	-	-	5.5	-	-	1.8	3.3

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		05-May-04	05-May-04	05-May-04	05-May-04	05-May-04	05-May-04	05-May-04	26-Jun-04	08-Jul-04
		3 m	4 m	5 m	6 m	7 m	8 m	9 m	0 m	1 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	6.8	-
Conductivity [a]	µS/cm	-	-	-	-	-	-	-	11	-
Conductivity, Specific	µS/cm	11	10	11	12	14	15	17	-	12
Dissolved Oxygen (DO)	mg/L (ppm)	13.7	7.6	5.5	4.3	3	1.5	0.1	13	9.4
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	107	-
Temperature	°C	2.2	3	3.4	3.6	3.7	3.9	4.2	7.2	15.6
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	7	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	6.2	-
Conductivity [a]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	22	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	26	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	<6	-
Total Dissolved Solids (TDS) [b]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	21	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	16	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	<2	-
Turbidity	NTU	-	-	-	-	-	-	-	1	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	<0.5	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	<0.5	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	<0.5	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	2.7	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	31	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	<1	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	0.5	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	0.03	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	1.3	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	<0.1	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	<0.05	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	<0.05	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	<0.2	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	0.02	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	14	-
Colour	TCU	-	-	-	-	-	-	-	20	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	<0.1	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	<0.002	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	5	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	3	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	<0.1	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	<20	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	<0.4	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	<5	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	<0.5	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	<10	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	<0.2	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	1,000	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	<0.9	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	<5	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	130	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	<500	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	12.7	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	<500	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	<0.5	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	<0.6	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	<20	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	<500	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	<10	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	111	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	<0.2	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	<2,000	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		05-May-04	05-May-04	05-May-04	05-May-04	05-May-04	05-May-04	05-May-04	26-Jun-04	08-Jul-04
		3 m	4 m	5 m	6 m	7 m	8 m	9 m	0 m	1 m
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	<2	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	12	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	<3	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	<0.1	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	<4	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	890	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	<0.4	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	<2	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	<20	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	400	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	5	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	<1	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	<0.3	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	0.2	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	<5	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	360	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	<2	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	104	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	<1,000	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	<0.02	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	<0.05	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	<0.5	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	<2	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake K5 08-Jul-04 2 m	Kennady Lake K5 08-Jul-04 3 m	Kennady Lake K5 08-Jul-04 4 m	Kennady Lake K5 05-Aug-04 0 m	Kennady Lake K5 05-Aug-04 0.5 m	Kennady Lake K5 05-Aug-04 1 m	Kennady Lake K5 05-Aug-04 2 m	Kennady Lake K5 05-Aug-04 3 m	Kennady Lake K5 05-Aug-04 4 m
Field Measured										
pH	pH Units	-	-	-	-	-	6.9	6.9	6.9	6.9
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	11	11	11	12	-	12	12	12	12
Dissolved Oxygen (DO)	mg/L (ppm)	9.5	8.8	8.8	10.5	-	10.5	10.5	10.5	10.5
Dissolved Oxygen, saturation	%	-	-	-	102	-	102	102	102	101
Temperature	°C	14.5	13.3	12.7	13.8	-	13.9	13.9	13.9	13.9
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	8	-	8	8	8	8
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	5.6	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	13	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	8	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	<6	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	28	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	<2	-	-	-	-
Turbidity	NTU	-	-	-	-	<1	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	<0.5	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	<0.5	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	<0.5	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	1	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	9	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	<1	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	0.6	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	0.06	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	1.1	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	<0.1	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	<0.05	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	<0.05	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	0.6	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	0.02	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	13	-	-	-	-
Colour	TCU	-	-	-	-	10	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	<0.1	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	<0.002	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	6	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	3	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	<0.1	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	<20	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	15	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	<0.4	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	<5	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	<0.5	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	<10	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	<0.2	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	1,500	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	<0.9	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	<5	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	<50	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	780	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	4.8	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	<500	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	<0.5	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	1.1	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	<20	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	<620	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	<10	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	120	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	<0.2	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	<2,000	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		08-Jul-04	08-Jul-04	08-Jul-04	05-Aug-04	05-Aug-04	05-Aug-04	05-Aug-04	05-Aug-04	05-Aug-04
		2 m	3 m	4 m	0 m	0.5 m	1 m	2 m	3 m	4 m
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	<2	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	25	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	0.2	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	<3	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	<0.1	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	<4	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	1,180	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	0.4	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	<2	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	29	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	630	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	2.1	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	<1	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	<0.3	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	1.5	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	6	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	470	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	<2	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	169	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	<1,000	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	<0.02	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	<0.05	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	<0.5	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	3	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake K5 05-Aug-04 5 m	Kennady Lake K5 05-Aug-04 6 m	Kennady Lake K5 05-Aug-04 7 m	Kennady Lake K5 05-Aug-04 8 m	Kennady Lake K5 05-Aug-04 9 m	Kennady Lake K5 05-Aug-04 10 m	Kennady Lake K5 06-Aug-04 0 m	Kennady Lake K5 13-Sep-04 0 m	Kennady Lake K5 13-Sep-04 1 m
Field Measured										
pH	pH Units	6.9	7	6.9	6.9	6.9	6.9	6.9	4.7	4.7
Conductivity [(a)]	µS/cm	-	-	-	-	-	11	9	-	-
Conductivity, Specific	µS/cm	12	12	12	12	12	12	12	11	10
Dissolved Oxygen (DO)	mg/L (ppm)	10.5	10.5	10.5	10.5	10.5	10.6	11.5	11.1	11.1
Dissolved Oxygen, saturation	%	101	101	102	101	102	-	105	90	90
Temperature	°C	13.9	13.9	13.9	13.8	13.8	13.7	11.6	6.5	6.6
Total Dissolved Solids (TDS)	mg/L (ppm)	8	8	8	8	8	8	8	7	7
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	5.6	6.8	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	15	17	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	9	9	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	<6	<6	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	8	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	<2	24	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	<2	<2	-	-
Turbidity	NTU	-	-	-	-	-	1	1	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	<0.5	<0.5	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	<0.5	<0.5	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	<0.5	<0.5	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	0.9	1.2	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	11	12	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	<1	<1	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	0.6	0.6	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	0.05	0.03	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	1.2	1.4	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	<0.1	<0.1	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	<0.05	<0.05	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	<0.05	<0.05	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	0.7	<0.2	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	0.02	<0.02	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	12	11	-	-
Colour	TCU	-	-	-	-	-	10	10	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	<0.1	<0.1	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	<0.002	<0.002	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	3	6	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	3	3	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	<0.1	<0.1	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	<20	<20	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	<0.1	<0.1	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	<0.4	<0.4	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	<5	<5	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	<0.5	<0.5	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	<10	<10	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	<0.2	<0.2	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	1400	<1000	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	<0.9	<0.9	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	<0.1	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	<5	<5	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	<50	52	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	<0.1	<0.1	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake K5 05-Aug-04 5 m	Kennady Lake K5 05-Aug-04 6 m	Kennady Lake K5 05-Aug-04 7 m	Kennady Lake K5 05-Aug-04 8 m	Kennady Lake K5 05-Aug-04 9 m	Kennady Lake K5 05-Aug-04 10 m	Kennady Lake K5 06-Aug-04 0 m	Kennady Lake K5 13-Sep-04 0 m	Kennady Lake K5 13-Sep-04 1 m
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	800	<500	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	5.2	2.4	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	<500	<1	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	<0.5	<0.5	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	<0.6	2.2	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	<20	<50	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	<630	<500	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	<10	<10	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	291	105	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	<0.2	<0.2	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	<2000	<2000	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	<0.05	<0.05	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	<0.05	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	<0.1	<0.1	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	<2	7	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	166	<10	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	<0.1	<0.1	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	0.2	0.2	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	4	<3	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	<0.1	<0.1	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	<4	<4	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	<0.05	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	1250	930	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	1.8	<0.4	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	0.29	<0.05	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	<2	<2	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	120	35	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	<0.05	0.47	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	1070	570	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	4.3	2.7	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	<1	<1	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	<0.3	<0.3	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	2.5	0.2	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	54	<5	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	510	450	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	<2	<2	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	146	142	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	<0.05	<0.05	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	<1000	<1000	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	<0.02	0.02	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	<0.05	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	<0.5	<0.5	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	4	17	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		13-Sep-04	13-Sep-04	13-Sep-04	13-Sep-04	13-Sep-04	13-Sep-04	13-Sep-04	13-Sep-04	13-Sep-04
		2 m	3 m	4 m	4.2 m	4.2 m duplicate	5 m	6 m	7 m	8 m
Field Measured										
pH	pH Units	4.7	4.7	4.7	4.9	4.9	4.9	4.8	4.7	4.8
Conductivity [a]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	10	10	10	10	7	10	10	10	10
Dissolved Oxygen (DO)	mg/L (ppm)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
Dissolved Oxygen, saturation	%	90	90	90	90	90	90	90	90	90
Temperature	°C	6.5	6.5	6.5	6.5	6.6	6.5	6.5	6.5	6.5
Total Dissolved Solids (TDS)	mg/L (ppm)	7	7	7	7	7	7	7	7	7
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [a]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [b]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K5	K5	K5	K5	K5	K5	K5
		13-Sep-04	13-Sep-04	13-Sep-04	13-Sep-04	13-Sep-04	13-Sep-04	13-Sep-04	13-Sep-04	13-Sep-04
		2 m	3 m	4 m	4.2 m	4.2 m duplicate	5 m	6 m	7 m	8 m
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K1	K1	K1	K1	K1	K1	K1
		13-Sep-04	13-Sep-04	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05
		9 m	10 m	0 m	1 m	2 m	3 m	4 m	5 m	6 m
Field Measured										
pH	pH Units	4.7	4.8	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	10.3	10	9.8	9.7	9.7	9.7	9.6
Conductivity, Specific	µS/cm	10	10	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Dissolved Oxygen (DO)	mg/L (ppm)	11.1	11.1	11.67	11.37	11.78	111.4	107.7	110.3	112.4
Dissolved Oxygen, saturation	%	90	90	118.3	111.4	113.4	11.56	11.28	11.48	11.73
Temperature	°C	6.5	6.5	15.7	14.5	13.6	13.5	13.3	13.2	13.1
Total Dissolved Solids (TDS)	mg/L (ppm)	7	7	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	6.22	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	17	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	12	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	<6	-	-	-	-	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	32	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	<2	-	-	-	-	-	-
Turbidity	NTU	-	-	1	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	1	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	<0.5	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	<0.5	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	<0.5	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	15	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	<1	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	0.4	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	0.06	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	<0.5	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	<0.1	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	<0.05	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	<0.05	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	<0.02	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	10	-	-	-	-	-	-
Colour	TCU	-	-	3	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	<0.1	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	<0.002	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	4	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	4	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	<0.1	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	<5	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	0.9	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	<0.4	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	<5	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.5	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	<10	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.2	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	1,160	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.9	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	<1	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	90	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	<0.1	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	<500	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	2	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.1	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.5	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	<0.6	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	<50	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	<500	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.8	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	60	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.2	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	<500	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.05	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	0.2	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	4	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	5	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	<0.1	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	0.1	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	<3	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	<0.1	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K5	K5	K1	K1	K1	K1	K1	K1	K1
		13-Sep-04	13-Sep-04	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05
		9 m	10 m	0 m	1 m	2 m	3 m	4 m	5 m	6 m
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	<4	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	<0.05	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	1,040	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	<0.4	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	<0.05	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	<1	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	<10	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	0.05	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	<500	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	<1	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	<0.1	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.3	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	0.4	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	<5	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	<500	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	<0.4	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	10	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	<0.05	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	<500	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.02	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	<0.5	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	5	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K3
		06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05
		7 m	8 m	9 m	10 m	11 m	12 m	13 m	14 m	0 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [a]	µS/cm	9.6	9.6	9.6	9.5	9.5	9.5	9.5	29.5	10.3
Conductivity, Specific	µS/cm	12.5	12.5	12.5	12.5	12.5	12.5	12.5	312.4	12.5
Dissolved Oxygen (DO)	mg/L (ppm)	11.31	11.57	11.53	11.67	11.78	11.71	11.76	411.65	11.6
Dissolved Oxygen, saturation	%	107.1	109.8	110.5	109.9	111	110.5	110.4	5109.7	117.5
Temperature	°C	13	13	12.9	12.8	12.6	12.6	12.6	612.6	15.8
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	5.91	-	5.9
Conductivity [a]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	16	-	15
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	10	-	10
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	<6	-	<6
Total Dissolved Solids (TDS) [b]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	28	-	<10
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	<2	-	<2
Turbidity	NTU	-	-	-	-	-	-	1	-	2
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	1	-	1
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	<0.5	-	<0.5
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	<0.5	-	<0.5
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	<0.5	-	<0.5
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	12	-	12
Carbonate	mg/L (ppm)	-	-	-	-	-	-	<1	-	<1
Chloride	mg/L (ppm)	-	-	-	-	-	-	0.4	-	0.6
Fluoride	mg/L (ppm)	-	-	-	-	-	-	0.07	-	0.06
Sulphate	mg/L (ppm)	-	-	-	-	-	-	0.5	-	<0.5
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	<0.1	-	<0.1
Nitrate	mg/L (ppm)	-	-	-	-	-	-	<0.05	-	0.05
Nitrite	mg/L (ppm)	-	-	-	-	-	-	<0.05	-	<0.05
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	<0.02	-	<0.02
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	9	-	10
Colour	TCU	-	-	-	-	-	-	<1	-	<1
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	<0.1	-	<0.1
Phenol	mg/L (ppm)	-	-	-	-	-	-	<0.002	-	<0.002
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	3	-	3
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	3	-	3
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	<0.1	-	<0.1
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	<5	-	<5
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	<0.1
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	<0.4	-	<0.4
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	<5	-	<5
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	<0.5	-	<0.5
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	<10	-	<10
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	<0.2	-	<0.2
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	1060	-	1100
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	<0.9	-	<0.9
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	<0.1
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	<1	-	1.1
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	<10	-	<10
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	0.1
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	<500	-	<500
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	2	-	3
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	<0.1
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	<0.5	-	<0.5
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	<0.6	-	0.8
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	<50	-	<50
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	<500	-	<500
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	<0.8	-	<0.8
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	<10	-	<10
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	<0.2	-	<0.2
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	<500	-	<500
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	<0.05
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	<0.05
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	0.2	-	0.2
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	<2	-	<2
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	4	-	4
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	<0.1
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	0.1	-	0.1
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	<3	-	<3
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	<0.1

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K1	K1	K1	K1	K1	K1	K1	K1	K3
		06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05
		7 m	8 m	9 m	10 m	11 m	12 m	13 m	14 m	0 m
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	<4	-	<4
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	930	-	<200
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	<0.4	-	<0.4
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	<0.05
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	<1	-	<1
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	<10	-	<10
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	<500	-	<500
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	2	-	<1
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	<0.1	-	<0.1
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	<0.3	-	<0.3
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	0.1	-	0.6
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	<5	-	<5
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	<500	-	<500
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	<0.4	-	<0.4
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	60	-	<10
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	<0.05
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	700	-	<500
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	<0.02	-	<0.02
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	<0.05	-	<0.05
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	<0.5	-	<0.5
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	3	-	3

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake K3 06-Aug-05 1 m	Kennady Lake K3 06-Aug-05 2 m	Kennady Lake K3 06-Aug-05 3 m	Kennady Lake K3 06-Aug-05 4 m	Kennady Lake K3 06-Aug-05 5 m	Kennady Lake K3 06-Aug-05 6 m	Kennady Lake K3 06-Aug-05 7 m	Kennady Lake K3 06-Aug-05 8 m	Kennady Lake K3 06-Aug-05 9 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [a]	µS/cm	10	9.8	9.8	9.7	9.7	9.7	9.7	9.6	9.6
Conductivity, Specific	µS/cm	12.5	12.5	12.5	12.5	12.4	12.5	12.5	12.5	12.5
Dissolved Oxygen (DO)	mg/L (ppm)	11.91	11.71	11.8	11.7	11.49	11.51	11.68	11.57	11.72
Dissolved Oxygen, saturation	%	117.5	114.3	114.6	113.1	109.5	111	112.1	111.1	111.8
Temperature	°C	14.5	14.1	13.9	13.5	13.4	13.4	13.3	13.2	13.1
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [a]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) [b]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K3	K3	K3
		06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05
		1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K5	K5	K5
		06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	05-Aug-05	05-Aug-05	05-Aug-05
		10 m	11 m	12 m	13 m	13.5 m	14 m	0 m	1 m	2 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [(a)]	µS/cm	9.6	9.6	9.6	9.5	9.5	9.6	10.1	10.2	10.2
Conductivity, Specific	µS/cm	12.5	12.5	12.5	12.5	12.5	12.7	12.5	12.7	12.7
Dissolved Oxygen (DO)	mg/L (ppm)	11.18	11.35	11.51	11.6	10.03	1.42	9.38	9.24	9.3
Dissolved Oxygen, saturation	%	106.5	108.3	108.9	109.5	94.2	16	92.5	91.3	91.7
Temperature	°C	13	12.9	12.8	12.7	12.5	12.2	14.8	14.8	14.8
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	-	-	5.82	-	-	6.82	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	15	-	-	14	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	-	11	-	-	5	-	-
Hardness, Total	mg/L (ppm)	-	-	-	<6	-	-	<6	-	-
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	<10	-	-	<10	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	<2	-	-	<2	-	-
Turbidity	NTU	-	-	-	2	-	-	1	-	-
Calcium (Ca)	mg/L (ppm)	-	-	-	1	-	-	0.9	-	-
Magnesium (Mg)	mg/L (ppm)	-	-	-	<0.5	-	-	<0.5	-	-
Potassium (K)	mg/L (ppm)	-	-	-	<0.5	-	-	<0.5	-	-
Sodium (Na)	mg/L (ppm)	-	-	-	<0.5	-	-	<0.5	-	-
Bicarbonate	mg/L (ppm)	-	-	-	13	-	-	6	-	-
Carbonate	mg/L (ppm)	-	-	-	<1	-	-	<1	-	-
Chloride	mg/L (ppm)	-	-	-	0.4	-	-	0.4	-	-
Fluoride	mg/L (ppm)	-	-	-	0.07	-	-	0.04	-	-
Sulphate	mg/L (ppm)	-	-	-	<0.5	-	-	<0.5	-	-
Nutrients										
Ammonia	mg/L (ppm)	-	-	-	<0.1	-	-	<0.1	-	-
Nitrate	mg/L (ppm)	-	-	-	<0.05	-	-	<0.05	-	-
Nitrite	mg/L (ppm)	-	-	-	<0.05	-	-	<0.05	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	<0.02	-	-	<0.02	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	4	-	-	11	-	-
Colour	TCU	-	-	-	<1	-	-	10	-	-
Oil and Grease	mg/L (ppm)	-	-	-	<0.1	-	-	<0.1	-	-
Phenol	mg/L (ppm)	-	-	-	<0.002	-	-	<0.002	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	3	-	-	5	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	3	-	-	4	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	<0.1	-	-	<0.1	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	<5	-	-	19	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	<0.1	-	-	<0.1	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	<0.4	-	-	<0.4	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	<5	-	-	<5	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.5	-	-	<0.5	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	<10	-	-	<10	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.2	-	-	<0.2	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	1,040	-	-	950	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.9	-	-	<0.9	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.1	-	-	<0.1	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	<1	-	-	<1	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	<10	-	-	30	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.1	-	-	0.1	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	<500	-	-	<500	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	4	-	-	3	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.1	-	-	<0.1	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.5	-	-	<0.5	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	<0.6	-	-	0.8	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	<50	-	-	<50	-	-
Potassium (K)	µg/L (ppb)	-	-	-	<500	-	-	<500	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	<0.8	-	-	<0.8	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	<10	-	-	30	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	<0.2	-	-	<0.2	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	<500	-	-	<500	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	<0.05	-	-	<0.05	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	0.2	-	-	0.2	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	6	-	-	5	-	-
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	-	4	-	-	12	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	<0.1	-	-	<0.1	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	0.1	-	-	0.2	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	<3	-	-	<3	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	<0.1	-	-	<0.1	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake
		K3	K3	K3	K3	K3	K3	K5	K5	K5
		06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	05-Aug-05	05-Aug-05	05-Aug-05
		10 m	11 m	12 m	13 m	13.5 m	14 m	0 m	1 m	2 m
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	<4	-	-	<4	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	<0.05	-	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	<200	-	-	910	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	<0.4	-	-	<0.4	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	<0.05	-	-	<0.05	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	<1	-	-	<1	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	<10	-	-	<10	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	<0.05	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	<500	-	-	<500	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	<1	-	-	<1	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	<0.1	-	-	<0.1	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	<0.3	-	-	<0.3	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	<0.1	-	-	0.7	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	<5	-	-	<5	-	-
Potassium (K)	µg/L (ppb)	-	-	-	<500	-	-	<500	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	<0.4	-	-	<0.4	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	<10	-	-	80	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	<0.05	-	-	<0.05	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	<500	-	-	<500	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	<0.02	-	-	<0.02	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	<0.05	-	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	<0.5	-	-	<0.5	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	5	-	-	4	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	A1 Lake	A1 Lake	A1 Lake	A2 Lake	A3 Lake
		K5	K5	K5	K5					
		05-Aug-05	05-Aug-05	05-Aug-05	05-Aug-05	Aug-02	26-Jun-04	06-Aug-04	Aug-02	26-Jun-04
		3 m	4 m	5 m	6 m	1 m	1 m	1 m	1 m	1 m
Field Measured										
pH	pH Units	-	-	-	-	8.3	6.6	8.1	8.0	6.7
Conductivity [(a)]	µS/cm	10.2	10.2	10.2	9.8	11.15	11	7	17.7	13
Conductivity, Specific	µS/cm	12.7	12.8	12.9	12.6	-	-	10.7	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	9.25	9.32	9.46	9.46	10.9	13.1	10.1	9.3	12.0
Dissolved Oxygen, saturation	%	91.5	91.8	92.4	91.3	-	112	110	-	116
Temperature	°C	14.7	14.6	14.3	13.4	14.1	8.4	13.0	17.8	13.7
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	7	6	-	8
Conventional Parameters and Major Ions										
pH	pH Units	-	-	6.84	-	-	6.6	6.7	-	6.4
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	
Conductivity, Specific	µS/cm	-	-	15	-	-	20	11	-	31
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	-	-	5	-	10	22	<1	11	33
Hardness, Total	mg/L (ppm)	-	-	<6	-	3.9	<6	<6	6.9	<6
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	11	17.5	-	13	25
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	16	-	<10	21	40	<10	28
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	<2	-	-	<2	<2	-	<2
Turbidity	NTU	-	-	1	-	-	1	2	-	<1
Calcium (Ca)	mg/L (ppm)	-	-	1.1	-	-	0.5	<0.5	-	0.5
Magnesium (Mg)	mg/L (ppm)	-	-	<0.5	-	-	<0.5	<0.5	-	<0.5
Potassium (K)	mg/L (ppm)	-	-	<0.5	-	-	<0.5	<0.5	-	<0.5
Sodium (Na)	mg/L (ppm)	-	-	<0.5	-	-	2.2	1.1	-	2.6
Bicarbonate	mg/L (ppm)	-	-	6	-	12.2	27	<1	13.4	41
Carbonate	mg/L (ppm)	-	-	<1	-	<0.5	<1	<1	<0.5	<1
Chloride	mg/L (ppm)	-	-	0.4	-	<1	0.3	0.2	<1	0.3
Fluoride	mg/L (ppm)	-	-	0.04	-	-	0.02	0.03	-	0.05
Sulphate	mg/L (ppm)	-	-	0.5	-	<1	1.1	1.2	<1	1.5
Nutrients										
Ammonia	mg/L (ppm)	-	-	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrate	mg/L (ppm)	-	-	<0.05	-	<0.2	<0.05	<0.05	<0.2	<0.05
Nitrite	mg/L (ppm)	-	-	<0.05	-	<0.3	<0.05	<0.05	<0.3	<0.05
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	<0.2	0.2	-	<0.2
Phosphate	mg/L (ppm)	-	-	-	-	<0.3	-	-	<0.3	-
Phosphorus, Total	mg/L (ppm)	-	-	<0.02	-	-	<0.02	<0.02	-	<0.02
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	10	-	-	13	13	-	11
Colour	TCU	-	-	10	-	-	15	5	-	10
Oil and Grease	mg/L (ppm)	-	-	<0.1	-	-	<0.1	1.1	-	<0.1
Phenol	mg/L (ppm)	-	-	<0.002	-	-	<0.002	0.009	-	<0.002
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	6	-	-	5	5	-	4
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	4	-	-	4	4	-	3
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	<0.1	-	-	<0.1	0.1	-	<0.1
Total Metals										
Aluminum (Al)	µg/L (ppb)	-	-	18	-	<20	<20	20	<20	<20
Antimony (Sb)	µg/L (ppb)	-	-	<0.1	-	<1	0.9	<0.1	<1	<0.1
Arsenic (As)	µg/L (ppb)	-	-	<0.4	-	<1	<0.4	<0.4	<1	<0.4
Barium (Ba)	µg/L (ppb)	-	-	<5	-	2	<5	<5	4	<5
Beryllium (Be)	µg/L (ppb)	-	-	<0.5	-	<0.2	<0.5	<0.5	<0.2	<0.5
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	<50	-	-	<50	-
Boron (B)	µg/L (ppb)	-	-	<10	-	<8	<10	<10	<8	<10
Cadmium (Cd)	µg/L (ppb)	-	-	<0.2	-	<0.1	<0.2	<0.2	<0.1	<0.2
Calcium (Ca)	µg/L (ppb)	-	-	1020	-	970	1100	<1000	1730	1100
Chromium (Cr)	µg/L (ppb)	-	-	1.5	-	<5	<0.9	<0.9	<5	<0.9
Cobalt (Co)	µg/L (ppb)	-	-	<0.1	-	<0.5	<0.1	<0.1	<0.5	<0.1
Copper (Cu)	µg/L (ppb)	-	-	<1	-	5	<5	<5	<5	<5
Iron (Fe)	µg/L (ppb)	-	-	110	-	51	<50	69	162	<50
Lead (Pb)	µg/L (ppb)	-	-	0.1	-	<0.5	<0.1	<0.1	<0.5	<0.1
Lithium (Li)	µg/L (ppb)	-	-	-	-	<20	-	-	<20	-
Magnesium (Mg)	µg/L (ppb)	-	-	<500	-	350	<500	<500	640	500
Manganese (Mn)	µg/L (ppb)	-	-	4	-	3	4.8	4.3	3	6.6
Mercury (Hg)	µg/L (ppb)	-	-	<0.1	-	<0.05	<500	<1	<0.05	<500
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.5	-	<5	<0.5	<0.5	<5	<0.5
Nickel (Ni)	µg/L (ppb)	-	-	0.7	-	<8	<0.6	1	<8	<0.6
Phosphorus (P)	µg/L (ppb)	-	-	<50	-	<100	<20	<50	<100	<20
Potassium (K)	µg/L (ppb)	-	-	<500	-	400	<500	<500	560	<500
Selenium (Se)	µg/L (ppb)	-	-	<0.8	-	<1	<10	<10	<1	<10
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	30	-	-	126	168	-	154
Silver (Ag)	µg/L (ppb)	-	-	<0.2	-	<0.1	<0.2	<0.2	<0.1	<0.2
Sodium (Na)	µg/L (ppb)	-	-	<500	-	450	<2000	<2000	630	<2000
Strontium (Sr)	µg/L (ppb)	-	-	-	-	5	-	-	9	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.05	-	<0.1	<0.05	<0.05	<0.1	<0.05
Tin (Sn)	µg/L (ppb)	-	-	-	-	<20	-	-	<20	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	<3	-	-	<3	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	<0.1	<0.05	<0.05	<0.1	<0.05
Vanadium (V)	µg/L (ppb)	-	-	0.2	-	<5	<0.1	<0.1	<5	<0.1
Zinc (Zn)	µg/L (ppb)	-	-	10	-	39	<2	7	55	<2
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	-	18	-	-	<10	16	-	<10
Antimony (Sb)	µg/L (ppb)	-	-	<0.1	-	-	<0.1	<0.1	-	<0.1
Arsenic (As)	µg/L (ppb)	-	-	<0.1	-	-	<0.1	0.2	-	<0.1
Barium (Ba)	µg/L (ppb)	-	-	<3	-	-	<3	<3	-	<3
Beryllium (Be)	µg/L (ppb)	-	-	<0.1	-	-	<0.1	<0.1	-	<0.1

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	A1 Lake	A1 Lake	A1 Lake	A2 Lake	A3 Lake
		K5	K5	K5	K5					
		05-Aug-05	05-Aug-05	05-Aug-05	05-Aug-05	Aug-02	26-Jun-04	06-Aug-04	Aug-02	26-Jun-04
		3 m	4 m	5 m	6 m	1 m	1 m	1 m	1 m	1 m
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	<4	-	-	<4	<4	-	<4
Cadmium (Cd)	µg/L (ppb)	-	-	0.07	-	-	<0.05	<0.05	-	<0.05
Calcium (Ca)	µg/L (ppb)	-	-	1070	-	-	1080	910	-	1050
Chromium (Cr)	µg/L (ppb)	-	-	<0.4	-	-	<0.4	<0.4	-	<0.4
Cobalt (Co)	µg/L (ppb)	-	-	<0.05	-	-	0.06	<0.05	-	<0.05
Copper (Cu)	µg/L (ppb)	-	-	<1	-	-	<2	<2	-	<2
Iron (Fe)	µg/L (ppb)	-	-	<10	-	-	<20	39	-	<20
Lead (Pb)	µg/L (ppb)	-	-	0.15	-	-	<0.05	<0.05	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	<500	-	-	380	450	-	440
Manganese (Mn)	µg/L (ppb)	-	-	<1	-	-	13.5	2.9	-	4
Mercury (Hg)	µg/L (ppb)	-	-	<0.1	-	-	<1	<1	-	<1
Molybdenum (Mo)	µg/L (ppb)	-	-	<0.3	-	-	<0.3	<0.3	-	<0.3
Nickel (Ni)	µg/L (ppb)	-	-	0.7	-	-	0.3	0.3	-	0.3
Phosphorus (P)	µg/L (ppb)	-	-	<5	-	-	<5	<5	-	<5
Potassium (K)	µg/L (ppb)	-	-	<500	-	-	360	370	-	430
Selenium (Se)	µg/L (ppb)	-	-	<0.4	-	-	<2	<2	-	<2
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	80	-	-	137	95	-	185
Silver (Ag)	µg/L (ppb)	-	-	<0.05	-	-	<0.05	<0.05	-	<0.05
Sodium (Na)	µg/L (ppb)	-	-	<500	-	-	<1000	<1000	-	<1000
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	<0.02	-	-	<0.02	<0.02	-	<0.02
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	<0.05	-	-	<0.05	<0.05	-	<0.05
Vanadium (V)	µg/L (ppb)	-	-	<0.5	-	-	<0.5	<0.5	-	<0.5
Zinc (Zn)	µg/L (ppb)	-	-	6	-	-	<2	3	-	<2

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	A3 Lake	A3 Lake	B1 Lake	B1 Lake	B1 Lake	D1 Lake	D1 Lake	D1 Lake	D3 Lake
		09-Aug-04	02-Aug-05	26-Jun-04	06-Aug-04	02-Aug-05	12-Aug-03	25-Jun-04	06-Aug-04	02-Aug-05
		1 m	1 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m
Field Measured										
pH	pH Units	7.0	6.5	6.49	6.87	6.83	7.8	6.7	6.8	6.9
Conductivity [(a)]	µS/cm	9	9	8.67	4	6	11	11	11	6
Conductivity, Specific	µS/cm	12	12	-	-	7	-	-	14	7
Dissolved Oxygen (DO)	mg/L (ppm)	12.4	11.3	10.93	11.43	10.25	10.0	11.3	11.4	11.1
Dissolved Oxygen, saturation	%	116	106	108.63	105.7	97.1	-	104	108	104
Temperature	°C	12.1	12.3	15.08	11.88	12.87	15.1	11.6	13.1	12.7
Total Dissolved Solids (TDS)	mg/L (ppm)	8	-	6	3	-	-	7	9	-
Conventional Parameters and Major Ions										
pH	pH Units	6.8	5.4	6.2	6.66	5.33	6.7	5.7	6.7	5.5
Conductivity [(a)]	µS/cm	-		-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	14	14	22	9.5	9	13	21	16	9
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	5	19	26	10	12	<5	35	7	10
Hardness, Total	mg/L (ppm)	<6	<6	<6	<6	<6	5	<6	<6	<6
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	20.6	-	-	3	26	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	36	16	19	36	<10	-	36	30	16
Total Suspended Solids (TSS)	mg/L (ppm)	<2	<2	<2	2	<2	-	<2	<2	4
Turbidity	NTU	1	2	1	3	2	-	1	2	2
Calcium (Ca)	mg/L (ppm)	0.5	1.2	<0.5	0.5	0.8	1.1	<0.5	0.7	0.8
Magnesium (Mg)	mg/L (ppm)	<0.5	<0.5	310	400	<0.5	0.5	<0.5	<0.5	<0.5
Potassium (K)	mg/L (ppm)	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5
Sodium (Na)	mg/L (ppm)	0.9	0.6	3.2	0.9	0.6	<1	3.5	1.05	0.6
Bicarbonate	mg/L (ppm)	6.64	23	32	12	15	<5	43	9	12
Carbonate	mg/L (ppm)	<1	<1	<1	<1	<1	<5	<1	<1	<1
Chloride	mg/L (ppm)	0.2	0.3	0.2	0.2	<0.1	<1	0.2	0.2	0.1
Fluoride	mg/L (ppm)	0.04	0.06	0.07	0.05	0.06	-	0.04	0.075	0.05
Sulphate	mg/L (ppm)	1.4	1	1.1	1.1	<0.5	0.62	1	1.15	<0.5
Nutrients										
Ammonia	mg/L (ppm)	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1
Nitrate	mg/L (ppm)	<0.05	0.06	<0.05	<0.05	<0.05	<0.006	<0.05	<0.05	<0.05
Nitrite	mg/L (ppm)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.002	<0.05	<0.05	<0.05
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	0.3	-	0.3	0.2	-	-	0.2	0.55	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	<0.02	<0.02	-	0.03	<0.02	0.012	0.03	<0.02	<0.02
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	12	12	14	23	18	-	23	29.5	19
Colour	TCU	10	5	50	20	25	-	30	25	15
Oil and Grease	mg/L (ppm)	208 h	<0.1	<0.1	0.2	<0.1	-	<0.1	<0.1	2.1
Phenol	mg/L (ppm)	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	4	4	11	6	7	-	8	8	7
Organic Carbon, Total (TOC)	mg/L (ppm)	4	4	5	6	5	-	6	9	6
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	62.1 h	<0.1	<0.1	0.2	<0.1	-	<0.1	0.15	1.6
Total Metals										
Aluminum (Al)	µg/L (ppb)	<20	12	<20	76	69	60.7	<20	72	23
Antimony (Sb)	µg/L (ppb)	1.3	<0.1	<0.1	0.8	<0.1	0.13	<0.1	0.15	<0.1
Arsenic (As)	µg/L (ppb)	<0.4	<0.4	<0.4	<0.4	<0.4	0.36	<0.4	<0.4	0.5
Barium (Ba)	µg/L (ppb)	<5	<5	<5	<5	<5	3.14	<5	<5	<5
Beryllium (Be)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<0.5	<0.5
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	<10	<10	<10	<10	<10	1	<10	<10	<10
Cadmium (Cd)	µg/L (ppb)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.2	<0.2	<0.2
Calcium (Ca)	µg/L (ppb)	<1,000	1,010	<1,000	<1,000	700	990	<1,000	1,200	580
Chromium (Cr)	µg/L (ppb)	<0.9	<0.9	<0.9	<0.9	<0.9	0.07	<0.9	<0.9	<0.9
Cobalt (Co)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	<5	<1	<5	<5	<1	1.3	<5	<5	<1
Iron (Fe)	µg/L (ppb)	<50	20	292	399	100	231	224	213.5	80
Lead (Pb)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	<500	<500	<0.5	<0.5	<500	475	<500	665	<500
Manganese (Mn)	µg/L (ppb)	7	4	6.6	5.9	2	2.4	3.3	3.3	2
Mercury (Hg)	µg/L (ppb)	<1	<0.1	<500	<1	<0.1	<0.02	<500	<1	<0.1
Molybdenum (Mo)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	0.1	<0.5	<0.5	<0.5
Nickel (Ni)	µg/L (ppb)	0.7	<0.6	<0.6	0.9	0.6	0.6	<0.6	1.5	<0.6
Phosphorus (P)	µg/L (ppb)	<50	59	<20	<50	<50	-	<20	<50	<50
Potassium (K)	µg/L (ppb)	<500	<500	<500	<500	<500	390	<500	<500	<500
Selenium (Se)	µg/L (ppb)	<10	<0.8	<10	<10	<0.8	<0.1	<10	<10	<0.8
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	165	150	223	136	100	-	102	153	60
Silver (Ag)	µg/L (ppb)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.2
Sodium (Na)	µg/L (ppb)	<2,000	<5,00	<2,000	<2,000	<500	567	<2,000	<2,000	<500
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	6.4	-	-	-
Thallium (Tl)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	<0.1	0.2	<0.1	0.2	0.4	0.27	0.3	0.2	0.3
Zinc (Zn)	µg/L (ppb)	6	<2	<2	10	<2	1.7	<2	6	<2
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	<10	15	38	42	47	-	30	322.5	17
Antimony (Sb)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1
Arsenic (As)	µg/L (ppb)	0.1	<0.1	<0.1	0.2	0.1	-	<0.1	0.3	0.1
Barium (Ba)	µg/L (ppb)	<3	<3	<3	<3	<3	-	<3	8	<3
Beryllium (Be)	µg/L (ppb)	<0.1	0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	A3 Lake	A3 Lake	B1 Lake	B1 Lake	B1 Lake	D1 Lake	D1 Lake	D1 Lake	D3 Lake
		09-Aug-04	02-Aug-05	26-Jun-04	06-Aug-04	02-Aug-05	12-Aug-03	25-Jun-04	06-Aug-04	02-Aug-05
		1 m	1 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	<4	<4	<4	<4	<4	-	<4	<4	<4
Cadmium (Cd)	µg/L (ppb)	<0.05	0.12	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Calcium (Ca)	µg/L (ppb)	1,002	1,080	880	910	750	-	890	1,725	580
Chromium (Cr)	µg/L (ppb)	<0.4	<0.4	<0.4	<0.4	<0.4	-	<0.4	2.95	<0.4
Cobalt (Co)	µg/L (ppb)	<0.05	0.1	0.1	0.08	<0.05	-	0.06	0.6	<0.05
Copper (Cu)	µg/L (ppb)	<2	<1	<2	<2	<1	-	<2	2.5	<1
Iron (Fe)	µg/L (ppb)	<20	60	178	154	280	-	121	358	280
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	520	<500	<500	<500	<500	-	370	1560	<500
Manganese (Mn)	µg/L (ppb)	5.3	4	5.1	2.9	3	-	1.8	6.3	3
Mercury (Hg)	µg/L (ppb)	<1	<0.1	<1	<1	<0.1	-	<1	<1	<0.1
Molybdenum (Mo)	µg/L (ppb)	<0.3	<0.3	<0.3	<0.3	<0.3	-	<0.3	<0.3	<0.3
Nickel (Ni)	µg/L (ppb)	0.3	0.4	0.5	0.4	0.3	-	2	2.1	0.3
Phosphorus (P)	µg/L (ppb)	<5	<5	<5	<5	<5	-	<5	97.5	<5
Potassium (K)	µg/L (ppb)	460	<500	280	260	<500	-	380	770	<500
Selenium (Se)	µg/L (ppb)	<2	<0.4	<2	<2	<0.4	-	<2	<2	<0.4
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	191	160	280	144	110	-	106	177.5	60
Silver (Ag)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Sodium (Na)	µg/L (ppb)	<1,000	500	<1,000	<1,000	<500	-	<1,000	<1,000	<500
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	<0.02	0.02	<0.02	<0.02	<0.02	-	<0.02	<0.02	0.02
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Zinc (Zn)	µg/L (ppb)	12	<2	3	8	3	-	2	5	2

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	D7 Lake	D7 Lake	D10 Lake	D10 Lake	D10 Lake	E1 Lake	E1 Lake	E2 Lake	E2 Lake
		25-Jun-04	06-Aug-04	12-Aug-03	25-Jun-04	06-Aug-04	25-Jun-04	06-Aug-04	12-Aug-03	25-Jun-04
		0.5 m	0.5 m	1 m	1 m	1 m	0.5 m	0.5 m	0.5 m	0.5 m
Field Measured										
pH	pH Units	6.7	6.9	7.3	6.9	6.0	6.1	7.1	6.9	6.4
Conductivity [(a)]	µS/cm	11	7	14	9	11	11.7	9	34.2	-
Conductivity, Specific	µS/cm	-	10	-	-	14	-	12	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	12.9	12.3	8.5	11.2	11.7	7.6	12.3	8.9	9.7
Dissolved Oxygen, saturation	%	108	112	-	115	106	81	112	-	112
Temperature	°C	7.7	11.5	14.2	16.4	11.3	18.3	11.1	18	22.3
Total Dissolved Solids (TDS)	mg/L (ppm)	7	6	-	6	9	8	8	-	-
Conventional Parameters and Major Ions										
pH	pH Units	7.2	6.7	6.8	6.0	7.0	7	6.7	6.4	7.2
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	23	12	16	24	16	27	13	36.9	40
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	14	9	<5	24	10	16	9	<5	14
Hardness, Total	mg/L (ppm)	<6	<6	6	<6	<6	<6	<6	14	9
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	14	-	3	20	-	15.7	-	16	19.2
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	33	12	-	28	28	19	24	-	55
Total Suspended Solids (TSS)	mg/L (ppm)	<2	<2	-	<2	<2	<2	4	-	3
Turbidity	NTU	1	2	-	2	3	2	3	-	4
Calcium (Ca)	mg/L (ppm)	0.5	<0.5	1.6	0.6	0.8	0.6	<0.5	3.8	2
Magnesium (Mg)	mg/L (ppm)	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	1.5	1
Potassium (K)	mg/L (ppm)	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	6.5	<0.5
Sodium (Na)	mg/L (ppm)	3.7	0.8	<1	3.6	1.1	3.9	1.1	2.5	4.3
Bicarbonate	mg/L (ppm)	17	11	5	29.5	12	19	11	6	17
Carbonate	mg/L (ppm)	<1	<1	<5	<1	<1	<1	<1	<5	<1
Chloride	mg/L (ppm)	0.2	0.2	<1	0.3	0.2	0.2	0.2	1	0.3
Fluoride	mg/L (ppm)	0.04	0.04	-	0.04	0.1	0.06	0.04	-	0.05
Sulphate	mg/L (ppm)	1.3	1.1	0.64	0.75	1.2	1.2	1.2	5.7	2.6
Nutrients										
Ammonia	mg/L (ppm)	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1
Nitrate	mg/L (ppm)	<0.05	<0.05	<0.006	<0.05	<0.05	<0.05	<0.05	<0.006	<0.05
Nitrite	mg/L (ppm)	<0.05	<0.05	<0.002	<0.05	<0.05	<0.05	<0.05	0.003	<0.05
Nitrate + Nitrite	mg/L (ppm)	-	-	<0.006	-	-	-	-	<0.006	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	<0.2	<0.2	-	0.15	0.4	<0.2	0.4	-	1.1
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.03	<0.02	0.008	0.025	<0.02	<0.02	<0.02	0.1	0.03
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	14	19	-	-	32	20	21	-	69
Colour	TCU	20	10	-	45	25	60	20	-	175
Oil and Grease	mg/L (ppm)	0.1	0.1	-	0.075	<0.1	0.1	<0.1	-	0.2
Phenol	mg/L (ppm)	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	-	<0.002
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	5	6	-	-	10	6	6	-	20
Organic Carbon, Total (TOC)	mg/L (ppm)	5	6	-	-	9	6	6	-	19
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	<0.1	0.1	-	-	<0.1	<0.1	<0.1	-	<0.1
Total Metals										
Aluminum (Al)	µg/L (ppb)	<20	<20	80	38	66	<20	34	1130	207
Antimony (Sb)	µg/L (ppb)	<0.1	<0.1	<0.4	<0.1	<0.1	<0.1	<0.1	0.5	<0.1
Arsenic (As)	µg/L (ppb)	<0.4	<0.4	<0.4	<0.4	0.4	<0.4	<0.4	1.1	0.7
Barium (Ba)	µg/L (ppb)	<5	<5	4.2	<5	<5	<5	<5	22.4	9
Beryllium (Be)	µg/L (ppb)	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<1	<0.5
Bismuth (Bi)	µg/L (ppb)	-	-	<0.1	-	-	-	-	<0.1	-
Boron (B)	µg/L (ppb)	<10	<10	<20	<10	<10	<10	<10	<20	<10
Cadmium (Cd)	µg/L (ppb)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium (Ca)	µg/L (ppb)	<1,000	<1,000	-	1,200	1,400	<1,000	<1,000	-	3,200
Chromium (Cr)	µg/L (ppb)	1.4	<0.9	<0.8	<0.9	<0.9	3.7	<0.9	1.7	<0.9
Cobalt (Co)	µg/L (ppb)	0.1	<0.1	0.2	<0.1	0.1	0.3	<0.1	2	0.7
Copper (Cu)	µg/L (ppb)	<5	<5	<1	<5	<5	<5	<5	12	5
Iron (Fe)	µg/L (ppb)	124	110	-	96	132	169	172	-	606
Lead (Pb)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.8	<0.1
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	<500	<500	-	620	710	<500	580	-	1380
Manganese (Mn)	µg/L (ppb)	7.2	2.5	-	4.3	2.7	3.1	4	-	19.2
Mercury (Hg)	µg/L (ppb)	<500	<1	-	<500	<1	<500	<1	-	<500
Molybdenum (Mo)	µg/L (ppb)	<0.5	<0.5	0.1	<0.5	<0.5	<0.5	<0.5	0.9	<0.5
Nickel (Ni)	µg/L (ppb)	4.3	<0.6	0.6	<0.6	0.8	11	1.8	5.5	1.1
Phosphorus (P)	µg/L (ppb)	<20	<50	-	<20	<50	<20	<50	-	36
Potassium (K)	µg/L (ppb)	<500	<500	-	550	560	<500	<500	-	830
Selenium (Se)	µg/L (ppb)	<10	<10	<0.4	<10	<10	<10	<10	<0.4	19
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	93	60	-	40.5	85	113	93	-	389
Silver (Ag)	µg/L (ppb)	<0.2	<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	<0.4	<0.2
Sodium (Na)	µg/L (ppb)	<2,000	<2,000	-	<2,000	<2,000	<2,000	<2,000	-	<2,000
Strontium (Sr)	µg/L (ppb)	-	-	7.8	-	-	-	-	26.3	-
Thallium (Tl)	µg/L (ppb)	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05
Tin (Sn)	µg/L (ppb)	-	-	<0.4	-	-	-	-	1	-
Titanium (Ti)	µg/L (ppb)	-	-	<5	-	-	-	-	44	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	0.3	0.09
Vanadium (V)	µg/L (ppb)	<0.1	0.1	<0.2	0.25	0.2	0.1	<0.1	5.6	1.3
Zinc (Zn)	µg/L (ppb)	<2	6	<4	4.5	<2	<2	7	15	15
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	10	<10	-	48	39	43	24	-	134
Antimony (Sb)	µg/L (ppb)	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1
Arsenic (As)	µg/L (ppb)	0.2	0.1	-	<0.1	0.4	<0.1	0.2	-	<0.1
Barium (Ba)	µg/L (ppb)	<3	<3	-	3	3	3	<3	-	8
Beryllium (Be)	µg/L (ppb)	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	D7 Lake	D7 Lake	D10 Lake	D10 Lake	D10 Lake	E1 Lake	E1 Lake	E2 Lake	E2 Lake
		25-Jun-04	06-Aug-04	12-Aug-03	25-Jun-04	06-Aug-04	25-Jun-04	06-Aug-04	12-Aug-03	25-Jun-04
		0.5 m	0.5 m	1 m	1 m	1 m	0.5 m	0.5 m	0.5 m	0.5 m
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	<4	<4	-	<4	<4	<4	<4	-	<4
Cadmium (Cd)	µg/L (ppb)	<0.05	<0.05	-	<0.05	<0.05	0.08	<0.05	-	<0.05
Calcium (Ca)	µg/L (ppb)	950	730	-	940	1370	1090	880	-	2690
Chromium (Cr)	µg/L (ppb)	<0.4	<0.4	-	<0.4	<0.4	0.5	<0.4	-	1
Cobalt (Co)	µg/L (ppb)	0.05	<0.05	-	0.075	0.07	0.1	<0.05	-	0.6
Copper (Cu)	µg/L (ppb)	<2	<2	-	<2	<2	<2	<2	-	4
Iron (Fe)	µg/L (ppb)	44	34	-	52	64	124	81	-	386
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	430	420	-	435	740	410	590	-	1150
Manganese (Mn)	µg/L (ppb)	4.4	1.3	-	1.4	1.3	0.9	1.7	-	12.5
Mercury (Hg)	µg/L (ppb)	<1	<1	-	<1	<1	<1	<1	-	<1
Molybdenum (Mo)	µg/L (ppb)	<0.3	<0.3	-	<0.3	<0.3	<0.3	<0.3	-	0.5
Nickel (Ni)	µg/L (ppb)	0.6	0.2	-	0.4	0.5	0.9	0.4	-	1.8
Phosphorus (P)	µg/L (ppb)	<5	<5	-	<5	<5	<5	<5	-	<5
Potassium (K)	µg/L (ppb)	410	370	-	450	560	330	400	-	770
Selenium (Se)	µg/L (ppb)	<2	<2	-	<2	<2	<2	<2	-	<2
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	102	72	-	22	90	107	69	-	415
Silver (Ag)	µg/L (ppb)	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05
Sodium (Na)	µg/L (ppb)	<1,000	<1,000	-	<1,000	<1,000	<1,000	<1,000	-	1,100
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.02
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	0.07
Vanadium (V)	µg/L (ppb)	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	0.8
Zinc (Zn)	µg/L (ppb)	<2	2	-	2	3	<2	4	-	6

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	E2 Lake	E3 Lake	E3 Lake	E3 Lake	G1 Lake	G1 Lake	I1 Lake	I1 Lake	I1 Lake
		06-Aug-04	12-Aug-03	25-Jun-04	06-Aug-04	26-Jun-04	06-Aug-04	Aug-02	26-Jun-04	06-Aug-04
		0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m
Field Measured										
pH	pH Units	6.9	7.1	6.7	7.0	6.5	6.8	8.2	6.7	-
Conductivity [a]	µS/cm	27	18	14	15	11	12	11	11	-
Conductivity, Specific	µS/cm	38	-	-	20	-	17	-	-	10
Dissolved Oxygen (DO)	mg/L (ppm)	12.7	9.5	10.6	11.9	11.2	11.3	11.5	11.7	8.7
Dissolved Oxygen, saturation	%	113	-	112	107	111	100	-	106	-
Temperature	°C	10.1	16.7	17.8	10.7	14.9	9.8	11.3	10.8	14.7
Total Dissolved Solids (TDS)	mg/L (ppm)	25	-	9	13	7	11	-	7	-
Conventional Parameters and Major Ions										
pH	pH Units	6.8	6.6	7.0	6.6	6.2	6.7	-	5.9	6.6
Conductivity [a]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	42.3	20	19	22	23	19	-	21	12
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	12	<5	15	9	25	11	9	30	4.58
Hardness, Total	mg/L (ppm)	11	7	<6	<6	<6	<6	3.8	<6	<6
Total Dissolved Solids (TDS) [b]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	8	13.6	-	21	-	<10	22.8	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	90	-	19	64	24	32	<10	33	24
Total Suspended Solids (TSS)	mg/L (ppm)	44.5	-	<2	2	<2	2	-	<2	-
Turbidity	NTU	27.5	-	1	6	2	4	-	<1	3
Calcium (Ca)	mg/L (ppm)	2.3	1.8	<0.5	1	<0.5	0.8	-	<0.5	<0.5
Magnesium (Mg)	mg/L (ppm)	1.4	0.8	<0.5	0.6	<0.5	<0.5	-	<0.5	<0.5
Potassium (K)	mg/L (ppm)	0.8	0.7	<0.5	0.6	<0.5	<0.5	-	<0.5	<0.5
Sodium (Na)	mg/L (ppm)	2.7	1.5	3	1.8	3.9	1.5	-	2.4	0.9
Bicarbonate	mg/L (ppm)	14.58	<5	18	11	31	13	11	36	5.59
Carbonate	mg/L (ppm)	<1	<5	<1	<1	<1	<1	<0.5	<1	<1
Chloride	mg/L (ppm)	0.5	1	0.2	0.4	<0.1	0.2	<1	0.2	0.2
Fluoride	mg/L (ppm)	0.06	-	0.04	0.06	0.05	0.08	-	0.03	0.03
Sulphate	mg/L (ppm)	4.15	1.69	0.9	0.9	1.4	1.9	<1	1.5	1.4
Nutrients										
Ammonia	mg/L (ppm)	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrate	mg/L (ppm)	<0.05	0.02	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05
Nitrite	mg/L (ppm)	<0.05	0.003	<0.05	<0.05	<0.05	<0.05	<0.3	<0.05	<0.05
Nitrate + Nitrite	mg/L (ppm)	-	0.02	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	2.4	-	<0.2	1.1	<0.2	0.4	-	<0.2	<0.2
Phosphate	mg/L (ppm)	-	-	-	-	-	-	<0.3	-	-
Phosphorus, Total	mg/L (ppm)	<0.02	0.02	0.03	<0.02	0.03	<0.02	-	<0.02	<0.02
Organics							-			
Oxygen Demand, Chemical (COD)	mg/L (ppm)	123	-	18	62	21	30	-	15	11
Colour	TCU	125	-	30	85	50	30	-	20	15
Oil and Grease	mg/L (ppm)	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	0.1	<0.1
Phenol	mg/L (ppm)	<0.002	-	0.002	0.002	<0.002	0.009	-	<0.002	<0.002
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	37.5	-	6	20	7	11	-	5	5
Organic Carbon, Total (TOC)	mg/L (ppm)	30	-	5	19	6	9	-	4	4
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1
Total Metals										
Aluminum (Al)	µg/L (ppb)	366	170	<20	138	<20	88	<20	<20	61
Antimony (Sb)	µg/L (ppb)	<0.1	<0.4	2.1	0.2	<0.1	0.4	<1	<0.1	<0.1
Arsenic (As)	µg/L (ppb)	0.9	<0.4	<0.4	<0.4	<0.4	0.5	<1	<0.4	<0.4
Barium (Ba)	µg/L (ppb)	11	5.8	<5	<5	<5	<5	2	<5	<5
Beryllium (Be)	µg/L (ppb)	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<0.5
Bismuth (Bi)	µg/L (ppb)	-	<0.1	-	-	-	-	<50	-	-
Boron (B)	µg/L (ppb)	<10	<20	<10	<10	<10	<10	<8	<10	<10
Cadmium (Cd)	µg/L (ppb)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2
Calcium (Ca)	µg/L (ppb)	3,250	-	<1,000	1,500	<1,000	1,400	890	<1,000	<1,000
Chromium (Cr)	µg/L (ppb)	1.58	<0.8	<0.9	<0.9	4	<0.9	<5	<0.9	1.1
Cobalt (Co)	µg/L (ppb)	0.85	0.3	<0.1	<0.1	0.3	0.2	<0.5	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	5	1	<5	<5	10	<5	<5	<5	<5
Iron (Fe)	µg/L (ppb)	1180	-	97	272	327	340	89	77	77
Lead (Pb)	µg/L (ppb)	0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.5	0.1	<0.1
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	<20	-	-
Magnesium (Mg)	µg/L (ppb)	2,060	-	<500	1,080	<500	820	380	<500	580
Manganese (Mn)	µg/L (ppb)	17.4	-	3.1	3.2	6.8	5.2	5	8.5	3.2
Mercury (Hg)	µg/L (ppb)	<1	-	<500	<1	<500	<1	<0.05	<500	<1
Molybdenum (Mo)	µg/L (ppb)	0.4	0.1	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5
Nickel (Ni)	µg/L (ppb)	4.6	1.1	<0.6	1.9	13.2	1.2	<8	<0.6	3.1
Phosphorus (P)	µg/L (ppb)	67	-	24	<50	<20	<50	<100	<20	<50
Potassium (K)	µg/L (ppb)	1,255	-	<500	850	<500	500	420	<500	<500
Selenium (Se)	µg/L (ppb)	<10	<0.4	<10	<10	<10	<10	<1	<10	<10
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	233.5	-	79	92	175	168	-	162	171
Silver (Ag)	µg/L (ppb)	<0.2	<0.4	0.5	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2
Sodium (Na)	µg/L (ppb)	2,050	-	<2,000	<2,000	<2,000	<2,000	480	<2,000	<2,000
Strontium (Sr)	µg/L (ppb)	-	10.9	-	-	-	-	5	-	-
Thallium (Tl)	µg/L (ppb)	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05
Tin (Sn)	µg/L (ppb)	-	<0.4	-	-	-	-	<20	-	-
Titanium (Ti)	µg/L (ppb)	-	<5	-	-	-	-	3	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	2.35	0.3	<0.1	0.4	0.3	0.4	<5	<0.1	<0.1
Zinc (Zn)	µg/L (ppb)	12.5	13	<2	9	<2	<2	22	<2	8
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	168	-	20	125	33	49	-	23	14
Antimony (Sb)	µg/L (ppb)	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1
Arsenic (As)	µg/L (ppb)	0.9	-	<0.1	0.5	<0.1	0.4	-	<0.1	0.2
Barium (Ba)	µg/L (ppb)	8	-	<3	4	<3	3	-	<3	<3
Beryllium (Be)	µg/L (ppb)	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	E2 Lake	E3 Lake	E3 Lake	E3 Lake	G1 Lake	G1 Lake	I1 Lake	I1 Lake	I1 Lake
		06-Aug-04	12-Aug-03	25-Jun-04	06-Aug-04	26-Jun-04	06-Aug-04	Aug-02	26-Jun-04	06-Aug-04
		0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	<4	-	<4	<4	<4	<4	-	<4	<4
Cadmium (Cd)	µg/L (ppb)	<0.05	-	<0.05	<0.05	0.09	<0.05	-	<0.05	<0.05
Calcium (Ca)	µg/L (ppb)	3,345	-	900	1590	1060	1460	-	820	770
Chromium (Cr)	µg/L (ppb)	1.8	-	<0.4	0.7	<0.4	<0.4	-	<0.4	<0.4
Cobalt (Co)	µg/L (ppb)	0.3	-	0.07	0.2	0.13	0.12	-	0.09	<0.05
Copper (Cu)	µg/L (ppb)	4.5	-	<2	<2	<2	<2	-	<2	<2
Iron (Fe)	µg/L (ppb)	463	-	29	176	153	152	-	36	<20
Lead (Pb)	µg/L (ppb)	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	0.09	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	2,250	-	320	1140	380	860	-	400	480
Manganese (Mn)	µg/L (ppb)	4.9	-	2.1	2	2.4	3.2	-	5.9	1.3
Mercury (Hg)	µg/L (ppb)	<1	-	<1	<1	<1	<1	-	<1	<1
Molybdenum (Mo)	µg/L (ppb)	0.5	-	<0.3	<0.3	<0.3	<0.3	-	<0.3	<0.3
Nickel (Ni)	µg/L (ppb)	2.6	-	0.3	0.9	0.9	1.1	-	0.4	0.3
Phosphorus (P)	µg/L (ppb)	7.5	-	<5	<5	<5	<5	-	<5	<5
Potassium (K)	µg/L (ppb)	1,195	-	420	830	340	520	-	440	420
Selenium (Se)	µg/L (ppb)	<2	-	<2	<2	<2	<2	-	<2	<2
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	215	-	35	101	180	129	-	173	109
Silver (Ag)	µg/L (ppb)	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05
Sodium (Na)	µg/L (ppb)	2,250	-	<1,000	1,600	<1,000	1,000	-	<1,000	<1,000
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	0.07	-	<0.02	<0.02	<0.02	0.2	-	<0.02	0.03
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	0.08	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	1.2	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Zinc (Zn)	µg/L (ppb)	2	-	<2	7	3	7	-	<2	3

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	I2 Lake	J1 Lake	J1 Lake	J2 Lake	Ka1 Lake	Kb2 Lake	Kb3 Lake	Kb4 Lake	Kirk Lake Inlet
		Aug-02	May-98	Aug-02	Aug-02	12-Aug-03	Aug-02	Aug-02	12-Aug-03	02-Aug-05
		0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0 m
Field Measured										
pH	pH Units	6.7	-	8.4	6.7	7.1	6.5	6.6	6.5	6.4
Conductivity [a]	µS/cm	25	-	17	19	21	15	17	16	7
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	10
Dissolved Oxygen (DO)	mg/L (ppm)	8.4	-	10.8	9.0	9.5	9.8	9.2	9.6	11.6
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	105
Temperature	°C	18.0	-	14.2	17.3	15.0	16.3	17.2	13.3	10.9
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	-	6.6	-	-	6.7	-	-	6.6	5.4
Conductivity [a]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	14	-	-	16	-	-	20	12
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	10	5	13	10	<5	11	9	<5	17
Hardness, Total	mg/L (ppm)	9.7	5.57	6.4	7.3	7	5.6	5.9	8	<6
Total Dissolved Solids (TDS) [b]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	15	<1	15	12	4	13	11	6	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	10	<20	<10	<10	-	<10	<10	-	<10
Total Suspended Solids (TSS)	mg/L (ppm)	-	-	-	-	-	-	-	-	<2
Turbidity	NTU	-	0.6	-	-	-	-	-	-	2
Calcium (Ca)	mg/L (ppm)	-	-	-	-	1.95	-	-	1.85	0.9
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	0.85	-	-	0.85	<0.5
Potassium (K)	mg/L (ppm)	-	-	-	-	0.4	-	-	0.6	<0.5
Sodium (Na)	mg/L (ppm)	-	-	-	-	0.75	-	-	1.5	0.6
Bicarbonate	mg/L (ppm)	12.2	-	15.8	12.2	<5	13.4	11	6	21
Carbonate	mg/L (ppm)	<0.5	-	<0.5	<0.5	<5	<0.5	<0.5	<5	<1
Chloride	mg/L (ppm)	<1	<0.5	<1	<1	<1	<1	<1	<1	0.3
Fluoride	mg/L (ppm)	-	0.03	-	-	-	-	-	-	0.04
Sulphate	mg/L (ppm)	1	2	<1	<1	0.76	1	<1	0.48	<0.5
Nutrients										
Ammonia	mg/L (ppm)	<0.1	0.01	<0.1	<0.1	-	<0.1	<0.1	-	<0.1
Nitrate	mg/L (ppm)	<0.2	<0.005	<0.2	<0.2	<0.006	<0.2	<0.2	<0.006	<0.05
Nitrite	mg/L (ppm)	<0.3	-	<0.3	<0.3	0.002	<0.3	<0.3	<0.002	<0.05
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	<0.006	-	-	<0.006	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	<0.3	8	<0.3	<0.3	-	<0.3	<0.3	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	0.011	-	-	0.037	<0.02
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	11
Colour	TCU	-	-	-	-	-	-	-	-	5
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	<0.1
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	0.002
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	6
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	4
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	<0.1
Total Metals										
Aluminum (Al)	µg/L (ppb)	130	36	30	100	240	40	50	230	23
Antimony (Sb)	µg/L (ppb)	<1	<0.05	<1	<1	<0.4	<1	<1	<0.4	<0.1
Arsenic (As)	µg/L (ppb)	<1	0.2	<1	<1	<0.4	<1	<1	<0.4	<0.4
Barium (Ba)	µg/L (ppb)	7	3.45	3	6	6.8	4	4	7.4	<5
Beryllium (Be)	µg/L (ppb)	<0.2	<0.5	<0.2	<0.2	<1	<0.2	<0.2	<1	<0.5
Bismuth (Bi)	µg/L (ppb)	<50	<0.5	<50	<50	<0.1	<50	<50	0.1	-
Boron (B)	µg/L (ppb)	<8	2	<8	<8	<20	<8	<8	<20	<10
Cadmium (Cd)	µg/L (ppb)	<0.1	<0.05	<0.1	<0.1	<0.2	<0.1	<0.1	<0.2	<0.2
Calcium (Ca)	µg/L (ppb)	2,240	1,400	1,550	1,740	-	1,350	1,240	-	760
Chromium (Cr)	µg/L (ppb)	<5	<0.5	<5	<5	<0.8	<5	<5	<0.8	<0.9
Cobalt (Co)	µg/L (ppb)	<0.5	0.2	<0.5	<0.5	0.4	<0.5	<0.5	0.7	<0.1
Copper (Cu)	µg/L (ppb)	12	1	<5	<5	6	<5	8	2	<1
Iron (Fe)	µg/L (ppb)	437	90	228	540	-	168	194	-	70
Lead (Pb)	µg/L (ppb)	<0.5	<0.05	<0.5	<0.5	0.1	<0.5	<0.5	<0.1	<0.1
Lithium (Li)	µg/L (ppb)	<20	<1	<20	<20	-	<20	<20	-	-
Magnesium (Mg)	µg/L (ppb)	1,090	580	6,200	910	-	560	680	-	<500
Manganese (Mn)	µg/L (ppb)	7	15.9	7	9	-	3	3	-	3
Mercury (Hg)	µg/L (ppb)	<0.05	<0.01	<0.05	<0.05	-	<0.05	<0.05	-	<0.1
Molybdenum (Mo)	µg/L (ppb)	<5	<0.05	<5	<5	0.3	<5	<5	0.3	<0.5
Nickel (Ni)	µg/L (ppb)	<8	0.7	<8	<8	1.8	<8	<8	1.7	<0.6
Phosphorus (P)	µg/L (ppb)	<100	<300	<100	<100	-	<100	100	-	52
Potassium (K)	µg/L (ppb)	780	550	640	800	-	490	720	-	<500
Selenium (Se)	µg/L (ppb)	<1	<1	<1	<1	<0.4	<1	<1	<0.4	<0.8
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	160	-	-	-	-	-	-	120
Silver (Ag)	µg/L (ppb)	<0.1	<0.01	<0.1	<0.1	<0.4	<0.1	<0.1	<0.4	<0.2
Sodium (Na)	µg/L (ppb)	1,190	590	660	760	-	580	820	-	<500
Strontium (Sr)	µg/L (ppb)	13	7.6	8	10	14.4	7	7	12	-
Thallium (Tl)	µg/L (ppb)	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05
Tin (Sn)	µg/L (ppb)	<20	<0.1	<20	<20	1.1	<20	<20	<0.4	-
Titanium (Ti)	µg/L (ppb)	4	<10	<3	3	<5	<3	<3	<5	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.1	0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05
Vanadium (V)	µg/L (ppb)	<5	<1	<5	<5	0.2	<5	<5	0.4	0.3
Zinc (Zn)	µg/L (ppb)	30	1	36	25	6	46	26	6	<2
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	-	23	-	-	-	-	-	-	18
Antimony (Sb)	µg/L (ppb)	-	<0.05	-	-	-	-	-	-	<0.1
Arsenic (As)	µg/L (ppb)	-	0.2	-	-	-	-	-	-	<0.1
Barium (Ba)	µg/L (ppb)	-	3.25	-	-	-	-	-	-	<3
Beryllium (Be)	µg/L (ppb)	-	<0.5	-	-	-	-	-	-	0.1

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	I2 Lake	J1 Lake	J1 Lake	J2 Lake	Ka1 Lake	Kb2 Lake	Kb3 Lake	Kb4 Lake	Kirk Lake Inlet
		Aug-02	May-98	Aug-02	Aug-02	12-Aug-03	Aug-02	Aug-02	12-Aug-03	02-Aug-05
		0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0 m
Bismuth (Bi)	µg/L (ppb)	-	<0.5	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	2	-	-	-	-	-	-	<4
Cadmium (Cd)	µg/L (ppb)	-	<0.05	-	-	-	-	-	-	0.12
Calcium (Ca)	µg/L (ppb)	-	1,340	-	-	-	-	-	-	840
Chromium (Cr)	µg/L (ppb)	-	<0.5	-	-	-	-	-	-	<0.4
Cobalt (Co)	µg/L (ppb)	-	0.1	-	-	-	-	-	-	0.11
Copper (Cu)	µg/L (ppb)	-	1	-	-	-	-	-	-	<1
Iron (Fe)	µg/L (ppb)	-	40	-	-	-	-	-	-	140
Lead (Pb)	µg/L (ppb)	-	<0.05	-	-	-	-	-	-	<0.05
Lithium (Li)	µg/L (ppb)	-	<1	-	-	-	-	-	-	<500
Magnesium (Mg)	µg/L (ppb)	-	540	-	-	-	-	-	-	<500
Manganese (Mn)	µg/L (ppb)	-	12.4	-	-	-	-	-	-	4
Mercury (Hg)	µg/L (ppb)	-	<0.01	-	-	-	-	-	-	<0.1
Molybdenum (Mo)	µg/L (ppb)	-	<0.05	-	-	-	-	-	-	<0.3
Nickel (Ni)	µg/L (ppb)	-	0.6	-	-	-	-	-	-	0.4
Phosphorus (P)	µg/L (ppb)	-	<300	-	-	-	-	-	-	<5
Potassium (K)	µg/L (ppb)	-	560	-	-	-	-	-	-	<500
Selenium (Se)	µg/L (ppb)	-	<0.1	-	-	-	-	-	-	<0.4
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	140	-	-	-	-	-	-	110
Silver (Ag)	µg/L (ppb)	-	<0.1	-	-	-	-	-	-	<0.05
Sodium (Na)	µg/L (ppb)	-	540	-	-	-	-	-	-	500
Strontium (Sr)	µg/L (ppb)	-	7.4	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	<0.05	-	-	-	-	-	-	<0.02
Tin (Sn)	µg/L (ppb)	-	<0.1	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	<10	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	<0.01	-	-	-	-	-	-	<0.05
Vanadium (V)	µg/L (ppb)	-	<1	-	-	-	-	-	-	<0.5
Zinc (Zn)	µg/L (ppb)	-	1	-	-	-	-	-	-	<2

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units		Lake 410 Inlet SW	Lake 410 Inlet SW	Lake 410 Inlet SW	Lake 410 Inlet SE	Lake 410 Inlet SE	Lake 410	Lake 410	Lake 410
		02-Aug-05	26-Jun-04	06-Aug-04	04-Aug-05	06-Aug-04	04-Aug-05	09-Aug-04	09-Aug-04	04-Aug-05
		0 + 3 m	0 m	0 m	0 m	0 m	0 m	0.5 m	4 m	0 m
Field Measured										
pH	pH Units	6.6	6.7	6.9	6.5	6.9	6.5	6.8	6.8	6.5
Conductivity [(a)]	µS/cm	9	10	8	8	9	9	-	-	8
Conductivity, Specific	µS/cm	11	-	11	11	12	12	10	10	10
Dissolved Oxygen (DO)	mg/L (ppm)	10.5	13.2	11.0	11.4	11.9	11.3	11.2	11.1	11.1
Dissolved Oxygen, saturation	%	87	110	103	108	107	107	106	106	105
Temperature	°C	14.3	7.5	12.7	13.2	10.7	13.0	13.0	12.9	13.1
Total Dissolved Solids (TDS)	mg/L (ppm)	-	7	7	-	8		6	7	-
Conventional Parameters and Major Ions										
pH	pH Units	5.6	5.9	6.7	5.5	6.7	5.9	6.8	6.8	5.4
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	14	-	13	11	14	17	13	12	13
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	14	27	7	15	13	16	7	8	15
Hardness, Total	mg/L (ppm)	<6	<6	<6	<6	<6	<6	<6	<6	<6
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	20.3	-	-	-	-	-	6	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	<10	22	12	<10	20	12	12	24	<10
Total Suspended Solids (TSS)	mg/L (ppm)	<2	<2	<2	<2	2	<2	<2	<2	<2
Turbidity	NTU	2	1	1	1	3	2	1	1	2
Calcium (Ca)	mg/L (ppm)	0.9	<0.5	0.5	1	<0.5	1	0.6	0.6	0.9
Magnesium (Mg)	mg/L (ppm)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Potassium (K)	mg/L (ppm)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sodium (Na)	mg/L (ppm)	0.7	2.2	1.1	0.7	0.9	0.7	0.6	<0.5	0.6
Bicarbonate	mg/L (ppm)	17	32	9	18	16	19	9	10	19
Carbonate	mg/L (ppm)	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloride	mg/L (ppm)	0.4	0.4	0.5	0.3	0.5	0.4	0.5	0.4	0.4
Fluoride	mg/L (ppm)	0.06	0.02	0.03	0.04	0.03	0.04	0.03	0.03	0.05
Sulphate	mg/L (ppm)	0.9	1	1.4	0.5	1.3	0.6	1.3	1.2	0.7
Nutrients										
Ammonia	mg/L (ppm)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrate	mg/L (ppm)	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite	mg/L (ppm)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02
Organics										-
Oxygen Demand, Chemical (COD)	mg/L (ppm)	20	-	-	11	-	9	-	-	12
Colour	TCU	5	20	10	5	10	10	<1	<1	5
Oil and Grease	mg/L (ppm)	<0.1	<0.1	<0.1	0.3	<0.1	0.1	<0.1	<0.1	<0.1
Phenol	mg/L (ppm)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	5	-	-	4	-	5	-	-	5
Organic Carbon, Total (TOC)	mg/L (ppm)	5	-	-	4	-	4	-	-	4
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	<0.1	-	-	<0.1	-	<0.1	-	-	<0.1
Total Metals										
Aluminum (Al)	µg/L (ppb)	23	<20	43	6	55	17	<20	51	9
Antimony (Sb)	µg/L (ppb)	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.5
Arsenic (As)	µg/L (ppb)	0.8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Barium (Ba)	µg/L (ppb)	<5	<5	<5	<5	<5	<5	<5	<5	<5
Beryllium (Be)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	
Boron (B)	µg/L (ppb)	<10	<10	<10	<10	<10	<10	<10	<10	<10
Cadmium (Cd)	µg/L (ppb)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium (Ca)	µg/L (ppb)	890	<1000	<1000	800	<1000	860	<1000	<1000	780
Chromium (Cr)	µg/L (ppb)	0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9
Cobalt (Co)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	1.5	<5	<5	<1	<5	<1	<5	<5	1.8
Iron (Fe)	µg/L (ppb)	<10	<50	57	<10	186	30	<50	84	<10
Lead (Pb)	µg/L (ppb)	0.4	<0.1	<0.1	<0.1	0.7	<0.1	<0.1	<0.1	0.1
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	<500	<500	570	<500	520	<500	<500	<500	<500
Manganese (Mn)	µg/L (ppb)	<1	4.5	4	<1	8.6	2	2.8	3.4	<1
Mercury (Hg)	µg/L (ppb)	<0.1	<500	<1	<0.1	<1	<0.1	<1	<1	<0.1
Molybdenum (Mo)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel (Ni)	µg/L (ppb)	2.5	<0.6	2	<0.6	1.9	<0.6	<0.6	<0.6	1.2
Phosphorus (P)	µg/L (ppb)	<50	<20	<50	<50	<50	51	<50	<50	66
Potassium (K)	µg/L (ppb)	<500	<500	<500	<500	<500	<500	<500	<500	<500
Selenium (Se)	µg/L (ppb)	<0.8	<10	<10	<0.8	<10	<0.8	<10	<10	<0.8
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	50	124	201	100	174	140	114	112	70
Silver (Ag)	µg/L (ppb)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Sodium (Na)	µg/L (ppb)	<500	<2,000	<2,000	<500	<2,000	<500	<2,000	<2,000	<500
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	0.3	<0.1	<0.1	0.2	0.1	0.3	0.1	0.2	0.2
Zinc (Zn)	µg/L (ppb)	17	<2	6	<2	24	<2	<2	8	<2
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	14	10	<10	10	13	10	16	<10	12
Antimony (Sb)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic (As)	µg/L (ppb)	0.1	<0.1	0.1	<0.1	0.2	<0.1	0.1	<0.1	<0.1
Barium (Ba)	µg/L (ppb)	<3	<3	<3	<3	<3	<3	<3	<3	<3
Beryllium (Be)	µg/L (ppb)	<0.1	<0.1	<0.1	0.1	<0.1	0.1	<0.1	<0.1	0.1

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units		Lake 410 Inlet SW	Lake 410 Inlet SW	Lake 410 Inlet SW	Lake 410 Inlet SE	Lake 410 Inlet SE	Lake 410	Lake 410	Lake 410
		02-Aug-05	26-Jun-04	06-Aug-04	04-Aug-05	06-Aug-04	04-Aug-05	09-Aug-04	09-Aug-04	04-Aug-05
		0 + 3 m	0 m	0 m	0 m	0 m	0 m	0.5 m	4 m	0 m
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	<4	<4	<4	<4	<4	<4	<4	<4	<4
Cadmium (Cd)	µg/L (ppb)	<0.05	<0.05	<0.05	0.11	<0.05	0.11	<0.05	<0.05	0.12
Calcium (Ca)	µg/L (ppb)	850	900	940	840	1020	890	860	880	790
Chromium (Cr)	µg/L (ppb)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Cobalt (Co)	µg/L (ppb)	<0.05	<0.05	<0.05	0.09	<0.05	0.09	<0.05	<0.05	0.1
Copper (Cu)	µg/L (ppb)	1.4	<2	<2	<1	<2	<1	<2	<2	1.4
Iron (Fe)	µg/L (ppb)	50	<20	<20	40	46	80	<20	<20	30
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	<500	360	510	<500	620	<500	480	500	<500
Manganese (Mn)	µg/L (ppb)	<2	2.6	1	<2	4	3	0.9	1.1	<2
Mercury (Hg)	µg/L (ppb)	<0.1	<1	<1	<0.1	<1	<0.1	<1	<1	<0.1
Molybdenum (Mo)	µg/L (ppb)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Nickel (Ni)	µg/L (ppb)	2.1	0.1	0.2	0.3	0.4	0.3	0.3	0.4	1.2
Phosphorus (P)	µg/L (ppb)	<5	<5	<5	<5	<5	<5	<5	<5	<5
Potassium (K)	µg/L (ppb)	<500	330	380	<500	400	<500	370	370	<500
Selenium (Se)	µg/L (ppb)	<0.4	<2	<2	<0.4	<2	<0.4	<2	<2	<0.4
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	70	124	137	110	156	150	79	84	90
Silver (Ag)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sodium (Na)	µg/L (ppb)	500	<1,000	<1,000	500	<1,000	600	<1,000	<1,000	<500
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc (Zn)	µg/L (ppb)	20	<2	3	<2	3	<2	2	3	2

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Lake 410	Lake 410 Outlet	L1 Lake	L1 Lake	L4 Lake	L14 Lake	L14 Lake	L15 Lake	L21 Lake
		04-Aug-05	04-Aug-05	25-Jun-04	06-Aug-04	13-Aug-03	13-Aug-03	25-Jun-04	Aug-02	Aug-02
		6 m	0 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m
Field Measured										
pH	pH Units	6.4	-	6.7	6.9	7.3	7.1	6.7	6.6	6.7
Conductivity [(a)]	µS/cm	8	7	13	-	13	12	10	14	11
Conductivity, Specific	µS/cm	10	10	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	10.8	10.8	11.7	-	9.2	9.7	10.4	9.5	9.5
Dissolved Oxygen, saturation	%	102	100	107	-	-	-	107	-	-
Temperature	°C	12.7	11.9	11.3	-	12.7	13.5	16.6	16.7	15.5
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	8	-	-	-	7	-	-
Conventional Parameters and Major Ions										
pH	pH Units	5.5	5.4	6.5	6.8	6.7	6.6	6.1	-	-
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	13	14	24	16	19	14	23	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	12	13	22	7	<5	<5	30	11	8
Hardness, Total	mg/L (ppm)	<6	<6	<6	<6	7	0.5	<6	5.3	3.8
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	18.3	-	4	4	23.2	13	<10
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	12	<10	28	32	-	-	35	<10	<10
Total Suspended Solids (TSS)	mg/L (ppm)	<2	<2	<2	<2	-	-	<2	-	-
Turbidity	NTU	2	2	1.5	2	-	-	1	-	-
Calcium (Ca)	mg/L (ppm)	1.2	0.8	0.6	0.6	1.8	1.4	0.5	-	-
Magnesium (Mg)	mg/L (ppm)	<0.5	<0.5	<0.5	<0.5	0.6	0.4	<0.5	-	-
Potassium (K)	mg/L (ppm)	<0.5	<0.5	<0.5	<0.5	0.3	0.4	<0.5	-	-
Sodium (Na)	mg/L (ppm)	0.6	0.6	2.45	1.1	<1	<1	3	-	-
Bicarbonate	mg/L (ppm)	15	15	26.5	9	<5	<5	36	13.4	9.8
Carbonate	mg/L (ppm)	<1	<1	<1	<1	<5	<5	<1	<0.5	<0.5
Chloride	mg/L (ppm)	0.4	0.4	0.6	0.6	1	<1	0.2	<1	<1
Fluoride	mg/L (ppm)	0.05	0.09	0.025	0.04	-	-	0.05	-	-
Sulphate	mg/L (ppm)	0.7	1.5	1.25	1.3	6.6	1.28	1.3	1	<1
Nutrients										
Ammonia	mg/L (ppm)	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1
Nitrate	mg/L (ppm)	<0.05	<0.05	<0.05	<0.05	<0.006	<0.006	<0.05	<0.2	<0.2
Nitrite	mg/L (ppm)	<0.05	<0.05	<0.05	<0.05	<0.002	<0.002	<0.05	<0.3	<0.3
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	<0.006	<0.006	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	<0.2	<0.2	-	-	<0.2	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	<0.3	<0.3
Phosphorus, Total	mg/L (ppm)	<0.02	<0.02	<0.02	<0.02	0.022	0.015	<0.02	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	18	9	13.5	15	-	-	18	-	-
Colour	TCU	5	5	25	10	-	-	30	-	-
Oil and Grease	mg/L (ppm)	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-
Phenol	mg/L (ppm)	<0.002	<0.002	<0.002	<0.002	-	-	<0.002	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	5	5	4	4	-	-	6	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	5	4	3	4	-	-	6	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	14	12	<20	<20	150	170	<20	<20	<20
Antimony (Sb)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.4	<0.4	<0.1	<1	<1
Arsenic (As)	µg/L (ppb)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1	<1
Barium (Ba)	µg/L (ppb)	<5	<5	<5	<5	6.7	5.5	<5	4	3
Beryllium (Be)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	<0.2	<0.2
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	<0.1	<0.1	-	<50	<50
Boron (B)	µg/L (ppb)	<10	<10	<10	<10	<20	<20	<10	<8	<8
Cadmium (Cd)	µg/L (ppb)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1
Calcium (Ca)	µg/L (ppb)	790	720	1,000	1,100	-	-	1,100	1,390	1,090
Chromium (Cr)	µg/L (ppb)	<0.9	<0.9	<0.9	<0.9	<0.8	<0.8	<0.9	<5	<5
Cobalt (Co)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	0.2	0.3	<0.1	<0.5	<0.5
Copper (Cu)	µg/L (ppb)	<1	<1	<5	<5	4	1	<5	<5	<5
Iron (Fe)	µg/L (ppb)	<10	<10	<50	154	-	-	74	184	141
Lead (Pb)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	<20	<20
Magnesium (Mg)	µg/L (ppb)	<500	<500	505	530	-	-	<500	450	340
Manganese (Mn)	µg/L (ppb)	<1	<1	4.15	3.4	-	-	2.7	2	2
Mercury (Hg)	µg/L (ppb)	<0.1	<0.1	<500	<1	-	-	<500	<0.05	<0.05
Molybdenum (Mo)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	0.2	0.1	<0.5	<5	<5
Nickel (Ni)	µg/L (ppb)	<0.6	<0.6	<0.6	2.1	0.7	0.9	<0.6	<8	<8
Phosphorus (P)	µg/L (ppb)	<50	71	<20	<50	-	-	<20	<100	<100
Potassium (K)	µg/L (ppb)	<500	<500	<500	<500	-	-	<500	360	400
Selenium (Se)	µg/L (ppb)	<0.8	<0.8	<10	<10	<0.4	<0.4	<10	<1	<1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	70	60	101.5	121	-	-	71	-	-
Silver (Ag)	µg/L (ppb)	<0.2	<0.2	<0.2	<0.2	<0.4	<0.4	<0.2	<0.1	<0.1
Sodium (Na)	µg/L (ppb)	<500	<500	<2000	<2000	-	-	<2,000	420	370
Strontium (Sr)	µg/L (ppb)	-	-	-	-	11.7	8.4	-	8	6
Thallium (Tl)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.05	<0.1	<0.1
Tin (Sn)	µg/L (ppb)	-	-	-	-	<0.4	<0.4	-	<20	<20
Titanium (Ti)	µg/L (ppb)	-	-	-	-	<5	<5	-	3	3
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.05	<0.1	<0.1
Vanadium (V)	µg/L (ppb)	0.2	0.3	<0.1	<0.1	0.6	0.4	0.1	<5	<5
Zinc (Zn)	µg/L (ppb)	<2	<2	<2	6	4	10	<2	29	30
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	11	12	11.5	14	-	-	28	-	-
Antimony (Sb)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-
Arsenic (As)	µg/L (ppb)	<0.1	<0.1	<0.1	0.2	-	-	<0.1	-	-
Barium (Ba)	µg/L (ppb)	<3	<3	<3	<3	-	-	<3	-	-
Beryllium (Be)	µg/L (ppb)	0.1	0.1	0.1	<0.1	-	-	<0.1	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	Lake 410	Lake 410 Outlet	L1 Lake	L1 Lake	L4 Lake	L14 Lake	L14 Lake	L15 Lake	L21 Lake
		04-Aug-05	04-Aug-05	25-Jun-04	06-Aug-04	13-Aug-03	13-Aug-03	25-Jun-04	Aug-02	Aug-02
		6 m	0 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m
Boron (B)	µg/L (ppb)	<4	<4	<4	<4	-	-	<4	-	-
Cadmium (Cd)	µg/L (ppb)	0.12	0.11	<0.05	<0.05	-	-	<0.05	-	-
Calcium (Ca)	µg/L (ppb)	820	1,280	1,150	1,050	-	-	1,030	-	-
Chromium (Cr)	µg/L (ppb)	<0.4	<0.4	<0.4	<0.4	-	-	<0.4	-	-
Cobalt (Co)	µg/L (ppb)	0.09	0.1	<0.05	<0.05	-	-	<0.05	-	-
Copper (Cu)	µg/L (ppb)	<1	<1	<2	<2	-	-	<2	-	-
Iron (Fe)	µg/L (ppb)	40	50	41	99	-	-	40	-	-
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	0.285	<0.05	-	-	<0.05	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	<500	<500	475	620	-	-	340	-	-
Manganese (Mn)	µg/L (ppb)	<2	16	3.6	3.3	-	-	1.2	-	-
Mercury (Hg)	µg/L (ppb)	<0.1	<0.1	<1	<1	-	-	<1	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.3	<0.3	<0.3	<0.3	-	-	<0.3	-	-
Nickel (Ni)	µg/L (ppb)	0.5	0.2	0.25	0.3	-	-	0.4	-	-
Phosphorus (P)	µg/L (ppb)	<5	<5	<5	<5	-	-	<5	-	-
Potassium (K)	µg/L (ppb)	<500	<500	430	410	-	-	350	-	-
Selenium (Se)	µg/L (ppb)	<0.4	<0.4	<2	<2	-	-	<2	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	90	80	106	129	-	-	65	-	-
Silver (Ag)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	-	-	4.97	-	-
Sodium (Na)	µg/L (ppb)	<500	<500	<1,000	<1,000	-	-	<1,000	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	<0.02	<0.02	<0.02	<0.02	-	-	<0.02	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	-	-
Vanadium (V)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	-
Zinc (Zn)	µg/L (ppb)	<2	<2	<2	3	-	-	<2	-	-

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	M3a Lake Inflow Basin	M3a Lake Outflow Basin	M3a Lake Inflow Basin	M3a Lake Outflow Basin	M3a Lake Inflow Basin	M3a Lake Outflow Basin	M3a Lake Inflow Basin	M4 Lake	M4 Lake
		06-Feb-03	06-Feb-03	09-Mar-03	09-Mar-03	23-Mar-03	23-Mar-03	08-Feb-03	08-Feb-03	27-Feb-03
		3 m	3 m	3 m	3 m	3 m	3 m	3 m	8 m	3 m
Field Measured										
pH	pH Units	-	-	-	-	-	-	-	-	-
Conductivity [a]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	12.8	15.6	15.2	14.5	13.8	14.4	14.9	8.8	15.8
Dissolved Oxygen, saturation	%	-	-	-	-	-	-	-	-	-
Temperature	°C	1.7	1.6	1.6	1.6	1.6	1.5	1.2	2.6	1.3
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	6.5	6.5	6.4	6.5	6.5	6.3	6.5	6.6	6.3
Conductivity [a]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	22	19	22	20	25	20	20	21	21
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	8	8	8	8	8	8	8	8	8
Hardness, Total	mg/L (ppm)	8	7	9	8	9	8	7	7	7
Total Dissolved Solids (TDS) [b]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	10	9	11	10	12	10	10	10	9
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L (ppm)	<3	<3	<3	<3	<3	<3	<3	<3	<3
Turbidity	NTU	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium (Ca)	mg/L (ppm)	1.7	1.6	2	1.7	2.1	1.7	1.5	1.7	1.6
Magnesium (Mg)	mg/L (ppm)	0.8	0.7	0.9	0.8	0.9	0.8	0.7	0.7	0.7
Potassium (K)	mg/L (ppm)	-	0.6	0.7	0.6	0.7	0.7	0.8	0.6	0.5
Sodium (Na)	mg/L (ppm)	-	1	1.2	1.1	1.2	1.1	1.1	1.1	0.9
Bicarbonate	mg/L (ppm)	10	10	10	10	10	9	10	10	9
Carbonate	mg/L (ppm)	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chloride	mg/L (ppm)	<1	<1	<1	<1	1	<1	<1	<1	<1
Fluoride	mg/L (ppm)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L (ppm)	1.31	1.17	1.41	1.3	1.43	1.28	1.23	1.28	1.29
Nutrients										
Ammonia	mg/L (ppm)	0.026	0.027	0.013	0.012	0.012	0.009	0.021	0.02	0.017
Nitrate	mg/L (ppm)	<0.006	<0.006	0.021	0.02	0.032	0.034	<0.006	<0.006	0.137
Nitrite	mg/L (ppm)	<0.002	<0.002	<0.002	<0.002	0.003	0.003	0.003	0.003	<0.002
Nitrate + Nitrite	mg/L (ppm)	<0.006	<0.006	0.021	0.02	0.024	0.037	<0.006	<0.006	0.137
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	0.005	0.004	0.006	0.002	0.001	0.003	0.004	0.006
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-	-	-
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	6.1	6	6.2	6.3	6.6	6.5	5.5	5.4	5.9
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	24.8	26.6	30.3	28.9	30.4	30.7	20.2	20.1	22.7
Antimony (Sb)	µg/L (ppb)	0.14	0.07	0.48	0.06	0.09	0.09	0.14	0.14	0.09
Arsenic (As)	µg/L (ppb)	0.1	0.09	0.18	0.16	0.17	0.15	0.08	0.09	0.17
Barium (Ba)	µg/L (ppb)	2.74	2.24	3.75	2.75	3.88	2.97	2.25	2.35	2.64
Beryllium (Be)	µg/L (ppb)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bismuth (Bi)	µg/L (ppb)	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Boron (B)	µg/L (ppb)	2	2	3	2	2	2	2	2	2
Cadmium (Cd)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calcium (Ca)	µg/L (ppb)	1,450	1,230	1,760	1,430	1,870	1,530	1,320	1,310	1,470
Chromium (Cr)	µg/L (ppb)	<0.06	<0.06	<0.06	<0.06	0.1	0.09	<0.06	<0.06	0.1
Cobalt (Co)	µg/L (ppb)	<0.1	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	4.2	0.8	1	0.9	1.1	0.9	0.8	1.7	1
Iron (Fe)	µg/L (ppb)	47	43	61	46	72	48	27	28	18
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	1.1	1	1.3	1.2	0.2	<0.1	1	1	1.2
Magnesium (Mg)	µg/L (ppb)	656	579	796	662	822	708	564	580	644
Manganese (Mn)	µg/L (ppb)	4.2	1.7	18.7	5.2	25.9	6.9	1.1	1.5	1.1
Mercury (Hg)	µg/L (ppb)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Molybdenum (Mo)	µg/L (ppb)	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
Nickel (Ni)	µg/L (ppb)	0.5	0.551	0.34	0.59	0.63	0.55	0.43	0.46	0.5
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	403	343	553	424	554	482	369	373	449
Selenium (Se)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	600	500	600	500	600	500	400	500	500
Silver (Ag)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium (Na)	µg/L (ppb)	720	650	860	737	885	803	650	658	770
Strontium (Sr)	µg/L (ppb)	9.2	7.4	10.5	8.6	11.1	9.2	7.5	7.9	8.8
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	2.6	1.1	4.2	4.4	5.4	3.4	6.7	1.6	1.9
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc (Zn)	µg/L (ppb)	<0.8	<0.8	2.2	1.7	<0.8	1.2	1.7	<0.8	0.8
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	24	24.6	29	27.2	29.4	29	17.9	18.5	23.7
Antimony (Sb)	µg/L (ppb)	0.12	0.07	0.32	0.13	0.06	0.06	0.11	0.11	0.18
Arsenic (As)	µg/L (ppb)	0.11	0.09	0.19	0.16	0.16	0.15	0.09	0.09	0.29
Barium (Ba)	µg/L (ppb)	2.8	2.27	3.72	2.72	3.86	2.94	2.2	2.34	2.74
Beryllium (Be)	µg/L (ppb)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	M3a Lake Inflow Basin	M3a Lake Outflow Basin	M3a Lake Inflow Basin	M3a Lake Outflow Basin	M3a Lake Inflow Basin	M3a Lake Outflow Basin	M3a Lake Inflow Basin	M4 Lake	M4 Lake
		06-Feb-03	06-Feb-03	09-Mar-03	09-Mar-03	23-Mar-03	23-Mar-03	08-Feb-03	08-Feb-03	27-Feb-03
		3 m	3 m	3 m	3 m	3 m	3 m	3 m	8 m	3 m
Bismuth (Bi)	µg/L (ppb)	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Boron (B)	µg/L (ppb)	3	2	3	2	3	2	2	2	2
Cadmium (Cd)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calcium (Ca)	µg/L (ppb)	1,520	1,240	1,800	1,460	1,860	1,520	1,320	1,360	1,560
Chromium (Cr)	µg/L (ppb)	0.08	<0.06	0.12	<0.06	0.14	0.07	<0.06	<0.06	0.15
Cobalt (Co)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	2	2.3	4.9	0.9	1.3	1.1	0.8	1.1	1.3
Iron (Fe)	µg/L (ppb)	34	32	49	37	49	41	19	15	29
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	1.1	1	1.3	1.1	0.3	<0.1	1	1.1	1.2
Magnesium (Mg)	µg/L (ppb)	663	583	793	655	829	708	558	573	653
Manganese (Mn)	µg/L (ppb)	3.8	1.4	19.2	4.8	26.6	6.6	0.4	0.7	0.4
Mercury (Hg)	µg/L (ppb)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Molybdenum (Mo)	µg/L (ppb)	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
Nickel (Ni)	µg/L (ppb)	0.62	0.6	0.54	0.63	0.63	0.57	0.49	0.51	0.62
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	401	352	533	427	551	480	361	374	469
Selenium (Se)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	600	500	600	500	600	600	400	500	500
Silver (Ag)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium (Na)	µg/L (ppb)	742	675	872	742	903	801	646	665	804
Strontium (Sr)	µg/L (ppb)	9	7.4	10.6	8.6	11.1	9.1	7.5	7.9	9
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	3.5	2.1	38.9	5.4	23.3	28.9	7	1.3	5.5
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.15
Zinc (Zn)	µg/L (ppb)	<0.8	1.5	7.4	4	1.2	1	3.4	2.4	3.3

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	M4 Lake	M4 Lake	M4 Lake	M4a Lake	M4 Lake	N2 Lake	N2 Lake	N2 Lake	N6a Lake
		27-Feb-03	23-Mar-03	23-Mar-03	May-98	May-98	25-Jun-04	06-Aug-04	04-Aug-05	06-Aug-04
		8 m	3 m	8 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m
Field Measured										
pH	pH Units	-	-	-	-	-	6.6	6.8	7.0	7.0
Conductivity [a]	µS/cm	-	-	-	-	-	13	10	10	8
Conductivity, Specific	µS/cm	-	-	-	-	-	-	12	13	10
Dissolved Oxygen (DO)	mg/L (ppm)	9.2	14.8	7.7	-	-	13.4	11.1	11.0	11.5
Dissolved Oxygen, saturation	%	-	-	-	-	-	106	106	106	106
Temperature	°C	2.7	1.3	2.8	-	-	5.4	13.2	13.6	11.7
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	5	8	-	7
Conventional Parameters and Major Ions										
pH	pH Units	6.1	6.5	6.3	6.1	6.4	5.9	6.7	5.5	6.7
Conductivity [a]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	21	22	21	9	11	24	14	15	11
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	8	8	8	2	3	34	8	15	13
Hardness, Total	mg/L (ppm)	7	8	7	3.27	4.21	<6	<6	<6	<6
Total Dissolved Solids (TDS) [b]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	9	11	9	-	-	26.1	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	-	-	-	39	22	23	52	<10	32
Total Suspended Solids (TSS)	mg/L (ppm)	<3	<3	<3	<1	<1	<2	<2	<2	2
Turbidity	NTU	<0.1	<0.1	<0.1	0.5	0.7	1	2	2	2
Calcium (Ca)	mg/L (ppm)	1.6	1.7	1.7	-	-	0.9	0.6	1.5	<0.5
Magnesium (Mg)	mg/L (ppm)	0.7	0.8	0.7	-	-	<0.5	<1	<0.5	<0.5
Potassium (K)	mg/L (ppm)	0.6	0.6	0.5	-	-	<0.5	<0.1	<0.5	<0.5
Sodium (Na)	mg/L (ppm)	0.9	1.3	0.9	-	-	2.7	1.1	0.6	1
Bicarbonate	mg/L (ppm)	9	10	10	-	-	42	9	19	16
Carbonate	mg/L (ppm)	<5	<5	<5	-	-	<1	<1	<1	<1
Chloride	mg/L (ppm)	<1	1	<1	<0.5	0.5	0.7	0.8	0.8	0.3
Fluoride	mg/L (ppm)	<0.05	<0.05	<0.05	0.03	0.03	0.04	0.04	0.06	0.04
Sulphate	mg/L (ppm)	1.3	1.37	1.33	<1	1	1.2	1.2	0.6	1.2
Nutrients										
Ammonia	mg/L (ppm)	0.101	0.018	0.01	0.02	0.012	<0.1	<0.1	<0.1	<0.1
Nitrate	mg/L (ppm)	0.066	<0.006	0.043	0.005	<0.005	<0.05	<0.05	<0.05	<0.05
Nitrite	mg/L (ppm)	<0.002	0.002	0.002	-	-	<0.05	<0.05	<0.05	<0.05
Nitrate + Nitrite	mg/L (ppm)	0.066	<0.006	0.046	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	0.4	-	-
Phosphate	mg/L (ppm)	-	-	-	9	7	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.005	0.004	0.002	-	-	0.04	<0.02	<0.02	<0.02
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	14	15	20	16
Colour	TCU	-	-	-	-	-	20	10	10	10
Oil and Grease	mg/L (ppm)	-	-	-	-	-	<0.1	24.1 h	<0.1	<0.1
Phenol	mg/L (ppm)	-	-	-	-	-	<0.002	<0.002	<0.002	0.003
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	5	5	6	5
Organic Carbon, Total (TOC)	mg/L (ppm)	5.4	6.4	5	-	-	4	5	4	4
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	<0.1	14.7 h	<0.1	0.1
Total Metals										
Aluminum (Al)	µg/L (ppb)	19.5	25.5	20.3	83	47	<20	<20	15	<20
Antimony (Sb)	µg/L (ppb)	0.09	0.15	0.1	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1
Arsenic (As)	µg/L (ppb)	0.13	0.18	0.13	0.1	0.1	<0.4	<0.4	<0.4	<0.4
Barium (Ba)	µg/L (ppb)	3.3	2.96	3.73	2.74	<0.5	<5	<5	<5	<5
Beryllium (Be)	µg/L (ppb)	<0.2	<0.2	<0.2	<0.5	-	<0.5	<0.5	<0.5	<0.5
Bismuth (Bi)	µg/L (ppb)	<0.03	<0.03	<0.03	<0.5	<0.5	-	-	<10	-
Boron (B)	µg/L (ppb)	2	2	2	2	2	<10	<10	-	<10
Cadmium (Cd)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.2
Calcium (Ca)	µg/L (ppb)	1,490	1,600	1,600	750	1,010	1,100	1,100	1,050	<1,000
Chromium (Cr)	µg/L (ppb)	0.09	0.1	0.08	<0.5	<0.5	<0.9	<0.9	<0.9	<0.9
Cobalt (Co)	µg/L (ppb)	<0.1	<0.1	<0.1	0.8	0.2	<0.1	<0.1	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	38.9	1	1.1	1.3	1	<5	<5	<1	7
Iron (Fe)	µg/L (ppb)	24	28	61	260	120	<50	70	50	158
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	0.1	<0.1	<0.1	<0.1	1
Lithium (Li)	µg/L (ppb)	1.1	0.2	<0.1	<1	<1	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	633	721	679	340	470	<500	<500	<500	<500
Manganese (Mn)	µg/L (ppb)	16.9	1.2	20.3	30.7	16.5	7.8	4.7	1	4.3
Mercury (Hg)	µg/L (ppb)	<0.02	<0.02	<0.02	<0.01	<0.01	<500	<1	<0.1	<1
Molybdenum (Mo)	µg/L (ppb)	<0.06	<0.06	<0.06	<0.05	<0.05	<0.5	<0.5	<0.5	<0.5
Nickel (Ni)	µg/L (ppb)	0.51	0.28	0.22	1.4	0.9	<0.6	1.1	<0.6	0.8
Phosphorus (P)	µg/L (ppb)	-	-	-	<300	<300	<20	<50	<50	<50
Potassium (K)	µg/L (ppb)	426	518	480	470	490	<500	<500	<500	<500
Selenium (Se)	µg/L (ppb)	<0.1	<0.1	<0.1	<1	<1	<10	<10	<0.8	<10
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	800	500	800	410	310	188	167	140	76
Silver (Ag)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.01	<0.01	<0.2	<0.2	<0.2	<0.2
Sodium (Na)	µg/L (ppb)	721	840	762	430	460	<2000	<2000	<500	<2000
Strontium (Sr)	µg/L (ppb)	8.8	9.7	9.9	4.4	5.9	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin (Sn)	µg/L (ppb)	4	1	2.8	<0.1	0.2	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	<10	<10	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	<0.05	<0.05	0.06	0.02	<0.05	<0.05	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	<0.05	<0.05	<0.05	<1	<1	<0.1	<0.1	0.2	<0.1
Zinc (Zn)	µg/L (ppb)	1	0.8	<0.8	3	2	<2	5	<2	7
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	17.1	23.6	17.1	71	40	16	11	15	14
Antimony (Sb)	µg/L (ppb)	0.05	0.15	0.07	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1
Arsenic (As)	µg/L (ppb)	0.13	0.18	0.14	0.2	0.1	<0.1	0.1	<0.1	0.1
Barium (Ba)	µg/L (ppb)	3.27	2.94	3.69	2.62	3.03	<3	<3	<3	<3
Beryllium (Be)	µg/L (ppb)	<0.2	<0.2	<0.2	<0.5	<0.5	<0.1	<0.1	0.1	<0.1

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	M4 Lake	M4 Lake	M4 Lake	M4a Lake	M4 Lake	N2 Lake	N2 Lake	N2 Lake	N6a Lake
		27-Feb-03	23-Mar-03	23-Mar-03	May-98	May-98	25-Jun-04	06-Aug-04	04-Aug-05	06-Aug-04
		8 m	3 m	8 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m
Bismuth (Bi)	µg/L (ppb)	<0.03	<0.03	<0.03	<0.5	<0.5	-	-	-	-
Boron (B)	µg/L (ppb)	2	2	2	1	1	<4	<4	<4	<4
Cadmium (Cd)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.11	<0.05
Calcium (Ca)	µg/L (ppb)	1,490	1,630	1,580	730	950	1,120	1,090	1,150	850
Chromium (Cr)	µg/L (ppb)	0.13	0.12	0.12	<0.5	<0.5	<0.4	<0.4	<0.4	<0.4
Cobalt (Co)	µg/L (ppb)	<0.1	<0.1	<0.1	0.7	0.1	<0.05	<0.05	0.1	<0.05
Copper (Cu)	µg/L (ppb)	38.9	1.1	0.9	1.1	0.8	<2	<2	<1	<2
Iron (Fe)	µg/L (ppb)	63	17	21	200	60	<20	25	130	30
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	1.1	0.1	<0.1	<1	<1	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	632	730	678	350	450	440	540	<500	460
Manganese (Mn)	µg/L (ppb)	13.6	0.5	17.6	26.9	13.2	4.7	1.3	4	0.8
Mercury (Hg)	µg/L (ppb)	<0.02	<0.02	<0.02	<0.01	<0.01	<1	<1	<0.1	<1
Molybdenum (Mo)	µg/L (ppb)	<0.06	<0.06	<0.06	<0.05	<0.05	<0.3	<0.3	<0.3	<0.3
Nickel (Ni)	µg/L (ppb)	0.56	0.27	0.18	1.3	0.7	0.2	0.2	0.3	0.2
Phosphorus (P)	µg/L (ppb)	-	-	-	<300	<300	<5	<5	<5	<5
Potassium (K)	µg/L (ppb)	428	529	463	440	470	390	420	<500	390
Selenium (Se)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<2	<2	<0.4	<2
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	800	500	800	390	290	215	144	150	80
Silver (Ag)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05
Sodium (Na)	µg/L (ppb)	735	849	755	410	430	<1000	<1000	600	<1000
Strontium (Sr)	µg/L (ppb)	9	9.8	9.9	4.3	5.8	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02
Tin (Sn)	µg/L (ppb)	2.5	4.3	5.6	<0.1	<0.1	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	<10	<10	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	<0.05	<0.05	0.05	0.02	<0.05	<0.05	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	<0.05	<0.05	<0.05	<1	<1	<0.5	<0.5	<0.5	<0.5
Zinc (Zn)	µg/L (ppb)	2.8	2	<0.8	2	1	<2	-	<2	2

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	N7 Lake	N9 Bay	N9 Lake	N11 Lake	N13 Lake	N14 Lake	N14 Lake	N16 Lake	N16 Lake
		25-Jun-04	02-Aug-05	02-Aug-05	May-98	05-Aug-05	May-98	05-Aug-05	17-May-98	18-Jul-99
		0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0 m	2.0 m
Field Measured										
pH	pH Units	7.1	6.4	6.5	-	-	-	-	-	-
Conductivity [a]	µS/cm	7	8	8	-	11	-	7	-	-
Conductivity, Specific	µS/cm	-	10	10	-	13	-	8	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	11.3	10.6	10.9	-	9.3	-	8.6	-	-
Dissolved Oxygen, saturation	%	103	102	103	-	94	-	93	-	-
Temperature	°C	11.5	13.7	12.9	-	16.6	-	19.5	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	5	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions										
pH	pH Units	5.8	5.5	5.5	6.4	6.1	6.3	5.6	6.4	6.4
Conductivity [a]	µS/cm	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	16	12	13	12	17	10	8	13	10
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	26	13	14	4	11	3	8	4	4
Hardness, Total	mg/L (ppm)	<6	<6	<6	4.01	<6	4.74	<6	5.27	4.02
Total Dissolved Solids (TDS) [b]	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	20.1	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	35	24	<10	21	20	20	<10	20	12
Total Suspended Solids (TSS)	mg/L (ppm)	<2	10	<2	3	<2	2	<2	<1	<3
Turbidity	NTU	2	6	2	0.6	2	0.4	1	0.4	0.3
Calcium (Ca)	mg/L (ppm)	<0.5	1	0.9	-	1.4	-	0.7	-	-
Magnesium (Mg)	mg/L (ppm)	<0.5	<0.5	<0.5	-	<0.5	-	<0.5	-	-
Potassium (K)	mg/L (ppm)	<0.5	<0.5	<0.5	-	<0.5	-	<0.5	-	-
Sodium (Na)	mg/L (ppm)	2.6	0.7	0.6	-	<0.5	-	<0.5	-	-
Bicarbonate	mg/L (ppm)	32	16	17	-	14	-	9	-	-
Carbonate	mg/L (ppm)	<1	<1	<1	-	<1	-	<1	-	-
Chloride	mg/L (ppm)	0.2	0.1	0.2	<0.5	0.1	<0.5	<0.1	<0.5	<0.5
Fluoride	mg/L (ppm)	0.04	0.05	0.06	0.04	0.07	0.03	0.04	0.03	0.04
Sulphate	mg/L (ppm)	1.2	<0.5	0.8	1	<0.5	1	<0.5	1	<1
Nutrients										
Ammonia	mg/L (ppm)	<0.1	<0.1	<0.1	0.008	<0.1	0.005	<0.1	0.01	0.008
Nitrate	mg/L (ppm)	<0.05	<0.05	<0.05	<0.005	<0.05	<0.005	<0.05	<0.005	<0.005
Nitrite	mg/L (ppm)	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	-	-
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	0.3	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	9	-	1	-	6	4
Phosphorus, Total	mg/L (ppm)	0.02	0.03	<0.02	-	<0.02	-	<0.02	-	-
Organics										
Oxygen Demand, Chemical (COD)	mg/L (ppm)	21	21	11	-	22	-	15	-	-
Colour	TCU	30	30	5	-	30	-	10	-	-
Oil and Grease	mg/L (ppm)	<0.1	<0.1	<0.1	-	1.4	-	<0.1	-	-
Phenol	mg/L (ppm)	0.002	0.002	<0.002	-	<0.002	-	<0.002	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	7	9	5	-	9	-	7	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	4	7	4	-	8	-	5	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	<0.1	<0.1	<0.1	-	1.2	-	<0.1	-	-
Total Metals										
Aluminum (Al)	µg/L (ppb)	<20	482	17	28	46	25	11	23	9
Antimony (Sb)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.05	<0.1	<0.05	<0.1	<0.05	<0.05
Arsenic (As)	µg/L (ppb)	<0.4	<0.4	<0.4	<0.1	0.4	<0.1	<0.4	<0.1	<0.1
Barium (Ba)	µg/L (ppb)	<5	7	<5	3.45	<5	3.68	<5	3.89	2.16
Beryllium (Be)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.5	-	<0.5	-	<0.5	<0.5
Boron (B)	µg/L (ppb)	<10	<10	<10	1	<10	2	<10	2	1
Cadmium (Cd)	µg/L (ppb)	<0.2	<0.2	<0.2	<0.05	<0.2	<0.05	<0.2	<0.05	<0.05
Calcium (Ca)	µg/L (ppb)	<1,000	830	790	1,090	3,730	1,150	850	1,350	940
Chromium (Cr)	µg/L (ppb)	<0.9	1.2	<0.9	<0.5	<0.9	<0.5	<0.9	<0.5	<0.5
Cobalt (Co)	µg/L (ppb)	<0.1	0.3	<0.1	0.2	<0.1	0.2	<0.1	0.1	<0.1
Copper (Cu)	µg/L (ppb)	<5	1.9	<1	0.8	<1	0.8	1.3	0.9	0.5
Iron (Fe)	µg/L (ppb)	64	120	<10	150	250	110	110	80	<30
Lead (Pb)	µg/L (ppb)	<0.1	0.3	0.1	<0.05	<0.1	0.05	<0.1	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	<1	-	<1	-	<1	<1
Magnesium (Mg)	µg/L (ppb)	<500	<500	<500	390	620	430	<500	480	388
Manganese (Mn)	µg/L (ppb)	1.7	6	2	22.1	8	26	2	12.1	3.5
Mercury (Hg)	µg/L (ppb)	<500	<0.1	<0.1	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01
Molybdenum (Mo)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.05	<0.5	<0.05	<0.5	<0.05	<0.05
Nickel (Ni)	µg/L (ppb)	<0.6	1.3	<0.6	0.4	<0.6	0.6	<0.6	0.6	0.2
Phosphorus (P)	µg/L (ppb)	<20	100	<50	<300	<50	<300	<50	<300	<300
Potassium (K)	µg/L (ppb)	<500	<500	<500	400	<500	420	<500	460	370
Selenium (Se)	µg/L (ppb)	<10	<0.8	<0.8	<1	<0.8	<1	<0.8	<1	<1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	52	170	60	330	80	180	40	180	100
Silver (Ag)	µg/L (ppb)	<0.2	<0.2	<0.2	0.01	<0.2	0.01	<0.2	0.01	0.01
Sodium (Na)	µg/L (ppb)	<2,000	<500	<500	420	<500	430	<500	500	420
Strontium (Sr)	µg/L (ppb)	-	-	-	5.9	-	7	-	8.2	6
Thallium (Tl)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
Tin (Sn)	µg/L (ppb)	-	-	-	<0.1	-	<0.1	-	0.2	0.1
Titanium (Ti)	µg/L (ppb)	-	-	-	10	-	10	-	10	10
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	0.08	<0.05	0.03	<0.05	0.01	<0.05	0.01	0.01
Vanadium (V)	µg/L (ppb)	<0.1	1.4	0.3	<1	0.3	<1	0.2	<1	<1
Zinc (Zn)	µg/L (ppb)	<2	3	<2	2	<2	2	4	2	<1
Dissolved Metals										
Aluminum (Al)	µg/L (ppb)	35	57	9	63	55	22	18	21	6
Antimony (Sb)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.05	<0.1	<0.05	<0.1	<0.05	<0.05
Arsenic (As)	µg/L (ppb)	0.2	0.1	<0.1	<0.1	0.3	<0.1	0.1	<0.1	<0.1
Barium (Ba)	µg/L (ppb)	<3	<3	<3	2.98	<3	3.45	<3	3.73	2.11
Beryllium (Be)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.5	<0.1	<0.5	<0.1	<0.5	<0.5

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	N7 Lake	N9 Bay	N9 Lake	N11 Lake	N13 Lake	N14 Lake	N14 Lake	N16 Lake	N16 Lake
		25-Jun-04	02-Aug-05	02-Aug-05	May-98	05-Aug-05	May-98	05-Aug-05	17-May-98	18-Jul-99
		0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m	0 m	2.0 m
Bismuth (Bi)	µg/L (ppb)	-	-	-	<0.5	-	<0.5	-	<0.5	<0.5
Boron (B)	µg/L (ppb)	<4	<4	<4	1	<4	1	<4	2	1
Cadmium (Cd)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calcium (Ca)	µg/L (ppb)	660	1100	820	1020	1320	1210	680	1300	970
Chromium (Cr)	µg/L (ppb)	<0.4	<0.4	<0.4	0.5	<0.4	0.5	<0.4	0.5	0.5
Cobalt (Co)	µg/L (ppb)	0.07	0.08	<0.05	<0.1	0.06	0.2	<0.05	<0.1	0.1
Copper (Cu)	µg/L (ppb)	<2	<1	<1	0.7	<1	0.6	<1	0.8	0.5
Iron (Fe)	µg/L (ppb)	37	1080	120	70	120	50	50	40	<30
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	-	-	-	<1	-	<1	-	<1	<1
Magnesium (Mg)	µg/L (ppb)	330	<500	<500	360	<500	420	<500	490	391
Manganese (Mn)	µg/L (ppb)	1.7	15	7	12.3	<1	22.5	2	8.94	0.34
Mercury (Hg)	µg/L (ppb)	<1	<0.1	<0.1	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01
Molybdenum (Mo)	µg/L (ppb)	<0.3	<0.3	<0.3	<0.05	<0.3	<0.05	<0.3	<0.05	<0.05
Nickel (Ni)	µg/L (ppb)	1.1	0.5	0.2	0.3	0.2	0.4	0.3	0.5	0.3
Phosphorus (P)	µg/L (ppb)	<5	<5	<5	<300	<5	<300	<5	<300	<300
Potassium (K)	µg/L (ppb)	240	<500	<500	390	<500	410	<500	450	370
Selenium (Se)	µg/L (ppb)	<2	<0.4	<0.4	<1	<0.4	<1	<0.4	<1	<1
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	32	610	90	300	70	180	50	170	90
Silver (Ag)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.01	<0.05	<0.01	<0.05	<0.01	<0.01
Sodium (Na)	µg/L (ppb)	<1000	500	500	430	800	430	<500	500	450
Strontium (Sr)	µg/L (ppb)	-	-	-	5.8	-	6.7	-	8	6.1
Thallium (Tl)	µg/L (ppb)	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05
Tin (Sn)	µg/L (ppb)	-	-	-	<0.1	-	<0.1	-	<0.1	<0.1
Titanium (Ti)	µg/L (ppb)	-	-	-	<10	-	<10	-	<10	<10
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	<0.05	<0.05	0.02	<0.05	0.01	<0.05	0.01	<0.01
Vanadium (V)	µg/L (ppb)	<0.5	<0.5	<0.5	<1	<0.5	<1	<0.5	<1	<1
Zinc (Zn)	µg/L (ppb)	4	4	2	1	3	1	3	2	11

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	N16 Lake	N16 Lake	N16 Lake	N16 Lake	N16 Lake	N16 Lake	N16 Lake	N16 Lake
		18-Jul-99	18-Jul-99	18-Jul-99	18-Jul-99	18-Jul-99	09-Aug-04	09-Aug-04	03-Aug-05
		4.0 m	6.0 m	8.0 m	11.0 m	13.0 m	0.5 m	8.0 m	0 + 7 m
Field Measured									
pH	pH Units	-	-	-	-	-	6.8	6.8	6.3
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	8
Conductivity, Specific	µS/cm	-	-	-	-	-	11	11	11
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	10.9	10.9	11.1
Dissolved Oxygen, saturation	%	-	-	-	-	-	103	103	104
Temperature	°C	-	-	-	-	-	13.0	13.0	12.4
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	7	7	-
Conventional Parameters and Major Ions									
pH	pH Units	6.4	6.4	6.4	6.8	6.7	-	6.8	5.5
Conductivity [(a)]	µS/cm	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	10	10	10	9	14	15	14	14
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	4	4	4	4	4	8	8	15
Hardness, Total	mg/L (ppm)	3.9	3.93	3.99	3.95	3.92	<6	<6	<6
Total Dissolved Solids (TDS) [(b)]	mg/L (ppm)	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	8	-
Total Dissolved Solids (TDS) (Filterable)	mg/L (ppm)	11	<10	<10	10	<10	36	40	<10
Total Suspended Solids (TSS)	mg/L (ppm)	<3	<3	<3	<3	<3	<2	<2	<2
Turbidity	NTU	0.3	0.4	0.3	0.3	0.4	1	<1	2
Calcium (Ca)	mg/L (ppm)	-	-	-	-	-	0.7	0.7	0.5
Magnesium (Mg)	mg/L (ppm)	-	-	-	-	-	<0.5	0.7	<0.5
Potassium (K)	mg/L (ppm)	-	-	-	-	-	<0.5	<500	<0.5
Sodium (Na)	mg/L (ppm)	-	-	-	-	-	0.6	0.5	0.6
Bicarbonate	mg/L (ppm)	-	-	-	-	-	9	10	18
Carbonate	mg/L (ppm)	-	-	-	-	-	<1	<1	<1
Chloride	mg/L (ppm)	0.5	<0.5	<0.5	0.5	<0.5	0.4	0.4	0.3
Fluoride	mg/L (ppm)	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.05
Sulphate	mg/L (ppm)	1	<1	<1	<1	<1	1.5	1.6	1
Nutrients									
Ammonia	mg/L (ppm)	0.005	0.011	0.009	0.01	<0.005	<0.1	<0.1	<0.1
Nitrate	mg/L (ppm)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	<0.05	<0.05
Nitrite	mg/L (ppm)	-	-	-	-	-	<0.05	<0.05	<0.05
Nitrate + Nitrite	mg/L (ppm)	-	-	-	-	-	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	<0.2	<0.2	-
Phosphate	mg/L (ppm)	3	4	5	4	8	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	<0.02	<0.02	<0.02
Organics									
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	8	10	12
Colour	TCU	-	-	-	-	-	<1	<1	<1
Oil and Grease	mg/L (ppm)	-	-	-	-	-	<0.1	<0.1	<0.1
Phenol	mg/L (ppm)	-	-	-	-	-	0.003	0.004	<0.002
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	3	3	4
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	3	2	3
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	<0.1	0.1	<0.1
Total Metals									
Aluminum (Al)	µg/L (ppb)	9	9	9	9	9	<20	<20	6
Antimony (Sb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1
Arsenic (As)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.4	<0.4
Barium (Ba)	µg/L (ppb)	2.11	2.14	2.11	2.15	2.13	<5	<5	<5
Beryllium (Be)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bismuth (Bi)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-
Boron (B)	µg/L (ppb)	1	1	1	1	1	<10	<10	<10
Cadmium (Cd)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2
Calcium (Ca)	µg/L (ppb)	940	970	980	960	920	<1,000	<1,000	380
Chromium (Cr)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.9	<0.9	0.9
Cobalt (Co)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	0.6	0.5	0.5	0.5	0.5	<5	<5	<1
Iron (Fe)	µg/L (ppb)	<30	<30	<30	<30	<30	<50	<50	<10
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	0.4	<0.1	0.2
Lithium (Li)	µg/L (ppb)	<1	<1	<1	<1	<1	-	-	-
Magnesium (Mg)	µg/L (ppb)	387	389	388	389	392	<500	<500	<500
Manganese (Mn)	µg/L (ppb)	3.57	3.69	3.62	3.61	3.92	2.8	<0.01	<3
Mercury (Hg)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	<0.01	<1	<1	<0.1
Molybdenum (Mo)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.5	<0.5
Nickel (Ni)	µg/L (ppb)	0.2	0.2	0.2	0.2	0.2	<0.6	<0.6	1.1
Phosphorus (P)	µg/L (ppb)	<300	<300	<300	<300	<300	<50	<50	118
Potassium (K)	µg/L (ppb)	370	360	370	370	370	<500	<0.5	<500
Selenium (Se)	µg/L (ppb)	<1	<1	<1	<1	<1	<10	<10	<0.8
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	100	90	100	90	100	<50	<50	30
Silver (Ag)	µg/L (ppb)	0.01	0.01	0.01	0.01	0.01	<0.2	<0.2	<0.2
Sodium (Na)	µg/L (ppb)	420	410	410	410	420	<2,000	<2,000	<500
Strontium (Sr)	µg/L (ppb)	6.1	6.1	6.1	6.2	6.1	-	-	-

Table I.II-1 Historical Water Quality Sampling Data from the Local Study Area (1995-2005) (continued)

Parameter	Units	N16 Lake	N16 Lake	N16 Lake	N16 Lake	N16 Lake	N16 Lake	N16 Lake	N16 Lake
		18-Jul-99	18-Jul-99	18-Jul-99	18-Jul-99	18-Jul-99	09-Aug-04	09-Aug-04	03-Aug-05
		4.0 m	6.0 m	8.0 m	11.0 m	13.0 m	0.5 m	8.0 m	0 + 7 m
Thallium (Tl)	µg/L (ppb)	0.05	0.05	0.05	0.05	0.05	<0.05	<0.05	<0.05
Tin (Sn)	µg/L (ppb)	0.1	0.1	0.1	0.1	0.1	-	-	-
Titanium (Ti)	µg/L (ppb)	10	10	10	10	10	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	0.01	0.01	0.01	0.01	0.01	<0.05	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	<1	<1	<1	<1	<1	0.1	<0.1	0.3
Zinc (Zn)	µg/L (ppb)	<1	<1	<1	<1	<1	4	2	9
Dissolved Metals									
Aluminum (Al)	µg/L (ppb)	5	5	5	5	5	<10	13	5
Antimony (Sb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1
Arsenic (As)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Barium (Ba)	µg/L (ppb)	2.06	2	2.05	2.05	2.04	<3	<3	<3
Beryllium (Be)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	0.1
Bismuth (Bi)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-
Boron (B)	µg/L (ppb)	1	1	1	1	1	<4	<4	<4
Cadmium (Cd)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.13
Calcium (Ca)	µg/L (ppb)	930	950	970	940	940	1,060	1,130	1,040
Chromium (Cr)	µg/L (ppb)	0.5	0.5	0.5	0.5	0.5	<0.4	<0.4	<0.4
Cobalt (Co)	µg/L (ppb)	0.1	0.1	0.1	0.1	0.1	<0.05	<0.05	0.09
Copper (Cu)	µg/L (ppb)	0.5	0.4	0.5	0.5	0.61	<2	<2	<1
Iron (Fe)	µg/L (ppb)	<30	<30	<30	<30	<30	<20	27	20
Lead (Pb)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	0.08	<0.05	<0.05	<0.05
Lithium (Li)	µg/L (ppb)	<1	<1	<1	<1	<1	-	-	-
Magnesium (Mg)	µg/L (ppb)	384	377	382	387	383	490	550	<500
Manganese (Mn)	µg/L (ppb)	0.26	0.25	0.24	0.22	0.5	<0.5	2.9	<2
Mercury (Hg)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	<0.01	<1	<1	<0.1
Molybdenum (Mo)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.3	<0.3	<0.3
Nickel (Ni)	µg/L (ppb)	0.2	0.2	0.2	0.2	0.2	0.2	0.5	0.7
Phosphorus (P)	µg/L (ppb)	<300	<300	<300	<300	<300	<5	<5	<5
Potassium (K)	µg/L (ppb)	370	360	360	360	370	410	410	<500
Selenium (Se)	µg/L (ppb)	<1	<1	<1	<1	<1	<2	<2	<0.4
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	90	90	90	80	80	65	91	40
Silver (Ag)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05
Sodium (Na)	µg/L (ppb)	420	410	420	420	430	<1,000	<1,000	600
Strontium (Sr)	µg/L (ppb)	6.1	5.9	6	6.1	6	-	-	-
Thallium (Tl)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
Tin (Sn)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-
Titanium (Ti)	µg/L (ppb)	<10	<10	<10	<10	<10	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	<1	<1	<1	<1	<1	<0.5	<0.5	<0.5
Zinc (Zn)	µg/L (ppb)	1	3	4	4	4	2	3	3

(a) Data from JWEL was assumed to be conductivity since it did not specify in the report to be specific conductivity.

(b) Data from JWEL did not specify whether TDS was calculated or filterable.

(c) Sampling depth. This note applies to all subsequent columns.

(d) No precise date provided in the original report.

Table I.II-2 Sediment Quality Results for Surveyed Lakes in the Local Study Area (2004-2005)

Parameter	Units	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	Kennady Lake	N16 Lake	N16 Lake	Lake 410	Kirk Lake
		K1	K2	K3	K3	K3	K3	K3	K4	K5				
		10-Aug-04	4-Aug-04	5-Aug-04	06-Aug-05	06-Aug-05	06-Aug-05	06-Aug-05	8-Aug-04	5-Aug-04	07-Aug-04	07-Aug-04	9-Aug-04	02-Aug-05
		Depth: 14.5 m	Depth: 11 m	Depth: 18 m	Depth: 6 m	Depth: 8 m	Depth: 11 m	Depth: 14m	Depth: 11.1-12.4 m	Depth: 10 m	Depth: 7.4 m	Depth: 8.5-9.0 m	Depth: 4.1 m	Depth: 4 m
Texture and Carbon Content														
Sand	%	46	70	50	79	78	71	75	60	54	28	80	62	61
Silt	%	41	28	40	15	19	23	19	34	40	64	18	28	35
Clay	%	14	2	10	5	3	5	5	6	6	8	2	10	4
Calcium Carbonate	%	0.4	0.2	0.5	0.2	0.2	0.4	0.3	0.6	0.1	0.2	0.1	0.4	0.2
Inorganic Carbon, Total (TIC)	%	1.7	0.4	0.5	0.5	0.5	1.1	1.3	1.1	0.3	0.2	1.7	2	3
Organic Carbon, Total (TOC)	%	7	8	10	7	5	10	12	10	13	0.5	8	17	0.7
Total Carbon	%	9	8	10	8	5	11	14	11	13	0.7	6	20	4
Nutrients and Organics														
Nitrate	µg/g	<0.5	0.7	0.6	-	-	-	-	<0.5	<0.5	<0.5	0.9	<0.5	-
Phosphate	µg/g	73	85	148	-	-	-	-	82.4	20.6	83.4	17.9	74.6	-
Petroleum Hydrocarbons, Total (TPH)	µg/g	1,260	-	1,790	628	675	753	732	1640	2290	117	125	3030	583
Total Metals														
Aluminum	µg/g	22,100	12,300	18,900	12,100	20,500	17,800	18,000	18,400	18,600	10,900	11,200	10,300	10,500
Arsenic	µg/g	9	4	9	6	11	8	9	7	7	3	3	4	3
Barium	µg/g	88	91	66	65	127	94	131	67	66	56	74	63	83
Cadmium	µg/g	0.6	0.4	0.4	0.5	1	0.6	0.7	0.4	0.3	<0.2	0.4	0.3	<0.2
Calcium	µg/g	4,380	2,700	3,590	2,900	4,470	3,960	4,370	3,550	4,070	1,810	2,490	5,030	2,650
Chromium	µg/g	33	29	29	25	45	34	40	28	28	22	27	22	35
Cobalt	µg/g	18	10	18	12	34	13	22	17	19	9	9	17	9
Copper	µg/g	69	57	62	38	77	74	84	59	65	22	53	59	31
Iron	µg/g	69,500	29,600	68,100	33,100	55,800	44,800	36,000	58,400	67,600	18,100	23,900	26,300	16,400
Lead	µg/g	5	3	5	1.3	3	0.9	1	4	5	3	2	3	2
Magnesium	µg/g	5,060	3,300	4,360	3,050	6,110	4,060	5,840	4,360	4,180	4,930	3,420	3,470	5,130
Manganese	µg/g	525	234	394	300	646	348	638	324	287	174	217	209	167
Mercury	µg/g	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Molybdenum	µg/g	6	4	5	4	7	6	-	5	5	1.2	3	3	0.9
Nickel	µg/g	33	29	27	31	80	33	57	26	28	26	33	41	27
Phosphorus	µg/g	2,450	1,390	2,040	1,180	2,000	1,950	2,160	1,630	1,470	458	997	839	642
Potassium	µg/g	2,000	150	1,710	1,460	2,790	1,910	2,580	1,660	1,700	2,190	1,580	1,190	2,670
Selenium	µg/g	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	1.3	0.5	<0.5	<0.5	<0.5	0.6	<0.5
Sodium	µg/g	150	119	132	103	166	139	222	133	145	113	127	167	150
Thallium	µg/g	<0.5	<0.5	<0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Vanadium	µg/g	47	35	37	35	59	52	46	35	38	21	31	24	34
Zinc	µg/g	157	146	103	130	272	137	169	99.9	96.9	44.3	167	76.5	66

Table I.II-3 Summary of Water Quality during Under Ice Conditions in the Upper Lockart River Watershed, 1999

Parameter	Units	Courageous Lake	Lac Capot Blanc	MacKay Lake at King Outflow	MacKay Lake at Snake River Outflow	MacKay Outflow	Munn Lake	Undine Lake
		11-Mar-99	08-Mar-99	11-Mar-99	08-Mar-99	10-Mar-99	08-Mar-99	11-Mar-99
		Lat / Long	Lat / Long	Lat / Long	Lat / Long	Lat / Long	Lat / Long	Lat / Long
		64.13 / -111.27	63.62 / -110.60	63.84 / -110.72	64.03 / -110.41	64.18 / -109.91	63.72 / -109.82	64.08 / -111.65
Field Measured								
pH	pH Units	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-
Temperature	°C	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-
Conventional Parameters and Major Ions								
pH	pH Units	6.6	6.7	6.8	6.7	6.7	6.7	6.5
Conductivity	µS/cm	22	16	16	21	21	19	14
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	6	5	5	6	6	4	4
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	25	13	23	12	17	<10	24
Total Suspended Solids (TSS)	mg/L (ppm)	<3	<3	<3	<3	<3	<3	<3
Turbidity	NTU	0.5	0.5	0.3	0.6	1.2	0.8	0.4
Calcium (Ca)	mg/L (ppm)	1.8	1.3	1.2	1.7	1.5	1.2	1
Magnesium (Mg)	mg/L (ppm)	0.7	0.5	0.5	0.7	0.7	0.7	0.5
Potassium (K)	mg/L (ppm)	0.6	0.3	0.5	0.6	0.6	0.6	0.4
Sodium (Na)	mg/L (ppm)	0.6	0.5	0.6	0.6	0.7	0.6	0.5
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	<0.2	0.3	0.3	0.2	0.3	0.2	<0.2
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	<2.25	3	3	3	2	2	3
Nutrients								
Ammonia	mg/L (ppm)	0.03	0.02	0.006	0.02	0.01	0.010	0.02
Nitrate	mg/L (ppm)	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	0.03	0.01	0.009	0.03	0.007	0.01	0.02
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	<0.002	0.006	0.002	0.007	0.008	0.004	0.003
Organics								
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-
Colour	TCU	<3.75	<5	<5	<5	<5	<5	8
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-

Table I.II-3 Summary of Water Quality during Under Ice Conditions in the Upper Lockart River Watershed, 1999 (continued)

Parameter	Units	Courageous Lake	Lac Capot Blanc	MacKay Lake at King Outflow	MacKay Lake at Snake River Outflow	MacKay Outflow	Munn Lake	Undine Lake
		11-Mar-99	08-Mar-99	11-Mar-99	08-Mar-99	10-Mar-99	08-Mar-99	11-Mar-99
		Lat / Long	Lat / Long	Lat / Long	Lat / Long	Lat / Long	Lat / Long	Lat / Long
		64.13 / -111.27	63.62 / -110.60	63.84 / -110.72	64.03 / -110.41	64.18 / -109.91	63.72 / -109.82	64.08 / -111.65
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-
Total Metals								
Aluminum (Al)	µg/L (ppb)	<10	<10	<10	<10	<10	<10	25
Antimony (Sb)	µg/L (ppb)	0.8	0.5	0.5	0.8	0.6	0.7	0.5
Arsenic (As)	µg/L (ppb)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Barium (Ba)	µg/L (ppb)	3	1.7	1.8	3	2	1.9	1.7
Beryllium (Be)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth (Bi)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	<0.01	0.05	0.03	<0.01	0.01	0.04	<0.01
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	0.5	<0.1	0.1	<0.1	0.08	0.08	<0.1
Cobalt (Co)	µg/L (ppb)	0.2	<0.1	<0.1	0.2	0.1	0.1	<0.1
Copper (Cu)	µg/L (ppb)	0.9	0.4	0.5	0.8	0.7	0.8	0.7
Iron (Fe)	µg/L (ppb)	35	10	<20	13	<20	<10	45
Lead (Pb)	µg/L (ppb)	0.2	0.36	1.485	0.6	0.2	0.2	0.2
Lithium (Li)	µg/L (ppb)	1.2	0.7	1	1.2	1.3	1.2	1
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	15	2	0.7	3	1.15	1.2	5
Mercury (Hg)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Molybdenum (Mo)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel (Ni)	µg/L (ppb)	0.6	0.1	0.4	1.1	1	0.5	0.4
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	<1	<1	<1	<1	<1	<1	<1
Silica, Reactive	µg/L (ppb)	420	377	171	416	272	218	876
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	7	8	7	8	8	7	6
Thallium (Tl)	µg/L (ppb)	<0.05	<0.05	<0.05	0.02	<0.05	<0.05	<0.05
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	<0.05	<0.05	<0.05	0.07	<0.05	0.07	0.1
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	0.06	<0.05	<0.05	<0.05	0.04	<0.05
Vanadium (V)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Table I.II-3 Summary of Water Quality during Under Ice Conditions in the Upper Lockart River Watershed, 1999 (continued)

Parameter	Units	Courageous Lake	Lac Capot Blanc	MacKay Lake at King Outflow	MacKay Lake at Snake River Outflow	MacKay Outflow	Munn Lake	Undine Lake
		11-Mar-99	08-Mar-99	11-Mar-99	08-Mar-99	10-Mar-99	08-Mar-99	11-Mar-99
		Lat / Long	Lat / Long	Lat / Long	Lat / Long	Lat / Long	Lat / Long	Lat / Long
		64.13 / -111.27	63.62 / -110.60	63.84 / -110.72	64.03 / -110.41	64.18 / -109.91	63.72 / -109.82	64.08 / -111.65
Zinc (Zn)	µg/L (ppb)	<5	<5	<5	<5	<5	<5	<5
Dissolved Metals								
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-

Source: Blais, Bart. Aquatic Quality Specialist, Department of Indian and Northern Affairs Canada. Yellowknife, NT. Personal Communication / Email Correspondence, 10 February, 2005.

Table I.II-4 Summary of Water Quality during Open Water Conditions in the Upper Lockhart River Watershed, 1993 - 1999

Parameter	Units	Back Lake	MacKay Lake Inflow	Mackay Lake	MacKay Outflow	Camsell Lake	Courageous Lake	Courageous Lake	Courageous Lake	Jolly Lake	Matthews Lake	Mackay Lake	Mackay Lake	Margaret Lake	Seahorse Lake	Snap Lake	Starfish Lake	Undine Near Outflow	Unnamed Lake	Unnamed Lake	Unnamed Lake	Warburton Bay	Zyena Lake
		23-Jul-93	06-Aug-99	25-Jul-93	06-Aug-99	06-Aug-99	24-Jul-93	24-Jul-93	06-Aug-99	18-Jul-94	24-Jul-93	24-Jul-93	20-Jul-93	12-Jul-94	06-Aug-99	21-Jul-93	06-Aug-99	24-Jul-93	21-Jul-93	20-Jul-93	24-Jul-93	20-Jul-93	23-Jul-93
		Lat. / Long.	Lat. / Long	Lat. / Long.	Lat. / Long	Lat. / Long	Lat. / Long.	Lat. / Long.	Lat. / Long	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long	Lat. / Long.	Lat. / Long	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.
		63.75 / -109.44	63.88 / -110.41	63.86 / -110.6	64.18 / -109.90	63.71 / -110.96	64.24 / -111.46	64.13 / -111.28	64.23 / -111.46	64.14 / -111.93	64.06 / -111.23	64.03 / -110.39	63.92 / -111.34	63.70 / -109.74	64.30 / -111.27	63.60 / -110.81	64.31 / -111.59	64.07 / -111.63	63.69 / -110.51	63.86 / -111.87	64.10 / -110.81	63.76 / -111.43	63.89 / -109.69
Field Measured																							
pH	pH Units	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions																							
pH	pH Units	6.6	6.6	6.6	6.6	6.8	6.6	6.7	6.5	6.6	7.0	6.6	6.5	6.8	6.6	6.7	6.5	6.5	6.6	6.7	6.4	6.6	6.4
Conductivity	µS/cm	17	15	15	53	19	15	15	15	13	45	15	15	18	17	14	13	12	15	12	13	16	14
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	3	4	3	8	6	2	2	4	4	8	2	3	4	4	2	3	1	2	2	1	3	1
Hardness, Total	mg/L (ppm)	6	5	4	5	6	14	5	5	4	15	5	5	5	4	4	4	4	5	3	5	6	5
Total Dissolved Solids (TDS)	mg/L (ppm)	22	10	12	17	15	21	19	19	34	28	14	16	19	14	13	12	22	17	25	26	17	23
Total Suspended Solids (TSS)	mg/L (ppm)	<3	<3	<3	5	<3	<3	<3	<3	<3	<3	<3	<3	<3	11	<3	16	<3	<3	<3	<3	<3	<3
Turbidity	NTU	0.5	0.7	0.4	0.6	0.7	0.4	0.5	1.1	1.6	0.5	0.5	0.5	0.4	0.5	0.6	0.9	0.6	0.5	0.5	0.6	0.5	0.4
Calcium (Ca)	mg/L (ppm)	1.3	1	1.1	1.1	1.6	1.2	1.3	1.2	1	5	1.2	1.1	0.9	0.9	1	0.88	1.1	1.2	0.7	1.2	1.3	1
Magnesium (Mg)	mg/L (ppm)	0.7	0.5	0.4	0.5	0.5	0.4	0.4	0.5	0.4	0.7	0.4	0.5	0.6	0.4	0.5	0.46	0.4	0.4	0.4	0.5	0.6	0.6
Potassium (K)	mg/L (ppm)	0.5	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.7	0.5	0.4	0.5	0.4	0.3	0.38	0.2	0.5	0.6	0.1	0.6	0.3
Sodium (Na)	mg/L (ppm)	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.3	1	0.5	0.3	0.4	0.4	0.5	0.43	0.4	0.5	0.3	0.4	0.3	0.4

Table I.II-4 Summary of Water Quality during Open Water Conditions in the Upper Lockhart River Watershed, 1993 – 1999 (continued)

Parameter	Units	Back Lake	MacKay Lake Inflow	Mackay Lake	MacKay Outflow	Camsell Lake	Courageous Lake	Courageous Lake	Courageous Lake	Jolly Lake	Matthews Lake	Mackay Lake	Mackay Lake	Margaret Lake	Seahorse Lake	Snap Lake	Starfish Lake	Undine Near Outflow	Unnamed Lake	Unnamed Lake	Unnamed Lake	Warburton Bay	Zyena Lake
		23-Jul-93	06-Aug-99	25-Jul-93	06-Aug-99	06-Aug-99	24-Jul-93	24-Jul-93	06-Aug-99	18-Jul-94	24-Jul-93	24-Jul-93	20-Jul-93	12-Jul-94	06-Aug-99	21-Jul-93	06-Aug-99	24-Jul-93	21-Jul-93	20-Jul-93	24-Jul-93	20-Jul-93	23-Jul-93
		Lat. / Long.	Lat. / Long	Lat. / Long.	Lat. / Long	Lat. / Long	Lat. / Long.	Lat. / Long.	Lat. / Long	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long	Lat. / Long.	Lat. / Long	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.
		63.75 / - 109.44	63.88 / - 110.41	63.86 / - 110.6	64.18 / - 109.90	63.71 / - 110.96	64.24 / - 111.46	64.13 / - 111.28	64.23 / - 111.46	64.14 / - 111.93	64.06 / - 111.23	64.03 / - 110.39	63.92 / - 111.34	63.70 / - 109.74	64.30 / - 111.27	63.60 / - 110.81	64.31 / - 111.59	64.07 / - 111.63	63.69 / - 110.51	63.86 / - 111.87	64.10 / - 110.81	63.76 / - 111.43	63.89 / - 109.69
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	0.5	<0.2	0.4	0.2	<0.2	0.3	0.4	<0.2	0.57	4	0.4	0.8	0.6	<0.2	0.7	<0.2	0.4	1.0	0.6	0.5	0.7	0.5
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	<3	<3	<3	<3	<2	3	<3	<3	<3	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Nutrients																							
Ammonia	mg/L (ppm)	0.003	0.03	<0.002	0.03	0.06	<0.002	0.01	-	0.01	<0.002	0.014	0.009	0.002	0.02	0.02	0.02	0.007	0.003	0.005	<0.002	0.008	<0.002
Nitrate	mg/L (ppm)	-	<0.008		0.005	<0.008	-	-	<0.008	-	-	-	-	-	<0.008	-	<0.008	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	<0.008		<0.008	<0.008	-	-	<0.008	-	-	-	-	-	<0.008	-	<0.008	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	<0.008	<0.008	<0.008	0.005	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	<0.002	-	<0.002	<0.002	-		0.003	-	-	-	-	-	<0.002	-	<0.002	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.003	0.004	0.002	0.06	<0.002	0.006	0.007	0.005	0.005	0.006	0.004	0.004	<0.002	<0.004	0.003	0.005	0.004	0.003	0.01	0.02	0.004	0.003
Organics																							
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Colour	TCU	<5	<5	<5	5	<5	<5	<5	5	<5	<5	<5	<5	<5	5	<5	10	<5	<5	<5	7	<5	<5
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	3	-	3	3	-	-	4	-	-	-	-	-	3	-	4	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	3	-	3	5	-	-	4	-	-	-	-	-	4	-	4.4	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Metals																							
Aluminum (Al)	µg/L (ppb)	6	<30	7	<30	<30	7	11	<30	9	<0.54	3	0.8	4	<30	3	<30	17	5	1.3	17	<0.5	5
Antimony (Sb)	µg/L (ppb)	0.003	0.6	0.2	0.4	<0.5	0.4	0.2	0.8	0.4	0.2	0.2	0.2	0.4	<0.5	0.0	<0.5	0.1	0.03	0.1	0.2	0.1	0.03
Arsenic (As)	µg/L (ppb)	<0.3	<0.2	<0.3	<0.2	<0.2	<0.3	<0.3	<0.2	<0.3	0.1	<0.3	<0.3	<0.3	<0.2	<0.3	<0.2	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3

Table I.II-4 Summary of Water Quality during Open Water Conditions in the Upper Lockhart River Watershed, 1993 – 1999 (continued)

Parameter	Units	Back Lake	MacKay Lake Inflow	Mackay Lake	MacKay Outflow	Camsell Lake	Courageous Lake	Courageous Lake	Courageous Lake	Jolly Lake	Matthews Lake	Mackay Lake	Mackay Lake	Margaret Lake	Seahorse Lake	Snap Lake	Starfish Lake	Undine Near Outflow	Unnamed Lake	Unnamed Lake	Unnamed Lake	Warburton Bay	Zyena Lake
		23-Jul-93	06-Aug-99	25-Jul-93	06-Aug-99	06-Aug-99	24-Jul-93	24-Jul-93	06-Aug-99	18-Jul-94	24-Jul-93	24-Jul-93	20-Jul-93	12-Jul-94	06-Aug-99	21-Jul-93	06-Aug-99	24-Jul-93	21-Jul-93	20-Jul-93	24-Jul-93	20-Jul-93	23-Jul-93
		Lat. / Long.	Lat. / Long	Lat. / Long.	Lat. / Long	Lat. / Long	Lat. / Long.	Lat. / Long.	Lat. / Long	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long	Lat. / Long.	Lat. / Long	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.
		63.75 / -109.44	63.88 / -110.41	63.86 / -110.6	64.18 / -109.90	63.71 / -110.96	64.24 / -111.46	64.13 / -111.28	64.23 / -111.46	64.14 / -111.93	64.06 / -111.23	64.03 / -110.39	63.92 / -111.34	63.70 / -109.74	64.30 / -111.27	63.60 / -110.81	64.31 / -111.59	64.07 / -111.63	63.69 / -110.51	63.86 / -111.87	64.10 / -110.81	63.76 / -111.43	63.89 / -109.69
Barium (Ba)	µg/L (ppb)	1.3	2	1.6	2	2	1.7	1.5	2	1.7	3	1.7	1.4	1.6	1	1.5	2	1.7	1.6	0.9	1.6	1.2	1.1
Beryllium (Be)	µg/L (ppb)	<0.1	<2	<0.1	<2	<2	<0.1	<0.1	<2	<0.1	<0.1	<0.1	<0.1	<0.1	<2	<0.1	<2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth (Bi)	µg/L (ppb)	<0.1	<0.4	<0.1	<0.4	<0.4	<0.1	<0.1	<0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.1	<0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	<0.3	-	<0.3	<0.3	-	-	<0.3	-	-	-	-	-	<0.3	-	<0.3	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	0.2	<3	0.2	<3	<3	0.3	0.3	<3	0.2	0.3	0.2	<0.2	<0.2	<3	<0.2	<3	0.2	<0.2	<0.2	0.3	<0.2	<0.2
Cobalt (Co)	µg/L (ppb)	<0.1	<1	<0.1	<1	<1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	0.5	<2	0.5	<2	<2	0.6	0.7	<2	0.6	0.4	0.4	0.3	0.8	<2	0.3	<2	0.5	0.2	0.3	0.8	0.2	0.4
Iron (Fe)	µg/L (ppb)	<20	<30	<20	20	<30	<20	<20	<30	<20	<20	<20	<20	<20	30	<20	50	25	<20	<20	65	<20	<20
Lead (Pb)	µg/L (ppb)	<0.2	<1	<0.2	<1	<1	<0.2	0.3	<1	0.4	<0.2	<0.2	<0.2	0.5	<1	<0.2	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Lithium (Li)	µg/L (ppb)	1.1	<3	1	<3	<3	0.9	0.8	<3	0.6	1.2	0.9	0.9	0.9	<3	0.7	<3	0.8	0.7	0.8	1.1	1	1.3
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	1.2	1	1.4	4	2	4	4	5	4	10	3	0.9	1	4	2.3	7	7	2	3	5	1.6	3
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	<0.02	-	-	-	-	<0.02	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)		<1	0.03	<1	<1	0.01	0.03	<1	0.03	0.03	0.01		0.04	<1	0.02	<1	0.03	-	-	0.02	-	-
Nickel (Ni)	µg/L (ppb)	0.5	<1	0.3	1	<1	0.5	0.4	<1	0.4	0.4	0.7	0.3	0.4	<1	<0.1	<1	0.3	<0.1	0.2	1.2	0.2	1.1
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	<1	<10	<1	<10	<10	<1	<1	<10	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	<1
Silica, Reactive	µg/L (ppb)	65	179	70	262	215	153	130	417	154	110	138	80	72	136	90	719	188	265	97	185	102	101
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	<0.1	<0.3	<0.1	<0.3	<0.3	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	6	6	6.8	6	8	5	5	5	4	17	6	6	6	5	6	5	4	8	5	5	6	5

Table I.II-4 Summary of Water Quality during Open Water Conditions in the Upper Lockhart River Watershed, 1993 – 1999 (continued)

Parameter	Units	Back Lake	MacKay Lake Inflow	Mackay Lake	MacKay Outflow	Camsell Lake	Courageous Lake	Courageous Lake	Courageous Lake	Jolly Lake	Matthews Lake	Mackay Lake	Mackay Lake	Margaret Lake	Seahorse Lake	Snap Lake	Starfish Lake	Undine Near Outflow	Unnamed Lake	Unnamed Lake	Unnamed Lake	Warburton Bay	Zyena Lake
		23-Jul-93	06-Aug-99	25-Jul-93	06-Aug-99	06-Aug-99	24-Jul-93	24-Jul-93	06-Aug-99	18-Jul-94	24-Jul-93	24-Jul-93	20-Jul-93	12-Jul-94	06-Aug-99	21-Jul-93	06-Aug-99	24-Jul-93	21-Jul-93	20-Jul-93	24-Jul-93	20-Jul-93	23-Jul-93
		Lat. / Long.	Lat. / Long	Lat. / Long.	Lat. / Long	Lat. / Long	Lat. / Long.	Lat. / Long.	Lat. / Long	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long	Lat. / Long.	Lat. / Long	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.
		63.75 / -109.44	63.88 / -110.41	63.86 / -110.6	64.18 / -109.90	63.71 / -110.96	64.24 / -111.46	64.13 / -111.28	64.23 / -111.46	64.14 / -111.93	64.06 / -111.23	64.03 / -110.39	63.92 / -111.34	63.70 / -109.74	64.30 / -111.27	63.60 / -110.81	64.31 / -111.59	64.07 / -111.63	63.69 / -110.51	63.86 / -111.87	64.10 / -110.81	63.76 / -111.43	63.89 / -109.69
Thallium (Tl)	µg/L (ppb)	<0.1	<0.4	<0.1	<0.4	<0.4	<0.1	<0.1	<0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.1	<0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	<3	-	<3	<3	1.6	0.5	<3	-	-	-	-	0.0006	<3	-	<3	-	-	-	0.4	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.1	<0.3	<0.1	<0.3	<0.3	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Vanadium (V)	µg/L (ppb)	<0.1	<1	<0.1	<1	<1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1
Zinc (Zn)	µg/L (ppb)	<0.5	<10	0.6	<10	<10	0.7	0.7	<10	<0.5	<0.5	0.5	<0.5	<0.5	<10	<0.5	<10	1.5	<0.5	<0.5	1.5	<0.5	<0.5
Dissolved Metals																							
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table I.II-4 Summary of Water Quality during Open Water Conditions in the Upper Lockhart River Watershed, 1993 – 1999 (continued)

Parameter	Units	Back Lake	MacKay Lake Inflow	Mackay Lake	MacKay Outflow	Camsell Lake	Courageous Lake	Courageous Lake	Courageous Lake	Jolly Lake	Matthews Lake	Mackay Lake	Mackay Lake	Margaret Lake	Seahorse Lake	Snap Lake	Starfish Lake	Undine Near Outflow	Unnamed Lake	Unnamed Lake	Unnamed Lake	Warburton Bay	Zyena Lake
		23-Jul-93	06-Aug-99	25-Jul-93	06-Aug-99	06-Aug-99	24-Jul-93	24-Jul-93	06-Aug-99	18-Jul-94	24-Jul-93	24-Jul-93	20-Jul-93	12-Jul-94	06-Aug-99	21-Jul-93	06-Aug-99	24-Jul-93	21-Jul-93	20-Jul-93	24-Jul-93	20-Jul-93	23-Jul-93
		Lat. / Long.	Lat. / Long	Lat. / Long.	Lat. / Long	Lat. / Long	Lat. / Long.	Lat. / Long.	Lat. / Long	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long	Lat. / Long.	Lat. / Long	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.
		63.75 / - 109.44	63.88 / - 110.41	63.86 / - 110.6	64.18 / - 109.90	63.71 / - 110.96	64.24 / - 111.46	64.13 / - 111.28	64.23 / - 111.46	64.14 / - 111.93	64.06 / - 111.23	64.03 / - 110.39	63.92 / - 111.34	63.70 / - 109.74	64.30 / - 111.27	63.60 / - 110.81	64.31 / - 111.59	64.07 / - 111.63	63.69 / - 110.51	63.86 / - 111.87	64.10 / - 110.81	63.76 / - 111.43	63.89 / - 109.69
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sources: Blais, Bart. Aquatic Quality Specialist, Department of Indian and Northern Affairs Canada. Yellowknife, NT. Personal Communication / Email Correspondence, 10 February, 2005. Puznicki, W.S. 1996. An Overview of Lake Water Quality in the Slave Lake Structural Province Area, Northwest Territories. Water Resources Division, Natural Resources and Environmental Directorate. Prepared for the Department of Indian and Northern Affairs Canada. Gatineau, Québec.

Table I.II-5 Summary of Water Quality during Under Ice Conditions in the Lower Lockart River Watershed, 1999

Parameter	Units	Afreidi Lake	Aylmer Lake	Thonokeid Outflow	Kirk Lake	Ptarmigan Lake	Thonokeid Narrows
		10-Mar-99	10-Mar-99	10-Mar-99	10-Mar-99	10-Mar-99	10-Mar-99
		Lat / Long	Lat / Long	Lat / Long	Lat / Long	Lat / Long	Lat / Long
		64.29 / -109.32	64.08 / -109.21	64.11 / -108.89	63.67 / -109.13	63.55 / -107.52	64.04 / -107.79
Field Measured							
pH	pH Units	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-
Temperature	°C	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-
Conventional Parameters and Major Ions							
pH	pH Units	6.5	6.6	6.7	6.5	6.7	6.6
Conductivity	µS/cm	22	22	18	29	15	16
Conductivity, Specific	µS/cm	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	5	6	4	9	4	4
Hardness, Total	mg/L (ppm)	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	18	20	24	38	25	35
Total Suspended Solids (TSS)	mg/L (ppm)	<3	<3	<3	3	3.2	3
Turbidity	NTU	1.2	1.2	1.1	1.5	0.4	0.7
Calcium (Ca)	mg/L (ppm)	1.3	1.5	1	1.9	1	1.1
Magnesium (Mg)	mg/L (ppm)	1	0.7	0.6	1	0.5	0.6
Potassium (K)	mg/L (ppm)	0.7	0.6	0.5	0.8	0.5	0.5
Sodium (Na)	mg/L (ppm)	0.6	0.7	0.5	1	0.5	0.6
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-
Chloride	mg/L (ppm)	<2	<2	<0.2	0.4	0.12	<0.2
Fluoride	mg/L (ppm)	-	-	-	-	-	-
Sulphate	mg/L (ppm)	4	2.75	<3	3.5	<3	<3
Nutrients							
Ammonia	mg/L (ppm)	0.02	0.01	0.01	0.05	0.01	0.01
Nitrate	mg/L (ppm)	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	0.01	0.02	0.01	0.02	0.01	0.02
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-
Phosphate	mg/L (ppm)	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.006	0.006	0.006	0.008	0.003	0.005
Organics							
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-
Colour	TCU	<5	<5	<5	10	<5	<5
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-

Table I.II-5 Summary of Water Quality during Under Ice Conditions in the Lower Lockart River Watershed, 1999 (continued)

Parameter	Units	Afreidi Lake	Aylmer Lake	Thonokeid Outflow	Kirk Lake	Ptarmigan Lake	Thonokeid Narrows
		10-Mar-99	10-Mar-99	10-Mar-99	10-Mar-99	10-Mar-99	10-Mar-99
		Lat / Long	Lat / Long	Lat / Long	Lat / Long	Lat / Long	Lat / Long
		64.29 / -109.32	64.08 / -109.21	64.11 / -108.89	63.67 / -109.13	63.55 / -107.52	64.04 / -107.79
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-
Total Metals							
Aluminum (Al)	µg/L (ppb)	<10	<10	<10	15	<10	<10
Antimony (Sb)	µg/L (ppb)	0.5	0.6	0.6	0.5	0.5	0.5
Arsenic (As)	µg/L (ppb)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Barium (Ba)	µg/L (ppb)	2	3	1.9	4	2	2
Beryllium (Be)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth (Bi)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Boron (B)	µg/L (ppb)	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	<0.01	<0.01	0.008	0.008	<0.01	<0.01
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	0.07	0.2	0.5	0.3	0.1	0.2
Cobalt (Co)	µg/L (ppb)	0.07	0.08	0.08	0.2	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	0.8	0.8	0.6	1.2	0.5	0.5
Iron (Fe)^{O}	µg/L (ppb)	<20	20	<20	105	<20	<20
Lead (Pb)	µg/L (ppb)	0.3	0.5	0.3	0.5	0.1	0.3
Lithium (Li)	µg/L (ppb)	2	1.5	1.1	1.9	1	1.2
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	2	2.4	0.9	21	0.56	0.8
Mercury (Hg)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Molybdenum (Mo)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel (Ni)	µg/L (ppb)	0.7	1.1	0.6	1	0.5	0.7
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	<1	<1	<1	<1	<1	<1
Silica, Reactive	µg/L (ppb)	370	339	122	1175	121	111
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	7	9	6	12	6	6
Thallium (Tl)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	0.04	0.05	<0.05	0.145	<0.05	<0.05
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Vanadium (V)	µg/L (ppb)	<0.1	<0.1	<0.1	0.08	<0.1	<0.1

Table I.II-5 Summary of Water Quality during Under Ice Conditions in the Lower Lockart River Watershed, 1999 (continued)

Parameter	Units	Afreidi Lake	Aylmer Lake	Thonokeid Outflow	Kirk Lake	Ptarmigan Lake	Thonokeid Narrows
		10-Mar-99	10-Mar-99	10-Mar-99	10-Mar-99	10-Mar-99	10-Mar-99
		Lat / Long	Lat / Long	Lat / Long	Lat / Long	Lat / Long	Lat / Long
		64.29 / -109.32	64.08 / -109.21	64.11 / -108.89	63.67 / -109.13	63.55 / -107.52	64.04 / -107.79
Zinc (Zn)	µg/L (ppb)	<5	<5	<5	<5	<5	<5
Dissolved Metals							
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-

Source: Blais, Bart. Aquatic Quality Specialist, Department of Indian and Northern Affairs Canada. Yellowknife, NT. Personal Communication / Email Correspondence, 10 February, 2005.
Notes: a = Lake Identifier. See Figure I2-4 for the location.

Table I.II-6 Summary of Water Quality during Open Water Conditions in the Lower Lockhart River Watershed, 1993 - 1999

Parameter	Units	Afridi Lake	Afridi Lake	Aylmer Lake	Aylmer Lake	Aylmer Lake	Aylmer Lake	Laverty Lake	Taylor Lake	Thonokeid Lake	Thonokeid Lake	Thonokeid Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake
		25-Jul-93	06-Aug-99	25-Jul-93	25-Jul-93	25-Jul-93	06-Aug-99	12-Jul-94	23-Jul-93	06-Aug-99	06-Aug-99	06-Aug-99	23-Jul-93	23-Jul-93	25-Jul-93	23-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93
		Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.
		64.37 / -109.25	64.28 / -109.32	64.39 / -108.47	64.17 / -108.12	64.10 / -108.93	64.11 / -108.89	63.95 / -108.66	63.78 / -108.64	64.41 / -109.64	64.47 / -109.85	64.30 / -109.55	63.94 / -108.19	64.30 / -107.58	64.24 / -109.49	64.14 / -107.93	63.74 / -107.52	62.89 / -108.73	63.55 / -107.69	63.57 / -107.72	63.58 / -107.76
Field Measured																					
pH	pH Units	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Temperature	°C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Conventional Parameters and Major Ions																					
pH	pH Units	6.5	6.5	6.5	6.3	6.5	6.6	6.7	6.5	6.5	6.5	6.5	6.6	6.2	6.4	6.4	6.5	7.7	6.6	6.6	6.6
Conductivity	µS/cm	13	13	14	11	14	34	14	12	13	13	13	12	10	10	11	12	71	13	13	12
Conductivity, Specific	µS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	1.4	3	2	0.4	1.8	6	4	1.4	3	3	3	1.9	<0.3	1.4	0.9	1.5	31	1.5	1.5	1.3
Hardness, Total	mg/L (ppm)	3	4	4	3	4	4	4	4	4	4	4	4	2	3	4	4	34	4	3	3
Total Dissolved Solids (TDS)	mg/L (ppm)	-	13	10	<10	11	19	19	24	20	16	13	29	16	13	21	13	53	12	11	11
Total Suspended Solids (TSS)	mg/L (ppm)	<3	3	<3	<3	4	5	<3	<3	8	3	4	<3	<3	<3	<3	<3	<3	<3	<3	<3
Turbidity	NTU	0.5	0.7	0.4	0.4	0.5	0.6	0.9	0.5	0.8	0.4	1	0.5	0.4	0.4	0.5	0.6	0.5	0.7	0.6	0.6
Calcium (Ca)	mg/L (ppm)	0.6	0.7	0.8	0.5	0.8	0.9	0.9	1	0.8	0.6	0.7	1	0.3	0.5	1	1	7	0.7	0.4	0.5
Magnesium (Mg)	mg/L (ppm)	0.4	0.6	0.4	0.4	0.4	0.5	0.4	0.4	0.6	0.5	0.5	0.4	0.3	0.3	0.4	0.5	4	0.5	0.4	0.4
Potassium (K)	mg/L (ppm)	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.2	0.5	0.5	0.5	0.1	0.3	0.4	0.2	0.4	1.5	0.6	0.2	0.1
Sodium (Na)	mg/L (ppm)	0.4	0.4	0.4	0.3	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.3	0.4	1.3	0.6	0.5	0.4
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table I.II-6 Summary of Water Quality during Open Water Conditions in the Lower Lockhart River Watershed, 1993 - 1999 (continued)

Parameter	Units	Afridi Lake	Afridi Lake	Aylmer Lake	Aylmer Lake	Aylmer Lake	Aylmer Lake	Laverty Lake	Taylor Lake	Thonokeid Lake	Thonokeid Lake	Thonokeid Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake
		25-Jul-93	06-Aug-99	25-Jul-93	25-Jul-93	25-Jul-93	06-Aug-99	12-Jul-94	23-Jul-93	06-Aug-99	06-Aug-99	06-Aug-99	23-Jul-93	23-Jul-93	25-Jul-93	23-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93
		Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.
		64.37 / -109.25	64.28 / -109.32	64.39 / -108.47	64.17 / -108.12	64.10 / -108.93	64.11 / -108.89	63.95 / -108.66	63.78 / -108.64	64.41 / -109.64	64.47 / -109.85	64.30 / -109.55	63.94 / -108.19	64.30 / -107.58	64.24 / -109.49	64.14 / -107.93	63.74 / -107.52	62.89 / -108.73	63.55 / -107.69	63.57 / -107.72	63.58 / -107.76
Chloride	mg/L (ppm)	0.3	<0.2	0.4	0.4	0.4	<0.2	0.6	0.4	<0.2	0.2	<0.2	0.3	0.3	0.3	0.3	0.5	0.8	0.6	0.6	0.6
Fluoride	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulphate	mg/L (ppm)	-	<3	-	-	-	<3	-	-	<3	<3	<3	-	-	-	-	-	-	-	-	-
Nutrients																					
Ammonia	mg/L (ppm)	<0.002	0.03	0.02	0.004	<0.002	0.03	0.008	0.006	0.04	<0.005	0.03	0.002	<0.002	<0.002	<0.002	0.004	0.002	0.002	0.005	0.008
Nitrate	mg/L (ppm)	-	<0.008	-	-	-	<0.008	-	-	<0.008	<0.008	<0.008	-	-	-	-	-	-	-	-	-
Nitrite	mg/L (ppm)	-	<0.008	-	-	-	<0.008	-	-	<0.008	<0.008	<0.008	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	<0.008	<0.008	0.04	<0.008	<0.008	<0.008	<0.008	0.05	<0.008	<0.008	<0.008	-	-	<0.008	<0.008	<0.008	0.05	<0.008	<0.008	<0.008
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphate	mg/L (ppm)		<0.002				<0.002			<0.002	<0.002	<0.002	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.002	<0.004	0.003	0.003	0.002	0.004	0.003	0.014	0.004	0.004	0.005	-	-	-	-	-	-	-	-	-
Organics																					
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Colour	TCU	5	5	5	<5	<5	5	7	<5	5	5	5	<5	<5	5	<5	<5	7	<5	<5	<5
Oil and Grease	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	3	-	-	-	3	-	-	3	3	3	-	-	-	-	-	-	-	-	-

Table I.II-6 Summary of Water Quality during Open Water Conditions in the Lower Lockhart River Watershed, 1993 - 1999 (continued)

Parameter	Units	Afridi Lake	Afridi Lake	Aylmer Lake	Aylmer Lake	Aylmer Lake	Aylmer Lake	Laverty Lake	Taylor Lake	Thonokeid Lake	Thonokeid Lake	Thonokeid Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake
		25-Jul-93	06-Aug-99	25-Jul-93	25-Jul-93	25-Jul-93	06-Aug-99	12-Jul-94	23-Jul-93	06-Aug-99	06-Aug-99	06-Aug-99	23-Jul-93	23-Jul-93	25-Jul-93	23-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93
		Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.
		64.37 / - 109.25	64.28 / - 109.32	64.39 / - 108.47	64.17 / - 108.12	64.10 / - 108.93	64.11 / - 108.89	63.95 / - 108.66	63.78 / - 108.64	64.41 / - 109.64	64.47 / - 109.85	64.30 / - 109.55	63.94 / - 108.19	64.30 / - 107.58	64.24 / - 109.49	64.14 / - 107.93	63.74 / - 107.52	62.89 / - 108.73	63.55 / - 107.69	63.57 / - 107.72	63.58 / - 107.76
Organic Carbon, Total (TOC)	mg/L (ppm)	-	3	-	-	-	3	-	-	3	3	3	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Metals																					
Aluminum (Al)	µg/L (ppb)	6	<30	7	9	9	<30	16	6	<30	<30	<30	1	1	7	4	11	<0.5	5	4	5
Antimony (Sb)	µg/L (ppb)	0.2	0.5	0.2	0.2	0.2	<0.5	0.4	0.02	<0.5	<0.5	<0.5	0.02	0.03	0.2	0.005	0.02	-	0.01	0.03	0.04
Arsenic (As)	µg/L (ppb)	<0.3	<0.2	<0.3	0.6	<0.3	<0.2	<0.3	<0.3	<0.2	<0.2	<0.2	<0.3	<0.3	<0.3	<0.3	<0.3	0.3	<0.3	<0.3	<0.3
Barium (Ba)	µg/L (ppb)	1.2	1	1.7	1.4	1.5	2	2	1.8	2	2	2	1.1	0.5	1.1	1.3	2	5	1.2	1.2	1
Beryllium (Be)	µg/L (ppb)	<0.1	<2	<0.1	<0.1	<0.1	<2	<0.1	<0.1	<2	<2	<2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth (Bi)	µg/L (ppb)	<0.1	<0.4	<0.1	<0.1	<0.1	<0.4	<0.1	<0.1	<0.4	<0.4	<0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	<0.3	-	-	-	<0.3	-	-	<0.3	<0.3	<0.3	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	0.2	<3	0.3	<0.2	0.2	<3	<0.2	<0.2	<3	<3	<3	<0.2	<0.2	0.2	<0.2	<0.2	0.5	<0.2	<0.2	<0.2
Cobalt (Co)	µg/L (ppb)	<0.1	<1	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper (Cu)	µg/L (ppb)	0.6	<2	0.6	0.5	0.7	<2	0.5	0.3	<2	<2	<2	0.2	0.2	0.6	0.3	0.4	0.2	0.2	0.3	0.2
Iron (Fe)	µg/L (ppb)	<20	<30	<20	<20	<20	20	20	<20	<30	<30	<30	<20	<20	<20	<20	28	<20	28	24	28
Lead (Pb)	µg/L (ppb)	0.2	<1	<0.2	<0.2	<0.2	<1	0.4	<0.2	<1	<1	<1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Lithium (Li)	µg/L (ppb)	1.2	<3	1.1	0.9	1.1	<3	0.8	0.8	<3	<3	<3	0.6	0.7	1.4	0.7	0.6	0.5	0.5	0.5	0.5
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	5	2	1.3	3	2	3	3	3	3	3	3	3	2	2	4	4	0.7	7	6	5

Table I.II-6 Summary of Water Quality during Open Water Conditions in the Lower Lockhart River Watershed, 1993 - 1999 (continued)

Parameter	Units	Afridi Lake	Afridi Lake	Aylmer Lake	Aylmer Lake	Aylmer Lake	Aylmer Lake	Laverty Lake	Taylor Lake	Thonokeid Lake	Thonokeid Lake	Thonokeid Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake
		25-Jul-93	06-Aug-99	25-Jul-93	25-Jul-93	25-Jul-93	06-Aug-99	12-Jul-94	23-Jul-93	06-Aug-99	06-Aug-99	06-Aug-99	23-Jul-93	23-Jul-93	25-Jul-93	23-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93
		Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.
		64.37 / -109.25	64.28 / -109.32	64.39 / -108.47	64.17 / -108.12	64.10 / -108.93	64.11 / -108.89	63.95 / -108.66	63.78 / -108.64	64.41 / -109.64	64.47 / -109.85	64.30 / -109.55	63.94 / -108.19	64.30 / -107.58	64.24 / -109.49	64.14 / -107.93	63.74 / -107.52	62.89 / -108.73	63.55 / -107.69	63.57 / -107.72	63.58 / -107.76
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	0.03	<1	0.02	-	0.02	<1	0.04	0.002	<1	<1	<1	-	-	0.01	-	0.04	0.09	-	-	-
Nickel (Ni)	µg/L (ppb)	0.5	<1	0.6	0.5	0.7	<1	0.4	0.2	<1	<1	<1	<0.1	0.2	0.4	0.3	0.6	0.1	<0.1	<0.1	<0.1
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	<1	<10	<1	<1	<1	<10	<1	<1	<10	<10	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1
Silica, Reactive	µg/L (ppb)	51	135	70	87	74	186	221	80	176	25	194	38	135	59	94	200	1220	81	76	78
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	<0.1	<0.3	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.3	<0.3	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	4	4	6	4	6	5	5	5	5	5	5	4	3	4	4	5	10	5	5	5
Thallium (Tl)	µg/L (ppb)	<0.1	<0.4	<0.1	<0.1	<0.1	<0.4	<0.1	<0.1	<0.4	<0.4	<0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	0.3	<3	0.3	0.3	0.4	<3	-		<3	<3	<3	-	-	0.3	-	-	-	0.2	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	<0.1	<0.3	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.3	<0.3	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1
Vanadium (V)	µg/L (ppb)	<0.1	<1	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1
Zinc (Zn)	µg/L (ppb)	0.8	<10	0.5	0.7	0.9	<10	<0.5	0.6	<10	<10	<10	<0.5	0.6	0.8	0.7	0.6	<0.5	<0.5	<0.5	<0.5
Dissolved Metals																					
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table I.II-6 Summary of Water Quality during Open Water Conditions in the Lower Lockhart River Watershed, 1993 - 1999 (continued)

Parameter	Units	Afridi Lake	Afridi Lake	Aylmer Lake	Aylmer Lake	Aylmer Lake	Aylmer Lake	Laverty Lake	Taylor Lake	Thonokeid Lake	Thonokeid Lake	Thonokeid Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake
		25-Jul-93	06-Aug-99	25-Jul-93	25-Jul-93	25-Jul-93	06-Aug-99	12-Jul-94	23-Jul-93	06-Aug-99	06-Aug-99	06-Aug-99	23-Jul-93	23-Jul-93	25-Jul-93	23-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93
		Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.
		64.37 / -109.25	64.28 / -109.32	64.39 / -108.47	64.17 / -108.12	64.10 / -108.93	64.11 / -108.89	63.95 / -108.66	63.78 / -108.64	64.41 / -109.64	64.47 / -109.85	64.30 / -109.55	63.94 / -108.19	64.30 / -107.58	64.24 / -109.49	64.14 / -107.93	63.74 / -107.52	62.89 / -108.73	63.55 / -107.69	63.57 / -107.72	63.58 / -107.76
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (Cu)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron (Fe)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silica, Reactive	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table I.II-6 Summary of Water Quality during Open Water Conditions in the Lower Lockhart River Watershed, 1993 - 1999 (continued)

Parameter	Units	Afridi Lake	Afridi Lake	Aylmer Lake	Aylmer Lake	Aylmer Lake	Aylmer Lake	Laverty Lake	Taylor Lake	Thonokeid Lake	Thonokeid Lake	Thonokeid Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake	Unnamed Lake
		25-Jul-93	06-Aug-99	25-Jul-93	25-Jul-93	25-Jul-93	06-Aug-99	12-Jul-94	23-Jul-93	06-Aug-99	06-Aug-99	06-Aug-99	23-Jul-93	23-Jul-93	25-Jul-93	23-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93
		Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.	Lat. / Long.
		64.37 / - 109.25	64.28 / - 109.32	64.39 / - 108.47	64.17 / - 108.12	64.10 / - 108.93	64.11 / - 108.89	63.95 / - 108.66	63.78 / - 108.64	64.41 / - 109.64	64.47 / - 109.85	64.30 / - 109.55	63.94 / - 108.19	64.30 / - 107.58	64.24 / - 109.49	64.14 / - 107.93	63.74 / - 107.52	62.89 / - 108.73	63.55 / - 107.69	63.57 / - 107.72	63.58 / - 107.76
Silicon (Si)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (Ti)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sources: Blais, Bart. Aquatic Quality Specialist, Department of Indian and Northern Affairs Canada. Yellowknife, NT. Personal Communication / Email Correspondence, 10 February, 2005. Puznicki, W.S. 1996. An Overview of Lake Water Quality in the Slave Lake Structural Province Area, Northwest Territories. Water Resources Division, Natural Resources and Environmental Directorate. Prepared for the Department of Indian and Northern Affairs Canada. Gatineau, Québec.

Notes: Highlighted cells indicate guideline exceedances.

a = Lake Identifier. See Figure I2-4 for the location.

Table I.II-7 Summary of Sediment Quality in the Upper Lockart River Watershed,1999

Parameter	Unit	Afreidi in middle	Afreidi in middle	Afreidi Lake in North End	Aylmer at Outram Outflow	Aylmer at Thonokoid Outflow	Aylmer at Thonokoid Outflow	Aylmer Lake at Northern Point	Aylmer Lake in Rocknest Bay	Aylmer Lake Near Thonokoid River Outflow
		10-Mar-99	04-Aug-99	25-Jul-93	10-Mar-99	10-Mar-99	09-Aug-99	25-Jul-93	25-Jul-93	25-Jul-93
		Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.
		64.29 / -109.31	64.28 / -109.31	64.37 / -109.25	64.07 / -109.2	64.1 / -108.89	64.1 / -108.89	64.39 / -108.46	64.16 / -108.11	64.09 / -108.93
Texture and Carbon Content										
Sand	%	-	61	-	-	-	50	-	-	-
Silt	%	-	37	-	-	-	45	-	-	-
Clay	%	-	3	-	-	-	6	-	-	-
Calcium Carbonate	%	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	%	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	%	15	1.4	-	17	11	3	-	-	-
Total Carbon	µg/g	-	-	-	-	-	-	-	-	-
Nutrients and Organics										
Nitrate	µg/g	-	-	-	-	-	-	-	-	-
Phosphate	µg/g	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	µg/g	-	-	-	-	-	-	-	-	-
Total Metals										
Aluminum	µg/g	1,3000	8,700	12,968	18,000	18,000	17,200	16,327	7,119	12,342
Arsenic	µg/g	4	3	8	14	3	10	6	4	11
Barium	µg/g	84	50	62	115	108	70	83	36	94
Cadmium	µg/g	0.4	<0.2	0.06	0.7	<0.2	1	-	-	0.6
Calcium	µg/g	2,100	-	962	4,200	2,600	-	770	334	1,322
Chromium	µg/g	31	23	31	35	40	41	39	17	41
Cobalt	µg/g	8	4	8	22	9	13	9	10	21
Copper	µg/g	50	20	42	56	52	56	25	13	69
Iron	µg/g	14,000	9,600	19,788	25,600	19,500	31,600	25,636	28,642	15,929
Lead	µg/g	84	83	3	47	16	5	4	1.9	4
Magnesium	µg/g	4,300	-	3,731	5,000	5,500	-	6,634	2,553	3,683
Manganese	µg/g	163	112	136	362	246	260	479	847	224
Mercury	µg/g	0.02	-	0.1	0.04	0.02	-	0.09	0.07	0.1
Molybdenum	µg/g	1.2	0.2	1.2	3	1.4	3	1	0.3	3
Nickel	µg/g	36	22	33	67	36	43	32	11	72
Phosphorus	µg/g	44	310	-	31	337	1,330	-	-	-
Potassium	µg/g	2,400	-	3,366	3,200	3,300	-	3,235	1,360	1,766
Selenium	µg/g	<20	<2	-	<20	<20	<2	-	-	-
Sodium	µg/g	500	-	80	600	600	-	137	83	66
Thallium	µg/g	<0.2	<0.2	0.2	0.2	<0.2	0.2	0.2	0.1	0.4
Vanadium	µg/g	26	17	28	39	38	40	32	17	42
Zinc	µg/g	69	24	145	142	64	134	77	79	27

Table I.II-7 Summary of Sediment Quality in the Upper Lockart River Watershed,1999 (continued)

Parameter	Unit	Back Lake Near Main Inflow	Barnston River	Barnston River	Bedford Creek	Bedford Creek	Between King and Lake of the Enemy Outflows on McKay Lake	Camsell Lake Outflow	Courageous Lake at North End	Courageous Lake at North End	Courageous Lake near Matthews Outflow	Courageous near Matthew's Lake Outflow
		22-Jul-93	22-Mar-99	09-Aug-99	22-Mar-99	09-Aug-99	25-Jul-93	04-Aug-99	24-Jul-93	04-Aug-99	24-Jul-93	10-Mar-99
		Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.
		63.74 / -109.43	62.93 / -110.2	62.93 / -110.2	62.91 / -109.68	62.91 / -109.68	63.85 / -110.6	63.71 / -110.95	64.24 / -111.46	64.23 / -111.46	64.13 / -111.28	64.13 / -111.27
Texture and Carbon Content												
Sand	%	-	-	41	-	43	-	94	-	62	-	-
Silt	%	-	-	46	-	46	-	6	-	34	-	-
Clay	%	-	-	13	-	11	-	0.3	-	3	-	-
Calcium Carbonate	%	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	%	-	-	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	%	-	3	1.7	3	1.8	-	39	-	18	-	9
Total Carbon	µg/g	-	-	-	-	-	-	-	-	-	-	-
Nutrients and Organics												
Nitrate	µg/g	-	-	-	-	-	-	-	-	-	-	-
Phosphate	µg/g	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	µg/g	-	-	-	-	-	-	-	-	-	-	-
Total Metals												
Aluminum	µg/g	32,806	30,000	13,800	24,000	7,300	8,780	10,800	16,379	15,200	10,177	15,000
Arsenic	µg/g	1.6	3	4	5	0.9	4	3	28	23	9	15
Barium	µg/g	123	225	137	222	63	53	87	65	73	58	91
Cadmium	µg/g	0.6	<0.2	0.2	<0.2	<0.2	0.1	0.2	0.3	0.4	-	0.3
Calcium	µg/g	1,484	3,600	-	4,500	-	2,788	-	1,482	-	1,291	2,200
Chromium	µg/g	46	37	26	30	12	25	30	38	38	33	33
Cobalt	µg/g	10	10	9	8	4	5	7	22	13	8	15
Copper	µg/g	71	21	13	23	6	29	33	57	60	40	36
Iron	µg/g	22,134	28,300	22,700	26,100	11,100	9764	20,200	24,449	22,100	13,410	32,200
Lead	µg/g	4	241	6	10	4	3	4	6	6	501	56
Magnesium	µg/g	6,275	7,500	-	8,600	-	3,790	-	4,021	-	3,882	4,500
Manganese	µg/g	160	529	1,780	423	188	80	388	309	337	148	562
Mercury	µg/g	0.02	0.03	-	0.01	-	0.7	-	0.1	-	0.2	0.04
Molybdenum	µg/g	0.8	0.4	0.4	0.2	<0.2	0.9	1.4	5	3	1	3
Nickel	µg/g	60	27	22	28	8	24	26	45	38	28	25
Phosphorus	µg/g	-	17	514	35	215	-	330	-	321	-	140
Potassium	µg/g	4,223	6,500	-	5,400	-	2,758	-	1,510	-	1,451	2,200
Selenium	µg/g	-	<20	<2	<20	<2	-	<2	-	<2	0.08	<20
Sodium	µg/g	129	700	-	500	-	89	-	74	-	80	500
Thallium	µg/g	0.2	0.3	<0.2	0.2	<0.2	0.09	<0.2	0.4	0.3	0.2	<0.2
Vanadium	µg/g	39	38	27	34	17	20	25	34	33	27	36
Zinc	µg/g	71	57	38	49	<20	111	50	58	83	92	69

Table I.II-7 Summary of Sediment Quality in the Upper Lockart River Watershed,1999 (continued)

Parameter	Unit	Hoarfrost River	Hoarfrost River	Jolly Lake in the Middle	Unnamed Lake North Lac Cabot Blanc	Unnamed Lake North of Clinton-Colden Lake	Unnamed Lake North of the Outrams	Unnamed Lake West of Ptarmigan Lake	Unnamed Lake West of Snake Lake	Unnamed Lake West of Snake Lake	Unnamed Lake West of Snake Lake	Unnamed Lake West of Snake Lake	Waldron River
		22-Mar-99	09-Aug-99	13-Jul-94	21-Jul-93	22-Jul-93	25-Jul-93	22-Jul-93	24-Jul-93	24-Jul-93	24-Jul-93	24-Jul-93	22-Mar-99
		Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.
		62.84 / -109.3	62.84 / -109.3	64.14 / -111.93	63.69 / -110.5	64.29 / -107.57	64.24 / -109.48	63.57 / -107.75	64.09 / -110.82	64.09 / -110.83	64.1 / -110.81	64.09 / -110.81	62.93 / -110.56
Texture and Carbon Content													
Sand	%	-	80	-	-	-	-	-	-	-	-	-	-
Silt	%	-	16	-	-	-	-	-	-	-	-	-	-
Clay	%	-	4	-	-	-	-	-	-	-	-	-	-
Calcium Carbonate	%	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	%	-	-	-	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	%	3	0.8	-	-	-	-	-	-	-	-	-	1.2
Total Carbon	µg/g	-	-	-	-	-	-	-	-	-	-	-	-
Nutrients and Organics													
Nitrate	µg/g	-	-	-	-	-	-	-	-	-	-	-	-
Phosphate	µg/g	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	µg/g	-	-	-	-	-	-	-	-	-	-	-	-
Total Metals													
Aluminum	µg/g	28,000	5,100	19,012	29,545	14,849	12,071	7,344	15,565	9,981	10,325	12,039	26,000
Arsenic	µg/g	5	0.5	49	2	4	13	4	28	11	11	15	5
Barium	µg/g	204	35	82	135	42	79	49	75	53	62	68	96
Cadmium	µg/g	<0.2	<0.2	0.05	0.4	0.07	0.8	-	0.1	-	-	0.03	<0.2
Calcium	µg/g	3,700	-	1,563	1,317	295	907	711	953	840	1,101	682	2,900
Chromium	µg/g	32	9	37	48	25	37	20	40	28	37	36	23
Cobalt	µg/g	8	3	25	12	4	17	5	19	13	10	18	6
Copper	µg/g	22	6	57	59	85	84	20	36	25	33	32	10
Iron	µg/g	27,000	10,800	53,295	32,765	28,428	16,661	16,392	36,042	18,914	15,722	20,392	15,200
Lead	µg/g	9	3	5	7	7	5	2	4	4	3	4	5
Magnesium	µg/g	10,200	-	4,028	6,357	3,245	3,810	2,603	5,174	3,369	4,039	4,348	5,100
Manganese	µg/g	464	106	3613	460	88	182	266	271	164	128	261	371
Mercury	µg/g	0.01	-	0.04	0.2	0.09	0.07	0.03	0.06	0.05	0.09	0.03	0.006
Molybdenum	µg/g	0.3	<0.2	4	4	4	4	1	2	1.1	1.8	3	0.3
Nickel	µg/g	25	6	32	44	35	78	14	42	27	32	45	16
Phosphorus	µg/g	18	160	-	-	-	-	-	-	-	-	-	41
Potassium	µg/g	6,400	-	1,783	3,379	1,753	2,322	858	2,271	1,661	1,810	1,799	3,200
Selenium	µg/g	<20	<2	0.5	1.2	0.3	-	-	-	-	0.06	-	<20
Sodium	µg/g	800	-	70	76	59	64	55	116	94	82	89	600
Thallium	µg/g	0.3	<0.2	0.2	0.2	0.07	0.4	0.06	0.2	0.2	0.2	0.3	<0.2
Vanadium	µg/g	35	13	36	39	21	36	20	39	28	32	37	25
Zinc	µg/g	54	<20	30	115	32	115	43	50	70	70	139	31

Source: Bart. Aquatic Quality Specialist, Department of Indian and Northern Affairs Canada. Yellowknife, NT. Personal Communication / Email Correspondence, 10 February, 2005.

Table I.II-8 Summary of Sediment Quality in the Lower Lockart River Watershed, 1999

Parameter	Unit	Kirk Lake	Laverty Lake Near Middle	Lockhart River at Great Slave	Matthews Lake at South End	McKay at Outflow of Lake of the Enemy	McKay at Snake River Outflow	McKay at Snake River Outflow	McKay Main Outflow	McKay Outflow #1	McKay Outflow #2	Munn Lake near Outflow	Ptarmigan
		10-Mar-99	12-Jul-94	11-Mar-99	24-Jul-93	04-Aug-99	24-Jul-93	08-Mar-99	10-Mar-99	04-Aug-99	04-Aug-99	08-Mar-99	10-Mar-99
		Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.
		63.67 / -109.13	63.95 / -108.66	62.78 / -108.94	64.06 / -111.22	63.88 / -110.4	64.03 / -110.38	64.03 / -110.41	64.18 / -109.9	64.17 / -109.9	64.17 / -109.9	63.71 / -109.82	63.54 / -107.51
Texture and Carbon Content													
Sand	%	-	-	-	-	83	-	-	-	62	71	-	-
Silt	%	-	-	-	-	16	-	-	-	35	27	-	-
Clay	%	-	-	-	-	0.6	-	-	-	3	2	-	-
Calcium Carbonate	%	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	%	-	-	-	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	%	13	-	1	-	28	-	12	14	12	16	15	9
Total Carbon	µg/g	-	-	-	-	-	-	-	-	-	-	-	-
Nutrients and Organics													
Nitrate	µg/g	-	-	-	-	-	-	-	-	-	-	-	-
Phosphate	µg/g	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	µg/g	-	-	-	-	-	-	-	-	-	-	-	-
Total Metals													
Aluminum	µg/g	15,000	12,925	9,000	11,879	18,500	10,629	16,000	17,000	15,100	14,200	31,000	18,000
Arsenic	µg/g	1.4	26	0.6	22	12	41	17	6	12	11	4	12
Barium	µg/g	101	322	62	59	92	46	87	101	83	85	205	139
Cadmium	µg/g	<0.2	-	<0.2	0.4	0.6	0.6	0.8	0.5	0.4	0.4	0.4	0.5
Calcium	µg/g	3,700	1,219	3,400	2,233	-	1,061	1,600	2,500	-	-	2,300	2,500
Chromium	µg/g	36	40	12	29	42	28	32	35	30	33	60	36
Cobalt	µg/g	9	79	4	10	15	27	45	15	18	16	24	12
Copper	µg/g	29	43	7	61	87	55	46	56	47	47	77	45
Iron	µg/g	15,400	17,6226	11,300	17,241	32,400	18,705	21,600	16,100	21,100	19900	35700	35300
Lead	µg/g	18	4	3	42	5	3	12	27	4	153	30	86
Magnesium	µg/g	6,900	4,721	4,100	2,729	-	2,765	3,800	4,500	-	-	10,400	6,300
Manganese	µg/g	171	17610	134	231	256	178	666	251	592	451	2,270	905
Mercury	µg/g	0.04	0.05	0.008	0.08	-	0.08	0.02	0.02	-	-	0.01	0.009
Molybdenum	µg/g	1	4	<0.2	2	5	4	3	2	2	1.9	4	2
Nickel	µg/g	30	44	9	38	51	68	70	48	48	48	79	54
Phosphorus	µg/g	61	-	35	-	209	-	58	62	478	510	17	74
Potassium	µg/g	3,700	2,205	2,200	1,112	-	1,133	2,100	3,000	-	-	7,400	3,100
Selenium	µg/g	<20	0.9	<20	0.1	<20	0.8	<20	<20	<2	<2	<20	<20
Sodium	µg/g	700	59	1000	61	-	73	500	600	-	-	400	500
Thallium	µg/g	<0.2	0.3	<0.2	0.2	<0.2	0.3	0.3	0.2	<0.2	<0.2	0.4	0.2
Vanadium	µg/g	34	38	21	28	37	28	33	32	29	29	51	39
Zinc	µg/g	73	44	23	46	129	54	111	107	72	72	112	115

Table I.II-8 Summary of Sediment Quality in the Lower Lockart River Watershed, 1999 (continued)

Parameter	Unit	Seahorse near Main Outflow	Snap Lake	Starfish near Main Outflow	Taylor Lake Near Middle	Thonokoid Lake Central	Thonokoid Lake South Near Main Outflow	Undine near Outflow	Undine near Outflow	Unnamed Lake East of Laverty Lake	Zyena Lake Near Inflow	Lac Cabot Blanc near Inflow
		04-Aug-99	21-Jul-93	04-Aug-99	22-Jul-93	04-Aug-99	04-Aug-99	24-Jul-93	11-Mar-99	22-Jul-93	22-Jul-93	08-Mar-99
		Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.	Lat./Long.
		64.3 / -111.27	63.59 / -110.81	64.31 / -111.58	63.78 / -108.64	64.41 / -109.63	64.29 / -109.54	64.07 / -111.62	64.07 / -111.64	63.93 / -108.19	63.89 / -109.69	63.62 / -110.59
Texture and Carbon Content												
Sand	%	46	-	52	-	14	34	-	-	-	-	-
Silt	%	48	-	46	-	67	50	-	-	-	-	-
Clay	%	7	-	1.9	-	19	16	-	-	-	-	-
Calcium Carbonate	%	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	%	-	-	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	%	14	-	1.4	-	4	1.5	-	13	-	-	30
Total Carbon	µg/g	-	-	-	-	-	-	-	-	-	-	-
Nutrients and Organics												
Nitrate	µg/g	-	-	-	-	-	-	-	-	-	-	-
Phosphate	µg/g	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons, Total (TPH)	µg/g	-	-	-	-	-	-	-	-	-	-	-
Total Metals												
Aluminum	µg/g	14,100	16,142	8,400	15,979	20,000	15,200	6,678	15,000	10,993	23,411	29,000
Arsenic	µg/g	10	1	55	0.6	23	8	11	22	1.1	21	2
Barium	µg/g	176	91	98	91	89	72	36	90	72	97	148
Cadmium	µg/g	0.4	0.3	0.7	0.2	0.2	<0.2	-	0.3	-	0.05	0.8
Calcium	µg/g	-	2293	-	1309	-	-	533	1,800	1,485	834	2400
Chromium	µg/g	28	30	17	30	40	33	19	33	25	43	34
Cobalt	µg/g	124	10	51	5	24	23	12	14	9	16	11
Copper	µg/g	62	93	15	42	42	26	17	36	23	62	81
Iron	µg/g	164,000	33,708	21,300	11,601	30,600	22,200	12,987	31,600	16,212	62,876	54,900
Lead	µg/g	4	5	4	6	5	42	2	6	4	4	31
Magnesium	µg/g	-	3,190	-	3,372	-	-	2,046	5,200	3,903	5773	4,600
Manganese	µg/g	21,200	195	8,010	122	3,600	580	145	531	363	1,158	1,310
Mercury	µg/g	-	0.6	-	0.1	-	-	0.03	0.05	0.09	0.2	0.03
Molybdenum	µg/g	7	11	3	0.8	7	1.2	0.9	3	0.5	2	10
Nickel	µg/g	93	31	66	27	46	39	12	24	30	54	33
Phosphorus	µg/g	1.8	-	33	-	507	464	-	60	-	-	31
Potassium	µg/g	-	1,793	-	1740	-	-	947	2,700	1,926	3,489	3,000
Selenium	µg/g	<2	-	<2	-	<2	<2	-	<20	-	-	<20
Sodium	µg/g	-	76	-	108	-	-	110	500	212	76	300
Thallium	µg/g	0.5	0.1	0.7	0.1	0.3	<0.2	0.1	<0.2	0.1	0.1	0.3
Vanadium	µg/g	31	27	17	27	37	29	20	35	27	37	35
Zinc	µg/g	112	-	84	75	63	53	133	71	81	80	167

Source: Blais, Bart. Aquatic Quality Specialist, Department of Indian and Northern Affairs Canada. Yellowknife, NT. Personal Communication / Email Correspondence, 10 February, 2005.

Table I.II-9 Historical Water Quality (1969-2004) in the Lockhart River at the Outlet of Artillery Lake (62.53.20.004 N, 108.28.18.984 W) (Station ID NW07RD0001)

Parameters	Units	1969		1970		1971	1972		1973		1974	1975	1976		
		12-Jun	18-Jul	16-Jul	06-Oct	13-Aug	26-Jun	20-Sep	02-Feb	31-May	11-Oct	11-Jul	21-Apr	22-Jul	30-Sep
		Open	Open	Open	Open	Open	Open	Open	Under Ice	Open	Under Ice	Open	Under Ice	Open	Open
Conventional Parameters and Major Ions															
pH	pH Units	6.7	6.7	7.0	7.0	7.3	6.9	6.4	6.9	6.9	6.9	7.0	6.8	7.2	7.1
Conductivity, Specific	µS/cm	16	14	14	19	17	17	15	14	17	15	11	17	15	15
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	2	<0.5	1	-	2	2	-	-	-	-
Alkalinity, Total	mg/L (ppm)	3.9	3.8	3.8	3.9	4.9	4.7	2.1	3.9	4.6	6.8	3.4	3.9	3.7	4
Hardness, Total	mg/L (ppm)	5.8	5.3	4.9	5.4	5.3	5.1	2.2	7	5.4	6.1	8.7	10.2	5.7	9.5
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity	NTU	0.5	0.8	1.3	0.8	1.8	0.9	3.7	0.4	0.5	0.3	1.2	2.7	1.7	2
Calcium	mg/L (ppm)	2.1	1.5	1.3	1.3	1.5	1.2	0.6	0.7	1.5	1.4	2.7	<1	1.2	2.7
Magnesium	mg/L (ppm)	-	-	-	-	-	-		-	-	-	-	-	-	-
Potassium	mg/L (ppm)	0.4	0.3	0.5	0.4	0.3	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.3
Sodium	mg/L (ppm)	0.5	0.4	0.6	0.4	0.5	<0.1	0.8	0.4	0.5	0.4	0.2	0.25	0.5	0.3
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	0.3	<0.1	0.3	0.4	0.6	0.6	0.3	0.5	0.4	0.4	0.3	0.4	0.5	0.25
Fluoride	mg/L (ppm)	<0.1	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	-	<0.05	-	0.02	<0.05	-	0.04
Sulphate	mg/L (ppm)	1.3	1.6	<1	<1	<1	1.3	1.6	2.9	<1	1.5	<1	1	1	<1
Nutrients															
Ammonia	mg/L (ppm)	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	0.014	0.007	0.007	0.009	<0.005	<0.001	0.05	<0.001	1	-	0.023	0.01	0.015	0.01
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	0.2	<0.5	1.28	<0.1	0.45
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-	<0.003	<0.005	0.005	0.005	<0.005
Phosphorus, Dissolved	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organics									-						
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	9.8	21.5	66	75
Colour	TCU	5	<5	<5	<5	<5	<5	5	5	<5	<5	20	5	<5	5
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	5	4	3	-	1	3	-	-	-	-
Total Metals													-		-
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	<50	<100	<100	-	-
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	2	<1	<1	1	<1
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	<15	<10	-	-	-

Table I.II-9 Historical Water Quality (1969-2004) in the Lockhart River at the Outlet of Artillery Lake (62.53.20.004 N, 108.28.18.984 W) (Station ID NW07RD0001) (continued)

Parameters	Units	1969		1970		1971	1972		1973		1974	1975	1976		
		12-Jun	18-Jul	16-Jul	06-Oct	13-Aug	26-Jun	20-Sep	02-Feb	31-May	11-Oct	11-Jul	21-Apr	22-Jul	30-Sep
		Open	Open	Open	Open	Open	Open	Open	Under Ice	Open	Under Ice	Open	Under Ice	Open	Open
Cobalt (Co)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	5	<1	<1	1	<1
Copper (Cu)	µg/L (ppb)	<10	<10	<10	<10	1	2	3	-	2	<1	1	3	15	1
Iron (Fe)	µg/L (ppb)	<1	<1	<1	20	80	10	<50	-	<50	<40	<50	<50	<50	<50
Lead (Pb)	µg/L (ppb)	<10	<10	<10	<10	<1	<1	<1	-	<1	5	<5	<5	<5	<5
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	<10	<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	300	<10
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	<0.1	<0.05	-	-	-
Nickel (Ni)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	3	<5	<5	<5	<5
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silica, Reactive	mg/L (ppm)	0.2	0.1	0.8	0.1	<0.1	0.1	0.3	0.2	0.2	0.1	0.1	0.15	<0.1	<0.1
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	<10	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (Zn)	µg/L (ppb)	<10	<10	<10	<10	5	22	3	-	-	2	7	<1	35	4
Dissolved Metals															
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table I.II-9 Historical Water Quality (1969-2004) in the Lockhart River at the Outlet of Artillery Lake (62.53.20.004 N, 108.28.18.984 W) (Station ID NW07RD0001) (continued)

Parameters	Units	1977				1978	1979		1980					1981	
		04-Apr	25-May	18-Aug	29-Sep	05-Sep	27-Jun	08-Aug	04-Feb	08-May	19-Jun	30-Jul	16-Sep	24-Jun	22-Jul
		Under Ice	Under Ice	Open	Open	Open	Open	Open	Under Ice	Under Ice	Open	Open	Open	Open	Open
Conventional Parameters and Major Ions															
pH	pH Units	6.8	7.1	7.2	7.7	6.7	6.7	7.1	7.0	7.5	6.9	6.6	7.3	6.6	7.0
Conductivity, Specific	µS/cm	14	14	14	15	16	15	14	16	19	13	13	17	13	21
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	2	1	-	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	3	5	<1	5	5	<10	<10	4	-	5	2	3	4	5
Hardness, Total	mg/L (ppm)	12	28	8	11	-	-	-	5	8	6	-	8	4	7
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-	7	-	8	-	7	7	8
Turbidity	NTU	5.5	2	5.5	1.6	0.2	3.7	<0.1	0.3	0.5	0.2	0.4	0.5	0.2	0.7
Calcium	mg/L (ppm)	3.7	8.2	2.4	4	0.8	1.8	0.9	1.2	1.5	1.5	-	1.8	1.1	1.7
Magnesium	mg/L (ppm)	-	-	-	-	0.4	0.8	0.8	0.5	1.1	0.5	-	0.8	0.4	0.6
Potassium	mg/L (ppm)	0.5	0.25	<0.1	0.48	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.3
Sodium	mg/L (ppm)	0.5	0.5	0.6	0.6	0.4	0.6	0.5	0.6	0.5	0.6	0.5	0.5	0.3	0.4
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-	4.9	-	6.1	2.4	3.7	4.9	5.7
Chloride	mg/L (ppm)	0.4	0.4	0.2	0.45	0.3	0.4	0.4	0.5	0.5	0.4	0.6	0.4	0.4	0.5
Fluoride	mg/L (ppm)	<0.01	0.02	0.023	0.026	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L (ppm)	1.6	1.4	<1	1.1	2	1.5	1.5	1	-	1	1	1	2	1
Nutrients															
Ammonia	mg/L (ppm)	-	-	-	-	-	-		-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	0.02	0.03	<0.01	0.01	<0.01	0.02	<0.01	0.02	0.01	0.01	0.03	<0.01	-	<0.01
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	0.9	1.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	<0.005	<0.003	0.042	<0.003	<0.003	<0.003	0.003	<0.003	0.005	0.007	<0.003	<0.003	<0.003	0.009
Phosphorus, Dissolved	mg/L (ppm)	-	-	-	-	<0.003	<0.003	0.003	<0.003	0.003	0.005	<0.003	<0.003	<0.003	0.006
Organics															
Oxygen Demand, Chemical (COD)	mg/L (ppm)	<10	<10	<10	<10	-	-	-	-	-	-	-	-	-	-
Colour	TCU	10	5	5	<5	<5	5	<5	<5	5	<5	10	10	5	5
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	-	-	-	-	2	2	2	2	2	2	2	1	2.3	2.4
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	1	3.5	-	-	-	-	-	-	-	-	-	-
Total Metals															
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-		-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	<50	-	<50	<50	<50	<50	<50	<50	<50	50	<50	<50	<50	<50
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	<1	-	<1	<1	<1	<1	3	<1	1.1	<1	<1	<1	<1	<1
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	<15	-	<15	<15	-	-	-	-	-	-	-	-	-	-

Table I.II-9 Historical Water Quality (1969-2004) in the Lockhart River at the Outlet of Artillery Lake (62.53.20.004 N, 108.28.18.984 W) (Station ID NW07RD0001) (continued)

Parameters	Units	1977				1978	1979		1980					1981	
		04-Apr	25-May	18-Aug	29-Sep	05-Sep	27-Jun	08-Aug	04-Feb	08-May	19-Jun	30-Jul	16-Sep	24-Jun	22-Jul
		Under Ice	Under Ice	Open	Open	Open	Open	Open	Under Ice	Under Ice	Open	Open	Open	Open	Open
Cobalt (Co)	µg/L (ppb)	<1	-	<2	2	<2	-	<2	<2	4	3	<2	<2	<2	<2
Copper (Cu)	µg/L (ppb)	<1	-	1	1	<1	1	5	<1	3	<1	2	2	5	<1
Iron (Fe)	µg/L (ppb)	<40	-	<40	<40	<40	70	<40	40	<40	-	-	-	50	<40
Lead (Pb)	µg/L (ppb)	<4	-	<4	5	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	<10	-	<10	<10	<10	<10	<10	<10	<10	-	-	-	<10	<10
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	0.05	-	<0.02	<0.02	0.03	0.03	<0.02	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	<2	-	3	<2	-	-	-	-	6	4	<2	2	<2	<2
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silica, Reactive	mg/L (ppm)	<0.1	0.23	0.1	0.1	<0.1	0.1	0.1	<0.1	0.1	0.1	0.1	<0.1	<0.1	0.3
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	-	-	-	-	1	1	1	1	<1	<1	<1	<1	<1	<1
Zinc (Zn)	µg/L (ppb)	1	-	3	2	<1	<1	23	<1	-	-	-	-	-	-
Dissolved Metals															
Arsenic (As)	µg/L (ppb)	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron (B)	µg/L (ppb)	-	-	-	-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Selenium (Se)	µg/L (ppb)	-	-	-	-	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Table I.II-9 Historical Water Quality (1969-2004) in the Lockhart River at the Outlet of Artillery Lake (62.53.20.004 N, 108.28.18.984 W) (Station ID NW07RD0001) (continued)

Parameters	Units	1984			1985					1986				1987	
		21-Mar	05-Jul	26-Sep	16-Jan	11-Mar	22-May	25-Jun	18-Dec	29-Jan	14-May	09-Jul	13-Aug	12-Feb	20-May
		Under Ice	Open	Open	Under Ice	Under Ice	Under Ice	Open	Under Ice	Under Ice	Under Ice	Open	Open	Under Ice	Under Ice
Conventional Parameters and Major Ions															
pH	pH Units	7.0	7.6	7.2	7.1	7.0	7.6	8.1	6.5	7.0	6.9	7.1	7.6	7.3	7.3
Conductivity, Specific	µS/cm	19	16	15	13	16	16	16	23	15	20	32	27	15	16
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	6	6	4	6	5	6	6	5	4	6	5	4	5	4
Hardness, Total	mg/L (ppm)	-	-	-	-	-	5	7	6	6	6	7	7	5	6
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	8	9	15	8	9	8	8	7	8
Turbidity	NTU	0.5	0.3	0.4	0.3	0.7	0.5	0.2	0.2	0.5	0.2	0.4	0.2	0.2	0.2
Calcium	mg/L (ppm)	59	1.5	1.9	1.5	1.5	1	1.5	1.3	1.4	1.5	1.4	1.7	1.2	1.2
Magnesium	mg/L (ppm)	23	0.5	0.8	0.6	0.7	0.6	0.7	0.6	0.7	0.6	0.8	0.6	0.5	0.6
Potassium	mg/L (ppm)	9.2	0.4	0.4	0.4	0.5	0.4	0.9	0.5	0.5	0.5	0.38	0.42	0.44	0.42
Sodium	mg/L (ppm)	47	0.5	0.6	0.6	0.6	0.5	0.5	0.6	0.7	0.6	0.4	0.5	0.5	0.6
Bicarbonate	mg/L (ppm)	-	-	-	-	-	7.3	7.4	5.9	5.4	7.4	6.1	5.4	5.5	5.4
Chloride	mg/L (ppm)	76	0.8	0.3	0.2	0.5	0.5	0.5	0.4	0.3	<0.1	0.4	0.7	0.4	0.4
Fluoride	mg/L (ppm)	0.12	0.02	0.04	-	0.04	0.05	0.03	0.02	0.01	0.02	0.02	0.05	0.03	0.02
Sulphate	mg/L (ppm)	14.8	1	<1	1	2	1.4	1.4	9	1.5	1.3	1.2	1.4	1.1	1.7
Nutrients															
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	0.02	<0.01	<0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.03	0.01
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.016	0.01	0.01	0.016	<0.003	0.009	0.003	0.004	0.011	0.003	-	-	-	-
Phosphorus, Dissolved	mg/L (ppm)	<0.003	0.01	<0.003	<0.003	<0.003	<0.003	0.003	<0.003	0.009	<0.003	<0.003	0.007	<0.003	<0.003
Organics															
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Colour	TCU	-	5	5	5	<5	<5	<5	5	<5	<5	<5	<5	<5	<5
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	2.1	1.3	1.3	1.7	0.8	1.7	1.4	2.4	2.3	2.1	1.6	1.9	1.8	1.8
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Metals															
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<80	<80	<80
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table I.II-9 Historical Water Quality (1969-2004) in the Lockhart River at the Outlet of Artillery Lake (62.53.20.004 N, 108.28.18.984 W) (Station ID NW07RD0001) (continued)

Parameters	Units	1984			1985					1986				1987	
		21-Mar	05-Jul	26-Sep	16-Jan	11-Mar	22-May	25-Jun	18-Dec	29-Jan	14-May	09-Jul	13-Aug	12-Feb	20-May
		Under Ice	Open	Open	Under Ice	Under Ice	Under Ice	Open	Under Ice	Under Ice	Under Ice	Open	Open	Under Ice	Under Ice
Cobalt (Co)	µg/L (ppb)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<0.5
Copper (Cu)	µg/L (ppb)	4	4	1	2	<1	<1	<1	<1	2	<1	<1	0.7	3.2	0.5
Iron (Fe)	µg/L (ppb)	<40	<40	<40	40	<40	<40	<40	<40	<40	<20	<20	<7	<7	27
Lead (Pb)	µg/L (ppb)	<1	1	<1	<1	<1	<1	<1	<1	1	<1	<1	<0.7	<0.7	<0.7
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	<20	<20	<20	<20	<20	<20	<20	<20	<20	<10	<10	<2	<2	<2
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	<1	<1	3	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	0.5	<0.5
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silica, Reactive	mg/L (ppm)	13.6	0.1	0.1	0.09	0.33	0.1	0.2	0.08	0.08	0.17	0.09	0.08	0.06	0.08
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	1.2	-	-	-	-	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc (Zn)	µg/L (ppb)	<1	2	<1	5	2	2	<1	3	6	<1	<1	0.8	1.3	0.6
Dissolved Metals															
Arsenic (As)	µg/L (ppb)	0.4	0.1	-	0.3	0.2	<0.1	<0.1	0.1	<0.1	0.1	0.1	<0.1	0.1	<0.1
Boron (B)	µg/L (ppb)	<20	<20	<20	10	<20	<20	20	20	<20	30	<20	<20	<20	<20
Selenium (Se)	µg/L (ppb)	-	-	-	-	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1

Table I.II-9 Historical Water Quality (1969-2004) in the Lockhart River at the Outlet of Artillery Lake (62.53.20.004 N, 108.28.18.984 W) (Station ID NW07RD0001) (continued)

Parameters	Units	1988				1989						1991		
		15-Jan	12-May	28-Jul	07-Sep	02-Mar	07-Jun	30-Aug	14-May	19-Jul	05-Sep	30-Jan	29-Jul	28-Aug
		Under Ice	Under Ice	Open	Open	Under Ice	Open	Open	Under Ice	Open	Under Ice	Under Ice	Open	Open
Conventional Parameters and Major Ions														
pH	pH Units	7.7	6.6	7.1	6.6	7.0	7.2	7.0	7.3	6.9	6.8	7.5	7.1	7.1
Conductivity, Specific	µS/cm	12	16	16	15	18	28	16	16	10	16	16	16	10
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	4	4	5	5	4	5	4	5	5	5	7	4	5
Hardness, Total	mg/L (ppm)	6	5	6	17	6	6	5	6	6	6	5	5	6
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	7	8	7	12	7	9	7	8	8	8	8	7	7
Turbidity	NTU	0.2	0.5	0.1	0.1	0.2	0.1	0.2	0.1	0.3	0.1	0.2	0.3	0.5
Calcium	mg/L (ppm)	1.2	1.1	1.26	5.4	1.2	1.37	1.16	1.23	1.4	1.21	1.2	1.1	1.27
Magnesium	mg/L (ppm)	0.6	0.5	0.61	0.84	0.6	0.66	0.54	0.61	0.65	0.61	0.58	0.64	0.6
Potassium	mg/L (ppm)	0.4	0.5	0.4	0.4	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Sodium	mg/L (ppm)	0.5	0.6	0.4	0.4	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Bicarbonate	mg/L (ppm)	5	5	6	6	5	6	5	6	6	7	8	5	6
Chloride	mg/L (ppm)	0.5	0.5	0.5	0.4	0.1	0.8	0.5	0.5	0.5	0.4	0.5	0.7	0.7
Fluoride	mg/L (ppm)	0.03	0.02	0.01	0.02	0.03	0.04	0.03	0.06	0.04	0.04	0.05	0.03	0.02
Sulphate	mg/L (ppm)	1.2	2	1	1.4	1.4	2.2	1.8	1.7	1.5	1.9	1	0.6	1.2
Nutrients														
Ammonia	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate + Nitrite	mg/L (ppm)	0.02	0.015	0.01	<0.01	0.017	0.017	<0.01	0.016	0.01	<0.01	0.019	0.014	0.01
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	0.005	0.006
Phosphorus, Dissolved	mg/L (ppm)	<0.003	<0.003	<0.003	<0.003	0.003	<0.003	<0.003	0.007	<0.002	<0.002	<0.002	0.002	0.003
Organics														
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-
Colour	TCU	<5	<5	5	7.5	5	<5	<5	<5	5	<5	<5	<5	<5
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	1.9	2.72	2.78	1.94	2.09	2.12	2.15	2.15	2.06	1.91	2.01	1.99	1.97
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Metals														
Aluminum (Al)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	<80	<80	<80	<80	<80	120	<80	<80	<80	<80	<80	<80	<80
Beryllium (Be)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	µg/L (ppb)	0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	0.1	0.1	<0.1
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-

Table I.II-9 Historical Water Quality (1969-2004) in the Lockhart River at the Outlet of Artillery Lake (62.53.20.004 N, 108.28.18.984 W) (Station ID NW07RD0001) (continued)

Parameters	Units	1988				1989						1991		
		15-Jan	12-May	28-Jul	07-Sep	02-Mar	07-Jun	30-Aug	14-May	19-Jul	05-Sep	30-Jan	29-Jul	28-Aug
		Under Ice	Under Ice	Open	Open	Under Ice	Open	Open	Under Ice	Open	Under Ice	Under Ice	Open	Open
Cobalt (Co)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	0.9
Copper (Cu)	µg/L (ppb)	0.7	<0.5	0.8	1.1	0.6	0.6	<0.5	0.5	<0.5	<0.5	<0.5	0.7	0.7
Iron (Fe)	µg/L (ppb)	7	16	16	12	9	<7	<7	20	7	9	13	12	11.3
Lead (Pb)	µg/L (ppb)	1.1	<0.7	<0.7	0.8	<0.7	0.7	1.5	0.7	1	<0.7	<0.7	0.8	0.6
Lithium (Li)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	<2	6	3	3	4	<2	<2	<2	<2	<2	<2	<2	<2
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel (Ni)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	0.7	0.8	<0.5	0.6	1.1	<0.5	<0.5	1.4	19.4
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Silica, Reactive	mg/L (ppm)	0.07	0.08	0.1	0.1	0.1	0.2	0.1	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Tl)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5
Zinc (Zn)	µg/L (ppb)	1.4	0.7	0.7	1.6	1.2	2.4	1.1	0.6	0.5	0.4	0.3	1.5	0.43
Dissolved Metals														
Arsenic (As)	µg/L (ppb)	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.2	0.2
Boron (B)	µg/L (ppb)	<20	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.1	0.1	0.3	<0.1

Table I.II-9 Historical Water Quality (1969-2004) in the Lockhart River at the Outlet of Artillery Lake (62.53.20.004 N, 108.28.18.984 W) (Station ID NW07RD0001) (continued)

Parameters	Units	1992			1993			1994				1995			
		11-Feb	04-May	08-Oct	04-Mar	13-Jul	21-Aug	21-Jan	06-Jun	26-Aug	15-Nov	31-Jan	05-May	09-Jun	19-Sep
		Under Ice	Under Ice	Open	Under Ice	Open	Open	Under Ice	Open	Open	Under Ice	Under Ice	Under Ice	Open	Open
Conventional Parameters and Major Ions															
pH	pH Units	6.1	7.5	6.8	6.8	6.7	6.7	6.5	5.7	6.2	7.0	7.2	6.4	7.1	7.1
Conductivity, Specific	µS/cm	16	17	15	16	35	16	-	19	16	10	10	12	12	16
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	4	5	5	5	5	-	5	5	5	5	5	6	5	6
Hardness, Total	mg/L (ppm)	7	6	6	5	6	-	5	6	5	6	5	5	6	4
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	8	8	8	6	10	-	-	8	7	9	7	9	8	6
Turbidity	NTU	0.2	0.3	0.1	0.3	0.4	0.3	-	0.2	0.3	1.7	1.1	0.1	0.2	0.6
Calcium	mg/L (ppm)	1.9	1.3	1.3	1.2	1.3	-	1.1	1.3	1	1.3	1.1	1.1	1.4	1.2
Magnesium	mg/L (ppm)	0.6	0.6	0.6	0.6	0.7	-	0.6	0.6	0.5	0.6	0.6	0.6	0.7	0.6
Potassium	mg/L (ppm)	0.4	0.5	0.4	0.4	0.4	-	0.4	0.4	0.3	0.4	0.5	0.5	0.4	0.4
Sodium	mg/L (ppm)	0.5	0.6	0.5	0.5	0.4	-	-	0.5	0.4	0.4	0.5	0.5	0.5	0.5
Bicarbonate	mg/L (ppm)	5	6	7	6	6	-	6	6	6	6	6	7	6	6
Chloride	mg/L (ppm)	0.6	0.5	0.4	0.5	0.2	-	0.4	0.5	0.3	0.4	0.5	0.4	0.4	0.4
Fluoride	mg/L (ppm)	0.07	0.02	0.01	0.02	0.03	-	0.03	0.02	0.02	0.04	0.05	0.01	0.03	0.03
Sulphate	mg/L (ppm)	1.4	1.5	1.5	0.5	4	-	-	1.5	1.2	1.6	0.7	2.2	1.7	1.2
Nutrients															
Ammonia	mg/L (ppm)	-	-	-	-	0.006	0.004	0.02	0.001	0.02	0.09	0.01	0.02	0.02	0.01
Nitrate + Nitrite	mg/L (ppm)	0.02	0.02	0.01	0.02	-	-	-	0.04	0.009	0.07	0.03	0.03	0.04	0.03
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.005	0.004	0.004	0.003	0.011	0.002	0.004	0.004	0.0026	0.003	0.005	0.01	-	0.004
Phosphorus, Dissolved	mg/L (ppm)	0.003	0.004	0.003	0.002	0.011	<0.002	0.002	0.003	0.0026	0.002	0.004	0.008	-	0.003
Organics															
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Colour	TCU	<5	5	5	5	<5	<5	3	<5	5	5	5	<5	5	<5
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	2	2	2	2	2	2	1	2	3	2	2	2	2	2
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Metals															
Aluminum (Al)	µg/L (ppb)	-	-	-	-	9	9	16.75	6	6	6	4	6	8	1.25
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	<80	<80	<80	<80	3	3	3	3	1.6	3	2	3	3	3
Beryllium (Be)	µg/L (ppb)	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	<10	<10	<10	<10	<10	<10	<10
Cadmium (Cd)	µg/L (ppb)	<0.1	0.4	0.1	0.1	0.2	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium (Ca)	µg/L (ppb)	-	-	-	-	1400	1300	1200	1245	1079	1230	1180	1190	1170	1255
Chromium (Cr)	µg/L (ppb)	-	-	-	-	<0.2	<0.2	0.25	<0.2	0.12	<0.2	<0.2	<0.2	<0.2	<0.2

Table I.II-9 Historical Water Quality (1969-2004) in the Lockhart River at the Outlet of Artillery Lake (62.53.20.004 N, 108.28.18.984 W) (Station ID NW07RD0001) (continued)

Parameters	Units	1992			1993			1994				1995			
		11-Feb	04-May	08-Oct	04-Mar	13-Jul	21-Aug	21-Jan	06-Jun	26-Aug	15-Nov	31-Jan	05-May	09-Jun	19-Sep
		Under Ice	Under Ice	Open	Under Ice	Open	Open	Under Ice	Open	Open	Under Ice	Under Ice	Under Ice	Open	Open
Cobalt (Co)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
Copper (Cu)	µg/L (ppb)	0.8	0.8	<0.5	0.6	1.5	1.1	0.58	0.5	0.42	0.9	0.4	0.4	0.7	0.5
Iron (Fe)	µg/L (ppb)	9	12	<7	7.17	15.9	6.1	7.79	3.5	19.91	6.7	2.15	3.2	2.9	3.29
Lead (Pb)	µg/L (ppb)	1.6	0.8	<0.7	0.47	0.2	0.9	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Lithium (Li)	µg/L (ppb)	-	-	-	-	0.8	0.9	0.98	0.6	0.55	0.7	1	1	0.8	0.9
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	<1000	<1000	<1000	540	499	610	570	590	560	587.5
Manganese (Mn)	µg/L (ppb)	3	<2	<2	3.33	0.9	0.8	0.55	0.9	1.61	0.7	0.4	0.7	0.6	0.5
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1
Nickel (Ni)	µg/L (ppb)	<0.5	<0.5	<0.5	0.42	0.7	0.6	0.53	<0.2	0.36	0.6	0.6	0.4	0.4	0.5
Potassium (K)	µg/L (ppb)	-	-	-	-	<2000	<2000	<2000	340	286	330	440	360	390	333
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silica, Reactive	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	<2000	<2000	-	190	106	130	320	300	270	313
Strontium (Sr)	µg/L (ppb)	-	-	-	-	6	6	-	6	5	6	6	6	6	6
Thallium (Tl)	µg/L (ppb)	-	-	-	-			-	-	-	-	-	-	-	-
Tin (Sn)	µg/L (ppb)	-	-	-	-			-	-	-	-	-	-	-	-
Tungsten (W)	µg/L (ppb)	-	-	-	-			-	-	-	-	-	-	-	-
Uranium (U)	µg/L (ppb)	-	-	-	-			-	-	-	-	-	-	-	-
Vanadium (V)	µg/L (ppb)	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	-	<0.1	0.06	<0.1	<0.1	<0.1	0.1	<0.1
Zinc (Zn)	µg/L (ppb)	1.4	11.2	0.5	0.8	2.5	3.0	-	1.7	1.2	2.1	1.5	1.4	<0.2	1.4
Dissolved Metals								-							
Arsenic (As)	µg/L (ppb)	<0.1	0.1	<0.1	0.1	<0.1	<0.1	0.06	<0.1	0.06	<0.1	<0.1	<0.1	0.1	<0.1
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	<0.1	0.1	<0.1	0.07	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.45

Table I.II-9 Historical Water Quality (1969-2004) in the Lockhart River at the Outlet of Artillery Lake (62.53.20.004 N, 108.28.18.984 W) (Station ID NW07RD0001) (continued)

Parameters	Units	1996			1997	1998		1999	2000				2001	2002	
		03-Feb	18-Jun	16-Sep	28-Aug	10-Feb	29-Aug	04-Feb	17-Jan	10-Apr	23-Aug	17-Jun	25-Aug	11-Jan	16-Aug
		Under Ice	Open	Open	Open	Under Ice	Open	Under Ice	Under Ice	Under Ice	Open	Open	Open	Under Ice	Open
Conventional Parameters and Major Ions															
pH	pH Units	6.8	6.8	6.8	7.1	7.0	6.8	-	8.1	6.6	6.8	6.9	6.4	7.3	6.9
Conductivity, Specific	µS/cm	17	16	13	14	10	16	10	14	16	11	11	11	25	16
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	6	5	4	-	4	-	4	5	4	3	6	4	-	5
Hardness, Total	mg/L (ppm)	6	6	4	-	-	-	-	-	6	5	7	4	6	6
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	9	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity	NTU	0.4	0.4	0.5	0.2	0.1	0.2	-	1.5	0.5	0.09	0.7	0.33	-	1.67
Calcium	mg/L (ppm)	1.2	1.3	0.9	-	1.1	-	1.2	1.3	1.2	1.2	1.5	0.9	1.3	1.4
Magnesium	mg/L (ppm)	0.6	0.7	0.5	-	0.6	-	0.6	0.6	0.6	0.6	0.8	0.5	0.6	0.7
Potassium	mg/L (ppm)	0.5	0.4	0.3	-	0.6	-	0.6	0.6	0.5	0.3	0.5	0.3	0.4	0.4
Sodium	mg/L (ppm)	0.6	0.5	0.4	-	0.4	-	0.6	0.7	0.6	0.4	0.5	0.4	0.5	0.6
Bicarbonate	mg/L (ppm)	7	6	5	-	-	-	5	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	0.5	0.6	0.5	0.8	0.5	-	0.4	0.7	0.7	0.5	0.4	0.3	0.4	0.9
Fluoride	mg/L (ppm)	0.04	0.04	0.026	-	0.03	-	0.03	0.04	0.03	0.03	0.03	0.02	0.04	0.02
Sulphate	mg/L (ppm)	1.6	1.7	2	6.8	1.2	-	1.6	1.7	1.4	0.86	1.2	1.33	2.2	1.5
Nutrients															
Ammonia	mg/L (ppm)	0.05	0.01	0.004	0.01	0.08	0.01	-	0.09	0.01	<0.005	0.03	<0.005	-	0.02
Nitrate + Nitrite	mg/L (ppm)	0.03	0.04	0.01	0.04	0.04	<0.008	-	0.02	0.02	<0.008	0.03	0.02	-	0.01
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	0.003	0.002	0.006	0.02	0.002	0.002	-	0.012	0.009	0.004	0.006	0.008	-	0.03
Phosphorus, Dissolved	mg/L (ppm)	0.003	<0.002	0.004	0.019	<0.002	0.002	-	0.004	0.009	0.003	<0.002	0.007	-	0.006
Organics															
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Colour	TCU	<5	<5	<5	<5	<5	<5		<5		3.75	<5	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	3	2	1	-	2	-	2	2	3	2	3	2	-	2
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Metals															
Aluminum (Al)	µg/L (ppb)	6	7	6	-	5	-	4	5	4	6	4	5	5	5
Antimony (Sb)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	0.008
Arsenic (As)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium (Ba)	µg/L (ppb)	3	3	2	-	2	-	2	3	3	5	3	2	2	2
Beryllium (Be)	µg/L (ppb)	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.002
Bismuth (Bi)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-			<0.01
Boron (B)	µg/L (ppb)	30	<10	-	-	60	-	<10	<10	20	<10	160			<100
Cadmium (Cd)	µg/L (ppb)	<0.1	<0.1	<0.1	-	<0.1	-	0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.007
Calcium (Ca)	µg/L (ppb)	1180	1335	998	-	1200	-	1140	1220	1285	1202	1390	975	1340	-
Chromium (Cr)	µg/L (ppb)	<0.2	<0.2	0.15	-	<0.2	-	<0.2	0.3	<0.2	<0.2	<0.2	0.5	<0.2	0.03

Table I.II-9 Historical Water Quality (1969-2004) in the Lockhart River at the Outlet of Artillery Lake (62.53.20.004 N, 108.28.18.984 W) (Station ID NW07RD0001) (continued)

Parameters	Units	1996			1997	1998		1999	2000				2001	2002	
		03-Feb	18-Jun	16-Sep	28-Aug	10-Feb	29-Aug	04-Feb	17-Jan	10-Apr	23-Aug	17-Jun	25-Aug	11-Jan	16-Aug
		Under Ice	Open	Open	Open	Under Ice	Open	Under Ice	Under Ice	Under Ice	Open	Open	Open	Under Ice	Open
Cobalt (Co)	µg/L (ppb)	<0.1	<0.1	0.1	-	0.1	-	<0.1	0.1	<0.1	<0.1	<0.1	0.24	<0.1	7
Copper (Cu)	µg/L (ppb)	0.8	0.8	3.4	-	0.7	-	0.5	1.5	0.7	0.52	1.2	0.98	0.4	0.6
Iron (Fe)	µg/L (ppb)	10	9	6	-	2	-	6	5	6	13	12	8	5	4
Lead (Pb)	µg/L (ppb)	0.4	0.4	0.38	-	<0.2	-	<0.2	<0.2	<0.2	0.1	0.4	<0.2	<0.2	<0.014
Lithium (Li)	µg/L (ppb)	0.9	0.7	0.59	-	0.9	-	0.9	0.7	1	0.6	0.9	0.8	0.7	0.9
Magnesium (Mg)	µg/L (ppb)	600	640	444	-	580	-	570	580	580	537	640	474	630	-
Manganese (Mn)	µg/L (ppb)	0.6	1	0.5	-	0.3	-	0.1	0.4	0.4	1.8	0.7	0.5	0.4	0.5
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	0.1	<0.1	0.1	0.4	<0.1	0.02
Nickel (Ni)	µg/L (ppb)	0.5	0.5	0.5	-	0.4	-	0.5	0.5	0.5	0.38	0.5	<0.2	0.4	0.48
Potassium (K)	µg/L (ppb)	430	350	263	-	400	-	390	570	390	294	370	265	410	-
Selenium (Se)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silica, Reactive	mg/L (ppm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	-	<0.1	0.09	-	<0.1	-	<0.1	<0.1	0.1	<0.1	<0.1	0.73	<0.1	<0.005
Sodium (Na)	µg/L (ppb)	380	560	150	-	350	-	370	510	350	322	370	250	440	-
Strontium (Sr)	µg/L (ppb)	5	5	5	-	6	-	5	5	6	6	7	4	6	6
Thallium (Tl)	µg/L (ppb)	-	-	-	-		-	-	-	-	-	-	-	-	0.001
Tin (Sn)	µg/L (ppb)	-	-	-	-		-	-	-	-	-	-	-	-	<0.005
Tungsten (W)	µg/L (ppb)	-	-	-	-		-	-	-	-	-	-	-	-	<0.002
Uranium (U)	µg/L (ppb)	-	-	-	-		-	-	-	-	-	-	-	-	0.015
Vanadium (V)	µg/L (ppb)	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	<0.1	0.07	<0.1	<0.1	<0.1	0.023
Zinc (Zn)	µg/L (ppb)	4.4	1.6	<1.3	-	<0.2	-	1.55	2.8	1.65	0.94	1.4	<0.2	0.4	0.72
Dissolved Metals															
Arsenic (As)	µg/L (ppb)	<0.1	<0.1	0.06	-	<0.1	-	<0.1	<0.1	<0.1	0.06	0.1	0.1	<0.1	<0.1
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	<0.1	<0.1	0.06	-	0.1	-	<0.1	0.1	<0.1	<0.1	0.1	<0.1	0.1	<0.1

Table I.II-9 Historical Water Quality (1969-2004) in the Lockhart River at the Outlet of Artillery Lake (62.53.20.004 N, 108.28.18.984 W) (Station ID NW07RD0001) (continued)

Parameters	Units	2003				2004		
		11-Feb	07-May	10-Jun	14-Aug	07-May	15-Jun	01-Sep
		Under Ice	Under Ice	Open	Open	Under Ice	Open	Open
Conventional Parameters and Major Ions								
pH	pH Units	6.6	6.6	6.8	6.9	-	7.4	6.7
Conductivity, Specific	µS/cm	70	14	19	18	44	10	14
Dissolved Oxygen (DO)	mg/L (ppm)	-	-	-	-	-	-	-
Inorganic Carbon, Total (TIC)	mg/L (ppm)	-	-	-	-	-	-	-
Alkalinity, Total	mg/L (ppm)	6	5	7	7	-	-	-
Hardness, Total	mg/L (ppm)	6	4	7	6	11	5	-
Total Dissolved Solids (TDS) (Calculated)	mg/L (ppm)	-	-	-	-	-	-	-
Turbidity	NTU	0.2	1.2	1	0.5	-	-	-
Calcium	mg/L (ppm)	1.3	1	1.4	1.3	2.5	1.1	-
Magnesium	mg/L (ppm)	0.7	0.5	0.7	0.7	1.2	0.5	-
Potassium	mg/L (ppm)	0.5	0.4	0.5	0.4	0.8	0.4	-
Sodium	mg/L (ppm)	0.6	0.5	0.6	0.5	1.1	0.4	-
Bicarbonate	mg/L (ppm)	-	-	-	-	-	-	-
Chloride	mg/L (ppm)	0.3	0.4	0.5	0.4	1.8	0.3	-
Fluoride	mg/L (ppm)	0.02	0.02	0.03	0.02	0.08	0.03	-
Sulphate	mg/L (ppm)	1.4	1.2	1.4	1.3	0.9	1.1	-
Nutrients								
Ammonia	mg/L (ppm)	-	0.01	0.007	0.003	-	-	-
Nitrate + Nitrite	mg/L (ppm)	0.02	0.006	0.02	0.01	-	-	-
Nitrogen, Total Kjeldahl (TKN)	mg/L (ppm)	-	-	-	-	-	-	-
Phosphorus, Total	mg/L (ppm)	<0.004	0.003	0.005	0.006	-	-	-
Phosphorus, Dissolved	mg/L (ppm)	-	0.003	<0.004	0.01	-	-	-
Organics								
Oxygen Demand, Chemical (COD)	mg/L (ppm)	-	-	-	-	-	-	-
Colour	TCU	-	-	-	-	-	-	-
Organic Carbon, Dissolved (DOC)	mg/L (ppm)	3	2	2	3	-	-	-
Organic Carbon, Total (TOC)	mg/L (ppm)	-	-	-	-	-	-	-
Total Metals								
Aluminum (Al)	µg/L (ppb)	4	2	4	4	3	5	-
Antimony (Sb)	µg/L (ppb)	0.01	<0.001	<0.001	<0.001	0.005	0.004	-
Arsenic (As)	µg/L (ppb)		0.08	0.1	0.09	0.1	0.08	-
Barium (Ba)	µg/L (ppb)	2.8	2.0	3.1	2.5	2.6	2.2	-
Beryllium (Be)	µg/L (ppb)	<0.002	<0.001	0.001	0.001	<0.001	0.001	-
Bismuth (Bi)	µg/L (ppb)	<0.01	<0.001	<0.001	<0.001	<0.001	0.001	-
Boron (B)	µg/L (ppb)	1800	1113	1600	200	<100	70	-
Cadmium (Cd)	µg/L (ppb)	<0.005	0.02	0.01	<0.023	<0.001	0.005	-
Calcium (Ca)	µg/L (ppb)	-	-	-	-	-	-	-
Chromium (Cr)	µg/L (ppb)	0.04	0.03	0.02	0.02	0.03	0.05	-
Cobalt (Co)	µg/L (ppb)	7	3	5	6	6	8	-
Copper (Cu)	µg/L (ppb)	0.5	0.5	0.4	0.5	0.6	0.5	-
Iron (Fe)	µg/L (ppb)	3	1.1	0.7	4	1.4	4	-
Lead (Pb)	µg/L (ppb)	0.01	0.01	<0.005	<0.005	<0.005	0.01	-
Lithium (Li)	µg/L (ppb)	1	0.8	1	0.9	1.1	0.8	-
Magnesium (Mg)	µg/L (ppb)	-	-	-	-	-	-	-
Manganese (Mn)	µg/L (ppb)	0.4	0.3	0.6	0.7	0.3	0.9	-
Mercury (Hg)	µg/L (ppb)	-	-	-	-	-	-	-
Molybdenum (Mo)	µg/L (ppb)	0.02	<0.005	<0.005	0.019	0.016	0.01	-
Nickel (Ni)	µg/L (ppb)	0.5	0.4	0.5	0.5	0.6	0.4	-
Potassium (K)	µg/L (ppb)	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	-	<0.05	<0.05	0.1	<0.05	0.03	-
Silica, Reactive	mg/L (ppm)	-	-	-	-	-	-	-
Silver (Ag)	µg/L (ppb)	<0.005	<0.001	<0.001	0.001	0.002	0.011	-
Sodium (Na)	µg/L (ppb)	-	-	-	-	-	-	-
Strontium (Sr)	µg/L (ppb)	7	5	7	6	6	5	-
Thallium (Tl)	µg/L (ppb)	0.001	<0.001	<0.001	0.001	0.002	0.001	-
Tin (Sn)	µg/L (ppb)	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	-
Tungsten (W)	µg/L (ppb)	<0.002	<0.001	<0.001	<0.001	0.001	0.001	-
Uranium (U)	µg/L (ppb)	0.02	0.01	0.01	0.02	0.01	0.01	-
Vanadium (V)	µg/L (ppb)	0.02	0.02	0.02	0.03	0.05	0.06	-
Zinc (Zn)	µg/L (ppb)	0.4	0.4	0.5	0.3	0.4	0.4	-
Dissolved Metals								
Arsenic (As)	µg/L (ppb)	0.1	-	-	-	-	-	-
Boron (B)	µg/L (ppb)	-	-	-	-	-	-	-
Selenium (Se)	µg/L (ppb)	<0.1	-	-	-	-	-	-