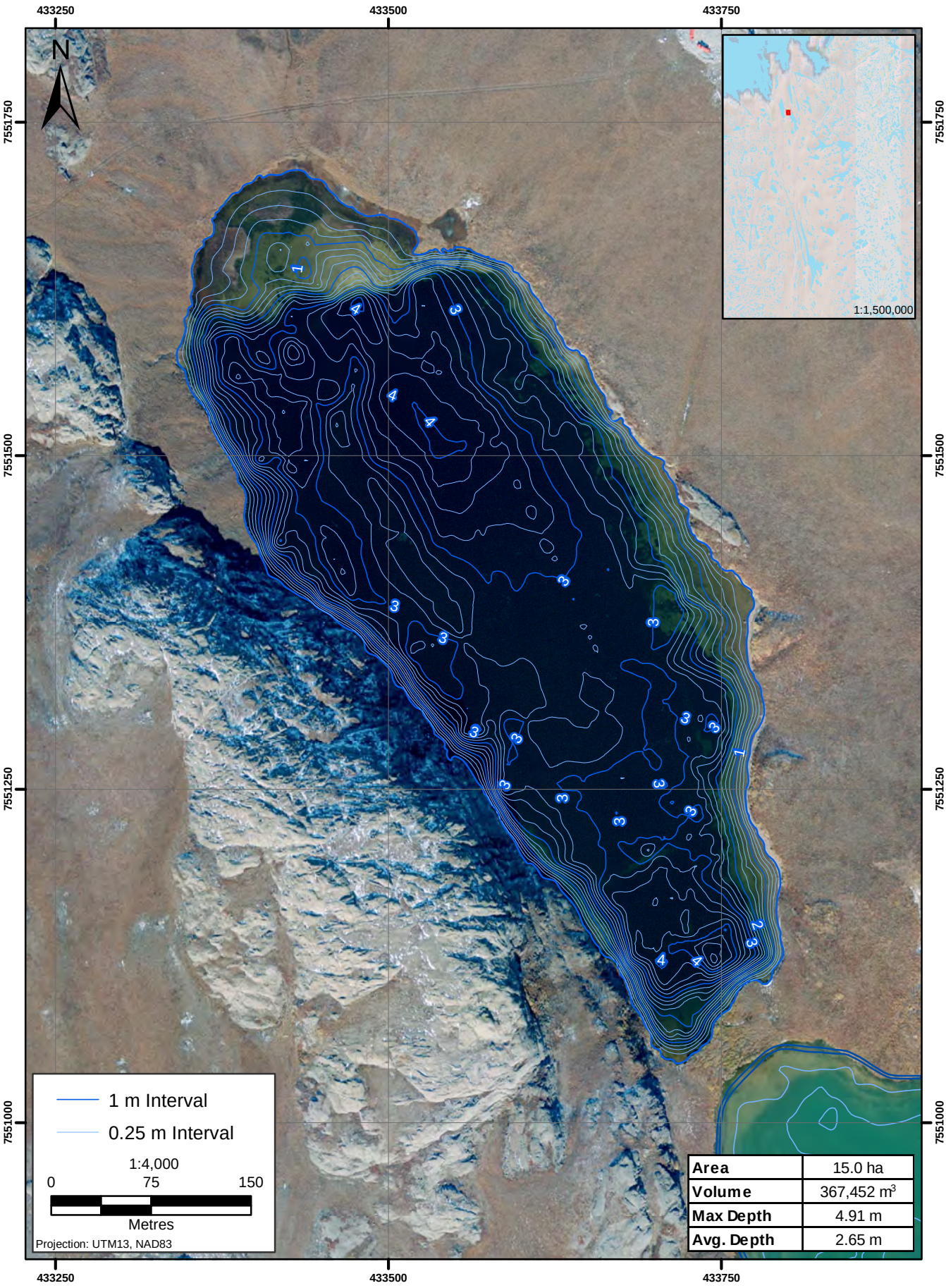
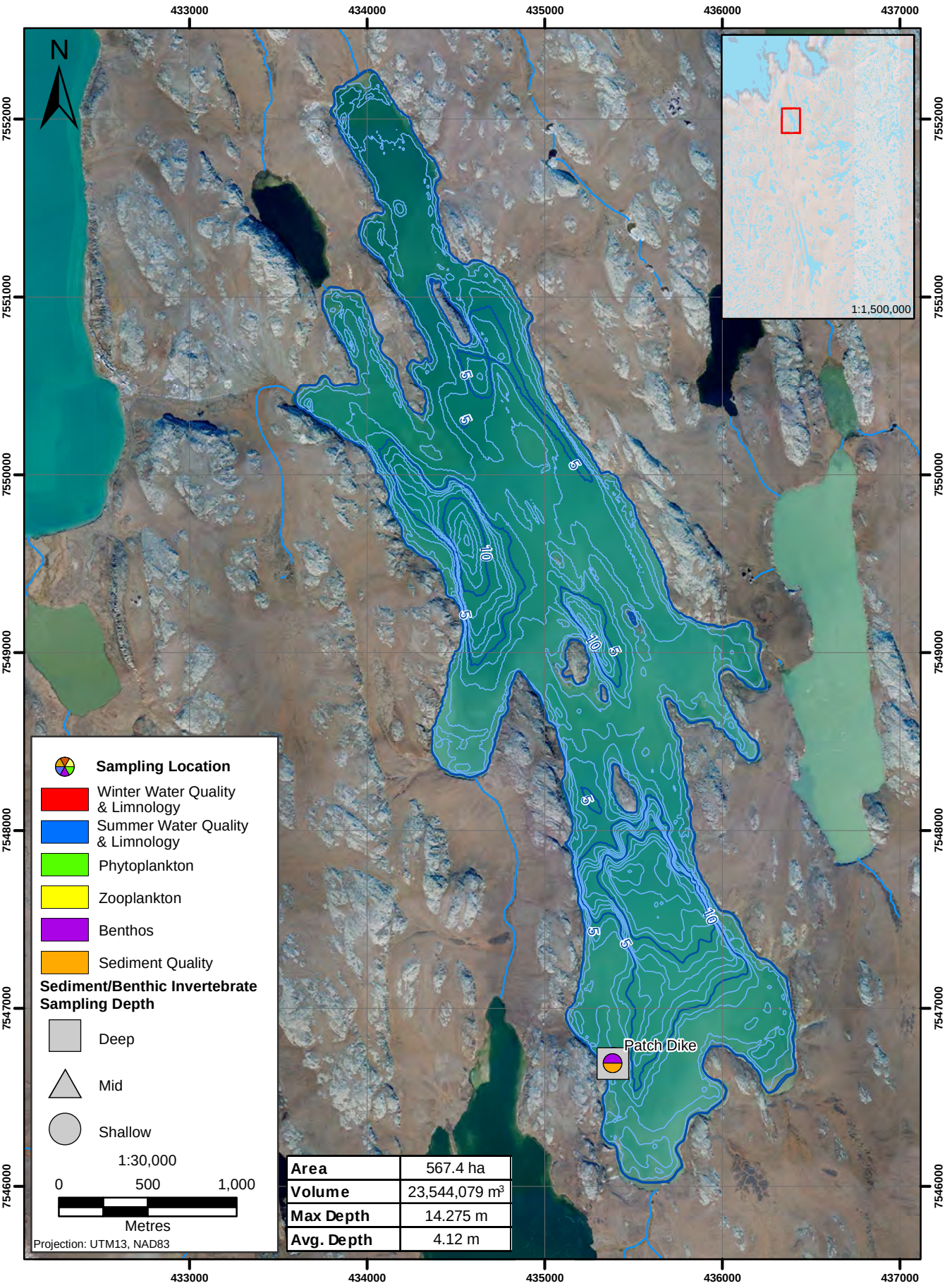


Figure 2.1-7

2010 Bathymetry for Imniagut Lake

NEWMONT The Gold Company

Rescan Engineers & Scientists

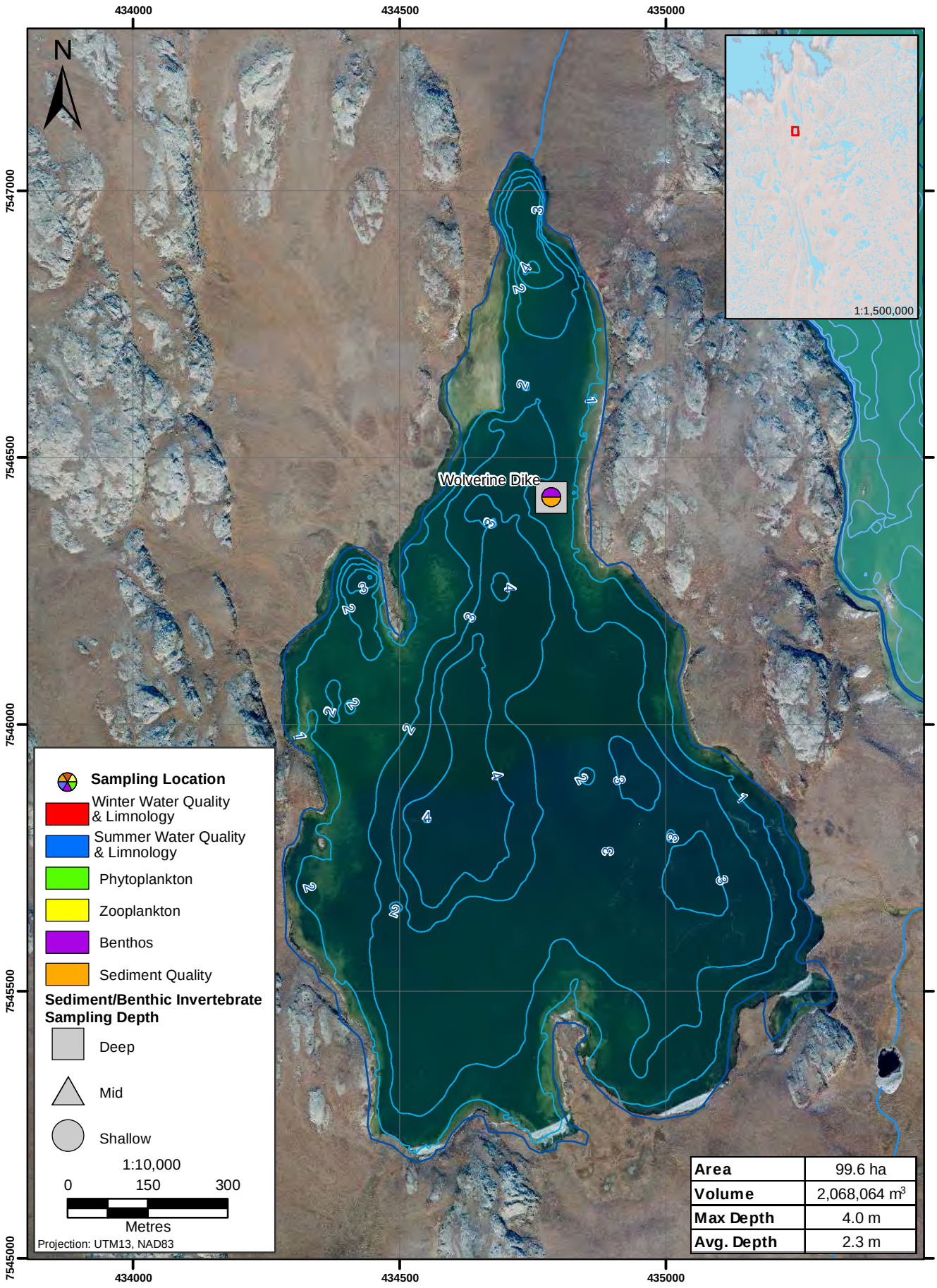


NEWMONT The Gold Company

2010 Environmental Sampling Locations for Patch Lake

Figure 2.1-8

Rescan Engineers & Scientists



2010 Environmental Sampling Locations for Wolverine Lake

Figure 2.1-9

NEWMONT The Gold Company

Rescan Engineers & Scientists

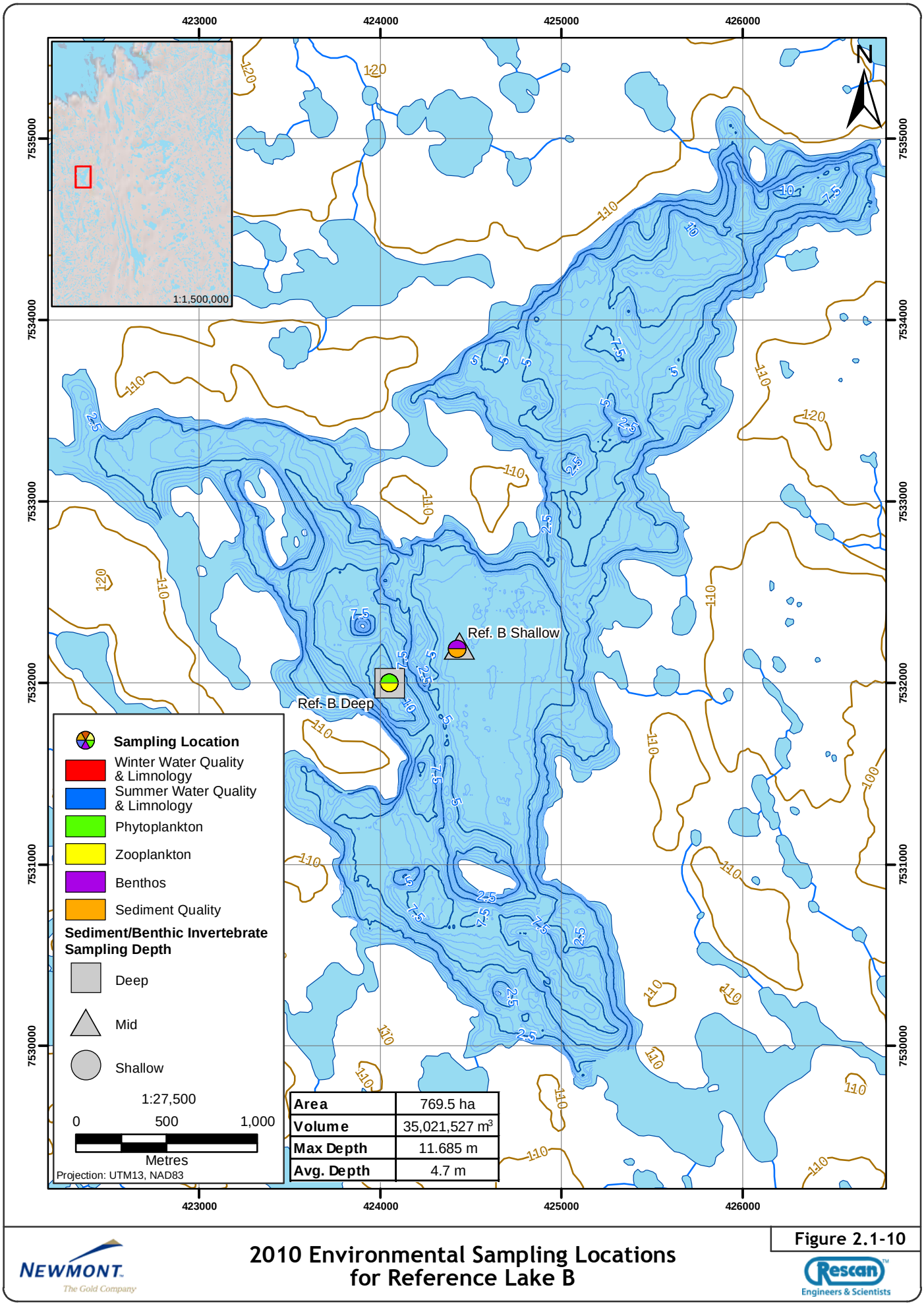


Figure 2.1-10

2010 Environmental Sampling Locations for Reference Lake B

NEWMONT The Gold Company

Rescan Engineers & Scientists

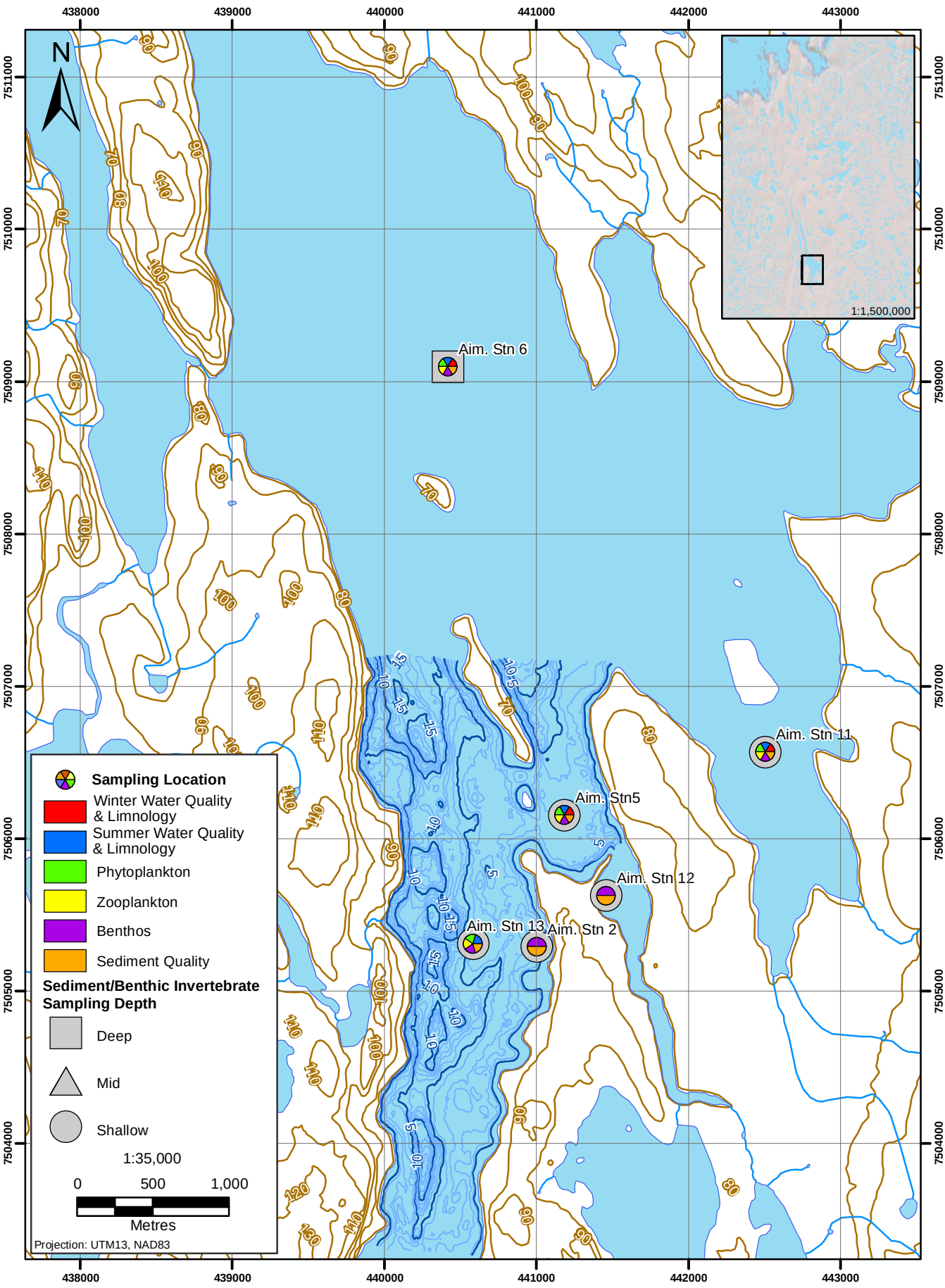


Figure 2.1-11

2010 Environmental Sampling Locations for Aimaokatalok Lake

NEWMONT The Gold Company

Rescan Engineers & Scientists

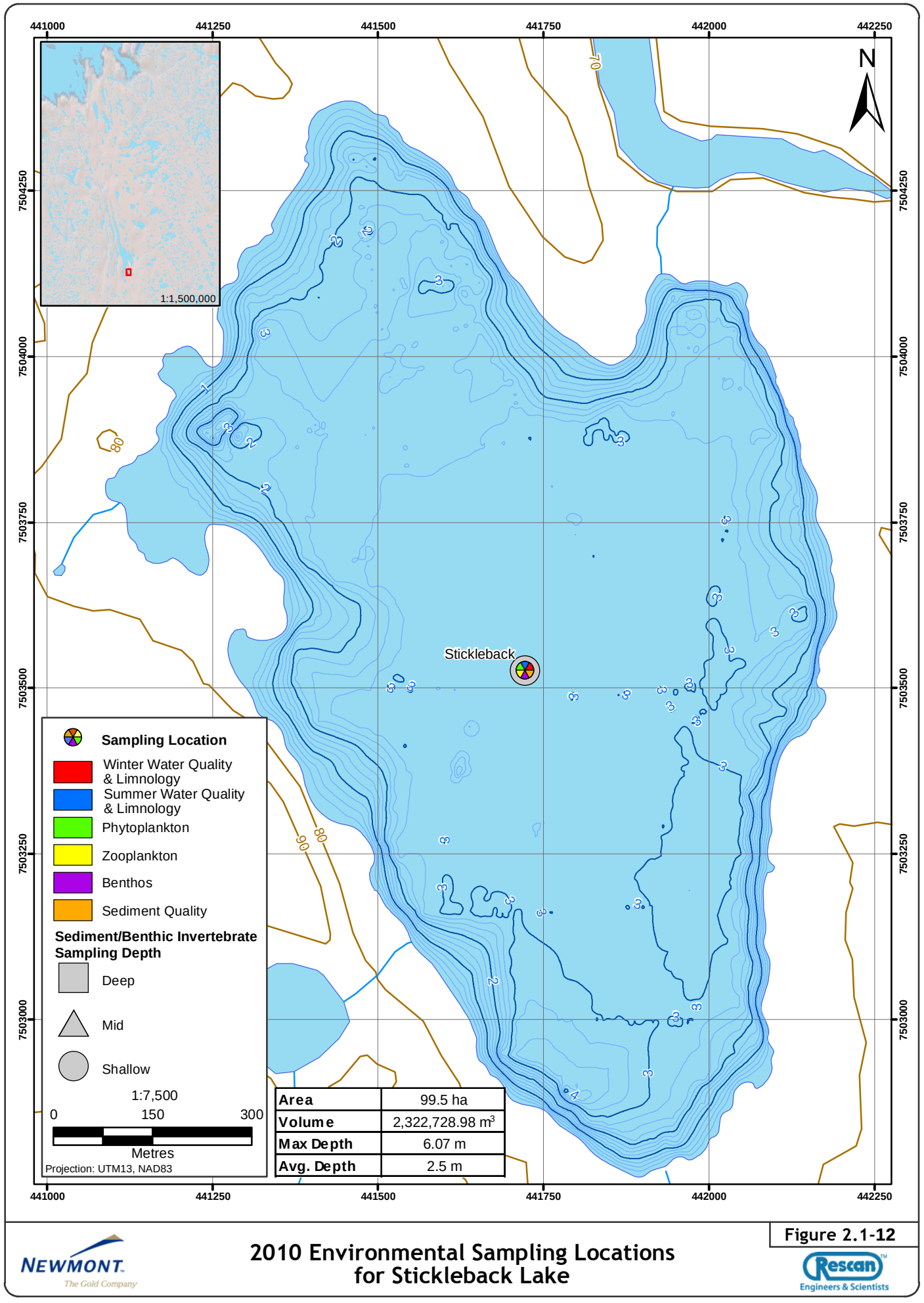


Figure 2.1-12

2010 Environmental Sampling Locations for Stickleback Lake

NEWMONT The Gold Company

Rescan Engineers & Scientists

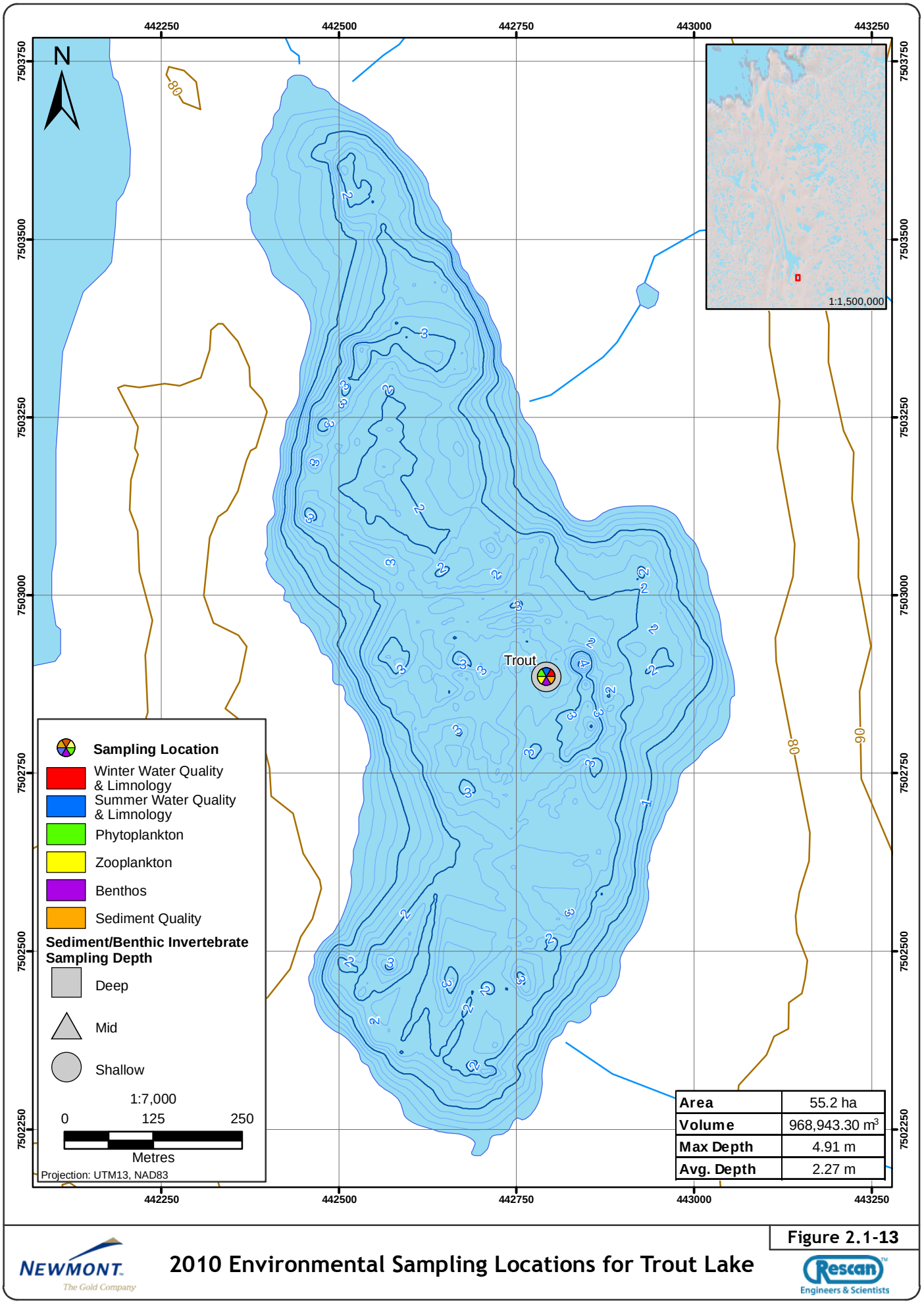


Figure 2.1-13

2010 Environmental Sampling Locations for Trout Lake

NEWMONT The Gold Company

Rescan Engineers & Scientists

Table 2.4-1. Water Quality Parameters and Method Detection Limits, Hope Bay Belt Project, 2010

Parameter	Units	Detection Limit	Parameter	Units	Detection Limit
Physical Tests			***Total and Dissolved Metals***	***(cont'd)***	
Conductivity	µS/cm	2	Cadmium (Cd)	mg/L	0.000005
Hardness (as $CaCO_3$)	mg/L	0.5	Calcium (Ca)	mg/L	0.02
pH	pH units	0.1	Chromium (Cr)	mg/L	0.0002
Total Suspended Solids	mg/L	3	Cobalt (Co)	mg/L	0.00005
Total Dissolved Solids	mg/L	10	Copper (Cu)	mg/L	0.0001
Turbidity	NTU	0.1	Iron (Fe)	mg/L	0.01
Anions and Nutrients			Lead (Pb)	mg/L	0.00005
Alkalinity, Bicarbonate (as $CaCO_3$)	mg/L	2	Lithium (Li)	mg/L	0.0002
Alkalinity, Carbonate (as $CaCO_3$)	mg/L	2	Magnesium (Mg)	mg/L	0.005
Alkalinity, Hydroxide (as $CaCO_3$)	mg/L	2	Manganese (Mn)	mg/L	0.00005
Alkalinity, Total (as $CaCO_3$)	mg/L	2	Mercury (Hg)	mg/L	0.00001
Ammonia (as N)	mg/L	0.005	Molybdenum (Mo)	mg/L	0.00005
Bromide (Br)	mg/L	0.05	Nickel (Ni)	mg/L	0.0001
Chloride (Cl)	mg/L	0.5	Phosphorus (P)	mg/L	0.3
Fluoride (F)	mg/L	0.02	Potassium (K)	mg/L	0.05
Nitrate (as N)	mg/L	0.005	Selenium (Se)	mg/L	0.0002
Nitrite (as N)	mg/L	0.001	Silicon (Si)	mg/L	0.05
Total Kjeldahl Nitrogen	mg/L	0.05	Silver (Ag)	mg/L	0.000005
Ortho Phosphate (as P)	mg/L	0.001	Sodium (Na)	mg/L	0.01
Total Phosphorus	mg/L	0.002	Strontium (Sr)	mg/L	0.00005
Sulphate (SO_4)	mg/L	0.5	Thallium (Tl)	mg/L	0.000002
Total and Dissolved Metals			Tin (Sn)	mg/L	0.0001
Aluminum (Al)	mg/L	0.001	Titanium (Ti)	mg/L	0.0002
Antimony (Sb)	mg/L	0.00001	Uranium (U)	mg/L	0.000002
Arsenic (As)	mg/L	0.00005	Vanadium (V)	mg/L	0.00005
Barium (Ba)	mg/L	0.00005	Zinc (Zn)	mg/L	0.001
Beryllium (Be)	mg/L	0.000005	***Organic Parameters***		
Bismuth (Bi)	mg/L	0.00005	Total Organic Carbon	mg/L	0.2
Boron (B)	mg/L	0.001			

Samples were collected at shallow (1 m depth) and deep (2 m above the water-sediment interface) depths within the water column. A single sample was collected at each depth, with 20% replication. Replicate samples were collected 5 to 20 m apart from each other by leaving slack in the anchor line and allowing the boat to drift. All water samples were transported and analyzed as described for winter lake water quality (Section 2.4.1).

2.5 LAKE SEDIMENT QUALITY

Lakes were sampled for sediment quality during August 2010 (Table 2.1-5). Lakes within three different watersheds were sampled. Within each lake, samples were collected from either one or two of the following depth strata: shallow depth (0 to 5 m), mid depth (5 to 10 m), and/or deep depth (>10 m). Triplicate samples were collected from each depth strata sampled.

An Ekman grab sampler (surface area of 0.0225 m^2) was used to collect two grabs per sample, to ensure enough sediment was obtained for all of the required analyses.

Each sediment sample was carefully transferred onto a white plastic tray, photographed, and described for colour, texture, and other characteristics. The surface 2 cm of sediment was then collected. All sediment quality samples were recorded on a chain of custody form and sent to ALS in Yellowknife. Samples were then sent to ALS's Burnaby laboratory for analysis of grain size, moisture, nutrients, and solid-phase metals. Table 2.5-1 presents the sediment quality parameters that were analyzed and their method detection limits (note that realized detection limits may differ from these theoretical values; realized detection limit ranges are indicated on all relevant figures).

Table 2.5-1. Sediment Quality Parameters and Method Detection Limits, Hope Bay Belt Project, 2010

Parameter	Units	Detection Limit	Parameter	Units	Detection Limit
Physical Tests			***Metals***	***(cont'd)***	
% Moisture	%	0.1	Calcium (Ca)	mg/kg	50
pH	pH	0.1	Chromium (Cr)	mg/kg	2
Particle Size			Cobalt (Co)	mg/kg	2
% Gravel (>2 mm)	%	0.1	Copper (Cu)	mg/kg	1
% Sand (2.0 mm - 0.063 mm)	%	0.1	Iron (Fe)	mg/kg	50
% Silt (0.063 mm – 4 µm)	%	0.1	Lead (Pb)	mg/kg	2
% Clay (<4 µm)	%	0.1	Lithium (Li)	mg/kg	2
Leachable Anions & Nutrients			Magnesium (Mg)	mg/kg	50
Total Nitrogen	%	0.02	Manganese (Mn)	mg/kg	1
Organic / Inorganic Carbon			Mercury (Hg)	mg/kg	0.005
Total Organic Carbon	%	0.1	Molybdenum (Mo)	mg/kg	0.2
Plant Available Nutrients			Nickel (Ni)	mg/kg	5
Available Ammonium (as N)	mg/kg	0.8	Phosphorus (P)	mg/kg	50
Available Nitrate (as N)	mg/kg	2	Potassium (K)	mg/kg	200
Available Nitrite (as N)	mg/kg	0.4	Selenium (Se)	mg/kg	0.5
Available Phosphate (as P)	mg/kg	2	Silver (Ag)	mg/kg	0.1
Metals			Sodium (Na)	mg/kg	200
Aluminum (Al)	mg/kg	50	Strontium (Sr)	mg/kg	0.5
Antimony (Sb)	mg/kg	10	Sulphur (S)	mg/kg	100
Arsenic (As)	mg/kg	0.05	Thallium (Tl)	mg/kg	0.5
Barium (Ba)	mg/kg	1	Tin (Sn)	mg/kg	5
Beryllium (Be)	mg/kg	0.5	Titanium (Ti)	mg/kg	1
Bismuth (Bi)	mg/kg	20	Vanadium (V)	mg/kg	2
Cadmium (Cd)	mg/kg	0.1	Zinc (Zn)	mg/kg	1

2.6 PHYTOPLANKTON

Phytoplankton biomass, density, and taxonomy samples were collected from lakes during August 2010 concurrently with water quality and zooplankton samples. Samples were collected 1 m below the surface using a 5 L GO-FLO bottle. Triplicate samples were collected 5 to 20 m apart for phytoplankton biomass (as chlorophyll *a*), abundance, and taxonomy. Phytoplankton biomass samples were filtered onto 0.45 µm pore size, nitrocellulose filters back in camp. The filters were wrapped in aluminum foil and kept frozen until they were sent to ALS Burnaby for analysis. Taxonomy and density samples were

also collected in triplicate (1 L plastic bottles) at each site. These samples were preserved with Lugol's iodine solution and sent to G3 Consulting Ltd. in Surrey, BC, for enumeration and identification.

2.7 ZOOPLANKTON

Zooplankton samples were collected from lakes concurrently with phytoplankton and water quality samples during August 2010. At each sampling site, three samples were collected using vertical hauls unless the water depth was too shallow, in which case a horizontal tows were conducted. The vertical hauls were conducted by lowering a net (118 µm mesh size, 30-cm diameter) to within 1 to 2 m of the lake bottom and bringing it to the surface at a speed of approximately 0.5 m/s. An internally mounted flowmeter (General Oceanics; model 2030R) was used to record the volume of water passing through the net during all hauls. Replicate samples were collected 5 to 20 m apart. Taxonomic samples were preserved with 5% buffered formalin and sent to G3 Consulting Ltd. in Surrey, BC, for enumeration and identification.

2.8 LAKE BENTHOS

Lake benthos samples were collected concurrently with lake sediment quality samples during August 2010. Benthos samples were collected from the same depth zones and locations as the sediment samples.

Five replicate samples, each consisting of a composite of three Ekman grab samples (surface area of (0.0225 m^2), were collected at each sampling location. Replicate samples were collected approximately 20 m apart if possible. Samples were gently sieved in the field using a 500 µm sieve bucket and were preserved in 10% buffered formalin. Samples were sent to Dr. Jack Zloty in Summerland, BC, for enumeration and identification.

2.9 STREAM AND RIVER WATER QUALITY

2.9.1 Winter Stream and River Water Quality

Under-ice water quality samples were collected in April 2010 at river sites where water was present (i.e., ice did not reach the river bed). This was attempted at Aim. R., Aim. OF, Koig. R., Koig. U/S, Koig. D/S, and Ang. R. Ref. using the holes drilled for physical limnology measurements.

If sufficient under-ice water was found, a clean narrow-necked collection bottle attached to a 3 m pole was lowered into the hole to base of the ice layer and allowed to fill passively. The collected water was used to fill the required clean sample containers.

All water samples were transported and analyzed as described for winter lake water quality (Section 2.4-1).

2.9.2 Summer Stream and River Water Quality

Stream and river water quality samples were collected three times during the open-water season: the freshet period (June), the low-flow summer period (August), and the higher-flow fall period (September).

Stream water samples were collected using clean techniques. For each sample, sampling personnel stood facing upstream to minimize sample contamination by disturbed sediments. Capped bottles were plunged 30 cm into the water and opened underwater to avoid the collection of surface material. Sample bottles were triple-rinsed using stream water before filling.

All water samples were transported and analyzed as described for winter lake water quality (Section 2.4-1).

2.10 STREAM AND RIVER SEDIMENT QUALITY

Stream and river sites were sampled for sediment quality during August 2010 (Table 2.1-5).

Three replicate samples were collected per stream/river site. Replicate samples were collected approximately three times the channel width apart from each other, except in large rivers. Sediments were collected with the use of an Ekman grab or a spoon in small streams. Depositional zones (where finer sediments accumulate) were preferentially sampled. All sediment quality samples were recorded on a chain of custody form and sent to ALS in Yellowknife. Samples were then sent to ALS's Burnaby laboratory for analysis. Table 2.5-1 presents the sediment quality parameters that were analyzed and their detection limits.

2.11 PERIPHYTON

Stream periphyton samples were collected once during the open-water season using artificial substrate samplers. The samplers were installed during early August 2010 and retrieved in early September 2010.

Five 10 cm x 10 cm Plexiglas® plates were affixed to rocks with fishing line and placed in each stream such that they remained submerged until retrieval. Five plates were installed per site to increase the likelihood that three plates were available to process in September. The plates were installed a minimum distance of three times the channel width apart from each other, except in large rivers where they were spaced approximately 20 m apart.

Upon collection, three quarters of each plate were scraped using a razor blade and rinsed into a bottle for analysis of periphyton biomass (as chlorophyll *a*). These samples were filtered and processed in the same way as phytoplankton biomass samples. The remaining quarter of the plate was scraped and rinsed into a bottle for periphyton taxonomy. Periphyton taxonomy samples were preserved and processed in the same way as phytoplankton taxonomy samples.

2.12 STREAM AND RIVER BENTHOS

Stream benthos samples were collected during August 2010. Five replicate samples, each consisting of a composite of three Hess samples were collected from each stream station. Replicate samples were collected a minimum distance of three times the channel width apart from each other, except in large rivers. A 500 μm mesh size Hess sampler, with a sampling surface area of 0.096 m^2, was used to collect stream benthos samples. Samples were preserved in 10% buffered formalin and sent to Dr. Jack Zloty in Summerland, BC, for enumeration and identification.

2.13 QUALITY ASSURANCE/QUALITY CONTROL

A quality assurance and quality control (QA/QC) program, including the use of chain of custody forms, replicates, and blanks was incorporated into the design of this study to track samples, account for within site variability, and identify potential sources of contamination from sampling equipment, sample transportation, or sample processing. Below are the specific QA/QC measures undertaken for each sampling component.

2.13.1 Water Quality QA/QC

Replicate samples accounted for approximately 20% of lake water samples collected during each sampling period. These replicate samples were collected from multiple depths. Replicate samples were collected at all stream and river sites to allow identification of natural variability. Natural variability is often higher in streams compared to lakes due to heterogeneously suspended material (such as leaves, small insects, etc.), which, if accidentally collected, can alter results.

Equipment blanks, field blanks, and travel blanks made up at least 5% of the total number of water quality samples collected. Equipment blanks were designed to identify possible contamination of the sampling equipment, including the sampling bottle (GO-FLO or Niskin). Field blanks were designed to identify possible contamination from the exposure of the sample to ambient conditions at the sampling site. Travel blanks were designed to identify potential contamination from the transportation of samples from the sampling location to ALS laboratories. The blanks were analyzed for the same parameters listed in Table 2.4-1.

Equipment blanks were collected in the field by first rinsing an acid-washed or lake water-rinsed GO-FLO with double de-ionized water (provided by ALS), then filling the GO-FLO bottle with double de-ionized water. The water remained in the GO-FLO for one minute (as would occur with a real sample) until sub-samples were drawn from the sampling bottle. Equipment blanks were preserved and handled in the same manner as water quality samples.

Field blanks were processed in the field by opening the bottles provided by ALS (containing double de-ionized water) and exposing the sample to ambient air for one minute. The bottles were preserved and handled in the same manner as water quality samples.

Travel blanks were provided by ALS and were never opened, but were handled in the same manner as water quality samples. All water quality samples including equipment, field, and travel blanks were recorded on chain of custody forms and sent to ALS in Yellowknife for analysis.

2.13.2 Sediment Quality QA/QC

The lake and stream sediment quality QA/QC program included the collection of triplicate sediment samples at all sites to account for within-site variability, and the use of chain of custody forms for all samples.

2.13.3 Aquatic Biology QA/QC

Chain of custody forms were used for all aquatic biology samples as part of the QA/QC program. All samples had replication; triplicate samples were taken for phytoplankton, periphyton, and zooplankton, and five replicates of three composite samples were collected for benthos. Additional QA/QC measures were used by the benthos taxonomist to ensure consistent and accurate sorting of benthos samples. These procedures are outlined below.

2.13.3.1 Lake, Stream and River Benthos Sorting QA/QC

As part of the QC program, the re-sorting of benthic sample residues was conducted on a randomly selected 10% of the benthos samples to determine the level of sorting efficiency. The criterion for an acceptable sorting was that more than 90% of the total number of organisms found in both the initial and QA/QC sort were recovered during the initial sort, as required by Environment Canada for invertebrate community surveys (Environment Canada, 2002). This was calculated by the following equation:

$$\% \text{ Sorting Efficiency} = [1-(\#\text{ in QA/QC re-sort} / (\#\text{ sorted originally} + \#\text{ QA/QC resort}))] \times 100$$

Any sample not meeting the 90% removal criterion was re-sorted a third time. The 90% minimum efficiency was attained for all benthos samples in this study.

2.14 DATA MANAGEMENT AND ANALYSIS

Data was managed using Microsoft Office Excel (2003) software. All graphically represented data and the calculation of means and standard errors were produced using Sigma Plot v10.0 (2006) software.

Diversity indices, including genera richness and Simpson's diversity index, were calculated using PRIMER v6.1 software (2006).

2.14.1 Physical Limnology

The measured Secchi depth (D_s) for each lake was used to calculate the depth of the euphotic zone. Euphotic zone depth (EZD) is defined as the depth at which 0.1% of surface radiation occurs, and generally represents the zone within which photosynthesis can occur. EZD was calculated as follows:

$$k' = 1.7/D_s$$

$$EZD = 6.9/k'$$

where k' = light extinction coefficient and 1.7 is a constant derived from experimental data (Parsons, Maita, and Lalli 1984).

2.14.2 Water Quality

Parameters of interest, including all parameters with corresponding CCME water quality guidelines for the protection of aquatic life, were graphed for lakes and streams/rivers. Values that were below analytical detection limits were replaced with half the realized sample detection limit for graphing and analyses.

For lakes, water quality data are presented to allow comparisons of vertical (shallow vs. deep), seasonal (winter vs. summer), and annual variability. For streams, water quality data are presented to allow comparison of monthly and annual variability.

2.14.3 Sediment Quality

All sediment quality parameters for which CCME guidelines exist, as well as other parameters of interest, were graphed for lakes and streams. As was done for water quality, parameter concentrations that were below analytical detection limits were replaced with half the realized sample detection limit for graphing and analyses.

2.14.4 Aquatic Biology

The number of organisms per sample were converted to density (organisms/m^2 for benthos; organisms/m^3 for zooplankton; cells/cm^2 for periphyton; and cells/mL for phytoplankton) by dividing each sample by the area or volume sampled. The volume sampled for zooplankton was calculated using flowmeter readings, as outlined in the General Oceanics flowmeter instruction manual (General Oceanics Inc.).

Richness is defined as the number of separate genera/sample present in a sample. In assessing genera richness, multiple species of the same genus were pooled together. Organisms were occasionally not identifiable to the genus level and were identified only to higher taxonomic levels (e.g., family or order). In these instances, the family or order was assumed to comprise a single genus for the calculation of genera richness and diversity unless otherwise stated.

The Simpson's diversity index incorporates richness and abundance to calculate a measure of diversity that can be compared among samples. Simpson's diversity index (D) was calculated based on the formula:

$$D = 1 - \sum_{i=1}^{G} [\, n_i(n_i-1)] \;/\; [N(N-1)]$$

where G is the number of genera, n_i is the number of individuals in the i^{th} genus and N is the total number of individuals. Simpson's diversity index was calculated for all aquatic biology samples.

Note that this formula for the Simpson's diversity index produces values that range from 0 (lowest diversity) to 1 (maximum diversity). The use of Simpson's diversity index takes into account the number of genera and the relative distribution of each genus (evenness).

2.15 HISTORICAL DATA

Historical sampling methodologies and exact sampling locations sometimes differed from 2010 sampling. Summaries of historical collection methodologies, sample collection depths, dates of collection, and replication are presented in Tables 2.14-1 through 2.14-9. A summary of the historical data collection sites for lakes and streams in the Hope Bay Belt area are presented as maps in Figures 2.14-1 through 2.14-5. Only historical data collected from locations also sampled in 2010 are presented in this report.

Table 2.14-1. Summary of Historical Lake Water Quality Sampling Conducted for the Hope Bay Belt Project

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000
Sampling month(s)	June, Aug	Aug	Aug	May*, June*, July, Aug	Apr*, Aug	Apr*, July, Aug	Apr*	July	July, Aug
Sampling depths	Shallow depth	Shallow depth at all sites. Mid and deep depths at Aim. Stn 3	Shallow depth at all sites. Mid and deep depths at Aim. Stn 3	Surface and shoreline surface grab at all sites. Vertical profiles at Doris N and S in August.	Shallow depths at all sites. Metered depths throughout length of column where appropriate.	Shallow depth at all sites. Deep depth sampled at Doris S	Shallow depth	Shallow depth and Shoreline surface grab	Shallow depth and mid depth
Analytical results for metals	Total	Total and dissolved	Total	Total and dissolved	Total and dissolved	Total and dissolved	Total	Total	Total
Replication	n = 1 at each sampling event/depth	n = 1 at each sampling event/depth	n = 1 at each sampling event/depth	n = 1 at each sampling event/depth; n = 2 at Trout Lake and Aim. Stn 3	n = 1 at each sampling event/depth	n = 1 + 20% replication at each sampling event/depth	n = 3 at each sampling event (2 replicates, 1 split sample)	n = 2 at each sampling event/depth	n = 2 at each sampling event/depth
QA/QC	unknown	unknown	Field Blanks	Replicate samples, Travel/Field Blanks	Replicate and Split samples, Field Blanks	Replicate and Split samples, Travel Blanks	Replicate and Split samples, Travel Blanks	Replicates	Replicates, Travel/Field Blanks
Sampling method	Grab samples at surface	Grab samples at surface, unknown sampler at depth.	Grab samples at surface, unknown sampler at depth.	Grab samples at surface, 2 L GO-FLO for deep samples.	2 L GO-FLO	5 L GO-FLO	5 L GO-FLO	Grab samples at surface, 5 L GO-FLO for deep samples.	5 L GO-FLO

Year	2003	2004	2005	2006	2007	2008	2009	2010
Sampling month(s)	July, Aug, Sept	June*, July, Aug, Sept	July, Aug, Sept	May* or June*, July, Aug,	May*, July, Aug, Sept	May*, July, Aug, Sept	Apr/May*, Aug	Apr*, Aug
Sampling depths	Shallow depth	Shallow and deep depths	Shallow and deep depths	Shallow and deep depths	Shallow and deep depths	Shallow and deep depths	Shallow and deep depths	Shallow and deep depths
Analytical results for metals	Total and dissolved	Total and dissolved	Total and dissolved	Total and dissolved	Total and dissolved	Total and dissolved	Total and dissolved	Total and dissolved
Replication	n = 1 at each sampling event/depth	n = 1 at each sampling event/depth	n = 1 at each sampling event/depth	n = 1 at each sampling event/depth	n = 1 at each sampling event/depth	n = 1 at each sampling event/depth	n = 1 + 20% replication at each sampling event/depth	n = 1 + 20% replication at each sampling event/depth
QA/QC	Split samples, Travel Blank	Replicates, Field/Equipment Blanks	Replicates, Field/Equipment Blanks	Replicates, Field Blanks	Replicates, Field/Equipment Blanks	Replicates, Field/Equipment Blanks	Replicates, Travel/Field/ Equipment Blanks	Replicates, Travel/Field/ Equipment Blanks
Sampling method	VanDorn water bottle	Shallow samples collected with geopump and Tygon tubing, deep samples collected with Kemmerer sampler.	Kemmerer sampler	Kemmerer sampler	Kemmerer sampler	Kemmerer sampler	2.5 L Skinny Niskin (winter) or 5 L GO-FLO (summer)	2.5 L Skinny Niskin (winter) or 5 L GO-FLO (summer)

Notes:

Not all sites were sampled on all sampling occasions.

**Denotes under-ice sampling events.*

Table 2.14-2. Summary of Historical Stream and River Water Quality Sampling Conducted for the Hope Bay Belt Project

Year	1992	1993	1994	1995	1996	1997	1998	2000
Sampling month(s)	Aug	June, Aug	Aug	July, Aug	June, Aug	June, July, Aug	June, July, Aug	June, Sept
Analytical results for metals	Total	Total	Total and dissolved	Total and dissolved	Total and dissolved	Total and dissolved	Total	Total
Replication	unknown	unknown	n=1 at each sampling location/event	n = 1 at each sampling location/event + variable % of replicates	n = 1 at each sampling location/event + variable % of replicates	n = 1 at each sampling location/event + variable % of replicates	n = 1 at each sampling location/event + variable % of replicates	n = 2 at each sampling event/location
QA/QC	unknown	unknown	Field Blanks	Replicate samples, Travel/Field Blanks	Replicate and Split samples, Field Blanks	Replicate and Split samples,Travel Blanks	Replicate and Split samples,Travel Blanks	Replicates, Travel/Field Blanks

Year	2003	2004	2005	2006	2007	2008	2009	2010
Sampling month(s)	July, Aug, Sept	sampling multiple times per month in June, July, Aug, Sept at Doris OF, monthly at other sites	sampling multiple times per month in June, July, Aug, Sept at Doris OF, monthly at other sites	sampling multiple times per month in June, July, Aug, Sept at Doris OF, monthly at other sites	sampling multiple times per month in June, July, Aug, Sept at Doris OF, monthly at other sites	June, July, Aug, Sept	Apr/May*, June, Aug, Sept	Apr*, June, Aug, Sept
Analytical results for metals	Total	Total and dissolved	Total and dissolved	Total and dissolved	Total and dissolved	Total and dissolved	Total and dissolved	Total and dissolved
Replication	n = 1 at each sampling event/location	n = 1 at each sampling event/location	n = 1 at each sampling event/location	n = 1 at each sampling event/location	n = 1 at each sampling event/location	n = 1 at each sampling event/location	n = 2 at each sampling event/location	n = 1 at each sampling location/event + variable % of replicates
QA/QC	Travel Blank	Replicates, Field/Equipment Blanks	Replicates, Field/Equipment Blanks	Replicates, Field Blanks	Replicates, Field/Equipment Blanks	Replicates, Field/Equipment Blanks	Replicates, Travel/Field/ Equipment Blanks	Replicates, Travel/Field/ Equipment Blanks

Notes:

Not all sites were sampled on all sampling occasions.

**Denotes under-ice sampling events.*

Table 2.14-3. Summary of Historical Lake Sediment Quality Sampling Conducted for the Hope Bay Belt Project

Year	1996	1997	2007	2009	2010
Sampling month(s)	August	July	August	August	August
Data collected	Sediment Chemistry & particle size	Sediment Chemistry & particle size	Sediment Chemistry & particle size	Sediment Chemistry & particle size	Sediment Chemistry & particle size
Sampled depth zones	Deepest location	Deepest location	Shallow & Mid or Deep	Shallow & Mid or Deep	Shallow & Mid or Deep
Replicates	n = 1	n = 1	n = 5 (corer); n = 1 (Ekman)	n = 3	n = 3
Sampling method	Ekman grab	Ekman grab	Gravity Corer and Ekman	Ekman Grab	Ekman Grab

Notes:

Not all sites were sampled on all sampling occasions.

Table 2.14-4. Summary of Historical Stream Sediment Quality Sampling Conducted for the Hope Bay Belt Project

Year	1993	2009	2010
Sampling month(s)	August	July	August
Data collected	Sediment Chemistry & particle size	Sediment Chemistry & particle size	Sediment Chemistry & particle size
Replicates	n = 1	n = 3	n = 3
Sampling method	Unknown	Ekman grab; depositional	Ekman grab; depositional

Notes:

Not all sites were sampled on all sampling occasions.

Table 2.14-5. Summary of Historical Lake Phytoplankton Sampling Conducted for the Hope Bay Belt Project

Year	1993	1994	1995	1996	1997	1998	2000
Sampling month(s)	Aug	Aug	Aug	Aug	July, Aug	July	July
Data collected	Abundance and Taxonomy	Abundance and Taxonomy	Abundance and Taxonomy	Abundance and Taxonomy; Chl *a*	Abundance and Taxonomy; Chl *a*	Abundance and Taxonomy; Chl *a*	Abundance and Taxonomy
Replication	n = 1	n = 1	n = 1	n = 3	n = 3 for abundance and taxonomy; n= 1 for chl *a*	n = 3	n = 3
Sampling methods	unknown	unknown	GO-FLO sample from surface, additional sample collected at 5 m depth at Aim Stn. 6	Grab sample from 0.5 m depth	5 L GO-FLO sample from 1 m depth	5 L GO-FLO sample from 1 m depth	5 L GO-FLO sample from 1 m depth

Year	2003	2006	2007	2008	2009	2010
Sampling month(s)	July, Aug, Sept	Sept	July, Aug, Sept	July, Aug, Sept	Apr*, Aug	Aug
Data collected	Chl *a*	Chl *a*	Abundance, Biovolume, and Taxonomy; Chl *a*	Chl *a*	Abundance, Biomass, and Taxonomy; Chl *a*	Abundance, Biomass, and Taxonomy; Chl *a*
Replication	n = 1	unknown	n = 1	n = 1	April n = 1; Aug n = 3	n = 3
Sampling methods	Depth-intergrated sample from entire euphotic zone	Kemmerer water sampler from 1 m depth	Depth-intergrated sample from entire euphotic zone	Kemmerer water sampler from 1 m depth	2.5 L Skinny Niskin bottle from 1 m below ice (Apr); 5 L GO-FLO sample from 1 m depth (Aug)	5 L GO-FLO sample from 1 m depth

Notes:

Not all sites were sampled on all sampling occasions.

**Denotes under-ice sampling events.*

Table 2.14-6. Summary of Historical Stream and River Periphyton Sampling Conducted for the Hope Bay Belt Project

Year	1993	1995	1996	1997	1998	2000	2009	2010
Sampling month(s)	instantaneous; Aug	instantaneous; Aug	instantaneous; Aug	June to July; July to Aug	July to Aug	July to Aug	July to Aug	Aug to Sept
Data collected	Abundance and Taxonomy	Abundance and Taxonomy	Abundance and Taxonomy	Abundance and Taxonomy; Chl *a*	Abundance and Taxonomy; Chl *a*	Abundance and Taxonomy; Chl *a*	Abundance and Taxonomy; Chl *a*	Abundance and Taxonomy; Chl *a*
Replicates	n = 3	n = 1	n = 3	n = 1	n = 3	n = 3	n = 3	n = 3
Sampling methods	Rock scraping	Rock scraping	Rock scraping	Plexiglas plate, installed for ~ 1 month	Plexiglas plate, installed for ~ 1 month	Plexiglas plate, installed for ~ 1 month	Plexiglas plate, installed for ~ 1 month	Plexiglas plate, installed for ~ 1 month

Notes:

Not all sites were sampled on all sampling occasions.

Table 2.14-7. Summary of Historical Lake Zooplankton Sampling Conducted for the Hope Bay Belt Project

Year	1993	1995	1996	1997	1998	2009	2010
Sampling month(s)	Aug	Aug	Aug	July, Aug	July	Aug	Aug
Analytical results	Abundance and Taxonomy	Abundance and Taxonomy	Abundance and Taxonomy	Abundance and Taxonomy	Abundance and Taxonomy	Abundance and Taxonomy	Abundance and Taxonomy
Replication	n = 4	n = 3	n = 3	n = 3	n = 3	n = 3	n = 3
Sampling method	64 µm mesh net, 0.3 m diameter	118 µm mesh net, 0.3 m diameter	118 µm mesh net, 0.3 m diameter	118 µm mesh net, 0.3 m diameter	118 µm mesh net, 0.3 m diameter	118 µm mesh net, 0.3 m diameter	118 µm mesh net, 0.3 m diameter

Notes:

Not all sites were sampled on all sampling occasions.

Table 2.14-8. Summary of Historical Lake Benthos Sampling Conducted for the Hope Bay Belt Project

Year	1993	1994	1995	1996	1997	1998	2000	2007	2009	2010
Sampling month(s)	Aug	Aug	Aug	Aug	July, Aug	July	July	Aug	Aug	Aug
Replicates	n = 3	n = 3	n = 3	n = 3	n = 3	n=3	n = 3	n = 5	n = 3	n = 5 composite replicates (each replicate consisted of 3 pooled samples)
Sampling method	Core Sampler (0.00332 m^2); 250 µm sieve bucket	Ekman (0.0225 m^2); 250 µm sieve bucket	Ekman (0.0225 m^2); 250 µm sieve bucket	Ekman (0.0232 m^2); 493 µm sieve bucket	Ekman (0.0232 m^2); 493 µm sieve bucket	Ekman (0.0232 m^2); 493 µm sieve bucket	Ekman (0.0225 m^2); 500 µm sieve bucket	Ekman (0.0225 m^2); 243 µm sieve bucket	Ekman (0.0225 m^2); 500 µm sieve bucket	Ekman (0.0225 m^2); 500 µm sieve bucket

Notes:

Not all sites were sampled on all sampling occasions.

Table 2.14-9. Summary of Historical Stream and River Benthos Sampling Conducted for the Hope Bay Belt Project

Year	1993	1995	1996	1997	1998	2000	2009	2010
Sampling month(s)	Aug	Aug	July to Aug	June to July, July to August	June to July	July to Aug	July	Aug
Replicates	n = 3	n = 3	n = 2 to 4	n = 1 to 3	n = 3	n = 3	n = 3	n = 5 composite replicates (each replicate consisted of 3 pooled samples)
Sampling method	Hess Sampler (0.096 m^2); 250 µm mesh size	Hess Sampler (0.096 m^2); 250 µm mesh size	Hester Dendy; 8 plates measuring 7.5 cm × 7.5 cm	Hester Dendy; 8 plates measuring 7.5 cm × 7.5 cm	Hester Dendy; 9 plates measuring 7.5 cm × 7.6 cm	Hester Dendy; 9 plates measuring 8 cm × 8 cm; 500 µm sieve bucket	Hess Sampler (0.096 m^2); 500 µm mesh size	Hess Sampler (0.096 m^2); 500 µm mesh size

Notes:

Not all sites were sampled on all sampling occasions.