

AGNICO-EAGLE MINES: MEADOWBANK DIVISION

**FISH HABITAT OFFSETTING PLAN:
PHASER LAKE**

JULY, 2015

TABLE OF CONTENTS

EXECUTIVE SUMMARY	IV
SECTION 1 • INTRODUCTION	1
1.1 Goal.....	1
1.2 Phaser Lake Water Quality	1
SECTION 2 • HABITAT EVALUATION PROCEDURE.....	4
2.1 HEP Model	4
2.1.1 Habitat Type Area (HT ₁₋₁₁)	4
2.1.2 Habitat Suitability Index (HSI _{sp,nu,fo,ow})	5
2.1.3 Life Function Weight	6
2.1.4 Species Weight	7
2.1.5 Access Factor	7
SECTION 3 • HABITAT LOSSES	9
3.1.1 HU Calculation - Losses.....	9
SECTION 4 • HABITAT GAINS	14
4.1 Re-flooding of Dewatered Basin and Pit	14
4.1.1 HU Calculation	16
4.2 Access Enhancements.....	19
4.2.1 Description	19
4.2.2 HU Calculation	19
4.3 Research Funding	20
4.4 Unmapped area.....	20
4.5 Design and Construction of the Offsetting Measures	21
4.6 Monitoring.....	21
SECTION 5 • DISCUSSION	22
5.1 Comparison of differences between 2012 and 2015 plans	22
5.2 Allotment of Gains	23
REFERENCES.....	25

LIST OF FIGURES

Figure 3-1. Footprint of mining activities in the Vault Lake Area.....	11
Figure 3-2. Pre-construction substrate and depth zones for the Vault Lake Area.	12
Figure 3-3. Pre-construction habitat types for the Vault Lake Area.	13

Figure 4-1. Post-offset substrate and depth zones for the Vault Lake Area.	17
Figure 4-2. Post-offset habitat types for the Vault Lake Area.	18

LIST OF TABLES

Table 1-1. Water quality in Phaser Lake; September and October, 2013.....	2
Table 2-1. Physical characteristics of the habitat types proposed for the Meadowbank HEP.....	5
Table 2-2. HSI values for the Meadowbank region fish species (sp=spawning, nu=nursery, fo=foraging, ow=overwintering). Habitat type 11 is for use in pits where mixing will occur, and water quality is expected to remain similar to baseline conditions.....	6
Table 2-3. Fisheries weightings.	7
Table 2-4. Access factor applied to each species, pre- and post-compensation, based on presence/absence (or anticipated presence/absence, for post-compensation).....	8
Table 2-5. Access factor values used for each species in Phaser Lake for the pre- and post-compensation scenarios.....	8
Table 3-1. Mapped pre-construction (baseline), or lost habitat type areas (ha) and habitat units (HUs) for Phaser Lake.	10
Table 4-1. Features of the Vault Lake Area and details of the changes and assumptions used to calculate habitat type areas for each feature, post-closure.	15
Table 4-2. Net habitat units (HUs) gained through re-flooding in Phaser Lake. Pre-offset HUs are 0 since there would be no fish habitat in this area without re-flooding.....	16
Table 4-3. Pre- and post-compensation habitat units involved in the creation of access for arctic char in Phaser Lake.....	19
Table 4-4. Total area of each mine feature in Phaser Lake and area for which habitat units could not be calculated or mapped.....	20
Table 5-1. Summary of pre-construction, or lost habitat units (HUs) associated with each lake and minesite feature for the Vault Lake Area based on 2012 and 2015 mine development plans. Increase in losses is due to inclusion of small-bodied fish in the 2015 model.....	22
Table 5-2. Gained habitat units (HUs) allotted to the Vault Lake area based on 2012 and 2015 mine development plans. Gains allotted to other areas as necessary or in keeping with historical documentation are indicated as “-.*partial gains from W3 access (Arctic char in Wally Lake) are allotted to the Vault Lake area – see 2012 NNLP for explanation.	23

LIST OF APPENDICES

Appendix A – HU Subtotals and Totals by Species

Appendix B – DFO Authorization (NU 03-0191.4)

Appendix C – DFO Meeting Minutes, May 2015

EXECUTIVE SUMMARY

This offsetting plan is presented as an addendum to Meadowbank's No-Net-Loss plan (NNLP; AEM, 2012). It has been developed to characterize the anticipated serious harm to fish that would be associated with the expansion of the Vault Area Pits, through the development of the BB Phaser Pit (immediately south of Phaser Pit, adjacent to Vault Pit), and to identify AEM's proposed offsetting measures.

Although the 2012 NNLP characterized serious harm to fish associated with the dewatering of Phaser Lake as a result of development of the Phaser Pit, AEM did not apply to DFO for a Fisheries Authorization for Phaser Lake at that time. Since then, development of an additional pit area in Phaser Lake (BB Phaser Pit) has been proposed. Therefore, this addendum presents the updated habitat offsetting calculations for Phaser Lake.

Losses and gains in fish habitat were quantified using the Habitat Evaluation Procedure (HEP) approach applied in the 2012 NNLP. Development of both Phaser and BB Phaser pits will require dewatering of Phaser Lake, following a fish-out program. Baseline (pre-construction) HUs for Phaser Lake were calculated to be 5.89 HU. These are the losses to fish habitat that will occur if no offsets are implemented. Offsets are planned to include re-flooding of the de-watered lake following habitat improvement measures such as backfilling of the Phaser Pit, construction of shoals to create higher-value habitat, and access enhancements for Arctic char. A total of 13.22 HU are gained through these measures. As additional an additional offset, AEM proposes to provide a portion of the offsetting costs for research funding, with a planned focus on aquatic eDNA. This project would make use of the unique opportunity to confirm results of eDNA analysis following the Phaser Lake fish-out program.

Losses calculated in the previous 2012 NNLP for Phaser Lake were 5.35 HU, and gains following re-flooding were 12.87 HU. No funding for research in Phaser Lake was proposed as part of that plan.

The DFO Authorization (NU-03-0191.4) issued to AEM in 2013 authorized habitat losses in Vault Lake (27.73 HU) for mining of the Vault Pit, but did not authorize losses in Phaser Lake. However, the same Authorization included habitat gains associated with the re-flooding of both Vault and Phaser Lakes (total 65.32 HU, of which 12.87 HU were derived from re-flooding of Phaser Lake). I.e., no Authorization was issued for the dewatering of Phaser Lake, but the offsets associated with re-flooding it were counted in the Vault Lake Authorization. AEM communicated this to DFO when the Authorization was issued, and will ensure the matter is equitably resolved.

SECTION 1 • INTRODUCTION

In 2012, AEM developed a revised No-Net-Loss Plan (NNLP) for the Meadowbank site to account for habitat alterations, disruptions or destructions (HADD) that were planned to occur in Second Portage Lake, Third Portage Lake, Vault Lake and Phaser Lake. Based on this plan, DFO Authorizations (NU-03-0191.3 and NU-03-0191.4) were applied for, and issued for works in Second Portage Lake, Third Portage Lake and Vault Lake.

AEM is now planning to apply for a DFO Authorization for Phaser Lake. However, since 2012, changes have been made to the footprint of planned development in Phaser Lake. This offsetting plan is therefore presented as an addendum to AEM's 2012 No-Net-Loss-Plan, and aims to characterize the residual harm to fish and fish habitat that will occur throughout the mine development and operational phase of Phaser Pit and BB Phaser Pit (located in Phaser Lake), and the offsetting measures that will be implemented. It should be noted that federal legislation around fisheries compensation changed in 2013, and although this plan is presented as an addendum to AEM's 2012 NNLP (terminology that is no longer used), as discussed with DFO during a meeting in May, 2015 (see Appendix C), AEM believes that the methodology for habitat quantification remains acceptable under the new policy, and that it will continue to apply under the Fisheries Act, Section 35. As a result, the habitat-based model used in the 2012 NNLP for quantifying HADD is maintained here to quantify serious harm to fish and fish habitat.

Phaser Lake is located to the north of the main camp at Meadowbank. It is adjacent to Vault Lake, where dewatering has already occurred and pit development is underway. Phaser Lake is relatively small and isolated, with a maximum depth of 4-5 m. For further descriptions of the Meadowbank site, ecological setting, fish species, their habitat preferences, and history of the NNLP at Meadowbank, refer to the 2012 NNLP (AEM, 2012).

1.1 GOAL

The main goal of this plan is to characterize the residual serious harm to fish that will occur as a result of mining activities in Phaser Lake at the Meadowbank mine, and to select offsetting measures. This plan will support AEM's application to DFO for a new Fisheries Authorization for Phaser Lake and assist in the impact assessment for the expansion of Vault Pit to include Phaser Pit and BB Phaser.

Offsetting (at the time, "compensation") options were previously proposed for losses associated with Phaser Pit (and other areas) in the 2012 NNLP after researching techniques and projects implemented at other northern mines, holding workshops and site visits with the local Hunter's and Trapper's Organization, Kivalliq Inuit Association and the DFO Habitat and Science & Research Departments, and reviewing the literature for information on effectiveness of compensation techniques in the north. As a result, those options are maintained in this plan and applied as offsetting for the new BB Phaser Pit.

1.2 PHASER LAKE WATER QUALITY

Water quality in Phaser Lake was analyzed on three dates in September and October, 2013. Parameters included total and dissolved metals, cyanide, hardness, alkalinity, ammonia, sulfate, nitrate and nitrite. Results of these analyses are provided in Table 1-1. As with other lakes in the area, Phaser Lake is considered to be ultraoligotrophic, and the majority of parameters were below limits of detection.

Table 1-1. Water quality in Phaser Lake; September and October, 2013.

Parameter	Units	10/09/2013	23/09/2013	02/10/2013
Alkalinity	mg CaCO ₃ /L	49	49	45
Ammonia nitrogen (NH ₃ -NH ₄)	mg N/L	0.08	0.32	<0.01
TDS	mg/L	36	36	36
CN total	mg/L	0.007	<0.005	<0.005
CN Free	mg/L	<1	<1	<1
pH (field)		6.83	7.12	7.57
Conductivity (field)		37	56.2	60.1
Turbidity (field)	NTU	0.7	0.68	0.56
Chloride	mg/L	1.2	0.8	1.1
Fluoride	mg/L	0.15	0.03	0.12
Hardness	mg CaCO ₃ /L	26	19	23
Nitrate	mg/L	0.03	0.07	0.15
Nitrite	mg/L	<0.01	<0.01	<0.01
Sulphate	mg/L	3.9	8.3	4.2
Dissolved Aluminium (Al)	mg/L	<0.006	<0.006	<0.006
Dissolved Arsenic (As)	mg/L	<0.0005	<0.0005	0.0006
Dissolved Barium (Ba)	mg/L	0.002	0.0019	0.0026
Dissolved Cadmium (Cd)	mg/L	<0.00002	<0.00002	<0.00002
Dissolved Copper (Cu)	mg/L	0.0006	<0.0005	<0.0005
Dissolved Iron (Fe)	mg/L	<0.01	<0.01	<0.01
Dissolved Lead (Pb)	mg/L	<0.0003	<0.0003	<0.0003
Dissolved Manganese (Mn)	mg/L	<0.0005	<0.0005	<0.0005
Dissolved Mercury (Hg)	mg/L	<0.0001	<0.0001	<0.0001
Dissolved Molybdenum (Mo)	mg/L	<0.0005	<0.0005	<0.0005
Dissolved Nickel (Ni)	mg/L	<0.0005	<0.0005	<0.0005
Dissolved Selenium (Se)	mg/L	<0.001	<0.001	<0.001
Dissolved Silver (Ag)	mg/L	<0.001	<0.001	<0.0001
Dissolved Thallium (Tl)	mg/L	<0.005	<0.005	
Dissolved Zinc (Zn)	mg/L	<0.001	<0.001	
Aluminium (Al)	mg/L	0.023	<0.006	<0.006
Antimony (Sb)	mg/L	<0.0001	<0.0001	<0.0001
Arsenic (As)	mg/L	<0.0005	<0.0005	0.0022
Boron (B)	mg/L	<0.01	<0.01	<0.01
Barium (Ba)	mg/L	0.0024	0.0019	0.0029
Beryllium (Be)	mg/L	<0.0005	<0.0005	<0.0005
Cadmium (Cd)	mg/L	<0.00002	<0.00002	<0.00002
Copper (Cu)	mg/L	<0.0005	<0.0005	<0.0005

Parameter	Units	10/09/2013	23/09/2013	02/10/2013
Chromium (Cr)	mg/L	<0.0006	<0.0006	<0.0006
Cobalt (Co)	mg/L	<0.0005	<0.0005	<0.0005
Iron (Fe)	mg/L	<0.01	<0.01	0.04
Lithium (Li)	mg/L	<0.005	<0.005	<0.005
Manganese (Mn)	mg/L	<0.0005	<0.0005	0.0006
Mercury (Hg)	mg/L	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	<0.0005	<0.0005	<0.0005
Nickel (Ni)	mg/L	<0.0005	<0.0005	0.0005
Lead (Pb)	mg/L	<0.0003	<0.0003	<0.0003
Selenium (Se)	mg/L	<0.001	<0.001	<0.001
Tin (Sn)	mg/L	<0.001	<0.001	<0.001
Strontium (Sr)	mg/L	0.026	0.027	0.032
Titanium (Ti)	mg/L	<0.01	<0.01	<0.01
Thallium (Tl)	mg/L	<0.005	<0.005	<0.005
Uranium (U)	mg/L	<0.001	<0.001	<0.001
Vanadium (V)	mg/L	<0.0005	<0.0005	<0.0005
Zinc (Zn)	mg/L	<0.001	<0.001	0.001

SECTION 2 • HABITAT EVALUATION PROCEDURE

The habitat evaluation procedure (HEP) that was used to quantify habitat losses and gains for Phaser Lake in this report is identical to the procedure used for the 2012 NNL assessment. A summary is provided below, and further rationale is available in the 2012 document.

The HEP involves the multiplication of each affected area (in hectares) by a habitat suitability index (HSI) and series of fish species weights in order to derive a value in habitat units (HUs) that describes both the quality and quantity of habitat. In the first stage of the habitat evaluation, pre-construction (natural, or baseline) habitat units are calculated for all areas of the mine site where an impact to habitat will occur. Changes to habitat units occurring for each area post-closure are then calculated in the second stage based on mine construction designs, and incorporating any habitat compensation features, to determine the total number of habitat units present after mining (“gains” or “offsets”).

The net HUs will depend on the habitat type (11 groups, by substrate and depth) that is lost and gained in each area, and the suitability of that habitat type for each fish species. Suitability of each habitat type is ranked between 0-1 for each life stage of each fish species (spawning, nursery, foraging, overwintering).

For each minesite feature (e.g. pits, dikes, roads) where losses or gains are expected to occur, HUs are calculated by multiplying the area of each habitat type in that feature by the HSI allotted to each life function of each fish species, multiplied by the species weight and life function weight, and summed. This subtotal is then multiplied by an access factor, which represents the accessibility of the area to each species, and a habitat co-factor which describes changes in hydrological, thermal or chemical water quality (not employed for this Phaser Lake addendum). The HEP model is described in further detail below, and an example calculation is provided in Appendix A of the 2012 NNLP.

2.1 HEP MODEL

The HEP model used here can be described, for each fish species (spp 1-n) as:

$$\text{HU}_{\text{spp } 1-n} = \sum_{\text{HT } 1-11} \left(\sum_{\text{sp,nu,fo,ow}} (\text{HT}_{1-11} \times \text{HSI}_{\text{sp,nu,fo,ow}} \times \text{life function weight} \times \text{species weight}) \right) \times \text{access factor}$$

Where HT_{1-11} = area (ha) of habitat types 1 through 11

$\text{HSI}_{\text{sp,nu,fo,ow}}$ = habitat suitability index for each life function:

sp = spawning use

nu = nursery use

fo = foraging use

ow = overwintering use

2.1.1 Habitat Type Area (HT_{1-11})

The foundation of the HEP is the delineation of “habitat types” – the method by which habitat areas are grouped, and thereby mapped. The Meadowbank HEP model uses 11 habitat

types, which are based on various combinations of substrate and depth. Habitat types 1-9 are applied to natural habitat for various combinations of substrate type and depth zone. Habitat type 10 is included in the HEP in recognition of reduced habitat quality in end pit lakes as a result of pit water stratification and monimolimnion development. Habitat type 11 is applied in end pit lakes where permanent stratification is not predicted, and water quality is expected to be more suitable for aquatic biota. Substrate and depth zones associated with each habitat type are shown in Table 2-1.

Table 2-1. Physical characteristics of the habitat types proposed for the Meadowbank HEP.

Habitat Type	Depth Zone	Substrate	Use
1	0-2m	Fine	Loss/Gain
2	0-2m	Mixed	Loss/Gain
3	0-2m	Coarse	Loss/Gain
4	2-4m	Fine	Loss/Gain
5	2-4m	Mixed	Loss/Gain
6	2-4m	Coarse	Loss/Gain
7	>4m	Fine	Loss/Gain
8	>4m	Mixed	Loss/Gain
9	>4m	Coarse	Loss/Gain
10	>10m	None	End pit lake with monimolimnion
11	>10m	None	End pit lake without monimolimnion and with WQ suitable for aquatic biota

In order to calculate the extents of each habitat type, depth zones and substrate were mapped for the entire Meadowbank site, for pre- and post-closure scenarios. Maps for Phaser Lake were updated during this assessment to include BB Phaser Pit. All habitat type area calculations and mapping were completed by Dougan and Associates, and methods are described in further detail in the 2012 NNLP.

Habitat type areas were determined by overlaying depth and substrate layers. This was done for each minesite feature, in both the pre- and post-closure scenario in order to calculate losses and gains of each habitat type.

2.1.2 Habitat Suitability Index ($HSI_{sp,nu,fo,ow}$)

The habitat suitability term represents the relative quality of each habitat type for each life function of each fish species present in the region. In the case of this HEP, the life functions spawning, nursery, foraging and overwintering were considered. In this HEP, habitat suitability is indicated through a ranking of 0, 0.25, 0.5, 0.75 or 1. HSIs for all fish species and habitat types used in this HEP are shown in Table 2-2.

Table 2-2. HSI values for the Meadowbank region fish species (sp=spawning, nu=nursery, fo=foraging, ow=overwintering). Habitat type 11 is for use in pits where mixing will occur, and water quality is expected to remain similar to baseline conditions.

Habitat Type	Depth	Substrate	Arctic Char				Lake Trout				Round Whitefish			
			SP	NU	FO	OW	SP	NU	FO	OW	SP	NU	FO	OW
1	<2 m	Fines	0	0.25	0.25	0	0	0.25	0.25	0	0	0.25	0.75	0
2	<2 m	Mixed	0	0.25	0.25	0	0	0.5	0.5	0	0	0.75	0.5	0
3	<2 m	Coarse	0	0.5	0.5	0	0	1	0.75	0	0	0.75	0.5	0
4	2-4 m	Fines	0	0.5	0.5	0.75	0	0.5	0.5	0.75	0	0.25	1	0.75
5	2-4 m	Mixed	0.5	0.75	0.75	0.75	0.5	0.75	0.75	0.75	0.5	0.75	0.75	0.75
6	2-4 m	Coarse	1	1	1	0.75	1	1	1	0.75	1	1	0.75	0.75
7	>4 m	Fines	0	0.25	0.5	1	0	0.25	0.5	1	0	0.25	1	1
8	>4 m	Mixed	0.5	0.5	0.75	1	0.5	0.5	0.75	1	0.25	0.25	0.5	1
9	>4 m	Coarse	1	0.5	1	1	1	0.5	1	1	0.75	0.5	0.5	1
10	>10 m	None	0	0	0.25	0.75	0	0	0.5	0.75	0	0	0	0.75
11	>10 m	None	0	0	1	1	0.5	0	1	1	0	0	0.25	1
Habitat Type	Depth	Substrate	Burbot				Slimy Sculpin				Ninespine Stickleback			
			SP	NU	FO	OW	SP	NU	FO	OW	SP	NU	FO	OW
1	<2 m	Fines	0	0.25	0.25	0	0	0	0.25	0	1	1	1	0
2	<2 m	Mixed	0	0.75	0.5	0	0.25	0.25	0.5	0	0.5	0.5	0.75	0
3	<2 m	Coarse	0	1	0.5	0	1	1	1	0	0	0.25	0.75	0
4	2-4 m	Fines	0	0.25	0.25	0.75	0	0	0.25	0.75	0	0	0.5	0.75
5	2-4 m	Mixed	1	0.5	0.75	0.75	0.25	0.25	0.5	0.75	0	0	0.25	0.75
6	2-4 m	Coarse	0.75	0.5	1	0.75	0.75	0.75	1	0.75	0	0	0.25	0.75
7	>4 m	Fines	0	0	0.25	1	0	0	0	1	0	0	0	1
8	>4 m	Mixed	1	0	0.75	1	0	0	0.25	1	0	0	0	1
9	>4 m	Coarse	0.75	0.25	1	1	0.5	0.5	0.5	1	0	0	0	1
10	>10 m	None	0	0	0.25	0.25	0	0	0	0.25	0	0	0	0.75
11	>10 m	None	0	0	1	1	0	0	0.5	1	0	0	0	1
Habitat Type	Depth	Substrate	Lake Cisco				Arctic Grayling							
			SP	NU	FO	OW	SP	NU	FO	OW				
1	<2 m	Fines	0	0.25	0.5	0	0	0.25	0	0				
2	<2 m	Mixed	0	1	1	0	0	0.25	0.25	0				
3	<2 m	Coarse	0	1	1	0	0	0.5	0.25	0				
4	2-4 m	Fines	0	0.25	0.75	0.75	0	0	0.5	0.75				
5	2-4 m	Mixed	0.25	0.5	1	0.75	0	0	1	0.75				
6	2-4 m	Coarse	0.75	0.75	0.75	0.75	0	0	1	0.75				
7	>4 m	Fines	0	0	0.75	1	0	0	0.5	1				
8	>4 m	Mixed	0.5	0.25	1	1	0	0	1	1				
9	>4 m	Coarse	1	0.25	0.75	1	0	0	1	1				
10	>10 m	None	0	0	0.75	0.75	0	0	0	0.5				
11	>10 m	None	0.25	0	0.75	1	0	0	0	1				

2.1.3 Life Function Weight

Life function weights were equal, at 0.25 each for spawning, nursery, foraging and overwintering.

2.1.4 Species Weight

The overall species weights used in this method sum to 1 across species, and are comprised of a biomass weighting and a fisheries value weighting:

$$\text{Species weight} = (\text{biomass weight}/2) \times (\text{fisheries weight}/2)$$

These two components are described below.

2.1.4.1 Biomass Weight

In the case of the Meadowbank assessment, biomass weights for all areas onsite are based on the average proportional biomass observed in the Second Portage Lake and Third Portage Lake fishouts. These biomass proportions are site-specific and known with certainty, while fish surveys are relatively limited in other area lakes. Furthermore, for all mine-affected lakes other than Second Portage and Third Portage, fish assemblages are expected to change following the implementation of compensation measures that improve access between lakes. It should be noted that few small-bodied fish have been caught in fish surveys to date; however they are conservatively assumed to be present biomass weight calculations as they were common in stomach contents.

2.1.4.2 Fisheries Weight

Fisheries weights reflect the relative value of each species for subsistence fishing. There are no commercial fisheries in the project lakes area. Fisheries weights sum to 1 across species (Table 2-3).

Table 2-3. Fisheries weightings.

Species	Weight
Arctic char	0.50
Lake trout	0.25
Round whitefish	0.05
Burbot	0.05
Slimy sculpin	0
Ninespine stickleback	0
Lake cisco	0.05
Arctic grayling	0.10

2.1.5 Access Factor

Minns (2012) suggests the use of an access factor when fish assemblages are expected to change between the pre- and post-compensation scenarios. According to Minns (2012), the access factor is 1 for any species present in the habitat area, and 0 for any species not present. Each species receives an access factor in both the pre- and post- calculations (Table 2-4). Therefore, the opening of access to a habitat area for a species post-closure

(that did not have access pre-construction), results in a gain of habitat units. Similarly, the loss of access results in a loss of habitat units. These gains or losses may be complete (affect all species, e.g. conversion to a tailings storage facility), or partial (only some species are affected).

Note that presence or absence of a species pre-construction is based on monitoring studies in the affected habitat area, whereas presence or absence in the post-closure scenario is anticipated (to be confirmed after access is altered as part of compensation monitoring – see Section 4.6).

Table 2-4. Access factor applied to each species, pre- and post-compensation, based on presence/absence (or anticipated presence/absence, for post-compensation).

Scenario	Pre-compensation	Post-Compensation
Species Present	1	1
Species Not Present	0	0

For Phaser Lake, access factors applied are shown in Table 2-5. The rationale for use of an access factor of 0.75 for post-compensation for Arctic char is further described in Section 4. In the 2012 NNLP, burbot, ninespine stickleback, and slimy sculpin were erroneously excluded from habitat calculations in Phaser Lake. They were added into calculations here. The minor impact on HU calculations is described in Section 5.

Table 2-5. Access factor values used for each species in Phaser Lake for the pre- and post-compensation scenarios.

Species	Pre-construction	Post-compensation
Arctic char	0	0.75
Lake trout	1	1
Round whitefish	1	1
Burbot	1	1
Slimy sculpin	1	1
Ninespine stickleback	1	1
Lake cisco	0	0
Arctic grayling	0	0

SECTION 3 • HABITAT LOSSES

This section presents the calculation of habitat units for the pre-construction scenario (losses) in Phaser Lake. Impacts to habitat in Phaser Lake were quantified in the 2012 NNLP as a component of the Vault Lake Area. Since complete dewatering of Phaser Lake was planned at that time, there are no changes to the total impacted area. However, an adjustment to area calculations for the Phaser Pit cap (see Table 4-1) was made, after it was determined a small area was double-counted in previous calculations (0.23 ha). In addition, small-bodied fish were added to the habitat model, as described above. These two changes have resulted in a slight adjustment to the baseline HUs in Phaser Lake.

It should also be noted that as discussed in the 2012 NNLP, and similar to calculations for Vault Lake, resolution differences between substrate maps and base maps for Phaser Lake were found to produce an unmapped zone of 2.23 ha over several pockets of the lake, for which HUs could not be calculated (losses or gains). Impacts of this unmapped area on habitat calculations are further described in Section 4.

The footprint of mining activities in the Vault Lake Area, which includes Phaser Lake, is shown in Figure 3-1, including the location of pits, roads and dikes. In 2013, a Fisheries Authorization was obtained from DFO for Vault Lake based on AEM's 2012 NNLP. Following a fish salvage program, that lake was dewatered to allow pit development. A similar program will be implemented for Phaser Lake.

The fish population of Phaser Lake was examined briefly in a 2004 study for the BAEAR (Azimuth, 2005), and again in 2012 (2012 NNLP, Appendix E). It was found to contain populations of lake trout and round whitefish. Small-bodied fish are also assumed to inhabit this lake.

3.1.1 HU Calculation - Losses

Substrate zones (fines, mixed, coarse) for Phaser Lake, pre-construction, are shown in Figure 3-2a. The majority of substrate is fine grained, with coarse and mixed-grain substrate typically occurring around the shoreline.

The depth zones in Phaser Lake considered for the pre-construction scenario are shown in Figure 3-2b. Baseline depths are shallow, compared to the Main Minesite Area lakes (Second Portage and Third Portage Lakes). Phaser Lake reaches a maximum depth of 4-5 m.

The extents of habitat types 1-9 were calculated by overlaying substrate and depth maps. Habitat types for Phaser Lake are shown in Figure 3-3. This area consists of a relatively mixed proportion of habitat types.

A summary of the total habitat type areas and habitat units, calculated as described in Section 2, are shown in Table 3-1. The HU subtotal and total by species and minesite feature are provided in Appendix A.

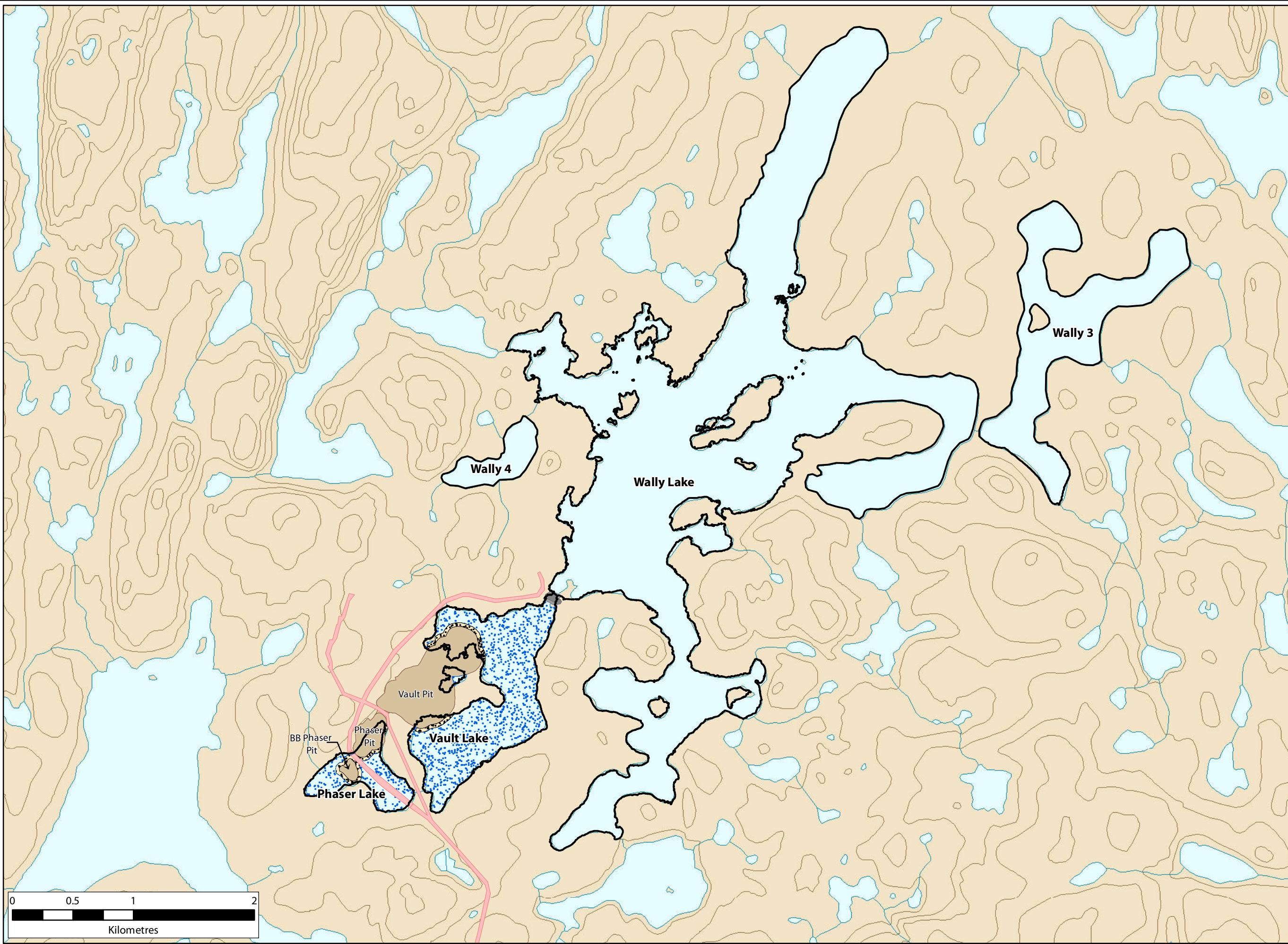
Table 3-1. Mapped pre-construction (baseline), or lost habitat type areas (ha) and habitat units (HUs) for Phaser Lake.

Habitat Type	Area (ha)	HUs
1	0.86	0.07
2	5.44	0.83
3	13.96	3.19
4	1.03	0.26
5	1.72	0.67
6	1.21	0.62
7	0.52	0.13
8	0.20	0.07
9	0.11	0.05
10	N/A	N/A
11	N/A	N/A
Total	25.05	5.89

Impacted aquatic habitat for Phaser Lake without compensation measures totals 25.05 hectares, or 5.89 HUs. This represents an increase of 0.54 HUs from the 2012 NNLP due to the adjustments discussed above. A further 2.23 ha of Phaser Lake could not be mapped – see Section 4.4.

Legend

- Study Lakes
- Dike
- Dike Base
- Roads
- Pit
- Pit Cap
- Lake Basin



Features
Vault Lake Area



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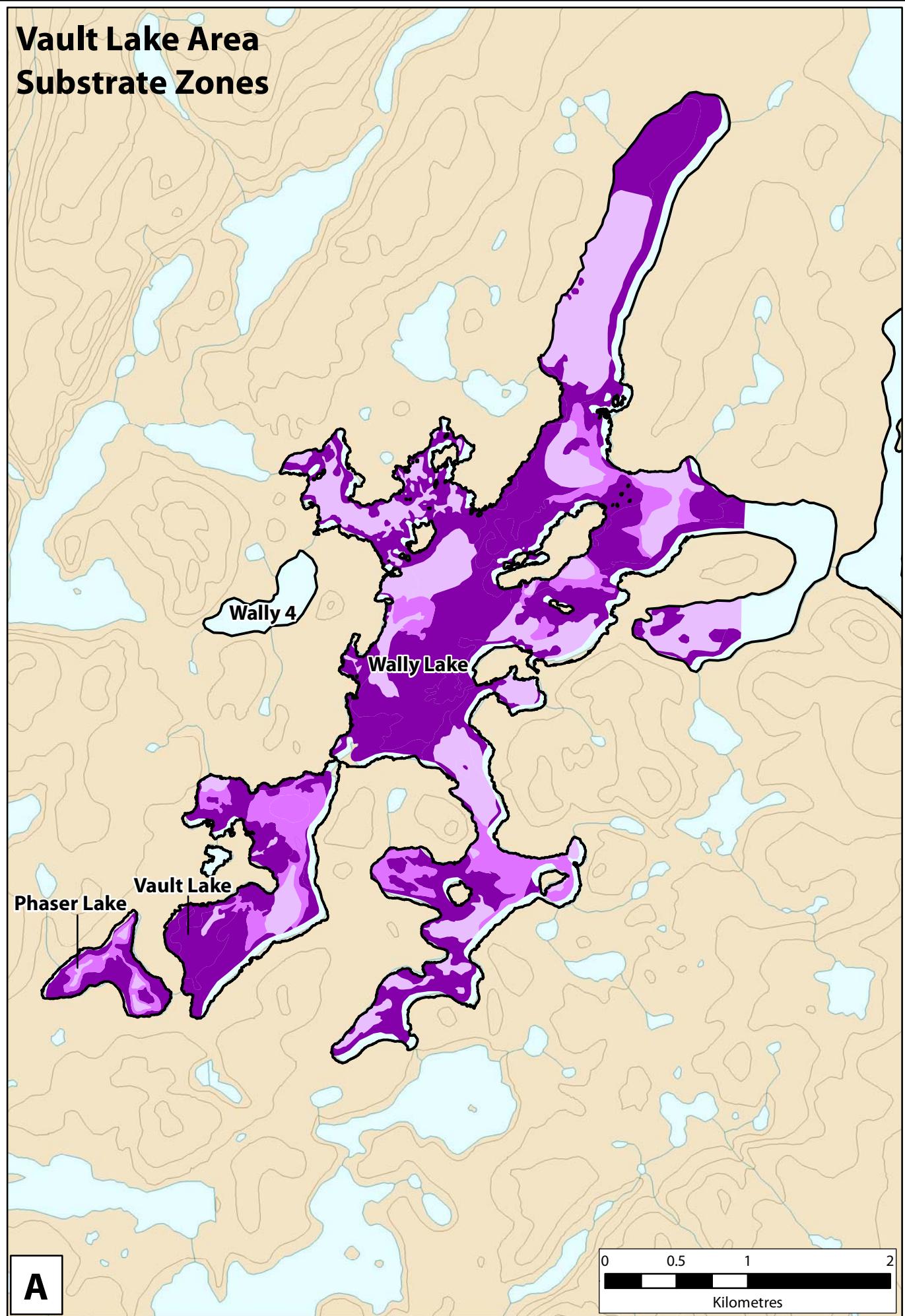
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FIGURE:

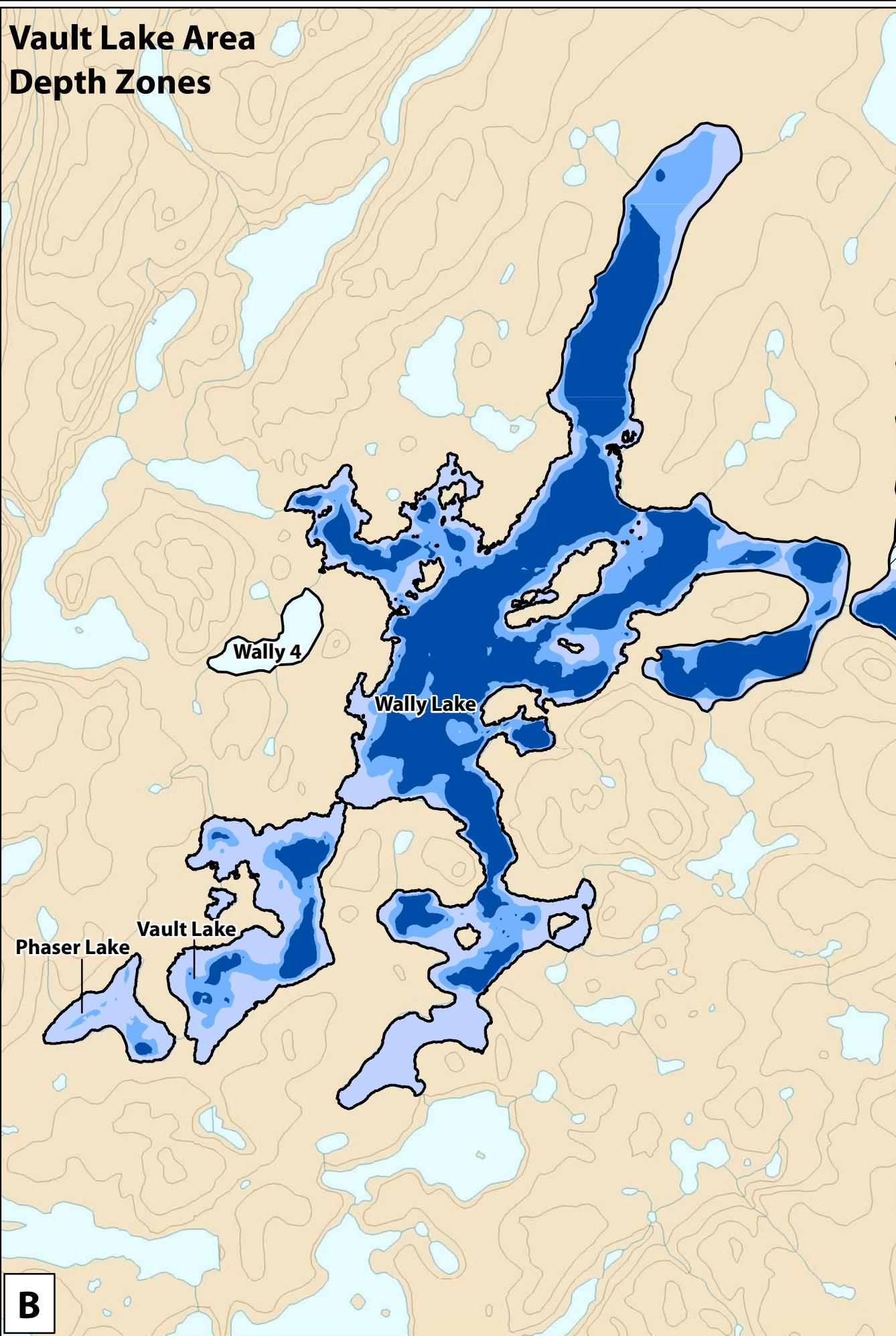
3-1

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations, features, or roads, nor as a guide to navigation. MNR data provided by Queen's Printer of Ontario. Use of the data in any derivative product does not constitute an endorsement by the MNR or the Ontario Government of such products.

Vault Lake Area Substrate Zones



Vault Lake Area Depth Zones



Legend

	Study Lakes
Substrate Zone	
	Fines
	Mixed
	Coarse
Depth Zone	
	<2m
	2-4m
	>4m
	N/A

Substrate and Depth Zones Pre-Construction



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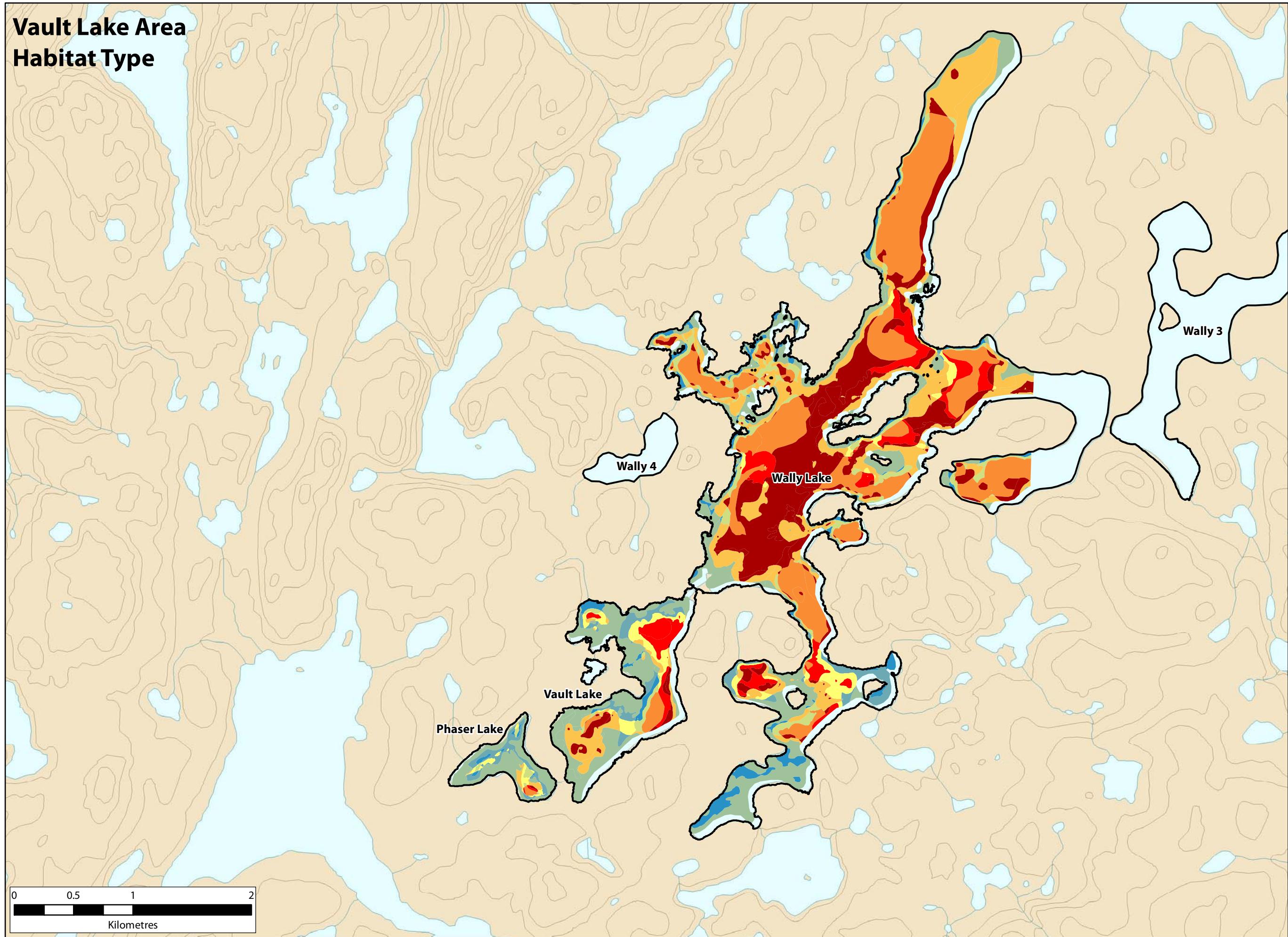
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	DRAWN BY: LC
	CHECKED BY:

FIGURE:

3-2

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations, features, or roads, nor as a guide to navigation. MNR data provided by Queen's Printer of Ontario. Use of the data in any derivative product does not constitute an endorsement by the MNR or the Ontario Government of such products.

Vault Lake Area Habitat Type



Legend

Study Lakes

Habitat Type

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

SECTION 4 • HABITAT GAINS

Habitat gains for Phaser Lake are largely to be obtained from re-flooding of dewatered basins and excavated pits, following the construction of habitat improvement features such as boulder gardens, reefs and shoals. The addition of Arctic char to Phaser Lake through access improvements is also included as a habitat offset. The details of each offsetting feature for Phaser Lake and the calculation of gained habitat units are described below.

4.1 RE-FLOODING OF DEWATERED BASIN AND PIT

As previously stated the major compensation measure authorized for the Meadowbank site is the re-flooding of dewatered basins and associated pits following mining activities (see discussion of end pit lakes as fish habitat, 2012 NNLP, Section 2.2.1 and DFO Authorizations NU-03-0191.3 and NU-03-0191.4). In order to recover the greatest number of HUs and ultimately re-establish a natural fish population, considerations for improving fish habitat have been incorporated into the basin and pit designs (e.g. boulder gardens, backfilling of deep pits). The following sections provide further details on these features and the calculation of habitat units recovered.

After mining, Vault Pit will connect Vault and Phaser Lakes, and the Vault Dike will be breached to allow both lakes to gradually re-fill. Once these lakes are hydraulically and chemically stable (see Cumberland, 2005) and meet water quality requirements, the Vault Dike will be removed, allowing fish from Wally Lake access to Vault and Phaser Lakes.

Post-closure alterations to Vault and Phaser Lakes will result from construction of pits, pit caps, roads and dikes (as seen in Figure 3-1). Both lakes will be expanded as a result of land-to-lake conversion in the Vault and Phaser Pits. Backfilling the Phaser pit to 2-4 m depth will maximize habitat value, and approximate pre-construction conditions, while deep water habitat which is lacking in the lake will be provided by Baby Phaser Pit. Further habitat improvements in these lakes will be made through development of shoals and areas of mixed substrate from temporary haul roads. The features of Phaser Lake post-closure are described in Table 4-1.

Table 4-1. Features of the Vault Lake Area and details of the changes and assumptions used to calculate habitat type areas for each feature, post-closure.

Lake	Feature Name	Description of Feature	Description of Habitat
Phaser Lake	Basin	Area in Phaser Lake that is not covered by other features	Placement of coarse material for temporary roads will result in mixed substrate throughout basin area at depths based on pre-construction contours
	BB Phaser Pit	Pit entirely within Phaser Lake	Deep pit area will provide overwintering habitat; substrate is coarse
	BB Phaser Pit Cap	Cap around outside of Baby Phaser Pit (30 m width)	Cap area provides coarse substrate shoal habitat; no change in depth
	Phaser Pit Cap – Phaser portion	Cap around outside of Vault Pit in in-water portion of Phaser Lake; <i>design pending - assumed width similar to dike sides</i>	Cap area provides coarse substrate shoal habitat; no change in depth
	Phaser Pit	Portion of Vault Pit that overlays Phaser Lake	Backfilled to 2-4 m to provide increased habitat suitability; all substrate is coarse
	Phaser Pit - Land-to-Lake	Portion of Phaser Pit that overlays land	Backfilled to 2-4 m to provide increased habitat suitability; all substrate is coarse
	Roads	Haul road to run north-south across Phaser Lake	Simulated coarse substrate reef habitat at pre-construction depth

4.1.1 HU Calculation

Substrate zones (fines, mixed, coarse) for the Vault Lake Area, post-closure, as determined by the method described in Section 2.2.1, and incorporating the changes detailed in Table 4-1, above for Phaser Lake, are shown in Figure 4-1a. Post-closure, changes to substrate occur through pit and road development, creating areas of coarse and mixed sediment in previously fine-grained basins.

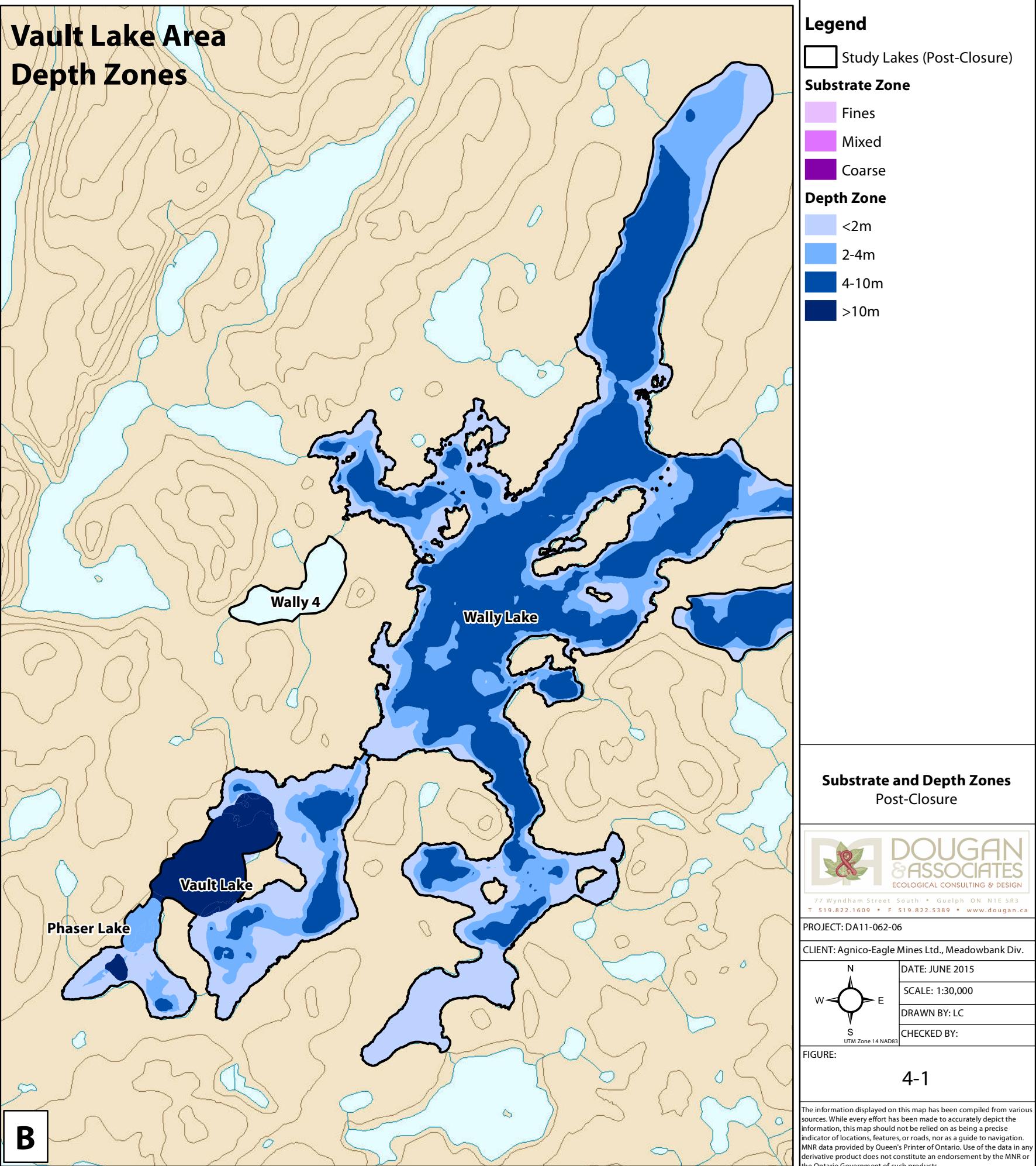
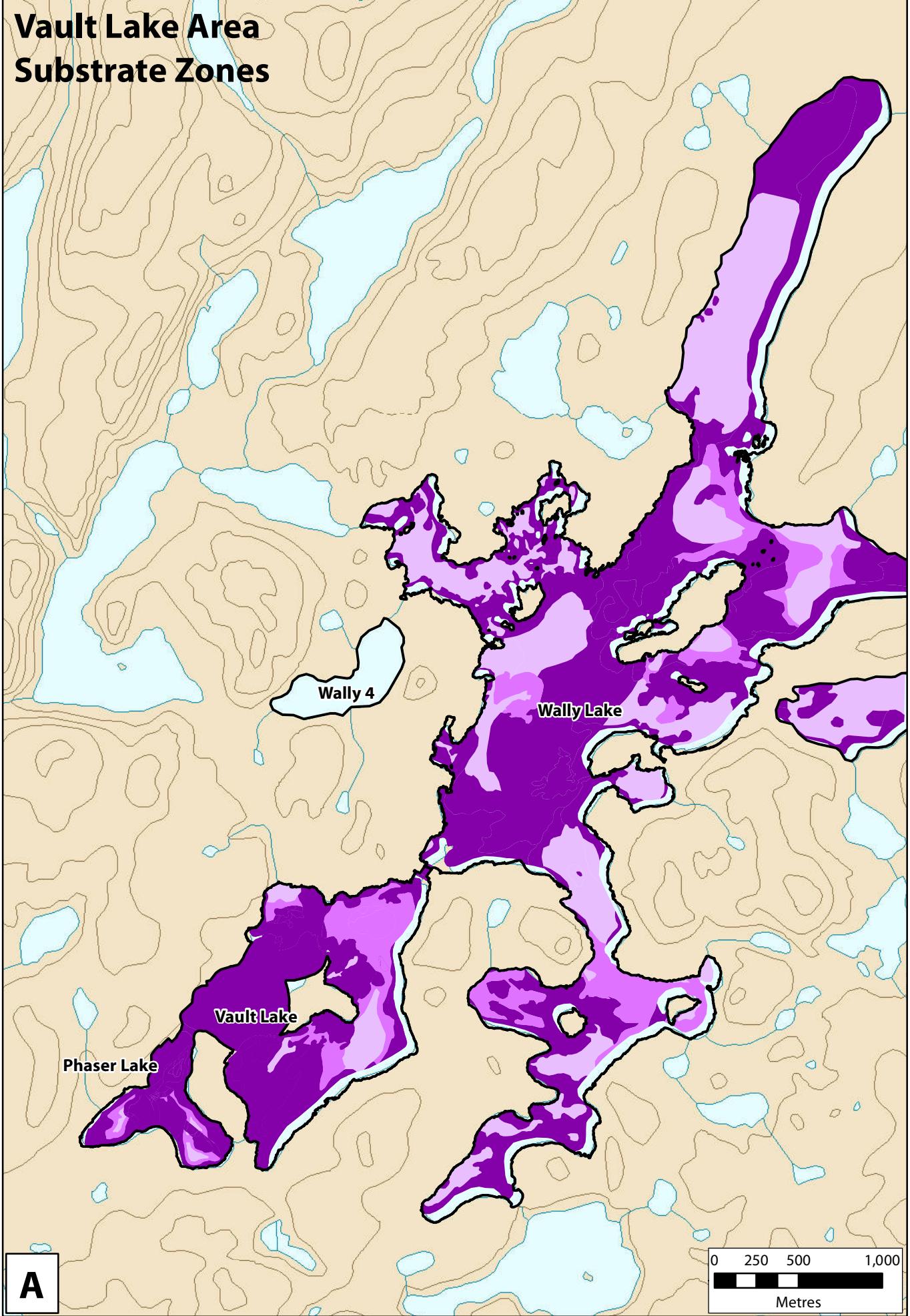
The extents of the depth zones considered in the Vault Lake Area for the post-closure scenario, calculated as described in Section 2.2.1, are shown in Figure 4-1b. BB Phaser Pit development will provide enhanced overwintering habitat, which is not abundant in this area.

The extent of habitat types 1-11, as described in Section 2.2.1, were calculated by overlaying substrate and depth maps. Habitat types for the Vault Lake Area are shown in Figure 4-2.

A summary of the total habitat type areas and habitat units, calculated as described in Section 2.2, are shown in Table 4-2. The HU subtotal and total by species and minesite feature are provided in Appendix A.

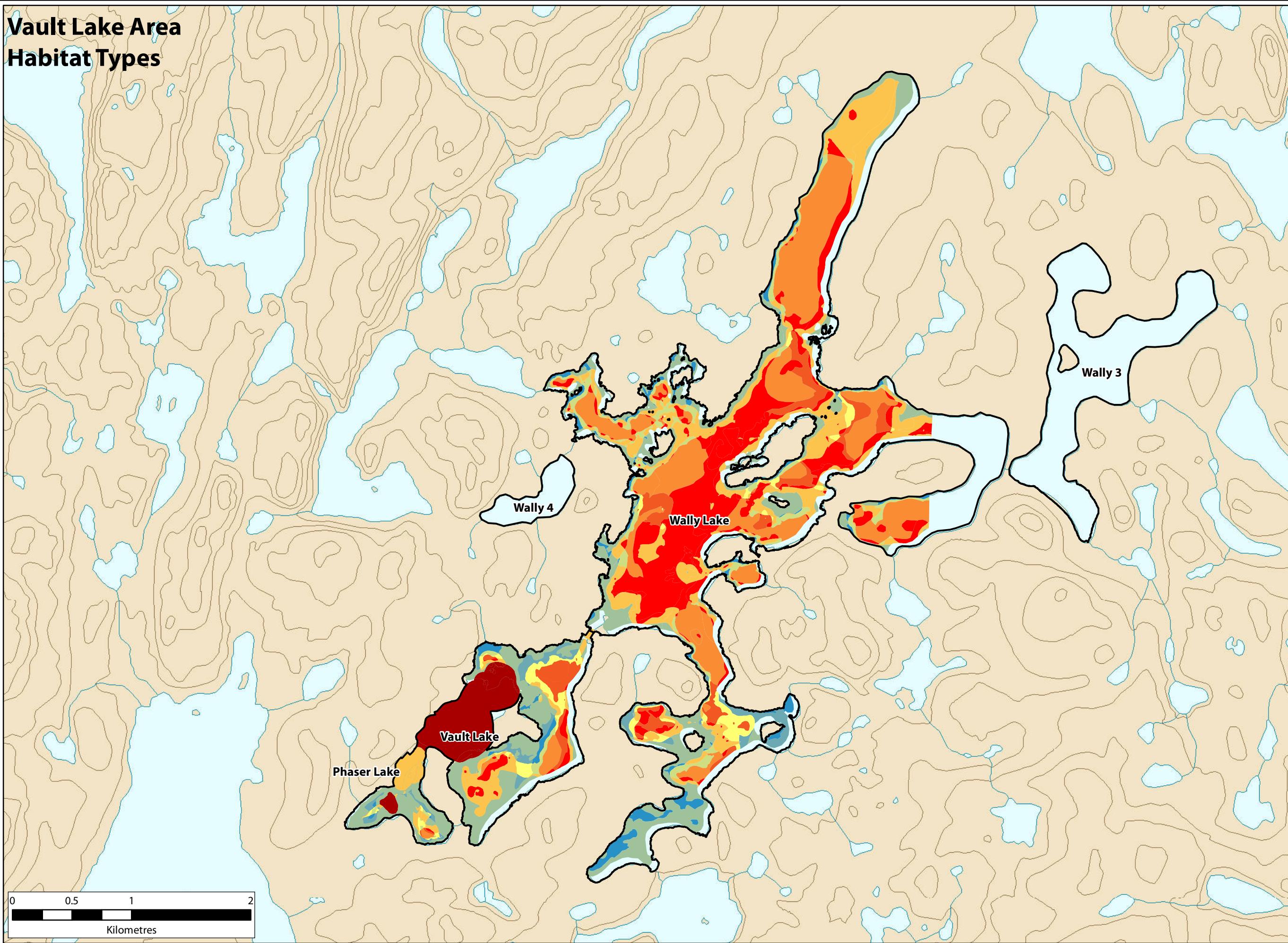
Table 4-2. Net habitat units (HUs) gained through re-flooding in Phaser Lake. Pre-offset HUs are 0 since there would be no fish habitat in this area without re-flooding.

Habitat Type	Pre-offset HUs	Post-offset HUs	Net Gain HUs
1	0	0.00	0.00
2	0	0.39	0.39
3	0	3.14	3.14
4	0	0.00	0.00
5	0	0.58	0.58
6	0	4.36	4.36
7	0	0.00	0.00
8	0	0.26	0.26
9	0	0.05	0.05
10	-	0.00	0.00
11	-	0.55	0.55
Total	0	9.34	9.34



Vault Lake Area

Habitat Types



Legend

Study Lakes (Post-Closure)

Habitat Type

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 11

Habitat Types

Post-Closure



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	DATE: JUNE 2015
	SCALE: 1:30,000
	DRAWN BY: LC
	CHECKED BY:

FIGURE:

4-2

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0 0.5 1 2
Kilometres

4.2 ACCESS ENHANCEMENTS

4.2.1 Description

As described in the 2012 NNLP, access for Arctic char to Phaser Lake is one of the habitat offsetting measures. This species was previously thought not to inhabit Vault and Phaser Lakes, they were not identified in baseline studies. It was predicted that the lack of Arctic char is due to historical isolation and the lack of deep-water habitat, which is generally recognized as niche habitat required by this species when landlocked. Pit development in Phaser and Vault Lakes will provide a significant quantity (approximately 47 ha) of this deep-water habitat, which is limited in the Vault Lake Area.

However, the fish-out of Vault Lake in 2014 determined that 5% of the fish biomass in this lake was in fact comprised of small Arctic char (101 out of 3183 fish), found primarily in a partially isolated bay with a conical morphometry (“Basin A”; see Vault fish-out report, AEM 2014). Since post-compensation calculations for Vault Lake in the 2012 NNLP estimated char biomass could reach 22% of total biomass, and conservatively assumed that 75% of that value would be achieved, the development of deep-water habitat for char is still considered a habitat improvement that will lead to sufficient population enhancements to meet expected habitat compensation ratios.

It is also still considered unlikely that Arctic char inhabit Phaser Lake, since the maximum depth of this lake is even shallower than Vault Lake (there is only a small area of 4 – 5 m). As a result, access enhancements for Arctic char in Phaser Lake are still considered a viable habitat offsetting measure. While monitoring studies will be conducted to ensure compensation is implemented as designed (see Section 4.6), the opportunity for focussed research on niche use partitioning following fish community changes in the north could also be available as part of this compensation feature (not currently proposed).

4.2.2 HU Calculation

Substrate and depth zones do not change post-compensation in Phaser Lake as a result of Arctic char access, but the access factor for char increases from 0. Since productivity of the introduced char is uncertain, the post-compensation access factor was conservatively set at 0.75, rather than 1. The net gain in HUs from the addition of char to Phaser Lake was calculated using post-closure habitat type areas as baseline values. Although small-bodied fish were not caught in surveys to date, they are conservatively assumed to be present in both the pre- and post-compensation calculations. Results are shown in Table 4-3. A net 3.60 HUs would be gained through the implementation of this compensation option.

Table 4-3. Pre- and post-compensation habitat units involved in the creation of access for arctic char in Phaser Lake.

Area	Feature Name	Pre-compensation HUs	Post-compensation HUs	Net Gain HUs
Phaser Lake	Access for Arctic char	9.34	13.22	3.88

4.3 RESEARCH FUNDING

In 2013, AEM re-assessed the No Net Loss Plans costs for the Meadowbank site. The estimated cost to construct access to Phaser Lake was \$462,611.12 using Reclaim V 6.0 software. Under the provisions of the DFO Fisheries Productivity Investment Policy: A proponent's guide to offsetting (DFO, 2013), as a complementary measure for offsetting the serious harm to fish associated with BB Phaser Pit, AEM proposes to provide 10% (estimated \$46,261) of the cost of conducting the Phaser Lake offsetting as funding for research. AEM has been working with researchers at the University of Guelph and University of Alberta to understand aquatic and terrestrial foodweb in the region, and have recently been in touch with researchers at the University of Guelph and University of Manitoba who have expressed an interest in conducting a study on eDNA in Phaser Lake. This is considered a unique opportunity for such a study, as it is a small, isolated lake with low biodiversity, that is planned to be dewatered following a fish-out program. Therefore, expected biomass and/or species composition estimated through eDNA methods can be confirmed, which is a rare occurrence and can continue to contribute to an improved understanding of northern ecosystems.

4.4 UNMAPPED AREA

As described in Section 3, resolution differences between substrate maps and base maps for Phaser Lake were found to produce an unmapped zone of 2.23 ha around the northern perimeter of the lake, for which HUs could not be calculated for losses or gains.

The total area for which habitat units could not be calculated, associated with each mine feature are shown in Table 4-4. Based on adjacent habitat types, all unmapped areas fall within the HT 3 zone (<2 m, coarse; see Figure 3-2). Since the Phaser Pit will be backfilled similar to pre-construction depths, and all substrate in impacted areas will remain coarse post-construction, no significant changes in habitat quality in the unmapped areas is anticipated. In addition, the total gains from access improvements for Arctic char are likely underestimated, since 2.23 ha of existing habitat are unaccounted for.

Table 4-4. Total area of each mine feature in Phaser Lake and area for which habitat units could not be calculated or mapped.

Phaser Lake Feature	Total Area (ha)	Mapped Area (ha)	Unmapped portion (ha)
Phaser Pit	3.55	2.78	0.76
Phaser Pit Cap	0.66	0.66	0.66
Phaser Lake Basin	16.84	15.41	1.43
Roads	2.76	2.71	0.04
Baby Phaser Pit	1.79	1.79	0
Baby Phaser Pit Cap	1.69	1.69	0
Total	27.29	25.05	2.23

4.5 DESIGN AND CONSTRUCTION OF THE OFFSETTING MEASURES

Construction of in-basin mine-related features including roads, pit caps, and pit backfilling is based on mine construction requirements and, depending on the feature, will be re-contoured to promote mixed habitat types.

While in-basin features will continue to be constructed in the Main Minesite and Vault Lake Areas throughout the life-of-mine, gains in fish habitat will not be realized until the basins are re-flooded and the dikes are breached to allow fish passage. Assuming water quality monitoring within the basin indicates acceptable conditions (as in Cumberland, 2005). Vault and Phaser Lakes are currently expected to be re-flooded during closure, with removal of the Vault Dike (closure and reflooding is currently planned to begin in 2018, as part of the reclamation and closure planning).

4.6 MONITORING

Monitoring to confirm that offsetting measures have been properly implemented and are effectively counterbalancing the serious harm to fish occurring in Phaser Lake will be conducted as described in AEM's Habitat Compensation Monitoring Plan (AEM, 2013). Development of the Vault Area pits in Vault and Phaser Lakes was planned at that time, and the addition of BB Phaser pit does not change the impacted area. As a result, no changes to the monitoring plan are proposed.

SECTION 5 • DISCUSSION

5.1 COMPARISON OF DIFFERENCES BETWEEN 2012 AND 2015 PLANS

The NNLP developed in 2012 included calculations of losses and offsets for Phaser Lake that were planned to occur as a result of development of the Phaser Pit (also referred to as the Vault pit – Phaser portion), but did not include BB Phaser Pit. The total lost HUs associated with Phaser Lake, including both Phaser Pit and BB Phaser Pit, remain nearly the same under the current updated development scenario, at 5.89 HUs (habitat lost if Phaser Lake was not re-flooded). This represents a marginal increase from 5.35 HUs due to inclusion of small-bodied fish in the habitat model.

Total habitat gains in the 2012 NNLP for Phaser Lake, including those associated with Phaser Pit, were 12.87 HUs. This was based on backfilling the Phaser pit to a depth of 2-4 m, substrate conversions within the former Phaser Lake basin from fines to mixed or coarse in certain areas, and providing access to Phaser Lake for Arctic char.

Under the updated development scenario, the habitat gained in this area will total 13.22 HUs. This is based on substrate and depth changes in BB Phaser Pit, as well as the same habitat improvements previously planned for the Phaser Lake basin and Phaser Pit.

The following tables present the comparisons of losses and gains for Phaser and Vault Lakes, as presented in the 2012 NNLP and this updated assessment, including those allotted from other areas.

Table 5-1. Summary of pre-construction, or lost habitat units (HUs) associated with each lake and minesite feature for the Vault Lake Area based on 2012 and 2015 mine development plans. Increase in losses is due to inclusion of small-bodied fish in the 2015 model.

Lake	Feature Name	Losses (HUs) – 2012	Losses (HUs) - 2015
Vault Lake	Basin	25.46	25.46
	Vault Pit	1.40	1.40
	Vault Pit Cap	0.78	0.78
	Vault Dike	0.09	0.09
<i>Subtotal</i>		27.73	27.73
Phaser Lake	Basin	4.11	3.78
	Phaser Pit	0.48	0.53
	Phaser Pit Cap	0.16	0.13
	Roads	0.6	0.70
	BB Phaser Pit	-	0.39
	BB Phaser Pit Cap	-	0.35
<i>Subtotal</i>		5.35	5.89
TOTAL LOSSES		33.09	33.61

Table 5-2. Gained habitat units (HUs) allotted to the Vault Lake area based on 2012 and 2015 mine development plans. Gains allotted to other areas as necessary or in keeping with historical documentation are indicated as “-”. *partial gains from W3 access (Arctic char in Wally Lake) are allotted to the Vault Lake area – see 2012 NNLP for explanation.

Lake	Compensation Measure	Feature Name	Gains (HUs) - 2012	Gains (HUs) - 2015	
Vault Lake	Re-flooding	Basin	-	-	
		Vault Pit	-	-	
		Vault Pit Cap	0.85	0.85	
		Vault Pit Land-to-Lake	-	-	
		Vault Dike removal	-	-	
	Access to Wally Lake	Access for arctic char to Vault Lake	17.14	17.14	
			17.99	17.99	
<i>Subtotal</i>					
Phaser Lake	Re-flooding after pit backfill	Basin	4.70	3.93	
		Phaser Pit	1.42	1.42	
		Phaser Pit Cap	0.20	0.16	
		Phaser Pit Land-to-Lake	2.01	2.01	
		Roads	0.80	0.85	
		BB Phaser Pit	N/A	0.55	
		BB Phaser Pit Cap	N/A	0.42	
	Access to Wally Lake	Access for arctic char to Phaser Lake	3.74	3.88	
			12.87	13.22	
<i>Subtotal</i>					
ADDITIONAL ALLOTTED GAINS					
Dogleg System	Connecting channel	Dogleg Pond	0.31	0.31	
		Dogleg North Pond	0.91	0.91	
		NP-2	0.63	0.63	
Wally Lake	Access to W3	Access for arctic char to Wally Lake	32.61*	32.61*	
<i>Subtotal</i>			34.46	34.46	
TOTAL ALLOTTED GAINS			65.32	65.67	

5.2 ALLOTMENT OF GAINS

The DFO Authorization (NU-03-0191.4) issued to AEM in 2013 for the Vault Lake area included losses for Vault Lake (27.73 HU) and not for Phaser Lake. At the time of application submission, the Phaser Pit was planned not to be developed, so authorization was only sought for Vault Lake. However, Authorization NU-03-0191.4 included habitat gains associated with habitat improvements and the re-flooding of both Vault and Phaser Lakes (total 65.32 HU). I.e., an Authorization was not issued for the dewatering of Phaser Lake, but the offsets associated with re-flooding it were counted in the Vault Lake

Authorization. AEM communicated this to DFO at the time of Authorization issue and will ensure the issue is equitably resolved.

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Appendix A –
HU Subtotals and Totals by Species

Phaser Lake

Losses from Mining Activities and Gains from Re-flooding

TOTAL BY FEATURE - Summary

Phaser Lake		Hectares		HU	
Phaser Pit	Habitat Type	Losses	Gains	Losses	Gains
	1	0.23		0.02	0.00
	2	1.23		0.19	0.00
	3	1.04		0.24	0.00
	4	0.19		0.05	0.00
	5	0.09		0.03	0.00
	6	0.01	2.78	0.01	1.42
	7			0.00	0.00
	8			0.00	0.00
	9			0.00	0.00
	11			0.00	0.00
Total		2.78	2.78	0.53	1.42

HU LOSSES - Species Totals

HU total per species x access weight								
Species >>	ARCH	LKTR	RNWH	BURB	SLSC	NNST	CISC	ARGR
Access >>	0	1	1	1	1	1	0	0
1	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
2	0.00	0.12	0.05	0.02	0.00	0.00	0.00	0.00
3	0.00	0.18	0.04	0.02	0.00	0.00	0.00	0.00
4	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00
5	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.37	0.11	0.05	0.00	0.00	0.00	0.00

Phaser Lake		Hectares		HU	
Phaser Pit Cap	Habitat Type	Losses	Gains	Losses	Gains
	1	0.02		0.00	0.00
	2	0.26		0.04	0.00
	3	0.36	0.64	0.08	0.15
	4			0.00	0.00
	5	0.03		0.01	0.00
	6		0.03	0.00	0.02
	7			0.00	0.00
	8			0.00	0.00
	9			0.00	0.00
	11			0.00	0.00
Total		0.67	0.67	0.13	0.16

HU total per species x access weight								
Species >>	ARCH	LKTR	RNWH	BURB	SLSC	NNST	CISC	ARGR
Access >>	0	1	1	1	1	1	0	0
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00
3	0.00	0.06	0.01	0.01	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.10	0.03	0.01	0.00	0.00	0.00	0.00

Phaser Lake		Hectares		HU	
BB Phaser Pit	Habitat Type	Losses	Gains	Losses	Gains
	1	0.12		0.01	0.00
	2	0.72		0.11	0.00
	3	0.57		0.13	0.00
	4			0.00	0.00
	5	0.37		0.14	0.00
	6	0.00		0.00	0.00
	7			0.00	0.00
	8			0.00	0.00
	9			0.00	0.00
	11		1.79	0.00	0.55
Total		1.79	1.79	0.39	0.55

HU total per species x access weight								
Species >>	ARCH	LKTR	RNWH	BURB	SLSC	NNST	CISC	ARGR
Access >>	0	1	1	1	1	1	0	0
1	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.07	0.03	0.01	0.00	0.00	0.00	0.00
3	0.00	0.10	0.02	0.01	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.10	0.03	0.01	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.27	0.08	0.04	0.00	0.00	0.00	0.00

Phaser Lake		Hectares		HU	
BB Phaser Pit Cap	Habitat Type	Losses	Gains	Losses	Gains
	1	0.14		0.01	0.00
	2	0.44		0.07	0.00
	3	0.99	1.57	0.23	0.36
	4	0.02		0.01	0.00
	5	0.10		0.04	0.00
	6	0.00	0.12	0.00	0.06
	7			0.00	0.00
	8			0.00	0.00
	9			0.00	0.00
	11			0.00	0.00
Total		1.69	1.69	0.35	0.42

HU total per species x access weight								
Species >>	ARCH	LKTR	RNWH	BURB	SLSC	NNST	CISC	ARGR
Access >>	0	1	1	1	1	1	0	0
1	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.04	0.02	0.01	0.00	0.00	0.00	0.00
3	0.00	0.17	0.04	0.02	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.25	0.07	0.03	0.00	0.00	0.00	0.00

Phaser Lake

Losses from Mining Activities and Gains from Re-flooding

TOTAL BY FEATURE - Summary

Phaser Lake		Hectares		HU	
Habitat Type	Losses	Gains	Losses	Gains	
1			0.00	0.00	
2			0.00	0.00	
3			0.00	0.00	
4			0.00	0.00	
5			0.00	0.00	
6		3.94	0.00	2.01	
7			0.00	0.00	
8			0.00	0.00	
9			0.00	0.00	
11			0.00	0.00	
Total	0.00	3.94	0.00	2.01	

HU LOSSES - Species Totals

Phaser Lake		HU total per species x access weight							
Species >>		ARCH	LKTR	RNWHD	BURB	SLSC	NNST	CISC	ARGR
Access >>		0	1	1	1	1	1	0	0
1		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phaser Lake		Hectares		HU	
Habitat Type	Losses	Gains	Losses	Gains	
1	0.29		0.02	0.00	
2	2.29	2.57	0.35	0.39	
3	9.65	9.65	2.20	2.20	
4	0.51		0.12	0.00	
5	0.98	1.49	0.38	0.58	
6	0.87	0.87	0.45	0.45	
7	0.52		0.13	0.00	
8	0.20	0.71	0.07	0.26	
9	0.11	0.11	0.05	0.05	
11			0.00	0.00	
Total	15.41	15.41	3.78	3.93	

Phaser Lake		HU total per species x access weight							
Species >>		ARCH	LKTR	RNWHD	BURB	SLSC	NNST	CISC	ARGR
Access >>		0	1	1	1	1	1	0	0
1		0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
2		0.00	0.22	0.08	0.04	0.00	0.00	0.00	0.00
3		0.00	1.65	0.36	0.19	0.00	0.00	0.00	0.00
4		0.00	0.09	0.03	0.01	0.00	0.00	0.00	0.00
5		0.00	0.26	0.08	0.04	0.00	0.00	0.00	0.00
6		0.00	0.32	0.09	0.04	0.00	0.00	0.00	0.00
7		0.00	0.09	0.03	0.01	0.00	0.00	0.00	0.00
8		0.00	0.05	0.01	0.01	0.00	0.00	0.00	0.00
9		0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00
11		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	2.74	0.71	0.34	0.00	0.00	0.00	0.00

Phaser Lake		Hectares		HU	
Habitat Type	Losses	Gains	Losses	Gains	
1	0.05		0.00	0.00	
2	0.50		0.08	0.00	
3	1.36	1.92	0.31	0.44	
4	0.31		0.08	0.00	
5	0.16		0.06	0.00	
6	0.32	0.80	0.17	0.41	
7			0.00	0.00	
8			0.00	0.00	
9			0.00	0.00	
11			0.00	0.00	
Total	2.71	2.71	0.70	0.85	

Phaser Lake		HU total per species x access weight							
Species >>		ARCH	LKTR	RNWHD	BURB	SLSC	NNST	CISC	ARGR
Access >>		0	1	1	1	1	1	0	0
1		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2		0.00	0.05	0.02	0.01	0.00	0.00	0.00	0.00
3		0.00	0.23	0.05	0.03	0.00	0.00	0.00	0.00
4		0.00	0.05	0.02	0.01	0.00	0.00	0.00	0.00
5		0.00	0.04	0.01	0.01	0.00	0.00	0.00	0.00
6		0.00	0.12	0.03	0.01	0.00	0.00	0.00	0.00
7		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.50	0.14	0.06	0.00	0.00	0.00	0.00

Phaser Lake

Losses from Mining Activities and Gains from Re-flooding

TOTAL BY FEATURE - Summary

Phaser Lake				
Phaser Pit	Hectares	HU		
Habitat Type	Losses	Gains	Losses	Gains
1	0.23		0.02	0.00
2	1.23		0.19	0.00
3	1.04		0.24	0.00
4	0.19		0.05	0.00
5	0.09		0.03	0.00
6	0.01	2.78	0.01	1.42
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11			0.00	0.00
Total	2.78	2.78	0.53	1.42

HU LOSSES -Species Sub-Totals

Habitat type area x HSI x species weight x life function weight								
Species >>	ARCH		LKTR		RNWH		BURB	
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW
1	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.00
2	0.00	0.03	0.03	0.00	0.00	0.06	0.06	0.00
3	0.00	0.05	0.05	0.00	0.00	0.10	0.08	0.00
4	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00
5	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.01	0.10	0.10	0.02	0.01	0.18	0.16	0.02
	0.00	0.06	0.05	0.01	0.00	0.03	0.02	0.00

Phaser Lake				
Phaser Pit Cap	Hectares	HU		
Habitat Type	Losses	Gains	Losses	Gains
1	0.02		0.00	0.00
2	0.26		0.04	0.00
3	0.36	0.64	0.08	0.15
4			0.00	0.00
5	0.03		0.01	0.00
6		0.03	0.00	0.02
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11			0.00	0.00
Total	0.67	0.67	0.13	0.16

Habitat type area x HSI x species weight x life function weight								
Species >>	ARCH		LKTR		RNWH		BURB	
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00
3	0.00	0.02	0.02	0.00	0.00	0.04	0.03	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.02	0.02	0.00	0.00	0.05	0.04	0.00
	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00

Phaser Lake				
BB Phaser Pit	Hectares	HU		
Habitat Type	Losses	Gains	Losses	Gains
1	0.12		0.01	0.00
2	0.72		0.11	0.00
3	0.57		0.13	0.00
4			0.00	0.00
5	0.37		0.14	0.00
6	0.00		0.00	0.00
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11		1.79	0.00	0.55
Total	1.79	1.79	0.39	0.55

Habitat type area x HSI x species weight x life function weight								
Species >>	ARCH		LKTR		RNWH		BURB	
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.02	0.02	0.00	0.00	0.04	0.04	0.00
3	0.00	0.03	0.03	0.00	0.00	0.06	0.04	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.01
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.02	0.07	0.07	0.02	0.02	0.12	0.11	0.03
	0.01	0.04	0.03	0.01	0.00	0.02	0.01	0.00

Phaser Lake				
BB Phaser Pit Cap	Hectares	HU		
Habitat Type	Losses	Gains	Losses	Gains
1	0.14		0.01	0.00
2	0.44		0.07	0.00
3	0.99	1.57	0.23	0.36
4	0.02		0.01	0.00
5	0.10		0.04	0.00
6	0.00	0.12	0.00	0.06
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11			0.00	0.00
Total	1.69	1.69	0.35	0.42

Habitat type area x HSI x species weight x life function weight								
Species >>	ARCH		LKTR		RNWH		BURB	
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.00
3	0.00	0.04	0.04	0.00	0.00	0.10	0.07	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.07	0.07	0.01	0.00	0.13	0.11	0.03
	0.00	0.04	0.03	0.01	0.00	0.02	0.01	0.00

Phaser Lake

Losses from Mining Activities and Gains from Re-flooding

TOTAL BY FEATURE - Summary

Phaser Lake				
Phaser Pit Land-to-Lake	Hectares	HU		
Habitat Type	Losses	Gains	Losses	Gains
1			0.00	0.00
2			0.00	0.00
3			0.00	0.00
4			0.00	0.00
5			0.00	0.00
6		3.94	0.00	2.01
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11			0.00	0.00
Total		0.00	3.94	0.00
			0.00	2.01

HU LOSSES -Species Sub-Totals

Habitat type area x HSI x species weight x life function weight												
Species >>	ARCH		LKTR		RNWH		BURB					
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW	SP	NU	FO	OW
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phaser Lake				
Basin	Hectares	HU		
Habitat Type	Losses	Gains	Losses	Gains
1	0.29		0.02	0.00
2	2.29	2.57	0.35	0.39
3	9.65	9.65	2.20	2.20
4	0.51		0.12	0.00
5	0.98	1.49	0.38	0.58
6	0.87	0.87	0.45	0.45
7	0.52		0.13	0.00
8	0.20	0.71	0.07	0.26
9	0.11	0.11	0.05	0.05
11			0.00	0.00
Total	15.41	15.41	3.78	3.93

Habitat type area x HSI x species weight x life function weight												
Species >>	ARCH		LKTR		RNWH		BURB					
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW	SP	NU	FO	OW
1	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
2	0.00	0.05	0.05	0.00	0.00	0.11	0.11	0.00	0.00	0.05	0.03	0.00
3	0.00	0.44	0.44	0.00	0.00	0.94	0.71	0.00	0.00	0.21	0.14	0.00
4	0.00	0.02	0.02	0.03	0.00	0.02	0.02	0.04	0.00	0.00	0.01	0.00
5	0.04	0.07	0.07	0.07	0.05	0.07	0.07	0.07	0.01	0.02	0.02	0.01
6	0.08	0.08	0.08	0.06	0.09	0.09	0.09	0.06	0.03	0.03	0.02	0.02
7	0.00	0.01	0.02	0.05	0.00	0.01	0.03	0.05	0.00	0.00	0.02	0.02
8	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.00	0.00	0.01	0.00
9	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.14	0.69	0.71	0.23	0.15	1.27	1.06	0.25	0.04	0.33	0.26	0.08
									0.03	0.17	0.11	0.03

Phaser Lake				
Roads	Hectares	HU		
Habitat Type	Losses	Gains	Losses	Gains
1	0.05		0.00	0.00
2	0.50		0.08	0.00
3	1.36	1.92	0.31	0.44
4	0.31		0.08	0.00
5	0.16		0.06	0.00
6	0.32	0.80	0.17	0.41
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11			0.00	0.00
Total	2.71	2.71	0.70	0.85

Habitat type area x HSI x species weight x life function weight												
Species >>	ARCH		LKTR		RNWH		BURB					
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW	SP	NU	FO	OW
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.01	0.01	0.00	0.00	0.02	0.02	0.00	0.00	0.01	0.01	0.00
3	0.00	0.06	0.06	0.00	0.00	0.13	0.10	0.00	0.00	0.03	0.02	0.00
4	0.00	0.01	0.01	0.02	0.00	0.02	0.02	0.02	0.00	0.00	0.01	0.00
5	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
6	0.03	0.03	0.03	0.02	0.03	0.03	0.03	0.02	0.01	0.01	0.01	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.04	0.13	0.13	0.05	0.04	0.22	0.18	0.06	0.01	0.06	0.05	0.02
									0.01	0.03	0.02	0.01

Phaser Lake

Losses from Mining Activities and Gains from Re-flooding

TOTAL BY FEATURE - Summary

Phaser Lake				
Phaser Pit	Hectares		HU	
Habitat Type	Losses	Gains	Losses	Gains
1	0.23		0.02	0.00
2	1.23		0.19	0.00
3	1.04		0.24	0.00
4	0.19		0.05	0.00
5	0.09		0.03	0.00
6	0.01	2.78	0.01	1.42
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11			0.00	0.00
Total	2.78	2.78	0.53	1.42

HU LOSSES -Species Sub-Totals

Habitat type area x HSI x species weight x life function weight																
Species >>	SLSC				NNST				CISC				ARGR			
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW	SP	NU	FO	OW	SP	NU	FO	O
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.01	0.01	0.00

Phaser Lake		Hectares		HU	
Phaser Pit Cap	Habitat Type	Losses	Gains	Losses	Gains
	1	0.02		0.00	0.00
	2	0.26		0.04	0.00
	3	0.36	0.64	0.08	0.15
	4			0.00	0.00
	5	0.03		0.01	0.00
	6		0.03	0.00	0.02
	7			0.00	0.00
	8			0.00	0.00
	9			0.00	0.00
	11			0.00	0.00
Total		0.67	0.67	0.13	0.16

Phaser Lake		Hectares		HU	
BB Phaser Pit		Losses	Gains	Losses	Gains
Habitat Type					
1		0.12		0.01	0.00
2		0.72		0.11	0.00
3		0.57		0.13	0.00
4				0.00	0.00
5		0.37		0.14	0.00
6		0.00		0.00	0.00
7				0.00	0.00
8				0.00	0.00
9				0.00	0.00
11			1.79	0.00	0.55
Total		1.79	1.79	0.39	0.55

Habitat type area x HSI x species weight x life function weight																
Species >>	SLSC				NNST				CISC				ARGR			
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW	SP	NU	FO	OW	SP	NU	FO	O
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.0

Phaser Lake					
BB Phaser Pit Cap		Hectares		HU	
Habitat Type	Losses	Gains	Losses	Gains	
1	0.14		0.01	0.00	
2	0.44		0.07	0.00	
3	0.99	1.57	0.23	0.36	
4	0.02		0.01	0.00	
5	0.10		0.04	0.00	
6	0.00	0.12	0.00	0.06	
7			0.00	0.00	
8			0.00	0.00	
9			0.00	0.00	
11			0.00	0.00	
Total	1.69	1.69	0.35	0.42	

Habitat type area x HSI x species weight x life function weight																
Species >>	SLSC				NNST				CISC				ARGR			
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW	SP	NU	FO	OW	SP	NU	FO	O
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.00

Phaser Lake

Losses from Mining Activities and Gains from Re-flooding

TOTAL BY FEATURE - Summary

Phaser Lake				
Phaser Pit Land-to-Lake	Hectares	HU		
Habitat Type	Losses	Gains	Losses	Gains
1			0.00	0.00
2			0.00	0.00
3			0.00	0.00
4			0.00	0.00
5			0.00	0.00
6		3.94	0.00	2.01
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11			0.00	0.00
Total	0.00	3.94	0.00	2.01

HU LOSSES -Species Sub-Totals

Habitat type area x HSI x species weight x life function weight												
Species >>	SLS		NNST		CISC		ARGR					
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW	SP	NU	FO	OW
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phaser Lake				
Basin	Hectares	HU		
Habitat Type	Losses	Gains	Losses	Gains
1	0.29		0.02	0.00
2	2.29	2.57	0.35	0.39
3	9.65	9.65	2.20	2.20
4	0.51		0.12	0.00
5	0.98	1.49	0.38	0.58
6	0.87	0.87	0.45	0.45
7	0.52		0.13	0.00
8	0.20	0.71	0.07	0.26
9	0.11	0.11	0.05	0.05
11			0.00	0.00
Total	15.41	15.41	3.78	3.93

Habitat type area x HSI x species weight x life function weight												
Species >>	SLS		NNST		CISC		ARGR					
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW	SP	NU	FO	OW
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.06	0.00	0.06	0.03	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.03
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.08	0.09	0.02	0.00	0.07

Phaser Lake				
Roads	Hectares	HU		
Habitat Type	Losses	Gains	Losses	Gains
1	0.05		0.00	0.00
2	0.50		0.08	0.00
3	1.36	1.92	0.31	0.44
4	0.31		0.08	0.00
5	0.16		0.06	0.00
6	0.32	0.80	0.17	0.41
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11			0.00	0.00
Total	2.71	2.71	0.70	0.85

Habitat type area x HSI x species weight x life function weight												
Species >>	SLS		NNST		CISC		ARGR					
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW	SP	NU	FO	OW
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.01	0.01	0.01

Phaser Lake

Losses from Mining Activities and Gains from Re-flooding

TOTAL BY FEATURE - Summary

Phaser Lake		Hectares		HU	
Phaser Pit	Habitat Type	Losses	Gains	Losses	Gains
	1	0.23		0.02	0.00
	2	1.23		0.19	0.00
	3	1.04		0.24	0.00
	4	0.19		0.05	0.00
	5	0.09		0.03	0.00
	6	0.01	2.78	0.01	1.42
	7			0.00	0.00
	8			0.00	0.00
	9			0.00	0.00
	11			0.00	0.00
Total		2.78	2.78	0.53	1.42

HU GAINS - Species Totals

HU total per species x access weight								
Species >>	ARCH	LKTR	RNWH	BURB	SLSC	NNST	CISC	ARGR
Access >>	0	1	1	1	1	1	0	0
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	1.02	0.29	0.11	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	1.02	0.29	0.11	0.00	0.00	0.00	0.00

Phaser Lake		Hectares		HU	
Phaser Pit Cap	Habitat Type	Losses	Gains	Losses	Gains
	1	0.02		0.00	0.00
	2	0.26		0.04	0.00
	3	0.36	0.64	0.08	0.15
	4			0.00	0.00
	5			0.01	0.00
	6			0.00	0.02
	7			0.00	0.00
	8			0.00	0.00
	9			0.00	0.00
	11			0.00	0.00
Total		0.67	0.67	0.13	0.16

HU total per species x access weight								
Species >>	ARCH	LKTR	RNWH	BURB	SLSC	NNST	CISC	ARGR
Access >>	0	1	1	1	1	1	0	0
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.11	0.02	0.01	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.12	0.03	0.01	0.00	0.00	0.00	0.00

Phaser Lake		Hectares		HU	
BB Phaser Pit	Habitat Type	Losses	Gains	Losses	Gains
	1	0.12		0.01	0.00
	2	0.72		0.11	0.00
	3	0.57		0.13	0.00
	4			0.00	0.00
	5			0.14	0.00
	6			0.00	0.00
	7			0.00	0.00
	8			0.00	0.00
	9			0.00	0.00
	11			0.00	0.55
Total		1.79	1.79	0.39	0.55

HU total per species x access weight								
Species >>	ARCH	LKTR	RNWH	BURB	SLSC	NNST	CISC	ARGR
Access >>	0	1	1	1	1	1	0	0
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.44	0.07	0.05	0.00	0.00	0.00	0.00
Total	0.00	0.44	0.07	0.05	0.00	0.00	0.00	0.00

Phaser Lake		Hectares		HU	
BB Phaser Pit Cap	Habitat Type	Losses	Gains	Losses	Gains
	1	0.14		0.01	0.00
	2	0.44		0.07	0.00
	3	0.99	1.57	0.23	0.36
	4			0.01	0.00
	5			0.04	0.00
	6			0.00	0.06
	7			0.00	0.00
	8			0.00	0.00
	9			0.00	0.00
	11			0.00	0.00
Total		1.69	1.69	0.35	0.42

HU total per species x access weight								
Species >>	ARCH	LKTR	RNWH	BURB	SLSC	NNST	CISC	ARGR
Access >>	0	1	1	1	1	1	0	0
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.27	0.06	0.03	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.31	0.07	0.04	0.00	0.00	0.00	0.00

Phaser Lake

Losses from Mining Activities and Gains from Re-flooding

TOTAL BY FEATURE - Summary

Phaser Lake		Hectares		HU	
Habitat Type	Losses	Gains	Losses	Gains	
1			0.00	0.00	
2			0.00	0.00	
3			0.00	0.00	
4			0.00	0.00	
5			0.00	0.00	
6		3.94	0.00	2.01	
7			0.00	0.00	
8			0.00	0.00	
9			0.00	0.00	
11			0.00	0.00	
Total	0.00	3.94	0.00	2.01	

HU GAINS - Species Totals

Phaser Lake		HU total per species x access weight							
Species >>		ARCH	LKTR	RNWH	BURB	SLSC	NNST	CISC	ARGR
Access >>		0	1	1	1	1	1	0	0
1		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6		0.00	1.44	0.41	0.16	0.00	0.00	0.00	0.00
7		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	1.44	0.41	0.16	0.00	0.00	0.00	0.00

Phaser Lake		Hectares		HU	
Habitat Type	Losses	Gains	Losses	Gains	
1	0.29		0.02	0.00	
2	2.29	2.57	0.35	0.39	
3	9.65	9.65	2.20	2.20	
4	0.51		0.12	0.00	
5	0.98	1.49	0.38	0.58	
6	0.87	0.87	0.45	0.45	
7	0.52		0.13	0.00	
8	0.20	0.71	0.07	0.26	
9	0.11	0.11	0.05	0.05	
11			0.00	0.00	
Total	15.41	15.41	3.78	3.93	

Phaser Lake		HU total per species x access weight							
Species >>		ARCH	LKTR	RNWH	BURB	SLSC	NNST	CISC	ARGR
Access >>		0	1	1	1	1	1	0	0
1		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2		0.00	0.25	0.10	0.04	0.00	0.00	0.00	0.00
3		0.00	1.65	0.36	0.19	0.00	0.00	0.00	0.00
4		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5		0.00	0.40	0.12	0.06	0.00	0.00	0.00	0.00
6		0.00	0.32	0.09	0.04	0.00	0.00	0.00	0.00
7		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8		0.00	0.19	0.04	0.03	0.00	0.00	0.00	0.00
9		0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00
11		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	2.85	0.72	0.36	0.00	0.00	0.00	0.00

Phaser Lake		Hectares		HU	
Habitat Type	Losses	Gains	Losses	Gains	
1	0.05		0.00	0.00	
2	0.50		0.08	0.00	
3	1.36	1.92	0.31	0.44	
4	0.31		0.08	0.00	
5	0.16		0.06	0.00	
6	0.32	0.80	0.17	0.41	
7			0.00	0.00	
8			0.00	0.00	
9			0.00	0.00	
11			0.00	0.00	
Total	2.71	2.71	0.70	0.85	

Phaser Lake		HU total per species x access weight							
Species >>		ARCH	LKTR	RNWH	BURB	SLSC	NNST	CISC	ARGR
Access >>		0	1	1	1	1	1	0	0
1		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3		0.00	0.33	0.07	0.04	0.00	0.00	0.00	0.00
4		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6		0.00	0.29	0.08	0.03	0.00	0.00	0.00	0.00
7		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.62	0.15	0.07	0.00	0.00	0.00	0.00

Phaser Lake

Losses from Mining Activities and Gains from Re-flooding

TOTAL BY FEATURE - Summary

Phaser Lake				
Phaser Pit	Hectares	HU	Losses	Gains
Habitat Type	Losses	Gains	Losses	Gains
1	0.23		0.02	0.00
2	1.23		0.19	0.00
3	1.04		0.24	0.00
4	0.19		0.05	0.00
5	0.09		0.03	0.00
6	0.01	2.78	0.01	1.42
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11			0.00	0.00
Total	2.78	2.78	0.53	1.42

HU GAINS -Species Sub-Totals

Habitat type area x HSI x species weight x life function weight																
Species >>	ARCH				LKTR				RNWH				BURB			
Life Function >>	SP	NU	FO	OW												
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.25	0.25	0.25	0.19	0.27	0.27	0.27	0.20	0.08	0.08	0.06	0.06	0.03	0.02	0.04	0.03
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.25	0.25	0.25	0.19	0.27	0.27	0.27	0.20	0.08	0.08	0.06	0.06	0.03	0.02	0.04	0.03

Phaser Lake				
Phaser Pit Cap	Hectares	HU	Losses	Gains
Habitat Type	Losses	Gains	Losses	Gains
1	0.02		0.00	0.00
2	0.26		0.04	0.00
3	0.36	0.64	0.08	0.15
4			0.00	0.00
5	0.03		0.01	0.00
6		0.03	0.00	0.02
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11			0.00	0.00
Total	0.67	0.67	0.13	0.16

Habitat type area x HSI x species weight x life function weight																
Species >>	ARCH				LKTR				RNWH				BURB			
Life Function >>	SP	NU	FO	OW												
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.03	0.03	0.00	0.00	0.06	0.05	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.03	0.03	0.00	0.00	0.07	0.05	0.00	0.00	0.02	0.01	0.00	0.00	0.01	0.00	0.00

Phaser Lake				
BB Phaser Pit	Hectares	HU	Losses	Gains
Habitat Type	Losses	Gains	Losses	Gains
1	0.12		0.01	0.00
2	0.72		0.11	0.00
3	0.57		0.13	0.00
4			0.00	0.00
5	0.37		0.14	0.00
6	0.00		0.00	0.00
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11		1.79	0.00	0.55
Total	1.79	1.79	0.39	0.55

Habitat type area x HSI x species weight x life function weight																
Species >>	ARCH				LKTR				RNWH				BURB			
Life Function >>	SP	NU	FO	OW												
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.07	0.07	0.00	0.00	0.15	0.12	0.00	0.00	0.03	0.02	0.00	0.00	0.02	0.01	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.01	0.08	0.08	0.01	0.01	0.17	0.13	0.01	0.00	0.04	0.03	0.00	0.00	0.02	0.01	0.00

Phaser Lake				
BB Phaser Pit Cap	Hectares	HU	Losses	Gains
Habitat Type	Losses	Gains	Losses	Gains
1	0.14		0.01	0.00
2	0.44		0.07	0.00
3	0.99	1.57	0.23	0.36
4	0.02		0.01	0.00
5	0.10		0.04	0.00
6	0.00	0.12	0.00	0.06
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11			0.00	0.00
Total	1.69	1.69	0.35	0.42

Habitat type area x HSI x species weight x life function weight																
Species >>	ARCH				LKTR				RNWH				BURB			
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW	SP	NU	FO	OW	SP	NU</		

Phaser Lake

Losses from Mining Activities and Gains from Re-flooding

TOTAL BY FEATURE - Summary

Phaser Lake				
Phaser Pit Land-to-Lake	Hectares	HU		
Habitat Type	Losses	Gains	Losses	Gains
1			0.00	0.00
2			0.00	0.00
3			0.00	0.00
4			0.00	0.00
5			0.00	0.00
6		3.94	0.00	2.01
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11			0.00	0.00
Total			0.00	3.94 0.00 2.01

HU GAINS -Species Sub-Totals

Habitat type area x HSI x species weight x life function weight																
Species >>	ARCH				LKTR				RNWH				BURB			
Life Function >>	SP	NU	FO	OW												
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.36	0.36	0.36	0.27	0.38	0.38	0.38	0.29	0.12	0.12	0.09	0.09	0.04	0.03	0.05	0.04
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.36	0.36	0.36	0.27	0.38	0.38	0.38	0.29	0.12	0.12	0.09	0.09	0.04	0.03	0.05	0.04

Phaser Lake				
Basin		Hectares	HU	
Habitat Type	Losses	Gains	Losses	Gains
1	0.29		0.02	0.00
2	2.29	2.57	0.35	0.39
3	9.65	9.65	2.20	2.20
4	0.51		0.12	0.00
5	0.98	1.49	0.38	0.58
6	0.87	0.87	0.45	0.45
7	0.52		0.13	0.00
8	0.20	0.71	0.07	0.26
9	0.11	0.11	0.05	0.05
11			0.00	0.00
Total	15.41	15.41	3.78	3.93

Habitat type area x HSI x species weight x life function weight																
Species >>	ARCH				LKTR				RNWH				BURB			
Life Function >>	SP	NU	FO	OW												
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.06	0.06	0.00	0.00	0.13	0.13	0.00	0.00	0.06	0.04	0.00	0.00	0.03	0.02	0.00
3	0.00	0.44	0.44	0.00	0.00	0.94	0.71	0.00	0.00	0.21	0.14	0.00	0.00	0.13	0.06	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.07	0.10	0.10	0.10	0.07	0.11	0.11	0.11	0.02	0.03	0.03	0.03	0.02	0.01	0.02	0.02
6	0.08	0.08	0.08	0.06	0.09	0.09	0.09	0.06	0.03	0.03	0.02	0.02	0.01	0.01	0.01	0.01
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.03	0.03	0.05	0.06	0.03	0.03	0.05	0.07	0.01	0.01	0.01	0.02	0.01	0.00	0.01	0.01
9	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.19	0.71	0.73	0.23	0.20	1.30	1.09	0.25	0.06	0.34	0.25	0.08	0.04	0.17	0.12	0.03

Phaser Lake				
Roads		Hectares	HU	
Habitat Type	Losses	Gains	Losses	Gains
1	0.05		0.00	0.00
2	0.50		0.08	0.00
3	1.36	1.92	0.31	0.44
4	0.31		0.08	0.00
5	0.16		0.06	0.00
6	0.32	0.80	0.17	0.41
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11			0.00	0.00
Total	2.71	2.71	0.70	0.85

Habitat type area x HSI x species weight x life function weight																
Species >>	ARCH				LKTR				RNWH				BURB			
Life Function >>	SP	NU	FO	OW												
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.09	0.09	0.00	0.00	0.19	0.14	0.00	0.00	0.04	0.03	0.00	0.00	0.03	0.01	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.07	0.07	0.07	0.05	0.08	0.08	0.08	0.06	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.07	0.16	0.16	0.05	0.08	0.27	0.22	0.06	0.02	0.07	0.05	0.02	0.01	0.03	0.02	0.01

Phaser Lake

Losses from Mining Activities and Gains from Re-flooding

TOTAL BY FEATURE - Summary

Phaser Lake				
Phaser Pit	Hectares	HU	Losses	Gains
Habitat Type	Losses	Gains	Losses	Gains
1	0.23		0.02	0.00
2	1.23		0.19	0.00
3	1.04		0.24	0.00
4	0.19		0.05	0.00
5	0.09		0.03	0.00
6	0.01	2.78	0.01	1.42
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11			0.00	0.00
Total	2.78	2.78	0.53	1.42

HU GAINS -Species Sub-Totals

Habitat type area x HSI x species weight x life function weight																
Species >>	SLSC				NNST				CISC				ARGR			
Life Function >>	SP	NU	FO	OW												
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.03	0.03
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.03	0.03

Phaser Lake				
Phaser Pit Cap	Hectares	HU	Losses	Gains
Habitat Type	Losses	Gains	Losses	Gains
1	0.02		0.00	0.00
2	0.26		0.04	0.00
3	0.36	0.64	0.08	0.15
4			0.00	0.00
5	0.03		0.01	0.00
6		0.03	0.00	0.02
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11			0.00	0.00
Total	0.67	0.67	0.13	0.16

Habitat type area x HSI x species weight x life function weight																
Species >>	SLSC				NNST				CISC				ARGR			
Life Function >>	SP	NU	FO	OW												
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phaser Lake				
BB Phaser Pit	Hectares	HU	Losses	Gains
Habitat Type	Losses	Gains	Losses	Gains
1	0.12		0.01	0.00
2	0.72		0.11	0.00
3	0.57		0.13	0.00
4			0.00	0.00
5	0.37		0.14	0.00
6	0.00		0.00	0.00
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11		1.79	0.00	0.55
Total	1.79	1.79	0.39	0.55

Habitat type area x HSI x species weight x life function weight																
Species >>	SLSC				NNST				CISC				ARGR			
Life Function >>	SP	NU	FO	OW												
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.02
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.02

Phaser Lake				
BB Phaser Pit Cap	Hectares	HU	Losses	Gains
Habitat Type	Losses	Gains	Losses	Gains
1	0.14		0.01	0.00
2	0.44		0.07	0.00
3	0.99	1.57	0.23	0.36
4	0.02		0.01	0.00
5	0.10		0.04	0.00
6	0.00	0.12	0.00	0.06
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11			0.00	0.00
Total	1.69	1.69	0.35	0.42

Habitat type area x HSI x species weight x life function weight									
Species >>	SL								

Phaser Lake

Losses from Mining Activities and Gains from Re-flooding

TOTAL BY FEATURE - Summary

Phaser Lake				
Phaser Pit Land-to-Lake	Hectares	HU		
Habitat Type	Losses	Gains	Losses	Gains
1			0.00	0.00
2			0.00	0.00
3			0.00	0.00
4			0.00	0.00
5			0.00	0.00
6		3.94	0.00	2.01
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11			0.00	0.00
Total	0.00	3.94	0.00	2.01

HU GAINS -Species Sub-Totals

Habitat type area x HSI x species weight x life function weight																
Species >>	SLS				NNST				CISC				ARGR			
Life Function >>	SP	NU	FO	OW												
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.00	0.00	0.05	0.04
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.00	0.00	0.05	0.04

Phaser Lake				
Basin		Hectares	HU	
Habitat Type	Losses	Gains	Losses	Gains
1	0.29		0.02	0.00
2	2.29	2.57	0.35	0.39
3	9.65	9.65	2.20	2.20
4	0.51		0.12	0.00
5	0.98	1.49	0.38	0.58
6	0.87	0.87	0.45	0.45
7	0.52		0.13	0.00
8	0.20	0.71	0.07	0.26
9	0.11	0.11	0.05	0.05
11			0.00	0.00
Total	15.41	15.41	3.78	3.93

Habitat type area x HSI x species weight x life function weight																
Species >>	SLS				NNST				CISC				ARGR			
Life Function >>	SP	NU	FO	OW												
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.01	0.01	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.06	0.00	0.00	0.06	0.03	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.02	0.01
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.09	0.09	0.02	0.00	0.07	0.08	0.03

Phaser Lake				
Roads		Hectares	HU	
Habitat Type	Losses	Gains	Losses	Gains
1	0.05		0.00	0.00
2	0.50		0.08	0.00
3	1.36	1.92	0.31	0.44
4	0.31		0.08	0.00
5	0.16		0.06	0.00
6	0.32	0.80	0.17	0.41
7			0.00	0.00
8			0.00	0.00
9			0.00	0.00
11			0.00	0.00
Total	2.71	2.71	0.70	0.85

Habitat type area x HSI x species weight x life function weight																
Species >>	SLS				NNST				CISC				ARGR			
Life Function >>	SP	NU	FO	OW												
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.00	0.01	0.02	0.01

Other Onsite Compensation

Net Gains

TOTAL BY FEATURE - Summary						
Phaser Lake						
Access for char	Hectares			HU		
Habitat Type	Pre-	Post-	Net	Pre-	Post-	Net
1	0.00	0.00	0.00	0.00	0.00	0.00
2	2.57	2.57	0.00	0.39	0.48	0.09
3	13.77	13.77	0.00	3.14	4.08	0.93
4	0.00	0.00	0.00	0.00	0.00	0.00
5	1.49	1.49	0.00	0.58	0.86	0.28
6	8.55	8.55	0.00	4.36	6.54	2.17
7	0.00	0.00	0.00	0.00	0.00	0.00
8	0.71	0.71	0.00	0.26	0.39	0.13
9	0.11	0.11	0.00	0.05	0.08	0.03
11	1.79	1.79	0.00	0.55	0.79	0.24
Total	29.00	29.00	0.00	9.34	13.22	3.88

PRE-COMPENSATION HUs - Species Totals								
HU total per species x access weight								
Species >>	ARCH	LKTR	RNWH	BURB	SLSC	NNST	CISC	ARGR
Access >>	0	1	1	1	1	1	0	0
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.25	0.10	0.04	0.00	0.00	0.00	0.00
3	0.00	2.36	0.51	0.28	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.40	0.12	0.06	0.00	0.00	0.00	0.00
6	0.00	3.13	0.89	0.35	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.19	0.04	0.03	0.00	0.00	0.00	0.00
9	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00
11	0.00	0.44	0.07	0.05	0.00	0.00	0.00	0.00
Total	0.00	6.81	1.73	0.81	0.00	0.00	0.00	0.00

Other Onsite Compensation

Net Gains

TOTAL BY FEATURE - Summary						
Phaser Lake						
Access for char	Hectares			HU		
Habitat Type	Pre-	Post-	Net	Pre-	Post-	Net
1	0.00	0.00	0.00	0.00	0.00	0.00
2	2.57	2.57	0.00	0.39	0.48	0.09
3	13.77	13.77	0.00	3.14	4.08	0.93
4	0.00	0.00	0.00	0.00	0.00	0.00
5	1.49	1.49	0.00	0.58	0.86	0.28
6	8.55	8.55	0.00	4.36	6.54	2.17
7	0.00	0.00	0.00	0.00	0.00	0.00
8	0.71	0.71	0.00	0.26	0.39	0.13
9	0.11	0.11	0.00	0.05	0.08	0.03
11	1.79	1.79	0.00	0.55	0.79	0.24
Total	29.00	29.00	0.00	9.34	13.22	3.88

PRE-COMPENSATION HUs -Species Sub-Totals							
Habitat type area x HSI x species weight x life function weight							

Species >>	ARCH				LKTR			
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.06	0.06	0.00	0.00	0.13	0.13	0.00
3	0.00	0.62	0.62	0.00	0.00	1.35	1.01	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.07	0.10	0.10	0.10	0.07	0.11	0.11	0.11
6	0.77	0.77	0.77	0.58	0.84	0.84	0.84	0.63
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.03	0.03	0.05	0.06	0.03	0.03	0.05	0.07
9	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
11	0.00	0.00	0.16	0.16	0.09	0.00	0.17	0.17
Total	0.88	1.59	1.78	0.92	1.04	2.46	2.32	0.99

Other Onsite Compensation

Net Gains

TOTAL BY FEATURE - Summary

Phaser Lake

Access for char	Hectares			HU			
	Habitat Type	Pre-	Post-	Net	Pre-	Post-	Net
1		0.00	0.00	0.00	0.00	0.00	0.00
2		2.57	2.57	0.00	0.39	0.48	0.09
3		13.77	13.77	0.00	3.14	4.08	0.93
4		0.00	0.00	0.00	0.00	0.00	0.00
5		1.49	1.49	0.00	0.58	0.86	0.28
6		8.55	8.55	0.00	4.36	6.54	2.17
7		0.00	0.00	0.00	0.00	0.00	0.00
8		0.71	0.71	0.00	0.26	0.39	0.13
9		0.11	0.11	0.00	0.05	0.08	0.03
11		1.79	1.79	0.00	0.55	0.79	0.24
Total		29.00	29.00	0.00	9.34	13.22	3.88

PRE-COMPENSATION HUs -Species Sub-Totals

Habitat type area x HSI x species weight x life function weight

Species >>	RNWH				BURB			
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.06	0.04	0.00	0.00	0.03	0.02	0.00
3	0.00	0.31	0.20	0.00	0.00	0.19	0.09	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.02	0.03	0.03	0.03	0.02	0.01	0.02	0.02
6	0.25	0.25	0.19	0.19	0.09	0.06	0.12	0.09
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.01	0.01	0.01	0.02	0.01	0.00	0.01	0.01
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.01	0.05	0.00	0.00	0.02	0.02
Total	0.28	0.66	0.49	0.30	0.12	0.28	0.27	0.14

Other Onsite Compensation

Net Gains

TOTAL BY FEATURE - Summary

Phaser Lake

Access for char	Hectares			HU			
	Habitat Type	Pre-	Post-	Net	Pre-	Post-	Net
1		0.00	0.00	0.00	0.00	0.00	0.00
2		2.57	2.57	0.00	0.39	0.48	0.09
3		13.77	13.77	0.00	3.14	4.08	0.93
4		0.00	0.00	0.00	0.00	0.00	0.00
5		1.49	1.49	0.00	0.58	0.86	0.28
6		8.55	8.55	0.00	4.36	6.54	2.17
7		0.00	0.00	0.00	0.00	0.00	0.00
8		0.71	0.71	0.00	0.26	0.39	0.13
9		0.11	0.11	0.00	0.05	0.08	0.03
11		1.79	1.79	0.00	0.55	0.79	0.24
Total		29.00	29.00	0.00	9.34	13.22	3.88

PRE-COMPENSATION HUs -Species Sub-Totals

Habitat type area x HSI x species weight x life function weight

Species >>	SLSC				NNST			
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00							

Other Onsite Compensation

Net Gains

TOTAL BY FEATURE - Summary

Phaser Lake

Access for char	Hectares			HU			
	Habitat Type	Pre-	Post-	Net	Pre-	Post-	Net
1		0.00	0.00	0.00	0.00	0.00	0.00
2		2.57	2.57	0.00	0.39	0.48	0.09
3		13.77	13.77	0.00	3.14	4.08	0.93
4		0.00	0.00	0.00	0.00	0.00	0.00
5		1.49	1.49	0.00	0.58	0.86	0.28
6		8.55	8.55	0.00	4.36	6.54	2.17
7		0.00	0.00	0.00	0.00	0.00	0.00
8		0.71	0.71	0.00	0.26	0.39	0.13
9		0.11	0.11	0.00	0.05	0.08	0.03
11		1.79	1.79	0.00	0.55	0.79	0.24
Total		29.00	29.00	0.00	9.34	13.22	3.88

PRE-COMPENSATION HUs -Species Sub-Totals

Habitat type area x HSI x species weight x life function weight

Species >>	CISC				ARGR			
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.02	0.02	0.00	0.00	0.01	0.01	0.00
3	0.00	0.09	0.09	0.00	0.00	0.09	0.04	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.01	0.01	0.00	0.00	0.02	0.01
6	0.04	0.04	0.04	0.04	0.00	0.00	0.11	0.08
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.02
Total	0.05	0.15	0.16	0.06	0.00	0.09	0.19	0.13

Other Onsite Compensation

Net Gains

TOTAL BY FEATURE - Summary

Phaser Lake

Access for char	Hectares			HU			
	Habitat Type	Pre-	Post-	Net	Pre-	Post-	Net
1		0.00	0.00	0.00	0.00	0.00	0.00
2		2.57	2.57	0.00	0.39	0.48	0.09
3		13.77	13.77	0.00	3.14	4.08	0.93
4		0.00	0.00	0.00	0.00	0.00	0.00
5		1.49	1.49	0.00	0.58	0.86	0.28
6		8.55	8.55	0.00	4.36	6.54	2.17
7		0.00	0.00	0.00	0.00	0.00	0.00
8		0.71	0.71	0.00	0.26	0.39	0.13
9		0.11	0.11	0.00	0.05	0.08	0.03
11		1.79	1.79	0.00	0.55	0.79	0.24
Total		29.00	29.00	0.00	9.34	13.22	3.88

POST-COMPENSATION HUs - Species Totals

HU total per species x access weight

Species >>	ARCH	LKTR	RNWH	BURB	SLSC	NNST	CISC	ARGR
Access >>	0.75	1	1	1	1	1	0	0
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.09	0.25	0.10	0.04	0.00	0.00	0.00	0.00
3	0.93	2.36	0.51	0.28	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.28	0.40	0.12	0.06	0.00	0.00	0.00	0.00
6	2.17	3.13	0.89	0.35	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.13	0.19	0.04	0.03	0.00	0.00	0.00	0.00
9	0.03	0.04	0.01	0.00	0.00	0.00	0.00	0.00
11	0.24	0.44	0.07	0.05	0.00	0.00	0.00	0.00
Total	3.88	6.81	1.73	0.81	0.00	0.00	0.00	0.00

Other Onsite Compensation

Net Gains

TOTAL BY FEATURE - Summary						
Phaser Lake						
Access for char	Hectares			HU		
Habitat Type	Pre-	Post-	Net	Pre-	Post-	Net
1	0.00	0.00	0.00	0.00	0.00	0.00
2	2.57	2.57	0.00	0.39	0.48	0.09
3	13.77	13.77	0.00	3.14	4.08	0.93
4	0.00	0.00	0.00	0.00	0.00	0.00
5	1.49	1.49	0.00	0.58	0.86	0.28
6	8.55	8.55	0.00	4.36	6.54	2.17
7	0.00	0.00	0.00	0.00	0.00	0.00
8	0.71	0.71	0.00	0.26	0.39	0.13
9	0.11	0.11	0.00	0.05	0.08	0.03
11	1.79	1.79	0.00	0.55	0.79	0.24
Total	29.00	29.00	0.00	9.34	13.22	3.88

HU GAINS -Species Sub-Totals								
Habitat type area x HSI x species weight x life function weight								
Species >>	ARCH				LKTR			
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.06	0.06	0.00	0.00	0.13	0.13	0.00
3	0.00	0.62	0.62	0.00	0.00	1.35	1.01	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.07	0.10	0.10	0.10	0.07	0.11	0.11	0.11
6	0.77	0.77	0.77	0.58	0.84	0.84	0.84	0.63
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.03	0.03	0.05	0.06	0.03	0.03	0.05	0.07
9	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
11	0.00	0.00	0.16	0.16	0.09	0.00	0.17	0.17
Total	0.88	1.59	1.78	0.92	1.04	2.46	2.32	0.99

Other Onsite Compensation

Net Gains

TOTAL BY FEATURE - Summary						
Phaser Lake						
Access for char	Hectares			HU		
Habitat Type	Pre-	Post-	Net	Pre-	Post-	Net
1	0.00	0.00	0.00	0.00	0.00	0.00
2	2.57	2.57	0.00	0.39	0.48	0.09
3	13.77	13.77	0.00	3.14	4.08	0.93
4	0.00	0.00	0.00	0.00	0.00	0.00
5	1.49	1.49	0.00	0.58	0.86	0.28
6	8.55	8.55	0.00	4.36	6.54	2.17
7	0.00	0.00	0.00	0.00	0.00	0.00
8	0.71	0.71	0.00	0.26	0.39	0.13
9	0.11	0.11	0.00	0.05	0.08	0.03
11	1.79	1.79	0.00	0.55	0.79	0.24
Total	29.00	29.00	0.00	9.34	13.22	3.88

HU GAINS -Species Sub-Totals						
Habitat type area x HSI x species weight x life function weight						
Species >>	RNWH				BURB	
Life Function >>	SP	NU	FO	OW	SP	NU
1	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.06	0.04	0.00	0.00	0.03
3	0.00	0.31	0.20	0.00	0.00	0.19
4	0.00	0.00	0.00	0.00	0.00	0.00
5	0.02	0.03	0.03	0.03	0.02	0.01
6	0.25	0.25	0.19	0.19	0.09	0.06
7	0.00	0.00	0.00	0.00	0.00	0.00
8	0.01	0.01	0.01	0.02	0.01	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.01	0.05	0.00	0.00
Total	0.28	0.66	0.49	0.30	0.12	0.28
						0.14

Other Onsite Compensation

Net Gains

TOTAL BY FEATURE - Summary						
Phaser Lake						
Access for char	Hectares			HU		
Habitat Type	Pre-	Post-	Net	Pre-	Post-	Net
1	0.00	0.00	0.00	0.00	0.00	0.00
2	2.57	2.57	0.00	0.39	0.48	0.09
3	13.77	13.77	0.00	3.14	4.08	0.93
4	0.00	0.00	0.00	0.00	0.00	0.00
5	1.49	1.49	0.00	0.58	0.86	0.28
6	8.55	8.55	0.00	4.36	6.54	2.17
7	0.00	0.00	0.00	0.00	0.00	0.00
8	0.71	0.71	0.00	0.26	0.39	0.13
9	0.11	0.11	0.00	0.05	0.08	0.03
11	1.79	1.79	0.00	0.55	0.79	0.24
Total	29.00	29.00	0.00	9.34	13.22	3.88

HU GAINS -Species Sub-Totals								
Habitat type area x HSI x species weight x life function weight								
Species >>	SLSC				NNST			
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00							

Other Onsite Compensation

Net Gains

TOTAL BY FEATURE - Summary

Phaser Lake

Access for char	Hectares			HU		
Habitat Type	Pre-	Post-	Net	Pre-	Post-	Net
1	0.00	0.00	0.00	0.00	0.00	0.00
2	2.57	2.57	0.00	0.39	0.48	0.09
3	13.77	13.77	0.00	3.14	4.08	0.93
4	0.00	0.00	0.00	0.00	0.00	0.00
5	1.49	1.49	0.00	0.58	0.86	0.28
6	8.55	8.55	0.00	4.36	6.54	2.17
7	0.00	0.00	0.00	0.00	0.00	0.00
8	0.71	0.71	0.00	0.26	0.39	0.13
9	0.11	0.11	0.00	0.05	0.08	0.03
11	1.79	1.79	0.00	0.55	0.79	0.24
Total	29.00	29.00	0.00	9.34	13.22	3.88

HU GAINS -Species Sub-Totals

Habitat type area x HSI x species weight x life function weight

Species >>	CISC				ARGR			
Life Function >>	SP	NU	FO	OW	SP	NU	FO	OW
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.02	0.02	0.00	0.00	0.01	0.01	0.00
3	0.00	0.09	0.09	0.00	0.00	0.09	0.04	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.01	0.01	0.00	0.00	0.02	0.01
6	0.04	0.04	0.04	0.04	0.00	0.00	0.11	0.08
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.02
Total	0.05	0.15	0.16	0.06	0.00	0.09	0.19	0.13

Appendix B –
DFO Mine Site Authorization (NU 03-0191.4)



FISHERIES ACT AUTHORIZATION

Authorization issued to:

Agnico Eagle Mines Ltd. (*hereafter referred to as the “Proponent”*)
Meadowbank Division
Regional Office 20, Route 395
Cadillac, QB
J0Y 1C0

Location of Proposed Development

Nearest community (city, town, village): Baker Lake
Municipality, district, township, county: Kivalliq Region
Province: Nunavut
Name of watercourse, waterbody: Vault Lake
Longitude and latitude, UTM Coordinates: Longitude 95°59'20", Latitude 65°04'18", Easting 359466, Northing 7219764

Valid Authorization Period for Impacts to Fish and Fish Habitat

The valid period of this authorization for the harmful alteration or disruption, or destruction of fish habitat pursuant to paragraph 35(2)(b) and the destruction of fish pursuant to paragraph 32(2)(c) includes:

From	To
Date of Issuance	December 31, 2017

The valid authorization periods for other conditions of this Authorization are set out below as **Conditions of Authorization**.

Description of Proposed Development

The proposed development impacting on fish and fish habitat involves:

The construction of Vault Pit in Vault Lake which will be isolated from adjacent Wally Lake by Vault Dike.

Vault Lake will undergo dewatering and fish transfer to Wally Lake to facilitate excavation and quarrying activities.

Description of Authorized Impacts to Fish and Fish Habitat

Authorized impacts to fish and fish habitat resulting from the works, undertakings, operations or activities associated with proposed development described above include:

Location	Work of Undertaking	Habitat Units Lost (HU's)
Vault Lake	Dewatering, excavation, dike construction and placement of course material in Vault Lake basin.	27.73

Conditions of Authorization

1. Conditions that relate to the Proponent's Plan:

1.1 The conditions of this Authorization notwithstanding, should the above authorized impacts to fish and fish habitat in the opinion of the Fisheries and Oceans Canada (DFO) be greater than previously assessed, then DFO may suspend any works, undertakings, activities and/or operations associated with the proposed development, to avoid or mitigate adverse impacts to fish and fish habitat. DFO may also direct the Proponent and its agents, and contractors, to carry out at the Proponent's expense any modifications, works or activities deemed necessary by DFO to avoid or mitigate further adverse impacts to fish and fish habitat. In circumstances where DFO is of the view that greater impacts may occur than were contemplated by the parties DFO may also modify or rescind this authorization. If the authorization is to be changed the Proponent will be given an opportunity to discuss any proposed modifications or rescission.

1.2 The Proponent confirms that all plans and specifications relating to this Authorization have been duly prepared and reviewed by appropriate professionals working on behalf of the Proponent and acknowledges that they are solely responsible for all design, safety and workmanship aspects of all the works associated with this Authorization.

1.3 The works, undertakings, activities and operations must comply with the means and

conditions as identified within this Authorization. Impacts to fish and fish habitat other than that specifically identified within this Authorization are not permitted.

1.4 Works and undertakings shall be conducted in accordance with the practices outlined in the following reports:

- Application for Authorization for Works or Undertakings Affecting Fish Habitat, signed by Rachel Gould (Agnico-Eagle Mines Ltd.) dated January 9, 2013
- Core Receiving Environment Monitoring Program (CREMP): Design Document 2012 – Meadowbank Division. Prepared by Agnico-Eagle Mines Ltd. – Meadowbank Division, dated December 2012
- Meadowbank Gold Project No Net Loss Plan (NNLP), prepared by Agnico-Eagle Mines Ltd. dated October 15, 2012
- Tyson, J.D., et al. Fisheries and Oceans Canada. 2011. General Fish-Out Protocol for Lakes and Impoundments in the Northwest Territories and Nunavut. Canadian Technical Report of Fisheries and Aquatic Sciences 2935.
- Fisheries and Oceans Canada. DFO Protocol for Winter Water Withdrawal from Ice-covered Waterbodies in the Northwest Territories and Nunavut. Dated June 21, 2010.
- No Net Loss Plan Implementation Cost Estimate and Construction Schedule – Meadowbank Gold Mine Project, Revision 1, prepared by Agnico-Eagle Mines Ltd. – Meadowbank Division, dated July 8, 2008
- Proposed Water Quality Monitoring and Management Plan for Dike Construction and Dewatering at the Meadowbank Mine, Ver.6, prepared by Agnico-Eagle Mines Ltd., dated April 2008
- Report Addendum Detailed Design of Dewatering Dikes Meadowbank Gold Project, 3 Volumes, Document No.492, Ver.0, prepared by Golder Associates, dated July 12, 2007
- Final Report Detailed Design of Dewatering Dikes Meadowbank Gold Project, 3 Volumes, Document No.342, Ver.0, prepared by Golder Associates, dated March 13, 2007
- Fisheries and Oceans Canada. 1995. Freshwater Intake End-of-Pipe Fish Screen Guideline. <http://www.dfo-mpo.gc.ca/library/223669.pdf>

2. Conditions that relate to the **mitigation** of potential impacts to fish and fish habitat:

2.1 A qualified biologist or environmental inspector shall be on site during all in-water construction, compensation and restoration works to ensure implementation of the designs as intended in the Proponent's Plan and conditions of this Authorization.

2.2 A Fish-Out Program for removing fish from within the diked off portions of Vault Lake at the Meadowbank Property, will be developed in consultation with DFO by June 1, 2013 and subject to DFO approval.

2.2.1 Fish rescue methods shall be implemented as per the Fish-Out Program approved by DFO.

2.3 All materials and equipment used for the purpose of site preparation and project completion shall be operated and stored in a manner that prevents any deleterious substance (e.g. petroleum products, debris, etc) from entering the water.

2.3.1 Any stockpiled materials shall be stored and stabilized above the ordinary high water mark of any water body.

2.3.2 Vehicle and equipment re-fuelling and maintenance shall be conducted above the ordinary high water mark of any water body.

2.3.3 Any part of equipment entering the water shall be free of fluid leaks and externally cleaned/degreased to prevent any deleterious substance from entering the water.

2.4 Only clean material free of fine particulate matter shall be placed in the water.

2.5 Sediment and erosion control measures shall be implemented prior to work, and maintained during the work phases, including decommissioning and restoration phases, to mitigate impacts to fish habitat.

2.5.1 All disturbed areas shall be stabilized upon completion of work and restored to a pre-disturbed state or better.

2.5.2 Sediment and erosion control measures shall be left in place and maintained until all disturbed areas have been stabilized.

3. Conditions that relate to monitoring and reporting of Authorization conditions:

3.1 The Proponent shall undertake monitoring and report to DFO annually, by December 31st, whether works, undertakings, activities or operations for the mitigation of potential impacts to fish and fish habitat were conducted according to the conditions of this Authorization, by:

3.1.1 Providing dated photographs and inspection reports to demonstrate effective implementation and functioning of mitigation works undertakings, activities or operations described above as mitigation conditions.

3.1.2 Providing details of any contingency measures that were followed to prevent impacts greater than allowed by this Authorization in the event that mitigation measures did not function as described in the Proponent Plan.

4. Conditions that relate to the **compensation** for the authorized impacts to fish and fish habitat:

4.1 65.32 Habitat Units (HU's) of compensatory fish habitat shall be created by re-flooding Vault Pit and Phaser Lake basin; creating access for Arctic Char to Wally Lake; and, creating a connecting channel to Dogleg Pond.

5. All fish habitat compensatory works shall be completed and functioning according to the *Meadowbank Gold Project No Net Loss Plan (NNLP), prepared by Agnico-Eagle Mines Ltd. dated October 15, 2012*;

5.1 If at any time the Proponent becomes aware that the compensatory habitat is not completed and/or functioning according to the above criteria, the Proponent shall carry out any works which are necessary to ensure the compensatory habitat is completed and/or functioning as required by this Authorization.

5.2 The Proponent confirms that they shall leave the compensatory habitat undisturbed. After the compensatory habitat has been created the Proponent shall not carry on any work, undertaking, activity or operation that will adversely disturb or impact the compensatory habitat.

6. Conditions that relate to monitoring and reporting of **compensation** (described above):

6.1 The Proponent shall conduct monitoring of the compensatory habitat according to the *Habitat Compensation Monitoring Plan, version 4, dated May 2008 and the No Net Loss Plan Implementation Cost Estimate & Construction Schedule – Meadowbank Gold Mine Project, Revision 1, dated July 08, 2008*

6.2 The Proponent shall report to DFO that the compensation works were conducted according to the conditions of this Authorization by providing the following:

6.2.1 A photographic record of before, during and after construction, during decommissioning and post-restoration, shall indicate that all works and undertakings have been completed according to the approved proponent plan and conditions of this Authorization.

6.2.1.1 The photographic record shall include, but not be limited to, a record of the sediment and erosion control measures and the fish habitat compensation measures.

6.2.1.2 The photographs for each pre-construction, during construction, post-construction, decommissioning and post-restoration time periods shall be taken from the same vantage point(s) and general direction.

6.2.1.3 All photographs shall be clearly labelled as to date and vantage point(s). The photographic vantage point(s) and viewing directions shall be indicated, and clearly indexed to the photographs, on a plan view drawing of the construction site(s).

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- 6.2.2 A written report and photographic record summarizing the results of the Monitoring Program shall be submitted to the Iqaluit, Nunavut office of Fisheries and Oceans Canada by March 31 of each year following the monitoring year detailed in the *No Net Loss Plan Implementation Cost Estimate & Construction Schedule – Meadowbank Gold Mine Project, Revision 1, dated July 8, 2008*.
- 6.3 As-built reports including engineering drawings shall be submitted to the Iqaluit, Nunavut office of Fisheries and Oceans Canada within 6 months of the respective completion of each fish habitat compensation effort identified in the *Meadowbank Gold Project No Net Loss Plan (NNLP), prepared by Agnico-Eagle Mines Ltd. dated October 15, 2012*
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Authorization Limitations and Application Conditions

The holder of this authorization is hereby authorized under the authority of paragraph 32(2)(c) and/or paragraph 35(2)(b) of the *Fisheries Act*. R.S.C., 1985, c.F. 14 to carry out the works, undertakings, activities and/or operations as described herein. This authorization is valid only with respect to fish and fish habitat and for no other purposes. It does not purport to release the applicant from any obligation to obtain permission from or to comply with the requirements of any other regulatory agencies.

This Authorization does not permit the deposit of a deleterious substance in water frequented by fish. Subsection 36(3) of the *Fisheries Act* prohibits the deposit of any deleterious substances into waters frequented by fish except under conditions that can only be authorized by regulations made by Governor in Council.

At the date of issuance of this Authorization, no aquatic SARA listed species were identified. In the event that a SARA listed species is identified or an aquatic species becomes listed under SARA, this authorization does not permit harm, harassment or killing of any species at risk (SARA section 32), the damage or destruction of residence (SARA section 33) or the destruction of critical habitat (SARA section 58).

Failure to comply with any condition of this authorization may result in charges being laid under the *Fisheries Act*.

This authorization should be held on site and work crews should be made familiar with the conditions attached.

The Proponent shall advise DFO in advance if the ownership or responsibility for the conditions of this authorization changes.

Date of Issuance: April 2 - 2013

Approved by: 
David Burden
A/Regional Director General
Central & Arctic Region
Fisheries and Oceans Canada

Appendix C –

DFO Meeting Minutes, May 2015



FINAL - May 1st DFO and AEM meeting in Yellowknife: Summary and Notes

Topics: **Vault Expansion into Phaser Lake (Phaser Pit and Baby Phaser Pit)**
Amaruq Exploration Access Road
Meliadine Fisheries Assessment and Offsetting Plan

Present and in attendance at the Meeting-

DFO: Veronique D'Amours-Gauthier; Georgina Williston; Julie Marentette (summary has been reviewed and revised by DFO)

Agnico Eagle Mines (AEM): Ryan Vanengen

Golder (on behalf of AEM): Cam Stevens

The below meeting minutes are intended to provide general information highlighting the key messages from AEM and feedback from DFO during the meeting held at the DFO office in Yellowknife on May 1st. It has been reviewed by all parties prior to finalizing. In addition to the below notes, please refer to the attached presentation that provided a guide to the meeting. The presentation was made by Ryan and provided a platform for discussion between Veronique, Georgina, Julie, Cam and Ryan; if you have any questions, don't hesitate to contact ryan.vanengen@agnicoeagle.com.

9:00am – Introductions and an overview of the Meadowbank Mine site and current status of Phaser Pit

AEM and DFO discussed the Meadowbank Authorizations and associated history. Ryan highlighted what has been done to date for Phaser Lake and explained that in July, AEM applied for an authorization, which triggered a review by NIRB. In February, NIRB requested that AEM complete an addendum to the original FEIS; nothing has been submitted by AEM since the request. AEM is working on the documents and intends to submit an addendum to the AEM 2012 No Net Loss Plan (NNLP) as part of the submission that covers both Phaser Pit and Baby Phaser Pit. AEM intends to submit the FEIS addendum by mid-June. The NNL Plan (or offsetting plan) addendum would use the same HU calculation method used in past submissions. The plan will also consider a productivity conversion using the historical fishout and water quality monitoring data.

DFO agreed with this approach and suggested to simply submit the report directly to DFO. Since the application was already submitted and the file is open with NIRB and DFO there is no need to go through the application process online. DFO recommended that AEM send it directly to Julie along with the NIRB submission.



Overall DFO was comfortable with this approach, appreciated the history and background on this file and will work with AEM (within the NIRB timeline) as best possible to meet the dewatering and operational timeline outlined in the presentation.

(9:35 – Cam arrived and joined the meeting)

10am - Amaruq Exploration Access Road

AEM is completing an advanced exploration surface drilling campaign, the proposed access road will provide safety and fuel for year round exploration and eventually AEM would like to expand the site to an exploration ramp or portal. There is a considerable amount of fuel required for underground ramp development; which is one of the main reasons for the application to NWB for a Type B access road.

The Type B application was submitted by AEM on March 17, 2015 and NPC is in the process of reviewing the file. AEM is clear spanning all 11 fisheries watercrossings with either a clear span bridge or arch culvert. Given this approach, Ryan asked DFO if a review by DFO was required. Ultimately, DFO will review the project through existing processes (through the NIRB screening); one recommended option is to submit the screening document with the assessment (so that DFO and AEM can refer to the information in the assessment form to minimize redundancies and have greater transparency); the DFO ‘letter of advice’ or recommendations to NIRB will determine whether a fisheries authorization is required; recommendations in the letter will represent the terms and conditions of the review decision.

DFO (Georgina) asked - what are you doing with decommissioning? Ryan responded that the plan submitted to board includes decommissioning following end of exploration use; 5 years to operate the exploration site and 2 years to decommission.

DFO noted that Veronique is presently helping the triage group, so northern files will be triaged by Veronique. All new applications are to be sent to the general email.

In addition to the access road, AEM presented the exploration site culvert installations proposed for September 2015. The culvert crossings at the approved and screened exploration site will be addressed under an existing permit and can be sent directly to Julie. AEM presented the stacked culvert design to be used at the exploration site culvert crossings; the streams are ephemeral, supporting only slimy sculpin and ninespine stickleback based on baseline studies. An imbedded culvert at the crossings will permit flow of the streams and passage of fish and no impacts to the fishery (Commercial Recreational or Aboriginal; CRA) are expected.

10:30 am - AEM presented the Meliadine Phase 1 site layout and the significant reductions in the aquatic footprint compared to the site layout assessed in the final Environmental Impact



Statement (FEIS), as a result of the re-designed site layout. No impacts to the productivity of the CRA fisheries are predicted under the updated site layout.

After reviewing the changes to the site, AEM presented the sequence of construction of the H17 dike (and H17 collection pond). AEM does not believe that impacts to Lake H17 (which only has incidental use by small numbers of ninespine stickleback that enter the lake following during the freshet) will cause serious harm to fish. Lake H17 will be a collection pond onsite (called CP1) and presently freezes through to the bottom because of the shallow depths. AEM intends to build the H17 dike in the winter and then dewater or use water for milling in the following freshet; therefore it is expected that no fish will be present the following summer. Ryan attended a training session that DFO gave to consultants, where he reported that ninespine stickleback that are isolated in ponds are not considered CRA fisheries; therefore, projects affecting such ponds don't require a review. So, H17 pond doesn't require an authorization. AEM suggests submitting a request for review given that there are potential impacts in the flows of downstream ponds of H1 and H2 during operation of the D-CP1 and D-CP8 dikes. Although only a few arctic grayling have been recorded in Lake H1 and juveniles in the stream H1-2, AEM noted that overall this stream system would not impact the productivity of the CRA fishery in Meliadine Lake and that the new site layout does not directly impact a CRA fishery.

DFO (Veronique) commented that the Meliadine file is open so just send the request for review to Veronique directly (not to triage). If needed AEM could meet with DFO following the submission to make sure information in the application is sufficient. Overall, AEM re-emphasized that the changes to the site have been significant and that although this is phase 1 of the project, we have made significant strides to avoid impacts to CRA fisheries at this point in the regulatory phase.

DFO requested that a table be included in the offsetting plan that shows a review of the waterbodies listed in the FEIS (approved in the NIRB Project Certificate) and the waterbodies affected under the updated layout, summarizing the efforts to avoid serious harm to fish.

DFO also reviewed the current staffing arrangement and roles at the DFO NWT/ NU office:

Georgina is current supervisor for north, Veronique is covering the Meliadine file, Julie is temporarily covering the Amaruq/Meadowbank file until Liz is back in September and Julie Dahl the manager, Dale Nicholson is the Regional Director.