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A. General

1. Operations shall proceed in accordance with the AMP [illegible] of [illegible], as updated and approved in accordance with Section F.
2. The AMP monitoring is comprised of Section B - Field Sampling Event Parameters and Section C - Continuous Monitoring as updated and approved in accordance with Section F.
3. Monitoring, as identified within the AMP and including biological monitoring, will occur for a minimum of three consecutive years prior to commencing extraction below the water table.
4. Should extraction below the water table begin in year 4, monitoring will occur in accordance with Tables 1 and 2.
5. [illegible] part of the reduced monitoring program.
6. If extraction below the water table ceases for one full year, the reduced monitoring program in Note A.5 is the only monitoring required.
7. All monitoring may be discontinued one year after [illegible] approval by the MNR.

B. Field Sampling Event Parameters

1. Three Paired Monitoring Stations, each composed of an index pool and shallow water monitoring location, have been establish in the vicinity of the continuous monitoring station at SW4.
2. [illegible]
3. In Table 1 below, a monitoring frequency of "4 times per year" means once during spring, twice during [illegible] season and once during fall.
4. Monitoring of the reference reach of Walkers Creek shall only be required if the NVCA facilitates access to the reference reach in a timely manner for the proposed sampling event. If access is not provided, SW-7 and P/R3 will be used.
5. Brook trout monitoring activity, described in Table 1 shall consist of multi-pass electrofishing in 50m reaches to acquire data on fish species presence, and brook trout population parameters including relative abundance and length.
6. Three replicate benthic samples, as described in Table 1 shall be collected with a 500 um Surber sampler. Subsamples will be processed to lowest practical taxa. Data will be analyzed for parameters including richness, density, diversity, evenness and EPT (Ephemeroptera-Plecoptera-Trichoptera).
7. Redd surveys will be conducted following *Salmonid Spawning Surveys of Selected Streams in the Grand River Watershed 1958-1962*, S.A. Grillmayer and R.J. Baldwin, GRCA).
8. Qualitative aquatic habitat assessment described in Table 1 shall consist of stream parameters including bank conditions, riparian vegetation and cover, substrate characteristics (including prevalence of fine sediment), instream cover, barriers and flow conditions.

Table 1. Field Sampling (Subject to Sections A and B)

Monitoring Activity	Groundwater Location	Frequency	Surface Water - Side Creek Location	Frequency	Pit Pond Location	Frequency
Water Levels	3 boreholes at or in the vicinity of, BH3, BH2002-5, and BH2000-10, and BH2000-10, and 2 in-stream piezometers at SW4 and SW7. Following completion of excavation footprint temperature monitoring, at two new down gradient monitors (~18m) to be located adjacent to BH2002-5, and one shallow (~5m) to be located generally southwest of BH2002-5	[illegible]	P/R 1, P/R 2, P/R 3	4 times per year or more often if required to support the development of defensible shallow water [illegible]	perimeter staff gauge in pit pond	4 times per year and [illegible]
Stream Flow	N/A	N/A	at SW4, SW-7, SW-8 and P/R 1, P/R 2, P/R 3	[illegible]	N/A	N/A
Temperature	3 boreholes at or in the vicinity of, BH3, BH2002-5 and BH2000-10 and 2 in-stream piezometers at SW4 and SW7. Following completion of excavation footprint temperature monitoring, at 2 new downgradient monitors; 1 deep (~15m) to be located [illegible]	[illegible]	Spot temperatures at SW-4, SW-7, SW-8, P/R 1, P/R 2, P/R 3 and the Side Tributary	4 times per year, or more often if required to support the development of defensible shallow water [illegible]	at staff gauge	[illegible]
Chemistry [illegible]	3 boreholes at or in the vicinity of, BH3, BH2002-5 and BH2000-10 and 2 in-stream piezometers at SW4 and SW7. Following completion of excavation footprint temperature monitoring at 2 new [illegible] be located adjacent to BH2002-5, and 1 shallow (~5m) to be located generally southwest of BH2002-5	[illegible]	SW-4 and SW-7	[illegible]	at staff gauge	[illegible]
Stream Habitat Assessment	N/A	N/A	Qualitative habitat assessment [illegible] at P/R 1, P/R 2, P/R 3 and in the Side Tributary	[illegible]	N/A	
Aquatic Benthic Sampling	N/A	N/A	[illegible]	[illegible]		
Aquatic Redd Survey	N/A	N/A	[illegible]	[illegible]		
Aquatic Brook Trout Sampling	N/A	N/A	near SW-4 and SW-7 [illegible]	Every [illegible] year [illegible] August to end September		

C. Continuous Monitoring (subject to Sections A and C)

1. [illegible] will be established at boreholes located within the footprint of below water excavation (excavation footprint temperature monitoring) and downgradient (downgradient monitoring), in-stream piezometers, surface water stations and the Pit Pond per Table 2.
2. "Continuous" monitoring in Table 2 means monitoring between April 1 and October 15 using automated sampling/recording device (data loggers) recording measurements at 0.25 hr intervals.
3. At any location where seasonal or weekly data downloading is required, [illegible] may be used, in which case the seasonal or weekly downloading of data is not required.

Table 2. Continuous Monitoring

Monitoring Activity	Groundwater Location	Frequency	Surface Water - Side Creek Location	Frequency	Pit Pond Location	Frequency
Water Levels	[illegible]	continuous sampling with data loggers [illegible]	Continuous at SW-4, SW-7 and SW-8	[illegible]	[illegible]	continuous sampling with data loggers [illegible]
Temperature	2 boreholes at or in the vicinity of BH2002-5 and [illegible]	[illegible]	[illegible]	continuous sampling with data loggers [illegible]	[illegible]	continuous sampling with data loggers [illegible]
Excavation Footprint Temperature	[illegible]	continuous sampling with [illegible]				

D. Data Assessment During Below Water Operations

1. In a season where there is active below water table extraction, the continuous monitoring data collected in accordance with Table 2 will be reviewed weekly (including use of direct downloads and uplinks) by the monitoring professionals to determine if trigger have been exceeded.
2. A "monitoring Professional" is a person or persons qualified to interpret monitoring data and provide expert opinions on this adaptive management program including implementation of contingency measures and modifications to monitoring.
3. The field data collected in accordance with Section B shall be compared and assessed with the continuous monitoring data collected in accordance with Section C.

E. Contingency Implementation

1. If the assessments confirm that triggers have been exceeded, and that contingency measures are required, the monitoring professional will notify the site manager who will implement operational contingencies as per Table 3. MNR and NVCA staff will be advised of a trigger being exceeded.
2. Monitoring professionals will [illegible] as appropriate and determine when and if [illegible] elapsed without a trigger being exceeded.
3. Table 3 identifies initial triggers for implementation of contingency measures in response to monitoring results for index pools. Shallow water [illegible].
4. Additional trigger variables for flow and downstream temperature and [illegible] Note F.5.

Table 3. Index Pool Contingency Triggers

Pool Depth	Reduction in the rate of Below Water Extraction	Maximum Weekly Average Temperature (MWAT)
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

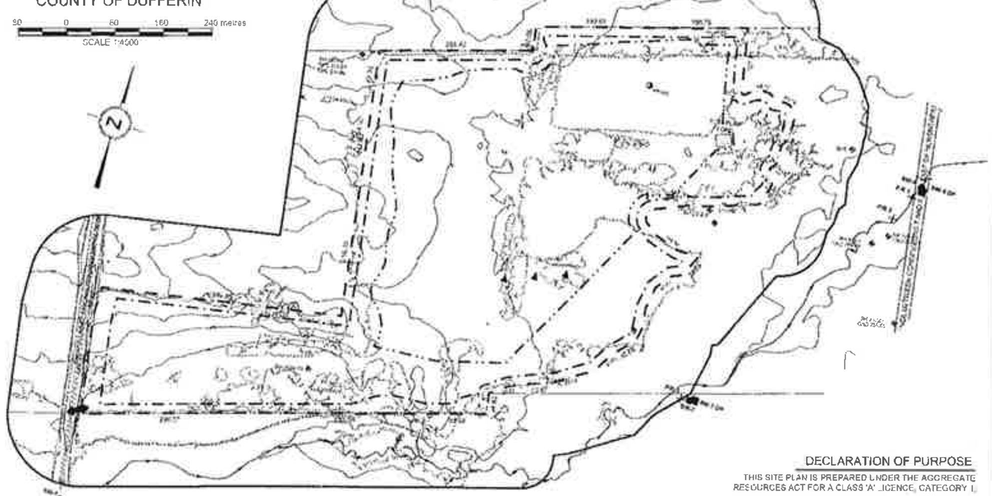
F. Annual Reporting and AMP Updating

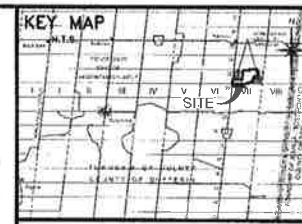
1. [illegible] agency staff upon pre-arranged site meeting basis.
2. An Annual Report prepared by a Monitoring Professional will be submitted to the MNR within 2 months of the end of each calendar year. The MOE and the NVCA will be provided copies of the Annual Report. The Annual Report will contain:
   a) The verified monitoring data collected
   b) An analysis and assessment of the data, and
   c) Recommendations pertaining to:
      i. [illegible]
      ii. The rate of aggregate extraction
      iii. Proposed changes to monitoring, if any
      iv. Proposed changes to the trigger variables or trigger values and associated contingency measures, if any, and
      v. [illegible]
3. Prior to implementing any proposed changes recommended in an Annual Report, such changes shall be approved by MNR, in consultation with NVCA.
4. Within two weeks of the MNR approving any changes to AMP that are recommended in an Annual Report, an updated Drawing 5 consolidating all approved changes to the AMP will be prepared and provided to the MNR and copied to the NVCA.
5. Prior to commencing below water table extraction:
   a) Trigger values will be developed for the shallow water monitoring stations and associated contingency measures, based on empirical data (including regression and other analyses), to the satisfaction of the MNR in consultation with the NVCA and the MOE.
   b) Flow and downstream temperature variables and associated contingency measures will be assessed (including regression and other analyses) for potential new trigger variable and associated contingency measures to the satisfaction of the MNR in consultation with the NVCA and the MOE.
6. Excavation footprint temperature monitoring will be conducted for a period of at least two years following commencement of below water extraction. Assessment of this complete data set will be conducted to confirm model predictions of groundwater temperature extents and identify locations for the two additional monitors to be installed thereafter downgradient of the extraction limit for below water excavation. This assessment to be included in the Annual Monitoring Report for the year in which it conducted.

G. SHARING OF DATA

1. The NVCA will be provided online access to non-verified monitoring data from Section C - Continuous Monitoring. Verified monitoring data will [illegible].
2. [illegible] that preserves the confidentiality of the data shared pursuant to Note G.1 while authorizing that data to be used by the NVCA for monitoring the pit and watershed management.

PART OF LOT 23, CONCESSION 7
EAST OF HURONTARIO STREET
TOWNSHIP OF MULMUR
COUNTY OF DUFFERIN





LEGEND

- LICENCED BOUNDARY
- LIMIT OF EXTRACTION - ABOVE THE WATER TABLE
- LIMIT OF EXTRACTION - BELOW THE WATER TABLE
- LINE INDICATING ALL POINTS WITHIN 120m (MINIMUM) OF LICENCED BOUNDARY
- PROPERTY LINE
- POST & PAGE WIRE FENCE (UNLESS OTHERWISE NOTED)
- PUBLIC ROAD
- WATER COURSE
- CONTOURS
- WOODED AREAS / PLANTATION
- POND
- P/R 3 — PAIRED MONITORING STATION
- GROUNDWATER MONITORING WELL
- PROPOSED MONITORING WELL
- PROPOSED DEEP MONITORING WELL
- SW-7 — SURFACE WATER MONITORING STATION
- SW-T-DP — IN-STREAM PIEZOMETER
- EXCAVATION FOOTPRINT TEMPERATURE MONITORING WELL

SCHEDULE OF AMENDMENTS

NO.	DATE	DESCRIPTION	APPROVED
1	[illegible]	[illegible]	[illegible]

ANNE TERRY GUIOT IS APPROVED BY THE MINISTRY OF NATURAL RESOURCES PURSUANT TO SECTION 8(4) OF THE AGGREGATE RESOURCES ACT TO PREPARE AND CERTIFY SITE PLANS

ANNE TERRY GUIOT   DATE

ARBOUR FARMS PIT

MULMUR TOWNSHIP

LICENSEE: ARBOUR FARMS LTD. c/o ADAM KREHM
245 CARLAW AVENUE, SUITE 107
TORONTO, ONTARIO
M4M 2S6
[illegible]

ADAPTIVE MANAGEMENT PROGRAM

PROJECT NO. 98 - 1483	DRWG. NO. 1483 - 5 OF 5
DATE: DECEMBER 2012	SCALE: [illegible]
DRAWN: CAP CHECKED: [illegible]	APPROVED: [illegible]

Skelton Brumwell
ENGINEERING PLANNING ENVIRONMENTAL CONSULTANTS

DECLARATION OF PURPOSE

THIS SITE PLAN IS PREPARED UNDER THE AGGREGATE RESOURCES ACT FOR A CLASS 'A' LICENCE, CATEGORY 1.