1. ENVIRONMENTAL & WATER SUPPLY OBJECTIVES The following Environmental, Water Quality, and Water Supply Objectives have been established as outlined in the RRRQ Water Management and Environmental Implementation Guide "Implementation Guide": **Environmental Objectives:**

- i. Ensure that the amphibian pond levels have recovered completely by late winter (March 1) ii. Maintain 10% wetted area to a depth of 10 cm in identified amphibian ponds until July 31st for all ponds except P5 and P10; for P5, 5-10% of the pond will be wetted to a depth of 10 cm until July 31st and some water will be maintained until at least August 15th; for P10, 10 cm of water will be maintained over 10% of the pond until the end of July and 5% of the pond will be wetted to a depth of 10 cm until the end of August.
- iii. Ensure that certain ponds dry out each year similar to existing conditions iv. Maintain seeps and springs west of the West Pond
- v. Maintain spring and associated on-site tributary to Kilbride Creek vi. Strive for a maximum temporary drawdown during extraction period in the Eastern Wetland Complex of 0.30 metres Environmental Water Quality Objectives:
- i. Temperature of groundwater discharge to Kilbride Creek and Kilbride Tributary will remain within existing ii. Turbidity of water within wetlands, Kilbride Creek and Kilbride Tributary will remain within existing range. Water Supply Objectives: Maintain existing water supply in private wells
- ii. Maintain existing water quality down gradient of site
- 2. WATER MANAGEMENT AND ECOLOGICAL MITIGATION/CONTINGENCY MEASURES Controlling the rate at which aggregate is removed from below-the-water table is one of the mitiaation methods that will be applied in order to manage the water levels in and around the site and minimize impacts. The rate of below water extraction can be reduced as necessary, or even stopped, to ensure the water levels are maintained at the appropriate levels as set out on this Site Plan and described in Reid Road Quarry Water and Environmental Management Implementation Guide ("Implementation Guide"). When conditions permit (e.g. a wetter year or season), extraction rates can be increased without affecting the minimum water levels
- required for maintenance of ecological function. The rate of extraction will ultimately depend on observed water level conditions in the ponds and in the adjacent wetlands. The primary mitigation methods for the proposed operation involve the maintenance of water levels by water level control mechanisms, including the construction of separated ponds (buffer ponds) and water dispersion systems. The buffer ponds are artificial water bodies situated between sensitive features and the active extraction area. The purpose of the buffer ponds is to temporarily maintain (only needed during active extraction) the existing surface water levels through the use of mechanical pumping. The purpose of the
- dispersion systems and apparatus is to disperse pumped water along a broad area beside a sensitive feature, thereby mitigating the effect of low groundwater levels caused by the aggregate extraction. These mitigation measures are only required while aggregate is being removed from below the water table. Post extraction, no mitigation is necessary and during periods of low aggregate production mitigation may also not be necessary.

A. Water Management Components

There are three main components of the Water Management System as further described in the Implementation guide. These are water transfer pumps, buffer ponds and infiltration/dispersion systems. None of these components will be located within ecological features. All water management systems are to be in place prior to any extraction below the water table occurring.

Table 1: Water Management System Components						
Component	Location	Function				
Transfer Pump 1	East Pond	Transfers water from East Pond to Central Pond and Buffer Pond 1				
Transfer Pump 2	Central Pond	Transfers Water from Central Pond to East Pond and Buffer Pond 1				
Transfer Pump 3	Central Pond	Transfers water from Central Pond to Dispersion System 1				
Transfer Pump 4	Central Pond	Transfers Water from Central Pond to Infiltration System 2				
Transfer Pump 5	West Pond	Transfers Water from the West Pond to Buffer Pond 2 and Central Pond				
Transfer Pump 6	East Pond	Transfers water to Eastern Wetland Complex if necessary.				
Transfer Pump 7	Phase 1	Transfers water between Phase 1 Pond and Central Pond.				
Buffer Pond 1	Central Pond	Maintains water levels in P7A and P7B				
Buffer Pond 2	West Pond	Maintains hydraulic gradient between West Pond and Kilbride Creek and Kilbride Tributary. This also supports the PSW identified as SWD7-1				
Dispersion System 1	Central Pond	Provides surface water to P5.				
Dispersion System 2	Kilbride Tributary	Maintains hydraulic gradient between Central Pond and Kilbride Tributary.				
Dispersion System 3	Eastern Wetland Complex	Limits water level drawdown in Eastern Wetland Complex				

B. Water Transfer System

Submersible pumps will be used to transfer water between the main ponds and mitiaation features. The pumps will be isolated from the ponds with either a sand barrier or filter cloth to minimize the transfer of turbidity. Where necessary, water lines will be heat-traced or buried as required for winter operations. The transfer pumps will be operated on a float-system to allow for automatic topping up of ponds as required. The operation of inster Pump 3 will occur on an as-needed basis according to water levels obtained from WP (Wetland Piezometer) 8 in order to meet target levels and Minimum Water Level Targets (MWLTs) for P5.

C. Buffer Ponds	
The buffer ponds are constructed water bodies situated between sensitive features and the active ex	
area and will be located along the shorelines of the West Pond and Central Pond. While the water le	
active extraction ponds may decline as aggregate is removed, maintaining a higher water level in th	
pond will maintain the water levels in the adjacent feature. Therefore, the natural pathway for water	
movement between the buffer pond and the sensitive feature will be maintained. The pea stone bar	
installed will not impede water movement. In Buffer Pond 1 ("BP1"), the natural pathway is an existing	
that extends from the Buffer Pond into wetlands P7A and P7B. Pumps will add water to Buffer Pond 1	
keep the water level in Buffer Pond 1 within the same seasonal range as it presently occurs in the Cen	
In Buffer Pond 2 ("BP2"), the natural pathway to the sensitive feature is groundwater migration throug	n the sand
and gravel aquifer. Pumps will add water to Buffer Pond 2 to keep the water level within the seasona	l range as
presently occurs in the West Pond. The present source water in both cases is pond water which is the	eby
maintaining chemical qualities and temperature as existing conditions. The Buffer Ponds will be separ	ated from
either the West Pond or Central Pond with a low permeability barrier to limit the volume of water recir	culating
back to the main ponds. The effectiveness of Buffer Pond 1 will be monitored by cellular-based data	loggers
located in WP3 and WP6. The effectiveness of Buffer Pond 2 will be monitored by cellular-based date	loggers in

D. Water Dispersion Systems

The purpose of the dispersion systems is to disperse pumped water along a broad area beside a sensitive feature thereby mitigating the effect of lower groundwater levels caused by the aggregate extraction. Dispersion System 1 ("DS1") is located between the Central Pond and P5. DS1 is constructed of a 30 m long forated pipe located at the ground surface adjacent to wetland P5. Water will be pumped into Dispe System 1. The effectiveness of Dispersion System 1 will be measured using a cellular-based data logger in WP8.

WP4 and WP7. The water levels in the Buffer Ponds are also monitored in this manner.

Dispersion System 2 ("DS2") will be approximately 30 m long and located between the Central Pond and the Kilbride Tributary. Dispersion System 2 will be a trench three metres deep and filled with pea gravel. The water level in Dispersion System 2 will be maintained within the natural range of the Central Pond using a float-switch within a central filling station connected to the trench. A cellular-based data logger will be located within Dispersion System 2 and the effectiveness of the trench will be verified by cellular-based data logger in WP4.

Dispersion System 3 ("DS3") will be designed to add water to the edge of the Eastern Wetland Complex if drawdown beneath the wetland is greater than anticipated and the vegetation is impacted. Similar to DS1, DS3 will be constructed of a perforated pipe located at the ground surface adjacent to the wetland. E. Summarization of Mitigation Within Operational Phases

Table 2 summarizes the mitigation required during each operational phase.

Table 2: Mitigation Features						
	Purpose	When Required	Source of Water	Pumping Rate	Monitoring Station	Monitoring Paramaeters and Frequency
Dispersion System 1	Temporary source of surface water for P5 to protect amphibian lifecycle.	Various Phases when water levels in Central Pond are lowered by extractive activities (pumping or aggregate removal)	Central Pond and East Pond	tbD ¹	WP8	Water Level , 30 minute interval
Dispersion System 2	Temporary source of groundwater in the headwater of the Kilbride Tributary. Maintain water level range in Kilbride Tributary and maintain temperature range in ground water discharging to Kilbride Tributary.	Various Phases when water levels in Central Pond are lowered by extractive activities (pumping or aggregate removal)	Central Pond and East Pond	TBD	DT2	Water Level , 30 minute interval
Dispersion System 3	Contingency measure to add water to the Eastern Wetland Complex	When drawdown occurs beneath the EWC and the ground flora consists of 40% upland plant species	West or Central Pond	TBD	WP9	Water Level , 30 minute interval
Buffer Pond 1	Temporary source of surface water for P7A and P7B. Maintain water levels in WP3 and WP6 within existing range	Various Phases when water levels in Central Pond are lowered by extractive activities (pumping or aggregate removal)	Central Pond and East Pond	TBD	WP3 and WP6	Water Level , 30 minute interval
Buffer Pond 2	Temporary source of groundwater in the headwater of the Kilbride Tributary and Kilbride Creek. Maintain water levels and groundwater temperature in groundwater discharge to Kilbride Creek and Kilbride Tributary.	Various Phases when water levels in West Pond are lowered by extractive activities (pumping or aggregate removal)	Central Pond and East Pond	TBD	WP4 and WP7 CB16S/D	Water Level and Temperature, 30 minute interval

have stabilized.

- F. Water Quality Mitigation Strategy The following mitigation will be in place to minimize changes to water quality:
- . Eliminate storage of large volumes of on-site fuel by using wheel-to-wheel refueling and only small double walled tanks located on impervious surfaces for small storage tanks.
- 2. Store asphalt and concrete for recycling a minimum of two metres above high water table on a fine-grained base such as silt or clay.
- 3. Separate water sources for mitigation from areas where turbidity may be generated by mining or blasting
- 4. Clean up all spills immediately using the Spills Response Protocol. 5. Maintain a Water Well Complaint Protocol.
- Maintain aroundwater flow to Kilbride Tributary and Kilbride Creek for temperature control. 7. Implement Water Quality Monitoring Program (see Table 3).
- G. Water Quantity Contingency Measures for Wetlands The groundwater modeling effort has shown that pumping water into the wetlands via BP1 and DS1 will have the desired effect of maintaining the appropriate hydroperiod in the wetlands. In the event that there is unexpected return drainage
- to the Central Pond via the sides and bottom of the wetland, the contingency measures include;
- Reduced aggregate extraction rate from Central Pond Reduced pumping from the Central Pond
- Increased pumping to BP2 and D\$1
- Reduction of permeability of shoreline between Central Pond and wetland with silt/clay • It may be necessary to rapidly respond to changing climatic conditions resulting in unexpected dry conditions in a wetland. This will be conducted by direct discharge of water from a tanker truck into the wetland, followed by setting up a temporary pumping system from the nearest Transfer Pumping Station to the wetland. H. Protection of Terrestrial Environments
- Turtle Nesting Habitat Protection • The berm separating P1 and P2 that is used for nesting will be retained. In an effort to reduce predation rates, the ends of the berm will be planted with a dense cover of Allegheny blackberry. A solid wall of approximately 2 m in
- width be planted at each end of the berm. • The berm that will be built to create the portion of BP2 that is in the West Pond will be covered with a substrate that is suitable for turtle nesting. This will consist of a mix of sand and gravel. Allegheny blackberry will also be planted at both ends of this berm to deter predators. The balance of the berm will be kept free of invading vegetation during
- the life of the quarry. Hand pulling/digging and/or herbicides will be used to remove undesirable vegetation from the berm during late summer after turtle eggs have hatched.
- In the event that the planting of Allegheny blackberry is not effective in deterring turtle nest depredation, alternative methods for protecting the nests will be researched and a preferred method will be identified in the annual monitoring report. The monitoring report will be circulated to the Region, Town, and Conservation Halton for their input on turtle nest protection. Tree Protection Fencing:
- In terrestrial areas where extraction activities are proposed in close proximity to wetlands or woodlands, tree protection fencing will be erected at the limit of all required setbacks where ground elevations are equal to or lower than the elevations in the adjacent extraction area. These areas include Phase 1, the connection between Phase 1 and 2/4 and in the southern part of Phase 5. Standard paige wire farm fence will be installed in the locations identified on the Operations Plan after any required tree clearing and grubbing is completed (e.g., in Phase 1 and CUW1-5) and prior to the initiation of extraction operations. Silt screen must also be attached to the paige wire fence and have its base covered with soil to ensure it can effectively trap sediment.

Invasive Species Control Measures

- Control measures will be implemented to reduce populations of highly invasive plants now established in the ation surrounding the existing ponds and the White-Cedar-Conifer Organic Swamp in the southern portion of the property. Species of particular concern are common buckthorn, dog strangling vine and garlic mustard. Mechanical and/or chemical treatments will be utilized to reduce these undesirable species and prevent
- their spread into adjacent natural areas and proposed planting sites. See Section 3.6.3 of the Implementation Guide for additional details regarding the strategies for the removal of invasive species. • The dense stand of Phragmites that is now established on the north side of the internal road will be cut and treated with an appropriate herbicide such as glyphosate. This aggressive invasive reed is now mostly found in close
- proximity to the north side of the road but if left uncontrolled it will continue to spread throughout the wetland communities in this area (i.e. SWC3-2 and MAS3-1). This invasive species control work will be carried out after the new culverts are installed and during a dry summer when no surface water is present in this area. Phragmites is also found around Pond 3 and since a portion of this area will be retained control work is also warranted here
- In the event that new invasive species become established, a protocol for their control will be prepared and circulated to the Region/Agencies for their comments. 3. ENVIRONMENTAL MONITORING

A. Background Off-Site Monitoring Network

One or more off-site locations will be used to determine long-term climate influenced trends in precipitation rates, air temperature, streamflow, groundwater levels and groundwater temperatures. Climate Stations Long term climate stations operated by Environment Canada will be used to obtain precipitation and air temperature data. The nearest long-term stations include Kitchener-Waterloo, Toronto International Airport and Hamilton Royal Botanical Gardens. These data will be reviewed for potential longer-term climate changes around the site. Streamflow

Streamflow measurements provide an integration of regional runoff and groundwater discharge. There are several streamflow stations operated by Environment Canada and Conservation Halton that will be considered for background monitoring. The data available from these stations will be reviewed as an indication of long-term climate change impacts on water resources. Groundwater Level and Temperature

There are several Provincial Groundwater Monitoring Network wells located within Conservation Halton watersheds and Grand River Conservation Authority watershed. Conservation Halton also independently operates several aroundwater monitoring stations. The data available from these stations will be reviewed as an indication of regional ambient groundwater level and groundwater temperature changes.

B. On-Site Monitoring Network Groundwater and Surface Water Monitoring

A comprehensive groundwater and surface water monitoring program has been designed to verify that the stated Environmental Objective, Environmental Water Quality Objectives, and Water Supply Objectives are being satisfied. The monitoring locations are shown on Page 1 and is summarized in Table 3 on this page.

- List of Groundwater Monitoring Stations to be installed The following additional groundwater monitoring wells will be established post licensing but before any below water table extraction occurs. The locations of these monitors are shown Page 1. A minimum of one year of data will be obtained
- prior to below-water-table extraction. • CB12S/D: A multi-level groundwater monitoring station will be installed between the East Pond and the residence at
- 9256 Twiss Road. The shallow well will be completed in the overburden and the deep well within five meters below the bedrock/overburden contact
- CB13S/D: A multi-level groundwater monitoring station will be installed between the Central Pond and the industrial park. The shallow well will be completed in the overburden and the deep well will penetrate the full thickness of the dolostone aquifer.
- CB14S/D: CB14 will be installed downgradient of the proposed recycling area in Phase 5. CB14S will be a shallow overburden monitoring well and CB14D will be a full depth bedrock well.
- CB15: CB15 will be installed in the upper five metres of the bedrock aquifer in the southwest corner of the site veen the Phase 1 pond and Kilbride Creek
- CB16S/16D: CB16S/D will be installed between Buffer Pond 2 and Kilbride Creek. CB16S will be completed in the overburden and CB16D will be completed in the upper ten metres of the bedrock.
- **CB17**: CB17 will be installed along the main access road

C. Summary of Groundwater and Surface Water Monitoring The following Table summarizes the Groundwater and Surface Monitoring requirements for the site. Additional information

regarding groundwater and surface water monitoring is provided in the Implementation Guide. Table 3: Summary of Groundwater and Surface Water Monitoring Program

Table 3: Su	ummary of Groundwater and Surface Wat	er Monitoring Pro
	Monitoring Station	Parameter
Ambient Site Monitoring (27 locations)	WP1, SG1, SG2, SG4, SG6 SG7, SG9, SG10, SG11, CB7S CB12S/D, CB13S, CB13D, CB14S/D CB15, , CB17, CB18S, CB18D, KC1IN, KC1OUT, KC2IN, KC2OUT, WEST LAKE PIEZOMETER	Water Level ar Temperature
Water Level Monitoring (55 locations)	 WP1, WP3, WP4, WP5, WP6, WP7, WP8, WP9 WP10, WP12, WP13, WP14, WP15, CB1, CB2, CB35, CB30, CB45, CB40, CB5, CB6, CB7D CB95, CB9D, CB16D, CB17, DS1, DS2, DS3, BP1, BP2, SG1, SG2, SG4, SG6, SG7, SG9, SG10, SG11, CB75, CB125/D, CB135, CB13D, CB145/D, CB15, CB165, CB17, CB175, CB125, CB18D, KCIN, KCOUT, KC2IN, KC2OUT, WEST LAKE PIEZOMETER 	Water Level
Mitigation Effectiveness Monitoring (17 locations)	WP3, WP4, WP5, WP6, WP7, WP8, WP9, WP12, WP13, WP14, WP15, CB4S, CB9S, CB16S, DS2, BP1, BP2	Water Level, Temperature
Groundwater Quality (16 locations)	CB1, CB3S/D, CB9S/D, CB12S/D, CB13S/D, CB14S/D, CB16S/D,CB15, CB17, WP7	General chemistry conductivity, anio metals, ammon nutrients, BTEX, F (CB14 only) Cr(IV) (CB14S/D, CB12
Surface Water Quality (4 ponds)	West Pond, Central Pond, East Pond, Phase 1 Pond	General chemistry conductivity, ania metals, ammon nutrients, BTEX
Pumping Water Quality	Transfer Pumping Stations	Visual Inspection Water Clarity
Climate	Climate Station at Scale House	Temperature, Baron Pressure, Precipito
Turbidity in Groundwater (4 locations)	CB15, SG9, SG10, CB16D	Turbidity
Suspended Solids at Transfer Station Pumps	Transfer Pumping Stations	Suspended Soli
Seepage Areas and Active Ponds	Seepage areas, SG9, WP7, CB16S/D, KC1, WP4, and West Pond, for Phase 2 and KC2, CB19S/D, CB15, SG10, Phase 1 Pond for Phase 1	Turbidity, Photogr
Table Notes: i. Monitoring well CB12S/D v Twiss Road, prior to below	vill be installed between the active extraction are water extraction.	a and the wells serv

ii. Monitoring Well CB13S/D will be installed between P7B and the industrial park iii. Monitoring Well CB14 will be installed downgradient of recycling area if implemented . Monitoring Well CB15 will be installed in Southwest Corner of Site v Monitoring Well CB16S/D will be installed between BP2 and Kilbride Creek vi. Monitoring Well CB17 will be installed along access road.

The mitigation features will be kept operational after extraction has ceased until water levels in the main ponds

Frequency Automatic Every 30 minutes Manual: Monthly Automatio Every 30 minute Cellular-Tied Annual

try (pF) (CB13 Annual. A minimum o four surface water try (pH, samples (seasonally nions), distributed) will be obtained prior to below-water-table extraction ion of Daily Hourly itation Monthly in period when Phase 1 and Phase 2 are actively mined. _____ Weekly when olids operational until confirmed TSS< 15 mg Weekly during first two graphs months of extraction in

rvicing 9526 and 9261

Phase 1 and Phase 2

D. Ecological Monitoring

Redd Surveys

Vegetation Plots

The following ecological monitoring surveys are proposed to supplement the data collected by the surface and groundwater monitoring program. These surveys may help to serve as a check on the effectiveness of proposed operational procedures and mitigation measures. Possible changes to vegetation cover and wildlife populations during the life of the quarry may not however, be related to quarry operations but may instead simply reflect natural processes such as plant succession and weather dependent swings in wildlife species abundance. When conducting ecological monitoring, fieldworkers will record the time of initiation and completion of surveys as well

as weather conditions (temperature, wind on the Beaufort wind scale, and precipitation). Ecological monitoring results will be presented in the annual monitoring report along with the hydrogeological monitoring results. The monitoring reports will be circulated each year to the Region/Agencies. In the event that monitoring triggers a mitigation response, this information will be provided by email to the Region/Agencies within one week.

Conduct brook trout redd surveys in the on-site portion of Kilbride Creek and in the Kilbride Tributary for 3 consecutive years starting in the first year of quarry operation. If no redds are discovered during this time frame then discontinue the survey, but if redds are found then continue to implement it every 3 years for the life of the auarry. In addition to the regular recording of time and weather conditions during the survey, investigators will record water temperatures in Kilbride Creek, the Kilbride Tributary, and any springs and upwellings that are observed. In addition, readings from gauges WP4, SG9, SG10, and K1 will be documented

Salamander Sampling Conduct salamander sampling at Pond 5 every 3 years starting in the first year of quarry operation. This will be a simple presence-absence survey deploying 15 minnow traps during the period when salamanders are breeding. Surveying in any given year will be terminated as soon as presence of salamanders is confirmed. No tail-tip samples will be taken and no genetic analyses will be completed. All necessary permits and animal care protocols will be obtained from MNRF and/or MECP in advance of survey commencement. In the event that Jefferson or suspected Jefferson salamanders are found during salamander sampling, the MECP will be notified for further direction.

Amphibian Call Surveys Conduct amphibian call surveys at Ponds 2, 3, 4, 5, 7A, 7B and 14. This survey will be initiated during the first year of guarry operation and every 3 years thereafter until guarry closure. The protocol that will be used will be the modified Bird Studies Canada protocol as described in the Natural Environment Technical Report. When surveying at P2, only those amphibians calling in that pond should be counted; any frogs calling from P1 or BP2 should be recorded separately. In the case of P4 and P14, the sampling station should be situated on the berm between the two ponds and frogs calling in each individual pond should be recorded separately.

Establish 8 permanent vegetation sample plots in the Eastern Wetland Complex during the first year of quarry operation. Plot boundaries will be delineated with rebar. The target communities for assessing potential positive or negative changes to vegetative cover are SWM4-1 and SWC3-2. Each plot will be 10 m x 10 m in size and they will be located in the following areas.

- 2 plots along the northern edge of the wetland (SWM 4-1) immediately south of the East Pond. The purpose of these plots will be to monitor potential effects of drawdown on wetland vegetation close to P11. Results will be used to determine if and when Dispersion System 3 should be activated.
- 2 plots along the north edge of the haul road in wetland areas (SWC 3-2) preferably with some living and dead tree cover, as well as some phragmites so the effectiveness of control measures can be assessed. These plots will monitor potential changes as a result of drawdown due to extraction in addition to improved drainage as a result of culvert installation.
- 2 plots close to Twiss Road in vegetation communities SWM4-1 and/or SWC3-2. These plots will monitor potential changes as a result of culvert improvements at Twiss Road. The existing culvert has been blocked/crushed for several years and installation of a new functional culvert by the Town of Milton will improve water flow out of the wetland. In so doing, water levels in the wetland should be lowered and tree growth should be improved. The plot locations should be selected so that the location can be reached regularly and safely by staff. • 2 plots in SWC 3-2 south of the haul road in areas where sensitive species such as bog sedge, leatherleaf,

Labrador tea and three-leaved soloman's-seal are growing. Within these plots all living and dead trees 10 cm diameter at breast height (dbh) and larger will be tagged, measured and have their vigour/health recorded. All tree regeneration within the plot will be counted by species as either a seedling or sapling (i.e., 1 to 9 cm dbh) while shrubs will just be counted by species. For herbaceous ground flora, 4 circular sub-plots 2 m in diameter will be established in areas with representative assemblages of herbaceous plants and all species observed will be recorded along with their abundance in the plot.

In addition, 4 photographs of the plot will be taken, one from each side of the plot (i.e., one from the north boundary of the plot looking south etc.). After the baseline data are collected in year 1, only photographs (4) of each plot will be taken in subsequent years unless there is visual evidence of significant changes to the species composition or form of coverage within a plot. If significant changes are observed then the detailed data will be collected to quantify the extent of observed changes and help to explain them.

Sampling should be conducted at approximately the same time each year, preferably in the first half of June. At this time, all sensitive species will be in flower, and some, such as the sedges are not readily identifiable later in the season. In addition to the 8 permanent vegetation sampling plots, additional photographic plots will be established. These will

include monitoring stations at a site along the Kilbride Creek tributary and at some of the ponds, including P5, P7 and P10. These will be marked with a rebar stake and photographs will be taken in the first half of June at these sites. The purpose of monitoring along the Kilbride Creek tributary is to determine if there is any change in vegetation related to the water management mitigation. The monitoring at P5, P7A, P7B, and P10 will also determine if there are any changes in vegetation. In addition to the photographic record a walk around the ponds will be undertaken to search for any invasive vegetation such as common reed. These wetlands are currently free of this species and if it is detected in them it should be eradicated as soon as possible using the above protocol.

In the event that vegetation monitoring detects changes in species composition or other alterations, a qualified person should ascertain whether these changes are likely due to external factors or to activities associated with quarry operations. In the event that they may be due to quarrying activities, appropriate mitigation measures should be mplemented. These may include initiating pumping to Dispersion System 3, changing pumping rates to Dispersion System 2 or 3, altering the extraction rate or phase, or changing the source of water that is pumped to various Buffer Ponds and Dispersion System.

Osprey Nesting Platform Once installed as part of progressive rehabilitation, the usage of the Osprey nesting platforms will be monitored annually.

Vhen turtle nesting activity is highest, the berms enclosing Pond 2 and BP2 will be searched for turtle nests. Nesting may start as early as May 20th, but the peak of nesting occurs from the first week to the third week of June. Depredated nests are easy to detect, but successful nests are more difficult to find. Snapping turtles generally leave two small- to medium-sized mounds with a deep line between them and painted turtles usually leave a patted-down area, but these signs may be obscured.

The three other artificial nesting sites, located near Pond 3, northeast of the Central Pond and north of the East Pond as shown on the Rehabilitation Page of the Site Plan, will also be inspected once constructed. This will be repeated later in autumn (September or October) to determine rates of predation. The plantings of Allegheny blackberry will also be checked to ensure that they are still providing a barrier to predator movement.

Barrier Fencing The barrier fencing along the haul road will be checked weekly from mid-March until the end of October to ensure that it is still intact. Any breaches in the fence will be repaired immediately. E. Climate Monitorin

Once the scale house is established, a Davis automatic rain gauge will be installed to measure precipitation and temperature at the site. The results will be compared to local Environment Canada stations for confirmation that site conditions are not significantly different. This will be undertaken for a five-year period.

4. PRIVATE WATER SUPPLY PROTECTION AND MITIGATION STRATEGY A. Pre-Extraction Water Well Survey

The Operator will conduct a door-to-door well survey of the wells within the area of influence of the quarry. This will be conducted after the issuance of the license and prior to any extractive operations. Private water well samples will be obtained once, prior to below-water-table extraction. Water quality samples will be obtained from the wells if possible and subject to permission from the owner. The water samples will be analyzed for the following parameters; general chemistry (pH, conductivity, anions, turbidity), metals, nutrients, microbiology and BTEX. The well survey and water quality sampling is access dependent, i.e. static water levels measurements will not be obtained from any well not accessible through the simple removal of well cap. The locations included in the private well survey are listed in Table 4. Table 4: Addresses to be included in the Private Well Survey

Twiss Road	Campbellville Side Road
9045, 9037, 9110, 9200, 9116, 9124, 9144, 9150,	
9160, 9180, 9184, 9188, 9190, 9148, 9120, 9063,	2030, 2090, 2110, 2167, 2225
9256, 9261, 8730, 8767, 8751, 8725	
1st Line Nassagaweya	Guelph Junction
9283, 9240, 9228, 9166, 9130, 9114, 9108, 9096, 9068,9014,9111	9024, 9034, 9039, 9072, 9029, 9084, 9090

The following is the protocol for detecting the potential for off-site impacts to private water supply: Water Quantity

Monitoring well CB12S/D will be installed and monitored to confirm that water level changes between the East Pond and these two private wells on Twiss Road are within acceptable levels and do not result in off-site reduction in yield in these nearby wells. The drawdown needed at CB12S/D to create an interference issue at the nearest private well will be estimated and used as a trigger and advanced warning levels will be established above this. The trigger values and warning values will be based on projected drawdown in the East Pond and the measured tolerance of the nearby wells. The first time that the East Pond is drawn down, weekly manual measurements will be obtained from the private wells. Water Quality

Water quality samples will be obtained annually from CB1, CB6, CB13, CB16S/D and CB17 located between the extraction area and private wells along Twiss Road, Guelph Junction Road and Campbellville Sideroad. In the event that the following conditions are found;

a) there is an statistically significant increasing trend, occurring over three sampling events, in the concentration of a chemical parameter measured in CB13 or CB17 and

b) that the chemical parameter has an Ontario Drinking Water Quality Standard The Operator will conduct a study to determine the source of the water quality change

If the quarry is found to be responsible and if there is a potential for a water quality parameter to exceed the Ontario Drinking Water Quality Standard at a downgradient well, the Operator will commence with the following actions; 1) Semi-annual testing (commencing immediately) of the water quality of private wells that could potentially be impacted by the quarry;

2) In the event that the quarry operation causes water in a private well to become unpotable, the Operator will offer to return the water quality to within Ontario Drinking Water Quality Standards by providing appropriate treatment in the home or business, drilling a new well or isolating the water supply to the deeper aquifer.

C. Communication Protocols and Water Supply Interference Procedures James Dick Construction Ltd. has committed to remedying any and all issues arising as a result of quarry activities. The following complaint protocol will be followed:

Complaints about water well issues will be received any time at (905) 857-3500 or email to info@jamesdick.com. James Dick Construction Ltd. has a water well contractor on stand-by to address any water quantity or quality issue that arises.

In the event of a water shortage, a supply of bottled water for drinking/cooking will be delivered within 12 hours of the complaint and an alternative water supply will be delivered within 24 hours of the complaint being received. The same commitment is made for industrial and agricultural operations and includes sufficient water supply for all farm requirements.

the cause of the water issue. The investigation will include but not be limited to the following actions: Inform the MECP, Town of Milton, and Halton Region

- Confirmation of water levels in on-site groundwater monitoring wells • Review of historical trends in groundwater levels and groundwater quality obtained in on-site groundwater monitoring wells
- Review of historical measured precipitation rates
- Interview with resident regarding well complaint • Investigation of subject well including flow testing, water level measurements and water quality testing if necessary
- Written report summarizing the findings In the event that quarry activities are likely to be the cause of the complaint, James Dick Construction will undertake appropriate
- mitigation measures such as: • Lowering the level of the pump within the well
- Extending the cased portion of the well Deepening the well
- Well replacement Water Treatment

 Modification of quarry activities 5. TARGETS, WARNING LEVELS AND MINIMUM WATER LEVEL THRESHOLDS

A. Pre-Extraction Site Water Levels

The groundwater and surface water levels at the site will be used to confirm effectiveness of mitigation systems and to trigge contingency responses if necessary. A representative set of monthly (12) water levels based on historical water levels will be determined for each sensitive receptor at the site.

This representative data set will be reviewed and modified for each feature prior to any below water table extraction occurs at the site. All targets, minimum water level threshold and warning values are based on this representative water level data set. The MWLT's, Warning Levels and Target Levels will be updated prior to commencement of below-water-table extraction to allow for the longest period of historical observations.

B. Minimum Water Level Threshold

functions may be negatively impacted. Specifically, these functions are identified as providing adequate water for a complete amphibian life cycle in specific wetlands and providing suitable brook trout habitat in the Kilbride Tributary. The specific water levels required as a minimum to sustain the function are called Minimum Water Level Thresholds (MWLTs) There are eight semi-permanent 'amphibian' pond wetlands at the site. These are identified as P4, P5, P7A, P7B, P8, P9, P10 and P1 on Page 1. Appropriate Minimum Water Level Thresholds for each of the wetlands will be established prior to below-water-table action occurring at the site. Minimum Water Level Thresholds for the semi-permanent amphibian ponds are established for March, April, May and July. In addition, Minimum Water Level Thresholds are identified for August for P5 and P10.

based upon modeling results, actual observed frequency of achieving the MWLTs, and the recommended periodicity of allowing each pond to dry out. For those ponds that will be allowed to dry out in some years, the periodicity of flooding in them will be equal or greater than under current conditions.

Table 5: Dry	Year Frequency to Pr	otect Emergent Vegetation in
Wetland Feature	Modeled Historical 25 Year Dry out Condition (Earth FX)	Actual Observed July 31 D Conditions with >10% Cover at Least 10 cm 2016-20
P4	n/a	Wet 2019, Dry 2020, 2018, 20
P5	0%	Wet 2016, 2017, 2019 Dry 20
P7A	0%	Wet 2016, 2017, 2018, 2019
P7B	8%	Wet 2016, 2017, 2018, 2019
P8	40%	Wet 2019, Dry 2018, 2017, 20
P9	92%	Wet 2019, 2017, Dry 2018, 20
P10	0%	Wet 2016, 2017, 2018, 2019
P14	84%	Wet 2019, Dry 2016, 2017 20

C. Target Water Levels There are times of the year when the wetland features do not require a specific level, when they are dry, for example. At these times, the water level can be lower than historically observed. However, it is recommended that they do not fall below a target level

D. Warning Water Levels

to enact contingency measures E. Groundwater Quality Monitoring

As outlined in Table 3, groundwater quality sampling will be conducted to confirm that the chemical quality, physical quality or temperature of the groundwater has not been changed significantly by the aggregate extraction related activities.

F. Transfer Pump Water Quality Threshold Water being transferred from the extraction ponds to the mitigation systems will have a maximum Total Suspended Solids value of 15

G. Target, Warning Levels and Minimum Water Level Thresholds Summary Table Table 6 is a summary of all of the targets, warning levels, minimum water level thresholds and temperature thresholds.

			,							
Feature		P4			Р5			P7A		
Min Wetland Surface Elevation (mAMSL)	TBD		291.03		290.38					
Representative Monitor		WP15			WP8			WP6		
Target/Warning/MWLT	Target	Warning	MWLT	Target	Warning	MWLT	Target	Warning	MWLT	Target
January 31	289.00			291.25			291.04			291.04
February 15		289.08			291.33			291.08		
February 28			289.15			291.40			291.12	
March 15		289.23			291.48			291.16		
March 31			289.30			291.55			291.20	
April 30			289.30			291.55			291.20	
May 31	289.20			291.45			291.15			291.19
June 30	289.20			291.45			291.15			291.19
July 15		289.13			291.40			291.10		
July 31			289.05			291.35			291.05	
August 15					291.29					
August 31	288.55			1		291.23	290.80			290.80
September 30	288.55			290.80			290.80			290.80
October 31	288.55			290.80			290.80			290.80
November 30	288.55			290.80			290.80			290.80
December 31	288.55			290.80			290.80			290.80
							5.0			
Feature		P10			P14		Kilbride	Tributary	Eastern Wetland Complex	BP1
Min Wetland Surface Elevation (mAMSL)		290.05			288.69					
Representative Monitor		WP12			WP14		w	'P4	WP9	WP6
Target/Warning/MWLT	Target	Warning	MWLT	Target	Warning	MWLT	Warning	MWLT	Target	Target
January 31	290.56			289.09			290.70	290.75	290.34	291.0
February 15		290.62			289.19					
February 28			290.68			289.29	290.75	290.80	290.37	291.1
March 15		290.74			289.39					

ptember 30 H. Response Action Framework

Day to day monitoring will be conducted by a Technician at the site. The onsite Technician and the Operations Manager will be trained in data collection by a qualified hydrogeologist. Periodic spot checks will be made by the hydrogeologist to verify the accuracy of data. The Technician will monitor telemetry monitors and manual monitors according to the Monitoring frequency in Table 6. Flow rates and discharge pump times from various mitigation system pumps will be physically checked to ensure they are working properly. Staff gauges will be physically observed. Daily monitoring will be logged along with weather information. Dust monitoring and mitigation information will also be logged at the same time as required under the BMPP for air quality.

When Ecological Monitoring events occur, water monitoring data gathering will be coordinated so that linkages between water levels and ecological observations can be drawn. Each day, the cellular based monitoring data from the previous 24hrs will be reviewed by the site Operations Manager (or designate) to verify that warning levels are not breached. A log of this daily review will be kept in the site office and available on request. The cellular based monitoring data will be cloud-based and accessible for review from any location. If all levels are above Warning Levels no actions will be taken.

Should any levels approach Warning Levels, the Operations Manager will advise senior management immediately. A meeting will be held with senior management to discuss and evaluate contingency measures that could be taken to avoid a trend toward a Warning Level. This could includ

- Slowing or suspension of below water table extraction. • Modifying rate of below-water-table-extraction on a seasonal basis. More extraction can be focused on the wet spring season
- when there is a general inundation of water from snow melt and precipitation events. • Mining in a different Phase. If drawdown effects are localized moving extraction temporarily to a different phase can dissipate
- and reduce the impacts of mining.
- Match extraction rate to pond-filling rate (Phase 1 and Phase 5). Pond filling within the plant area will displace excess water and this excess can mitigate drawdown effects. • Internal water pumping between Phases.
- Joining/separating main ponds as needed. Culverts can be installed between ponds to facilitate water movement between them by natural gradients. • Increasing pumping rates to a particular feature.
- Should a Warning Level be breached, a conference will be held within 24 hours with the site technician, the Operations Manager, Senior Management, a qualified ecologist and a qualified hydrogeologist to review the data and make recommendations as to how any undesirable trend can be avoided. Measures listed above will be implemented to avoid reaching Threshold Minimum Water Levels.

d ecologist and a qualified hydrogeologist will confer and an investigation will be immediately undertaken by the qualified hydrogeologist. The following activities will take place:

- Suspend below water table extraction immediately
- The MNRF, the Town of Milton, The Region of Halton and Halton Conservation will all be notified of the breach of the MWLT. • Confirmation of water level within 24 hours. Increase monitoring to daily until source of the trigger level exceedance is identified.
- Data from automatic water level recorders (AWLR) will be downloaded and reviewed on a daily basis.
- Within seven days complete an evaluation of precipitation, groundwater monitoring data and quarry activities to determine if quarry activities are responsible for the low water level observed.
- The water level data from the AWLRs will be plotted and the water level trends analyzed so that the time it will take for the water level to recover above the trigger level can be predicted.
- Data from all ALWRs will be provided to the MNRF, the MECP, the Township of Milton, the Region of Halton and the Halton Conservation Authority on a bi-weekly basis until the data indicates that water level are remaining consistently above the trigger

Within 48 hours, the Operator will initiate a hydrogeological investigation conducted by an independent hydrogeologist to determine above the threshold level. 6. WATER BUDGET REVIEWS extraction tonnage and original parameters value review.

Ecological functions of wetlands and the Kilbride Tributary are such that there is a seasonally based water level below which these

Table 5 provides a summary of how frequently each of the semi-permanent ponds currently achieves the MWLT in a 25-year period

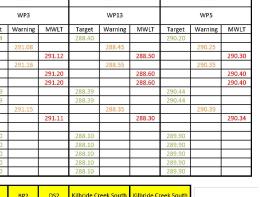
n Selected Wetland Features

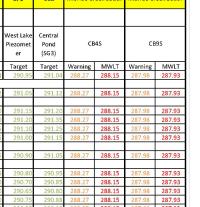
y out age of 9	Proposed Frequency of July 31 Dry out Conditions
7, 2016	Wet 1 year in 5
8, 2020	Wet every year
2020	Wet every year
2020	Wet every year
6, 2020	Wet 1 year in 5
6, 2020	Wet 2 years in 5
2020	Wet every year
8, 2020	Wet 1 year in 5

designed to give the operator some flexibility and provide a water level from which it is known historically, that the water levels can recover under normal circumstances. The targets are not a performance trigger or threshold level to trigger mitigation efforts.

The operator is encouraged not to allow the water level in wetlands to fall below the minimum water level thresholds. The warning water levels are designed to provide two weeks notice that a MWLT is being approached and the operator should enact or prepare

Table 6: Summary of Targets, Warning, Minimum Water Level Thresholds and Temperature Threshold P7B P8 P9 290.38 288.15 290.06





In the event that a Threshold Minimum Water Level is breached the site technician, the Operations Manager, Senior Management, of

Drawing No.

• If quarry activities are found to be responsible, James Dick Construction Ltd. will undertake the following contingency measures and a response will be presented to the MNRF, the Region of Halton, and the Town of Milton and Halton Conservation until water levels recover o Cease all below water table extraction o Redistribute water on site to mitigate the TMWL

• If quarry activity is not found to be the cause or contributor to the trigger level breach, then quarry activity will continue and monitoring frequency will return to normal. The MNRF, the Town of Milton, The Region of Halton and Halton Conservation will all be notified of this finding Once water levels recover above the MWLT limited operations may resume such that they will not result in a further breach of the MWLTs. Once water levels recover above Warning Levels normal operations may resume.

Water budget review will be a daily occurrence at this site assisted by the cellular based groundwater and surface water stations, daily inspections of the mitigation features, daily review of flow rates and observations of water levels in the East, Central and West Ponds. There will be an annual review of the water balance based on measured/calculated storage in ponds, measured water transfers, distribution between ponds 7. DATA EVALUATION AND REPORTING

An annual report for water monitoring and ecological monitoring data will be prepared. This report will also include all historic data. The report will be public information and provided to MNRF, MECP, Conservation Halton, The Region of Halton and the Town of Milton. Ecological monitoring will be included in the Annual Monitoring Report. In addition to summarizing and interpreting the findings, the need to continue each facet of the monitoring should be discussed, as well as the periodicity of monitoring and the possible need to monitor additional

features. The monitoring report will place any changes in context. Changes in the natural environment are based on many complex factors ar while the information presented will be interestina, it may be difficult to draw cause and effect relationships between quarry activities and ecological monitoring data. Annual Report will include the following items as a minimum; Relevant mapping

Historical data

- Interpretive figures including groundwater flow maps Installation details of all historical and new monitoring locations
- Summary of mining activities • Summary of water taking, water transfer and water discharge
- Summary of ecological enhancements and rehabilitation (in conjunction with Compliance Assessment Report)
- Summary of warning and minimum water level threshold exceedances • Summary of contingency measures required
- Summary of agency correspondence
- Summary of Residential Complaints and resolution Spill Reporting Incidences
- Update to Adequacy of Monitoring Program and Adjustments/Proposed Changes • The annual report is an opportunity to review site conditions and report on adjustments needed during the year to meet environmental
- A. Modifications to Hydrogeological Monitoring Program
- The annual report will include recommendations for adjustments to the monitoring program and, where necessary and appropriate to meet the stated environmental objectives, changes to the mitigation plan including target, warning and minimum water level thresholds may also be considered. Based on a comprehensive analysis and review of the results of the annual weather conditions monitored at the site (i.e. temperature, precipitation etc.) combined with the results of the ecological monitoring program and ground and surface monitoring program changes to the Target, warning, and minimum water level thresholds may be warranted for the following year. Any proposed adjustment to the monitoring or mitigation plan would be outlined in the annual report, with appropriate justification, and circulated to MNRF for approval, in consultation with Town of Milton, Region of Halton and Conservation Halton. Any monitoring or mitigation amendments that cannot wait until the annual review and are required to ensure environmental protection are permitted subject to prior notice being provided to MNRF, such

amendments must subsequently be approved by MNRF through the annual report and review process.

B. Modifications to Environmental Monitoring Program The annual report will include recommendations for modifications to environmental monitoring. This is an annual opportunity for agencies and the operator to review the monitoring program in light of the data collected and recognize gaps in the monitoring or recognize redundant/unnecessary monitoring. 8. CLOSURE

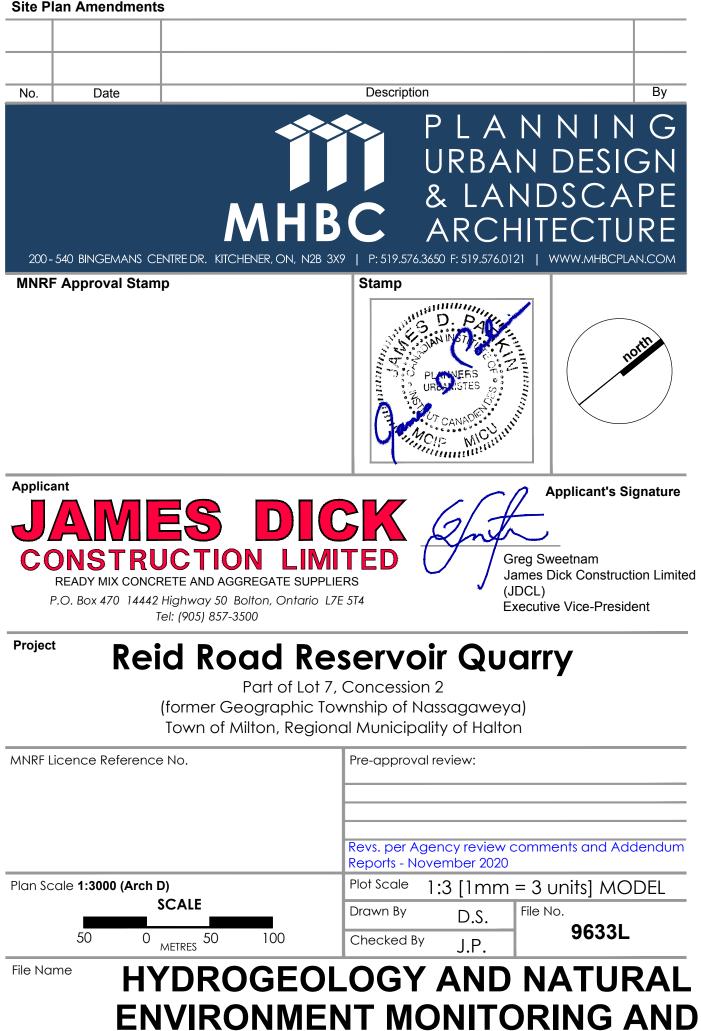
The closure state of this site will not require any ongoing activities or energy consumption and once surrendered this site will be a stable, environmental feature on the landscape. There will be confirmatory monitoring and reporting post extraction as detailed below; A. Confirmatory Reporting and Post-extraction Monitoring Requirements

For a period of two years following the cessation of extractive activities, the following monitoring program (Table 7) will be undertaken as verification that environme itions have stabilized. Table 7: Post Extraction Monitoring for Two Year Period after Extraction Complete Monitoring Station Parameter Frequency Temperature Daily Datalogger WP7, WP4, CB4S, CB4D

CB12, WP4, CB4S, CB4D, CB9S, CB9D, WP13, WP14, WP5, WP12, WP3, WP6, CB13S/D, CB3S/D, SG1, SG2, SG4 Water Level Daily Datalogger Water Quality Annual CB1, CB6, CB3S/D, CB13S/D, CB4S/D, CB9S/D, CB17 A closure report will be prepared following the two-year post closure monitoring. The report will include a review of the final rehabilitation and ecological enhancements as well as final water levels and water quality findings. In the event that water levels in the ponds do not recover as predicted or rehabilitation has not taken as anticipated, an evaluation of the site

and surrounding a rea conditions will be undertaken by qualified persons including a hydrogeologist and natural heritage professional. Should the water levels in the main ponds or wetlands not recover to pre-extraction conditions it may be necessary to reduce the permeability of the downgradient edge of the ponds with fine-grained material (silt or clay).

A report will be prepared for review by the MNRF and Conservation Halton along with recommendations for mitigation (if necessary).



CONTINGENCIES

4 OF 6