

Appendix #: A
To
Report #: RD2018-001

**The Corporation of the City of Kawartha Lakes
Council Report**

Report Number PW 2015-001

Date: January 27, 2015

Time: 2:00 p.m.

Place: Council Chamber

Ward Community Identifier: All

Subject: Update on City owned Gravel Pit Operations

Author/Title:

Rod Porter, East Area Maintenance Manager

Signature:

Michel Gratton, Public Works Supervisor, Emily Depot

Signature:

Recommendation(s):

RESOLVED THAT Report PW 2015-001, Update on City owned Gravel Pits, be received.

Department Head: _____

Corporate Services Director / Other: _____

Chief Administrative Officer: _____

Background:

At the Special Council meeting of October 1, 2013 the following resolution was passed:

RESOLVED THAT Project Number PW1408a – Gravel Pit Upgrades and PW 1408c – Gravel Pit Rehabilitation be included in the 2014 operating budget with a total project cost of \$59,225.00 and \$59,225.00 respectively and

THAT staff provide a report on the gravel program and gravel operation.

CARRIED CR2013-1012

This report addresses the recommendation to report back to Council.

Rationale:

As a result of the two year aggregate resource investigation for City owned gravel pits (undertaken in 2012 and 2013), it was determined there are a number of excellent opportunities to pursue with regard to the use of materials available for extraction. There is an opportunity to supply the City with granular rock products at competitive prices and at the same time build up modest financial reserves for future rehabilitation (through prescribed payment of royalties). It was recommended in the investigation reports that caution be utilized in starting this process too aggressively, with the first step being to supply maintenance gravel only. The capital gravel resurfacing would continue to be managed by contracted services, as this process includes delivery and application with the use of specialized trucks capable of hauling up to 35 tonnes per load.

Winter sand production and supply is also an opportunity and may be considered at a future date. The supply of winter sand however includes a number of steps including delivery, blending and stockpiling which would require contracted services and equipment the City does not currently own. As well, replenishment of sand domes in the winter months is a service best contracted out as City staff are focusing on snow plowing operations and managing winter events.

In future years the City may opt to produce stone for High Float resurfacing activities from some of the suitable sites. This operation also allows for other products to be produced from the same operation such as 2" crushed gravel for road base repair needs.

Investigations have also shown there is an opportunity for the City to supply landfill cover for many years to come from several of the City owned pits. There may be an opportunity for considerable savings with this exercise.

At this time however, the focus is on the production of Granular 'A' for maintenance activities.

Staff initially recommended an annual production of at least 20,000 tonnes of 'A' gravel for maintenance purposes with the production funded through the operating budget. A pilot project commenced in 2013 for this purpose and the results were positive. Approximately 20,000 tonnes of gravel was produced in the Taylor Pit; the material produced was tested twice daily and met the standards of the OPSS 1010.

The 2014 program which included crushing at the Manvers and Kerr pits, was considered a success once again. The total volume of gravel crushing was 19,750 metric tonnes as noted in the table below. The crushing was funded through the operating budget and was utilized as part of operational maintenance activities such as loose top maintenance (spot graveling), spot shouldering, road and shoulder washout rehabilitation and back fill for culvert repairs.

Maintenance Gravel Crushing		
Gravel Pit	Material Type	Quantity (Tonnes)
Manvers	5/8 Granular "A"	6,000.00
Manvers	2" Crusher Run	2,000.00
Kerr Pit	5/8 Granular "A"	11,750.00
Total Crushing		19,750.00

The 2014 gravel crushing program also included the crushing of 12,000 metric tonnes of granular "A" out of the Kerr Pit that was funded through and utilized on roads identified for repair under the Ontario Disaster Relief Assistance Program (ODRAP) as a result of the 2013 flood damage.

In 2014 a program was initiated to utilize the information collected from the 2012 and 2013 investigations combined with new state of the art technology to complete an updated site/operating plan for the pits with the most potential for gravel production and therefore most active. Manvers, Kerr/Logan and Taylor Pits were identified as having the greatest potential. An aerial survey was completed on the three identified pits and drawings are in production. The goal is to complete an aerial survey annually (or more frequently based on crushing activities and volumes) on each of these three pits once the initial survey and plans have been generated.

Aerial survey technology is a cost effective way to collect topographic information at a fraction of the cost of conventional survey crews. This information is valuable while generating a gravel pit operations plan as it helps to quantify the location, quantity, effort and cost of producing granular materials. It enables staff to generate a working pit plan in the most cost effective manner to minimize wasted material, time and prevent the need to re-handle (load and re-load) material once its mined. The plan will also enable pit rehabilitation to take place

as crushing operations are in progress; overburden material can be placed in a fashion to be utilized during rehabilitation and eliminate the need for re-handling. The advantage of rehabilitating pits in progressive phases minimizes liability and capital rehabilitation cost. The information compiled on one operational plan acts as an exceptional planning tool for staff and aggregate crushing contractors. The information is invaluable during crushing operations and provides logical placement of stockpiles, overburden and source aggregate for crushing to increase productivity.

All the information collected to date enables staff the ability to monitor this resource closely with an increased emphasis on inventory control. Furthermore, the information will be utilized to confirm that all mining is completed in a responsible manner and complies with Provincial Regulations and is used for reporting purposes to the Ministry of Natural Resources and The Ontario Aggregate Resource Corporation (T.O.A.R.C.). Samples of the above described pit operation plan drawings have been provided as Attachment C through J.

Staff have planned for the annual production of at least 20,000 tonnes of “A” Gravel for maintenance purposes for 2015, funded through the operating budget. To date crushing operations have been limited to the Manvers, Kerr/Logan and Taylor gravel pits however there are additional gravel production opportunities at the Oakwood Road Pit. This pit is strategically located on the west side of the City therefore reducing trucking costs to the westerly operating areas. Additional investigation and planning will be completed for the Oakwood Road Pit and if conditions are conducive for granular “A” production, crushing operations be implemented at this location in 2015 for an additional 10,000 tonnes of “A” gravel. The production as well will be funded through the operating budget.

Other Alternatives Considered:

Council could take a status–quo approach to the gravel pits and continue not to utilize them however this is not recommended. Test results indicate there is an opportunity to produce good product and in doing so provide cost savings to the City.

Financial Considerations:

A cost analysis was undertaken to assess the financial viability of the City extracting, producing and supplying aggregate resources from City owned gravel pits. Below are three tables summarizing this cost analysis: Projected 2015 Market Cost, Projected 2015 City Cost and Prospective 2015 Supply Savings.

The cost analysis has been divided into the following aggregate material types and Public Works applications:

- I. Granular "A" Gravel
 - a. Shoulder Rehabilitation
 - b. General Operations

Aggregate Resource Supply - Projected 2015 Market Cost						
Aggregate Material	Application	Estimated Tonnes	Estimated Supply Cost (\$/tonne)			
			Method of Procurement	Supply	Net HST	Total
Granular "A"	Shoulder Rehabilitation	8,500	Request for Tender	\$6.28	\$0.11	\$6.39
	General Operations	35,000	Casual Purchase or RFQ	\$7.68	\$0.13	\$7.81

Aggregate Resource Supply - Projected 2015 City Cost						
Aggregate Material	Application	Estimated Tonnes	Estimated Supply Cost (\$/tonne)			
			Production	Net HST	Net Royalty	Total
Granular "A"	Shoulder Rehabilitation	8,500	\$4.12	\$0.07	\$0.04	\$4.23
	General Operations	35,000	\$4.12	\$0.07	\$0.04	\$4.23

Aggregate Resource Supply - Prospective 2015 Supply Savings						
Aggregate Material	Application	Estimated Tonnes	Savings with City Supply			
			\$/tonne	Percent (%)	\$/Year	
Granular "A"	Shoulder Rehabilitation	8,500	\$2.16	33.79%	\$18,360	
	General Operations	35,000	\$3.58	45.84%	\$125,300	
Total:				39.65%	\$143,660	

The following assumptions underlie the above cost analysis:

The estimated annual quantities (i.e. tonnes) are based on current, recent and expected annual usages by the City.

1. Market supply costs are based on current supply prices quoted by local and regional aggregate producers via request for tenders and/or informal requests for quotations. A general cost inflator of 3% is used to translate 2014 prices into projected 2015 prices.

2. Production of aggregate in City owned pits includes site preparation, extraction, primary crushing (gravel only), secondary crushing (gravel only). Primary crushing is expected to not be required for the majority of extracted stone, but is included here for the purpose of calculating conservative savings estimates. Additional aggregate extraction is assumed to not increase the current rehabilitation liability of City owned pits. In the interest of being extremely conservative, the following costs have been assumed for aggregate production in City owned pits:
 - a. For granular “A”, the maximum price quoted via informal requests for quotations has been used.
3. When the City extracts aggregate from its own pits, it must pay the Ministry of Natural Resources a \$0.115/tonne royalty, however a “royalty rebate” of \$0.075/tonne is returned to the City via The Ontario Aggregate Resource Corporation (T.O.A.R.C) intended to defray the costs of pit rehabilitation liabilities. So the “net royalty” paid by the City is \$0.04/tonne.
4. Municipalities in Ontario receive an 11.24 percentage point rebate on the 13% HST, meaning that the City pays a “net HST” of only 1.76% of the price of purchased goods and services.

Relationship of Recommendation(s) To Strategic Priorities:

This report relates one of the main Council Strategic Priorities, namely:

- Managing Aggregates.

Consultations:

Michelle Hendry, C.E.T., Director of Public Works
Bernie Furhmann, Aggregate Development Specialist, WSP Canada Inc.
Alex Pearson, Aerial Survey Specialist, AG Unmanned Aerial Surveying

Attachments:



Appendix A Summary
of 2012 and 2013 Inv



Appendix B CKL
Granular Product Usa



Appendix C
Taylor_Pit_Operation



Appendix D
Taylor_Pit_Operation



Appendix E
Taylor_Pit_Operation



Appendix F
Taylor_Pit_Est._Mate



Appendix G
Taylor_Pit_Est._Mate



Appendix H
Taylor_Pit_Existing_P



Appendix I
Taylor_Pit_Cross_Sec



Appendix J
Kerr_Pit_Stockpile_Ir

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Department File: