

August 2018

HYDROLOGICAL REVIEW SUMMARY

The form is to be completed by the Professional that prepared the Hydrological Review.
Use of the form by the City of Toronto is not to be construed as verification of engineering/hydrological content.

Refer to the Terms of Reference, Hydrological Review:

[Link to Terms of Reference Hydrological Review](#)

For City Staff Use Only:	
Name of ECS Case Manager (Please print)	
Date Review Summary provided to to TW, EM&P	

**IF ANY OF THE REQUIREMENTS LISTED BELOW HAVE NOT BEEN INCLUDED IN THE HYDROLOGICAL REVIEW, THE REVIEW WILL BE CONSIDERED INCOMPLETE.
THE GREY SHADED BOXES WILL REQUIRE A CONSISTANCY CHECK BY THE ECS CASE MANAGER.**

Summary of Key Information:

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
Site Address	1637 – 1645 Bathurst Street, Toronto, Ontario	Page 1 Section 1.0	
Postal Code	M5P 3J6	Page 1 Section 1.0	
Property Owner (on request for comments memo)	Starlight Investments	Page 2-3 Section 1.4	
Proposed description of the project (if applicable) (point towers, number of podiums)	Four [4] storey building	Page 2 Section 1.3	
Land Use (ex. commercial, residential, mixed, institutional, industrial)	Residential	Page 2 Section 1.3	
Number of below grade levels for the proposed structure	Two [2]	Page 2 Section 1.3	
HYDROLOGICAL REVIEW INFORMATION			
Date Hydrological Review was prepared:	December 5, 2019	Page 20 Section 9.0	
Who Performed the Hydrological Review (Consulting Firm)	McClymont and Rak Engineers Inc.	Page 20 Section 9.0	
Name of Author of Hydrological Review	Lad Rak, P.Eng., M.Eng., QP _{ESA}	Page 20 Section 9.0	

HYDROLOGICAL REVIEW SUMMARY

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<p>Check the directories on the website for Professional Geoscientists and/or Professional Engineers of Ontario been checked to ensure that the Hydrological Report has been prepared by a qualified person who is a licensed Professional Geoscientist as set out in the Professional Geoscientist Act of Ontario or a Professional Engineer?</p> <p>PEO: Professional Engineers of Ontario APGO: Association of Professional Geoscientists of Ontario</p>	Yes	N/A	
<p>Has the Hydrological Review been prepared in accordance with all the following:</p> <ul style="list-style-type: none"> • Ontario Water Resources Act • Ontario Regulation 387/04 • Toronto Municipal Code Chapter 681-Sewers 	<p>Ontario Water Resources Act Toronto Municipal Code Chapter 681 – Sewers Ontario Regulation 387/04</p>	<p>Page 6 Section 3.2 Page 7 Section 3.5 Page 13-14 Section 5.3</p>	
		Page # & Section # of every occurrence in the Review	Review Includes this Information City Staff (Check)

HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
<p>Total Volume (L/day) Short Term Discharge of groundwater (construction dewatering) with safety factor included</p>	<p>What safety factor was used?</p> <p>Steady State discharge = 192,000 L/day with a safety factor of 1.50</p> <p>Maximum discharge = 336,000 L/day</p>	<p>Page 11-12 Section 5.1.1 Table 4</p>	
<p>Total Volume (L/day) Short Term Discharge of groundwater (construction dewatering) without safety factor included</p>	<p>Steady State discharge = 128,000 L/day without the safety factor</p>	<p>-</p>	
<p>Total Volume (L/day) Long Term drainage of groundwater (from foundation drainage, weeping tiles, sub slab drainage) with safety factor included</p> <p>If the development is part of a multiple tower complex, include total volume for each separate tower</p>	<p>What safety factor was used?</p> <p>Steady State discharge = 91,000 L/day with a safety factor of 1.50</p>	<p>Page 13 Section 5.2.1 Table 5</p>	
<p>List the nearest surface water (river, creek, lake)</p>	<p>Don River</p>	<p>Page 14-15 Section 5.5</p>	

HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
Lowest basement elevation	163.34 masl	Page 2 Section 1.3	
Foundation elevation	161.84 masl	Page 10 Section 5.1	
Ground elevation	170.65 to 174.75 masl	Page 2 Section 1.3	
STUDY AREA MAP		Page # & Section # of every occurrence in the Review	Review Includes this Information City Staff (Check)
Study area map(s) have been included in the report.	Borehole Location Plan	Drawing No. 1	
Study area map(s) been prepared according to the Hydrological Review Terms of Reference.	<input checked="" type="checkbox"/> Yes	Drawing No. 1	N/A
WATER LEVEL AND WELLS		Page # & Section # of every occurrence	Review Includes this Information (City Staff Initial)

HYDROLOGICAL REVIEW SUMMARY

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		in the Review	
The groundwater level has been monitored using all wells located on site (within property boundary).	Yes	Page 9 Section 4.2	
The static water level measurements have been monitored at all monitoring wells for a minimum of 3 months with samples taken every 2 weeks for a minimum of 6 samples. The intent is for the qualified professional to use professional judgement to estimate the seasonally high groundwater level.	Groundwater levels were monitored in all available wells in July and August 2017	Page 9 Section 4.2	
All water levels in the wells have been measured with respect to masl.	Yes	Page 9 Section 4.2 Table 1	
A table of geology/soil stratigraphy for the property has been included.	Yes	Page 8-9 Section 4.1	
GEOLOGY AND PHYSICAL HYDROLOGY		Page # & Section # of every occurrence in the Review	Review Includes this Information (City Staff Initial)
The review has made reference to the soil materials including thickness, composition and texture, and bedrock environments.	Yes	Pages 8-9 Section 4.1	
Key aquifers and the site's proximity to nearby surface water has been identified.	<input checked="" type="checkbox"/> Yes	Page 14-15 Section 5.5	N/A

HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
PUMP TEST/SLUG TEST/DRAWDOWN ANALYSIS		Page # & Section # of every occurrence in the Review	Review Includes this Information City Staff (Check)
A summary of the pumping test data and analysis is included in the review.	No	-	
The pump test been carried out for at least 24 hours if possible. If not, has a slug test been conducted?	No	-	
Have the monitoring well(s) have been monitored using digital devices? If yes how frequently?	Water levels were measured manually	Page 9 Section 4.2	
If a slug or pump test has been conducted has the static groundwater level been monitored at all monitoring well(s) multiple times to measure recovery? -prior to the slug or pumping test(s)? -post slug or pumping test(s)?	<input checked="" type="checkbox"/> No	-	N/A
The above noted slug or pump tests have been included in the report.	<input checked="" type="checkbox"/> No	-	
WATER QUALITY		Page # & Section # of every occurrence in the Review	Review Includes this Information City Staff (Check)

HYDROLOGICAL REVIEW SUMMARY

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The report includes baseline water quality samples from a laboratory. The water quality must be analyzed for all parameters listed in Tables 1 and 2 of Chapter 681 Sewers of the Toronto Municipal Code (found in Appendix A) and the samples must have to be taken unfiltered within 9 months of the date of submission.	Yes	Page 9 Section 4.3 Table 2	
The water quality data templates in Appendix A have been completed for each sample taken for both sanitary/combined and storm sewer limits.	For sanitary discharge- See the sanitary/combined sewer parameter limit template Yes For storm discharge- See the storm sewer parameter limit template Yes	Table 2 Appendix D	
Qualified professional to list all sample parameters that have violated the Bylaw limits for each sample taken for the sanitary/combined Bylaw limits If there are any sample parameter Exceedances the groundwater can't be discharged as is.	Sample collected from BH 1: No exceedances recorded	Page 9 Section 4.3 Table 2	
Qualified professional to list all sample parameters that have violated the Bylaw limits for each sample taken for the storm Bylaw limits. If there are any sample parameter exceedances the groundwater can't be discharged as is.	Sample collected from BH 1: No exceedances recorded	Page 9 Section 4.3 Table 2	
The water quality samples have been analyzed by a Canadian laboratory accredited and licensed by Standards Council of Canada and/or Canadian Association for Laboratory Accreditation.	<input checked="" type="checkbox"/> Yes	Page 7 Section 3.5 Appendix D	N/A

HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
List of Canadian accredited laboratories: Standards Council of Canada	ALS Laboratory is certified by the Canadian Association for Laboratory Accreditation (CALA) for chemical analysis	Page 7 Section 3.5 Appendix D	
A chain of custody record for the samples is included with the report.	Yes	Appendix D	
Has the chain of custody reference any filtered sample? If yes, the report has to be amended and re-submitted to include only non-filtered samples.	No	Page 6-7 Section 3.4	
List any of the sample parameters that exceed the Bylaw limits with the reporting detection limit (RDL) included.	-	Appendix D	
A true copy of the Certificate of Analysis report, is included with the report.	Yes	Appendix D	
EVALUATION OF IMPACT		Page # & Section # of every occurrence in the Review	Review Includes this Information City Staff (Check)
Does the report recommend a back-up system or relief safety valve(s)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	-	
Does the associated Geotechnical report recommend a back-up system or relief safety valve(s)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
The taking and discharging of groundwater on site has been analyzed to ensure that no negative	<input checked="" type="checkbox"/> No	Page 10 Section 5.1	N/A

HYDROLOGICAL REVIEW SUMMARY

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impacts will occur to the City sewage works in terms of quality and quantity (including existing infrastructure), the natural environment, and settlement issues.	The report has not conducted induced settlement calculations	Page 10 Section 5.1	
Has it been determined that there will be a negative impact to the natural environment, City sewage works, or surrounding properties has the study identified the following: the extent of the negative impact, the detail of the precondition state of all the infrastructure, City sewage works, and natural environment within the effected zone and the proposed remediation and monitoring plan?	<input type="checkbox"/> Yes If yes, identify impact: <input checked="" type="checkbox"/> No	-	N/A

Summary of Additional Information and Key Items (if applicable):

HYDROLOGICAL REVIEW SUMMARY

Appendix A:

SANITARY/COMBINED

Sample Location: BH 1

Inorganics		Sample Result	Sample Result with upper RDL included	
<u>Parameter</u>	<u>mg/L</u>			<u>ug/L</u>
BOD	300	<2.0	<2.0	300,000
Fluoride	10	<0.20	<0.20	10,000
TKN	100	<0.15	<0.15	100,000
pH	6.0 - 11.5	7.95	7.95	6.0 - 11.5
Phenolics 4AAP	1	0.0045	0.0045	1,000
TSS	350	8.8	8.8	350,000
Total Cyanide	2	<0.0020	<0.0020	2,000
Metals				
Chromium Hexavalent	2	<0.0010	<0.0010	2,000
Mercury	0.01	<0.000010	<0.000010	10
Total Aluminum	50	0.144	0.144	50,000
Total Antimony	5	0.00028	0.00028	5,000
Total Arsenic	1	0.00246	0.00246	1,000
Total Cadmium	0.7	<0.000010	<0.000010	700
Total Chromium	4	0.00077	0.00077	4,000
Total Cobalt	5	<0.00010	<0.00010	5,000
Total Copper	2	<0.0010	<0.0010	2,000
Total Lead	1	0.00021	0.00021	1,000
Total Manganese	5	0.0167	0.0167	5,000
Total Molybdenum	5	0.00433	0.00433	5,000
Total Nickel	2	0.00058	0.00058	2,000
Total Phosphorus	10	0.0211	0.0211	10,000
Total Selenium	1	0.00017	0.00017	1,000
Total Silver	5	<0.000050	<0.000050	5,000
Total Tin	5	0.00087	0.00087	5,000
Total Titanium	5	0.00227	0.00227	5,000
Total Zinc	2	0.0104	0.0104	2,000
Animal/Vegetable Oil & Grease	150	<2.0	<2.0	150,000
Mineral/Synthetic Oil & Grease	15	<1.0	<1.0	15,000

HYDROLOGICAL REVIEW SUMMARY

Volatile Organics		Sample Result	Sample Result with upper RDL included	
<u>Parameter</u>	<u>ug/L</u>			<u>mg/L</u>
Benzene	10	<0.50	<0.50	0.01
Chloroform	40	<1.0	<1.0	0.04
1,2-Dichlorobenzene	50	<0.50	<0.50	0.05
1,4-Dichlorobenzene	80	<0.50	<0.50	0.08
Cis-1,2-Dichloroethylene	4,000	<0.50	<0.50	4
Trans-1,3-Dichloropropylene	140	<0.50	<0.50	0.14
Ethyl Benzene	160	<0.50	<0.50	0.16
Methylene Chloride	2,000	<2.0	<2.0	2
1,1,2,2-Tetrachloroethane	1,400	<0.50	<0.50	1.4
Tetrachloroethylene	1,000	<0.50	<0.50	1
Toluene	16	<0.50	<0.50	0.016
Trichloroethylene	400	<0.50	<0.50	0.4
Total Xylenes	1,400	<1.1	<1.1	1.4
Semi-Volatile Organics				
Di-n-butyl Phthalate	80	<1.0	<1.0	0.08
Bis (2-ethylhexyl) Phthalate	12	<2.0	<2.0	0.012
3,3'-Dichlorobenzidine	2	<0.40	<0.40	0.002
Pentachlorophenol	5	<0.50	<0.50	0.005
Total PAHs	5	<1.7	<1.7	0.005
Misc Parameters				
Nonylphenols	20	<1.0	<1.0	0.02
Nonylphenol Ethoxylates	200	<2.0	<2.0	0.2

Sample Collected: August 28, 2017

Temperature: 6.1°

HYDROLOGICAL REVIEW SUMMARY

STORM

Sample Location: BH 1

Inorganics		Sample Result	Sample Result with upper RDL included	
Parameter	mg/L			ug/L
pH	6.0 - 9.5	7.95	7.95	
BOD	15	<2.0	<2.0	15,000
Phenolics 4AAP	0.008	0.0045	0.0045	8
TSS	15	8.8	8.8	15,000
Total Cyanide	0.02	<0.0020	<0.0020	20
Metals				
Total Arsenic	0.02	0.00246	0.00246	20
Total Cadmium	0.008	<0.000010	<0.000010	8
Total Chromium	0.08	0.0008	0.0008	80
Chromium Hexavalent	0.04	<0.0010	<0.0010	40
Total Copper	0.04	<0.0010	<0.0010	40
Total Lead	0.12	0.00021	0.00021	120
Total Manganese	0.05	0.0167	0.0167	50
Total Mercury	0.0004	<0.000010	<0.000010	0.4
Total Nickel	0.08	0.00058	0.00058	80
Total Phosphorus	0.4	0.0211	0.0211	400
Total Selenium	0.02	0.00017	0.00017	20
Total Silver	0.12	<0.000050	<0.000050	120
Total Zinc	0.04	0.0104	0.0104	40
Microbiology				
E.coli	200	0	0	200,000
Volatile Organics				
Parameter	ug/L			mg/L
Benzene	2	<0.50	<0.50	0.002
Chloroform	2	<1.0	<1.0	0.002
1,2-Dichlorobenzene	6	<0.50	<0.50	0.0056
1,4-Dichlorobenzene	7	<0.50	<0.50	0.0068
Cis-1,2-Dichloroethylene	6	<0.50	<0.50	0.0056
Trans-1,3-Dichloropropylene	6	<0.50	<0.50	0.0056
Ethyl Benzene	2	<0.50	<0.50	0.002
Methylene Chloride	5	<2.0	<2.0	0.0052
1,1,2,2-Tetrachloroethane	17	<0.50	<0.50	0.017
Tetrachloroethylene	4	<0.50	<0.50	0.0044
Toluene	2	<0.50	<0.50	0.002
Trichloroethylene	8	<0.50	<0.50	0.0076
Total Xylenes	4	<1.1	<1.1	0.0044

August 2018

HYDROLOGICAL REVIEW SUMMARY

Semi-Volatile Organics		Sample Result	Sample Result with upper RDL included	
Di-n-butyl Phthalate	5	<1.0	<1.0	0.015
Bis (2-ethylhexyl) Phthalate	8.8	<2.0	<2.0	0.0088
3,3'-Dichlorobenzidine	0.8	<0.40	<0.40	0.0008
Pentachlorophenol	2	<0.50	<0.50	0.002
Total PAHs	2	<1.7	<1.7	0.002
PCBs	0.4	<0.040	<0.040	0.0004
Misc Parameters				
Nonylphenols	1	<1.0	<1.0	0.001
Nonylphenol Ethoxylates	10	<2.0	<2.0	0.01

Sample Collected: August 28, 2017
 Temperature: 6.1°

Consulting Firm that prepared Hydrological Report: McClymont & Rak Engineers Inc

Qualified Professional who completed the report summary: Lad Rak, P.Eng., M.Eng., QP_{ESA}
 Print Name



Qualified Professional who completed the report summary: _____
 Signature December 5, 2019
Date & Stamp