

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	450 Dufferin Street	S.1-pg.1.	
Postal Code	M6K 2A5	S.2.1-pg.1.	
Property Owner (on request for comments memo)	HM RK (450 Dufferin) LP	S.1-pg.1.	
Proposed description of the project (if applicable) (point towers, number of podiums)	Fifteen stories building with two underground parking levels	S.2.3-pg.1.	
Land Use (ex. commercial, residential, mixed, institutional, industrial)	Residential with commercial	S.2.3-pg.1.	
Number of below grade levels for the proposed structure	Two (2)	S.2.3-pg.1.	
HYDROLOGICAL REVIEW INFORMATION			
Date Hydrological Review was prepared:	3 November 2022	Cover page	
Who Performed the Hydrological Review (Consulting Firm)	Terrapex Environmental Ltd.	Cover page, S.1-pg.1.	
Name of Author of Hydrological Review	Brian D. Theimer, Andrew Durbano	S.8-pg.12	

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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>	<p>Both are Professional Geoscientists</p>	<p>N/A</p>	
<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>Yes.</p>	<p>S.1-pg.1.</p>	
		<p>Page # & Section # of every occurrence in the Review</p>	<p>Review Includes this Information City Staff (Check)</p>

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Total Volume (L/day) Short Term Discharge of groundwater (construction dewatering) with safety factor included	16,800 L/day What safety factor was used? 2.0	S.6.1-pg.9.	
Total Volume (L/day) Short Term Discharge of groundwater (construction dewatering) without safety factor included	8,400 L/day	S.6.1-pg.9.	
Total Volume (L/day) Long Term drainage of groundwater (from foundation drainage, weeping tiles, sub slab drainage) with safety factor included If the development is part of a multiple tower complex, include total volume for each separate tower	Zero (0) L/day. Building garage will be water-tight. What safety factor was used? Not applicable to zero drainage.	S.6.1-pg.10.	
List the nearest surface water (river, creek, lake)	Lake Ontario is 1.5 km away	S2.5-pg.2.	

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SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
Lowest basement elevation	Walking floor / driving surface of P2 garage = 87.1	S.5.4.-pg.8	
Foundation elevation	Bottom of excavation = 84.2 masl	S.5.4.-pg.8	
Ground elevation	Planned ground floor elevation = 94.1 masl	S.2.4-pg.2.	
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.	<input checked="" type="checkbox"/> Yes	Appendix I, Figures 1, 2, 3 and 4	N/A
Study area map(s) been prepared according to the Hydrological Review Terms of Reference.	<input checked="" type="checkbox"/> Yes	Appendix I, Figures 2, 3 and 4	N/A
WATER LEVEL AND WELLS		Page # & Section # of every occurrence	Review Includes this Information (City Staff Initial)

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		in the Review	
The groundwater level has been monitored using all wells located on site (within property boundary).	Yes	S.3.3-pg.4; S.4.2-pg.6.	
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.	No. Three events obtained. Foundation Drainage Policy Guidelines of City of Toronto, under Option 1 (Flexible, Year-round) requires a minimum 3 events.	Appendix II, Table 2	
All water levels in the wells have been measured with respect to masl.	Yes.	S.4.2-pg.6.; Appendix II, Table 2	
A table of geology/soil stratigraphy for the property has been included.	Yes.	Appendix II, Table 5	
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.	S.4.1-pg 5. Appendix II, Table 5	
Key aquifers and the site's proximity to nearby surface water has been identified.	<input checked="" type="checkbox"/> Yes	S2.5.-pg2.; S2.8.-pg.2.	N/A

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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 pumping test due to lower permeability soils and deep water table.		
The pump test been carried out for at least 24 hours if possible. If not, has a slug test been conducted?	No pumping test. Slug tests were carried out in wells with sufficient water.	S.3.5-pg.4; S.5.1-pg.7.	
Have the monitoring well(s) have been monitored using digital devices? If yes how frequently?	Yes. During slug tests measured at 30 seconds intervals.	S.3.5-pg.4	
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 type="checkbox"/> Yes	Not applicable	N/A
The above noted slug or pump tests have been included in the report.	<input checked="" type="checkbox"/> Yes	S.3.5-pg.4; S.5.1-pg.7. Appendix IV.	
WATER QUALITY		Page # & Section # of every occurrence in the Review	Review Includes this Information City Staff (Check)

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SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
<p>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.</p>	<p>Yes</p>	<p>S.3.4-pg.4; S.5.3-pg.8.</p>	
<p>The water quality data templates in Appendix A have been completed for each sample taken for both sanitary/combined and storm sewer limits.</p>	<p>For sanitary discharge- See the sanitary/combined sewer parameter limit template Included For storm discharge- See the storm sewer parameter limit template Included.</p>	<p>See also Appendix II, Table 3.</p>	
<p>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.</p>	<p>No parameter exceeded the sanitary / combined bylaw limits.</p>	<p>S.6.3-pg.10.</p>	
<p>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.</p>	<p>Manganese was 0.12 mg/L in comparison to storm bylaw of 0.05 mg/L.</p>	<p>S.6.3-pg.10.</p>	
<p>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.</p>	<input checked="" type="checkbox"/> Yes	<p>S.3.4-pg.4.</p>	<p>N/A</p>

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List of Canadian accredited laboratories: Standards Council of Canada	ALS Laboratory Ltd.	S.3.4-pg4.	
A chain of custody record for the samples is included with the report.	Yes.	Appendix VI	
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.		
List any of the sample parameters that exceed the Bylaw limits with the reporting detection limit (RDL) included.	Manganese was 0.12 mg/L in comparison to storm bylaw of 0.05 mg/L.	S.6.3-pg.10.	
A true copy of the Certificate of Analysis report, is included with the report.	Yes	Appendix VI	
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		
	These reports do not discuss back-up systems or relief safety valve(s)		
The taking and discharging of groundwater on site has been analyzed to ensure that no negative	<input checked="" type="checkbox"/> Yes	S.6.2. pg.10.	N/A

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SITE INFORMATION	Page # & Section # of Review	Review Includes this Information City Staff (Check)
impacts will occur to: the City sewage works in terms of quality and quantity (including existing infrastructure), the natural environment, and settlement issues.		
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 checked="" type="checkbox"/> Yes If yes, identify impact: <input type="checkbox"/> No Yes, it has been determined and No, there are no anticipated negative impacts	S.6.2. pg.10. N/A

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

HYDROLOGICAL REVIEW SUMMARY

Appendix A:

SANITARY/COMBINED

Sample Location: MW104A - 450 Dufferin Street, Toronto

Inorganics		Sample Result	Sample Result with upper RDL included	
<u>Parameter</u>	<u>mg/L</u>	<u>mg/L</u>	<u>mg/L</u>	<u>µg/L</u>
BOD	300	3.1	3.1 (2.0)	300,000
Fluoride	10	0.72	0.72 (0.02)	10,000
TKN	100	3.41	3.41 (0.05)	100,000
pH	6.0 - 11.5	8	8 (0.1)	6.0 - 11.5
Phenolics 4AAP	1	<0.0010	<0.0010 (0.001)	1,000
TSS	350	8.1	8.1 (3.0)	350,000
Total Cyanide	2	<0.0020	<0.0020 (0.002)	2,000
Metals				
Chromium Hexavalent	2	<0.00050	<0.00050 (0.0005)	2,000
Mercury	0.01	<0.0000050	<0.0000050 (0.000005)	10
Total Aluminum	50	0.279	0.279 (0.003)	50,000
Total Antimony	5	0.00196	0.00196 (0.0001)	5,000
Total Arsenic	1	0.0069	0.0069 (0.0001)	1,000
Total Cadmium	0.7	<0.0000500	<0.0000500 (0.000005)	700
Total Chromium	4	<0.00500	<0.00500 (0.0005)	4,000
Total Cobalt	5	<0.00100	<0.00100 (0.0001)	5,000
Total Copper	2	<0.00500	<0.00500 (0.0005)	2,000
Total Lead	1	0.000733	0.000733 (0.00005)	1,000
Total Manganese	5	0.12	0.12 (0.0001)	5,000
Total Molybdenum	5	0.0337	0.0337 (0.00005)	5,000
Total Nickel	2	<0.00500	<0.00500 (0.0005)	2,000
Total Phosphorus	10	0.0773	0.0773 (0.002)	10,000
Total Selenium	1	<0.000500	<0.000500 (0.00005)	1,000
Total Silver	5	<0.000100	<0.000100 (0.00001)	5,000
Total Tin	5	0.0017	0.0017 (0.0001)	5,000
Total Titanium	5	0.00332	0.00332 (0.0003)	5,000
Total Zinc	2	<0.0300	<0.0300 (0.003)	2,000
Petroleum Hydrocarbons				
Animal/Vegetable Oil & Grease	150	<5.0	<5.0 (5)	150,000
Mineral/Synthetic Oil & Grease	15	<5.0	<5.0 (5)	15,000

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Volatile Organics		Sample Result	Sample Result with upper RDL included	
<u>Parameter</u>	<u>mg/L</u>	<u>mg/L</u>	<u>mg/L</u>	<u>µg/L</u>
Benzene	0.01	<0.00050	<0.00050 (0.0005)	10
Chloroform	0.04	<0.00050	<0.00050 (0.0005)	40
1,2-Dichlorobenzene	0.05	<0.00050	<0.00050 (0.0005)	50
1,4-Dichlorobenzene	0.08	<0.00050	<0.00050 (0.0005)	80
Cis-1,2-Dichloroethylene	4	<0.00050	<0.00050 (0.0005)	4,000
Trans-1,3-Dichloropropylene	0.14	<0.00030	<0.00030 (0.0003)	140
Ethyl Benzene	0.16	<0.00050	<0.00050 (0.0005)	160
Methylene Chloride	2	<0.0010	<0.0010 (0.001)	2,000
1,1,2,2-Tetrachloroethane	1.4	<0.00050	<0.00050 (0.0005)	1,400
Tetrachloroethylene	1	<0.00050	<0.00050 (0.0005)	1,000
Toluene	0.016	<0.00050	<0.00050 (0.0005)	16
Trichloroethylene	0.4	<0.00050	<0.00050 (0.0005)	400
Total Xylenes	1.4	<0.00050	<0.00050 (0.0005)	1,400
Semi-Volatile Organics				
Di-n-butyl Phthalate	0.08	<0.0010	<0.0010 (0.001)	80
Bis (2-ethylhexyl) Phthalate	0.012	<0.0020	<0.0020 (0.002)	12
3,3'-Dichlorobenzidine	0.002	<0.00040	<0.00040 (0.0004)	2
Pentachlorophenol	0.005	<0.00050	<0.00050 (0.0005)	5
Total PAHs	0.005	<0.00175	<0.00175 (0.00175)	5
Misc Parameters				
Nonylphenols	0.02	<0.0010	<0.0010 (0.001)	20
Nonylphenol Ethoxylates	0.2	<0.0020	<0.0020 (0.002)	200

Sample Collected: Sept 21 / Oct 3, 2022
 Temperature: 12 °C

HYDROLOGICAL REVIEW SUMMARY

STORM

Sample Location: MW104A - 450 Dufferin Street, Toronto

Inorganics		Sample Result	Sample Result with upper RDL included	
Parameter	mg/L	mg/L	mg/L	ug/L
pH	6.0 - 9.5	8	8 (0.1)	
BOD	15	3.1	3.1 (2.0)	15,000
Phenolics 4AAP	0.008	<0.0010	<0.0010 (0.001)	8
TSS	15	8.1	8.1 (3.0)	15,000
Total Cyanide	0.02	<0.0020	<0.0020 (0.002)	20
Metals				
Total Arsenic	0.02	0.0069	0.0069 (0.0001)	20
Total Cadmium	0.008	<0.0000500	<0.0000500 (0.000005)	8
Total Chromium	0.08	<0.00500	<0.00500 (0.0005)	80
Chromium Hexavalent	0.04	<0.00050	<0.00050 (0.0005)	40
Total Copper	0.04	<0.00500	<0.00500 (0.0005)	40
Total Lead	0.12	0.000733	0.000733 (0.00005)	120
Total Manganese	0.05	0.12	0.12 (0.0001)	50
Total Mercury	0.0004	<0.0000050	<0.0000050 (0.000005)	0.4
Total Nickel	0.08	<0.00500	<0.00500 (0.0005)	80
Total Phosphorus	0.4	0.0773	0.0773 (0.002)	400
Total Selenium	0.02	<0.000500	<0.000500 (0.00005)	20
Total Silver	0.12	<0.000100	<0.000100 (0.00001)	120
Total Zinc	0.04	<0.0300	<0.0300 (0.003)	40
Microbiology				
E.coli	200	35	35 (1)	200,000
Volatile Organics				
Parameter	mg/L	mg/L	mg/L	ug/L
Benzene	0.002	<0.00050	<0.00050 (0.0005)	2
Chloroform	0.002	<0.00050	<0.00050 (0.0005)	2
1,2-Dichlorobenzene	0.0056	<0.00050	<0.00050 (0.0005)	6
1,4-Dichlorobenzene	0.0068	<0.00050	<0.00050 (0.0005)	7
Cis-1,2-Dichloroethylene	0.0056	<0.00050	<0.00050 (0.0005)	6
Trans-1,3-Dichloropropylene	0.0056	<0.00030	<0.00030 (0.0003)	6
Ethyl Benzene	0.002	<0.00050	<0.00050 (0.0005)	2
Methylene Chloride	0.0052	<0.0010	<0.0010 (0.001)	5
1,1,2,2-Tetrachloroethane	0.017	<0.00050	<0.00050 (0.0005)	17
Tetrachloroethylene	0.0044	<0.00050	<0.00050 (0.0005)	4
Toluene	0.002	<0.00050	<0.00050 (0.0005)	2
Trichloroethylene	0.0076	<0.00050	<0.00050 (0.0005)	8
Total Xylenes	0.0044	<0.00050	<0.00050 (0.0005)	4

HYDROLOGICAL REVIEW SUMMARY

Semi-Volatile Organics		Sample Result	Sample Result with upper RDL included	
Di-n-butyl Phthalate	0.015	<0.0010	<0.0010 (0.001)	5
Bis (2-ethylhexyl) Phthalate	0.0088	<0.0020	<0.0020 (0.002)	8.8
3,3'-Dichlorobenzidine	0.0008	<0.00040	<0.00040 (0.0004)	0.8
Pentachlorophenol	0.002	<0.00050	<0.00050 (0.0005)	2
Total PAHs	0.002	<0.00175	<0.00175 (0.00175)	2
PCBs	0.0004	<0.000060	<0.000060 (0.00006)	0.4
Misc Parameters				
Nonylphenols	0.001	<0.0010	<0.0010 (0.001)	1
Nonylphenol Ethoxylates	0.01	<0.0020	<0.0020 (0.002)	10

Sample Collected: Sept 21 / Oct 3, 2022
 Temperature: 12 °C

Consulting Firm that prepared Hydrological Repo :

Terrapex Environmental Ltd.

Qualified Professional who completed the report summary:

Brian Theimer

Print Name

Qualified Professional who completed the report summary:

Brian D. Theimer 3 Nov 2022

Signature Date & Stamp

