

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	13, 15, 17, 19, & 21 John Street and 36, 38, & 40 South Station Street, Toronto, Ontario	Cover Page	
Postal Code	M9N 1J2	Cover Page	
Property Owner (on request for comments memo)	21 John Dev Inc.	Cover Page	
Proposed description of the project (if applicable) (point towers, number of podiums)	demolish the existing structures and construct a forty (40) storey mixed-use building with three (3) levels of underground parking (P3)	Pg. 3, Sec 1.1	
Land Use (ex. commercial, residential, mixed, institutional, industrial)	Mixed (residential and Commercial)	Pg. 3, Sec 1.1	
Number of below grade levels for the proposed structure	3 Level	Pg. 3, Sec 1.1	
HYDROLOGICAL REVIEW INFORMATION			
Date Hydrological Review was prepared:	April 17, 2023	Cover Page	
Who Performed the Hydrological Review (Consulting Firm)	EXP Services Inc.	Pg. 3, Sec 1.1	
Name of Author of Hydrological Review	Amar Neku, Ph.D., P.Eng., P.Geo., Senior Hydrogeologist	Pg. 20, Sec 7	

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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>		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 	Yes	Pg. 3-4, Sec.1.3	
		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)
Total Volume (L/day) Short Term Discharge of groundwater (construction dewatering) with safety factor included	230,000 L/day including rain fall amount What safety factor was used? 2	Pg. 14, Sec. 4.4.1 Appendix F –Construction Flow Rate Calculations	
Total Volume (L/day) Short Term Discharge of groundwater (construction dewatering) without safety factor included	134,000 L/day including rain fall amount	Pg. 14, 15 and 18 Sec. 4.4.1, 4.5.1 and Sec. 6 Appendix F –Construction Flow Rate Calculations	
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	Since the watertight foundation prevents groundwater seeping into the underground area a long-term dewatering will not be required. What safety factor was used? N/A	Pg 15 and 18 Sec. 4.5.2 and Sec. 6 Appendix F –Construction and Post-Construction Flow Rate Calculations	
List the nearest surface water (river, creek, lake)	The nearest surface water feature is Humber River, approximately located 350 meters southwest of the Site boundary. Lake Ontario is approximately 8.5 km from the Site boundary to the southeast.	Pg. 6 Sec. 2.2.2	

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SITE INFORMATION		Page # & Section# of Review	Review Includes this Information City Staff (Check)
Lowest basement elevation	116.9 masl	Pg. 12, Sec.4	
Foundation elevation	115.40 masl	Pg.12, Sec.4	
Ground elevation	127.4 masl	Pg. 12, Sec.4 Appendix F –Construction Flow Rate Calculations	
STUDY AREA MAP		Page # & Section# of every occurrence in the Review	Review Includes this Information City Staff (Check)
List the nearest surface water (river, creek, Study area map(s) have been included in the report.	✓ Yes	Figures	N/A
Study area map(s) been prepared according to the Hydrological Review Terms of Reference.	✓ Yes	Figures	N/A
WATER LEVEL AND WELLS		Page # & Section# of every occurrence	Review Includes this Information (City Staff Initial)

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SITE INFORMATION		Page # & Section# of Review	Review Includes this Information City Staff (Check)
The groundwater level has been monitored using all wells located on site (within property boundary).	Yes	Pg. 9, Sec 3.2 Appendix C – Groundwater Elevation Summary	
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.	Yes	Pg. 9, Sec. 3.2 Appendix C – Groundwater Elevation Summary	
All water levels in the wells have been measured with respect to masl.	Yes	Pg. 9, Sec. 3.2 Appendix C – Groundwater Elevation Summary	
A table of geology/soil stratigraphy for the property has been included.	Yes	Pg. 6 - 8, Sec.2.2.3 Appendix B- Borehole Logs	
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	Pg. 6 - 8, Sec.2.2.3 Appendix B- Borehole Logs	
Key aquifers and the site's proximity to nearby surface water has been identified.	✓ Yes	Pg. 5, Sec.2.1.2	N/A

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PUMP TEST/SLUG TEST/DRAWDOWN ANALYSIS		Page # & Section# of every occurrence in the Review	Review Includes this Information City Staff (Check)
SITE INFORMATION		Page # & Section# of 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 conducted, slug test data and analysis included in report.	Appendix D– SWRT Procedures and Results	
The pump test been carried out for at least 24 hours if possible. If not, has a slug test been conducted?	Single Well Response Tests (SWRT) have been conducted.	Pg. 9-11, Sec. 3.3	
Have the monitoring well(s) have been monitored using digital devices? If yes how frequently?	Monitoring wells monitored using data loggers set to 1 second intervals	Pg. 9-11, Sec. 3.3	
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)?	✓Yes Prior to and following completion of slug tests	Pg.9-11, Sec. 3.3	N/A
The above noted slug or pump tests have been included in the report.	✓Yes Slug test data has been included in report	Appendix D – SWRT Procedures and Results	

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WATER QUALITY		Page # & Section# of every occurrence in the Review	Review Includes this Information City Staff (Check)
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>Water quality has been 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 have been taken unfiltered within 9 months of the date of submission.</p>	<p>Appendix E– Laboratory Certificates of Analysis</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</p> <p>Water quality data templates have been completed.</p> <p>For storm discharge- See the storm sewer parameter limit template</p>	<p>Appendix A of Hydrology Summary Review Form</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</p> <p>If there are any sample parameters exceedances the groundwater can't be discharged as is.</p>	<p>When comparing the chemistry of the collected groundwater samples to the City of Toronto Sanitary and Combined Sewer Discharge Criteria (Table 1), there were no parameter exceedances to be reported.</p>	<p>Pg. 11, Sec.3.4</p>	

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<p>Qualified professional to list all sample parameters that have violated the Bylaw limits for each sample taken for the storm Bylaw limits.</p> <p>If there are any sample parameter exceedances the groundwater can't be discharged as is.</p>	<p>When comparing the chemistry of the collected groundwater samples to the City of Toronto Storm Sewer Discharge Criteria (Table 2) the following parameters reported an exceedance:</p> <ol style="list-style-type: none"> 1. Total Suspended Solids (TSS): 29 mg/L 2. Total Manganese (Mn): 52 µg/L 	<p>Pg. 11, Sec. 3.4</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>	<p>✓ Yes</p>	<p>Pg. 11, Sec. 3.4</p>	<p>N/A</p>
<p>SITE INFORMATION</p>		<p>Page # & Section# of Review</p>	<p>Review Includes this Information City Staff (Check)</p>
<p>List of Canadian accredited laboratories: Standards Council of Canada</p>	<p>BV Labs</p>	<p>Pg. 11, Sec. 3.4</p>	
<p>A chain of custody record for the samples is included with the report.</p>	<p>Yes</p>	<p>Appendix E – Laboratory Certificates of Analysis</p>	
<p>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.</p>	<p>No</p>	<p>Appendix E – Laboratory Certificates of Analysis</p>	
<p>List any of the sample parameters that exceed the Bylaw limits with the reporting detection limit (RDL) included.</p>	<p>For groundwater samples collected as part of the current investigation there were no exceedances of the Sewer Use By-Law parameters of Tables 1 and 2 due to the reporting detection limit (RDL)</p>	<p>Pg. 11, Sec. 3.4</p>	
<p>A true copy of the Certificate of Analysis report is included with the report.</p>	<p>Yes</p>	<p>Appendix E – Laboratory Certificates of Analysis</p>	

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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)?	✓ No		
Does the associated Geotechnical report recommend a back-up system or relief safety valve(s)?	✓ No		
The taking and discharging of groundwater on site has been analyzed to ensure that no negative Impacts will occur to: the City sewage works in terms of quality and quantity (including existing infrastructure), the natural environment, and settlement issues.	✓ Yes	Pg. 16, Sec 5	N/A
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 or all the infrastructure, City sewage works, and natural environment within the effected zone and the proposed remediation and monitoring plan?	If yes, identify impact: ✓ No		N/A

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

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Appendix A:

SANITARY/COMBINED

Sample Location:

BH 203

Inorganics		Sample Result	Sample Result with upper RDL included	
Parameter	mg/L			ug/L
Total BOD	300	ND	2	300,000
Fluoride (F-)	10	1.3	0.10	10,000
Total Kjeldahl Nitrogen (TKN)	100	3.8	0.10	100,000
pH	6.0 - 11.5	8.23	-	6.0 - 11.5
Phenols-4AAP	1	ND	0.0010	1,000
Total Suspended Solids	350	29	10	350,000
Total Cyanide (CN)	2	ND	0.0050	2,000
Metals				
Chromium (VI)	2	ND	0.50	2,000
Mercury (Hg)	0.01	ND	0.00010	10
Total Aluminum (Al)	50	1400	4.9	50,000
Total Antimony (Sb)	5	2.4	0.50	5,000
Total Arsenic (As)	1	5.4	1.0	1,000
Total Cadmium (Cd)	0.7	ND	0.090	700
Total Chromium (Cr)	4	ND	5.0	4,000
Total Cobalt (Co)	5	0.81	0.50	5,000
Total Copper (Cu)	2	1.8	0.90	2,000
Total Lead (Pb)	1	ND	0.50	1,000
Total Manganese (Mn)	5	52	2.0	5,000
Total Molybdenum (Mo)	5	16	0.50	5,000
Total Nickel (Ni)	2	1.8	1.0	2,000
Total Phosphorus (P)	10	ND	100	10,000
Total Selenium (Se)	1	ND	2.0	1,000
Total Silver (Ag)	5	ND	0.090	5,000
Total Tin (Sn)	5	ND	1.0	5,000
Total Titanium (Ti)	5	33	5.0	5,000
Total Zinc (Zn)	2	ND	5.0	2,000
Petroleum Hydrocarbons				
Total Oil & Grease	150	ND	0.50	150,000
Total Oil & Grease Mineral/Synthetic	15	ND	0.50	15,000

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Volatile Organics		Sample Result	Sample Result with upper RDL included	
Parameter	mg/L			ug/L
Benzene	0.01	ND	0.40	10
Chloroform	0.04	ND	0.40	40
1,2-Dichlorobenzene	0.05	ND	0.80	50
1,4-Dichlorobenzene	0.08	ND	0.80	80
cis-1,2-Dichloroethylene	4	ND	1.0	4,000
trans-1,3-Dichloropropene	0.14	ND	0.80	140
Ethylbenzene	0.16	ND	0.40	160
Methylene Chloride(Dichloromethane)	2	ND	4.0	2,000
1,1,2,2-Tetrachloroethane	1.4	ND	0.80	1,400
Tetrachloroethylene	1	ND	0.40	1,000
Toluene	0.016	0.72	0.40	16
Trichloroethylene	0.4	ND	0.40	400
Total Xylenes	1.4	ND	0.40	1,400
Semi-Volatile Organics				
Di-N-butyl phthalate	0.08	ND	2	80
Bis(2-ethylhexyl)phthalate	0.012	ND	2	12
3,3'-Dichlorobenzidine	0.002	ND	0.8	2
Pentachlorophenol	0.005	ND	1	5
Total PAHs (18 PAHs)	0.005	ND	1	5
Misc Parameters				
Nonylphenol Ethoxylate (Total)	0.02	ND	0.005	20
Nonylphenol (Total)	0.2	ND	0.001	200

Sample Collected: 8/4/22 13:00 August 4, 2022

Temperature: 25.7°C

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STORM

Sample Location: BH 203

Inorganics		Sample Result	Sample Result with upper RDL included	
Parameter	mg/L			ug/L
pH	6.0 - 9.5	8.23	0	
Total BOD	15	ND	2	15,000
Phenols-4AAP	0.008	ND	0.0010	8
Total Suspended Solids	15	29	10	15,000
Total Cyanide (CN)	0.02	ND	0.0050	20
Metals				
Total Arsenic (As)	0.02	5.4	1.0	20
Total Cadmium (Cd)	0.008	ND	0.090	8
Total Chromium (Cr)	0.08	ND	5.0	80
Chromium (VI)	0.04	ND	0.50	40
Total Copper (Cu)	0.04	1.8	0.90	40
Total Lead (Pb)	0.12	ND	0.50	120
Total Manganese (Mn)	0.05	52	2.0	50
Mercury (Hg)	0.0004	ND	0.00010	0.4
Total Nickel (Ni)	0.08	1.8	1.0	80
Total Phosphorus (P)	0.4	ND	100	400
Total Selenium (Se)	0.02	ND	2.0	20
Total Silver (Ag)	0.12	ND	0.090	120
Total Zinc (Zn)	0.04	ND	5.0	40
Microbiology				
Escherichia coli	200	<10	10	200,000
Volatile Organics				
Parameter	mg/L			ug/L
Benzene	0.002	ND	0.40	2
Chloroform	0.002	ND	0.40	2
1,2-Dichlorobenzene	0.0056	ND	0.80	6
1,4-Dichlorobenzene	0.0068	ND	0.80	7
cis-1,2-Dichloroethylene	0.0056	ND	1.0	6
trans-1,3-Dichloropropene	0.0056	ND	0.80	6
Ethylbenzene	0.002	ND	0.40	2
Methylene Chloride(Dichloromethane)	0.0052	ND	4.0	5
1,1,2,2-Tetrachloroethane	0.017	ND	0.80	17
Tetrachloroethylene	0.0044	ND	0.40	4
Toluene	0.002	0.72	0.40	2
Trichloroethylene	0.0076	ND	0.40	8
Total Xylenes	0.0044	ND	0.40	4

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Semi-Volatile Organics		Sample Result	Sample Result with upper RDL included	
Di-N-butyl phthalate	0.015	ND	2	5
Bis(2-ethylhexyl)phthalate	0.0088	ND	2	8.8
3,3'-Dichlorobenzidine	0.0008	ND	0.8	0.8
Pentachlorophenol	0.002	ND	1	2
Total PAHs (18 PAHs)	0.002	ND	1	2
Total PCB	0.0004	ND	0.05	0.4
Misc Parameters				
Nonylphenol (Total)	0.001	ND	0.001	1
Nonylphenol Ethoxylate (Total)	0.01	ND	0.005	10

Sample Collected: 8/4/2022 13:00

Temperature: 25.7°C

Consulting Firm that prepared Hydrological Report: EXP Services Inc.

Qualified Professional who completed the report summary Amar Neku, Ph.D., P.Eng., P.Geo., Senior Hydrogeologist
 Print Name

Qualified Professional who completed the report summary: *Amar Neku*  April 17, 2023
 Signature Date & Stamp