February 25, 2021

Reference: 20-8628

Via email: kdodgshon@aplinmartin.com

Aplin & Martin Consultants Ltd.
201 – 12448 82 Avenue
Surrey, BC V3W 3E9

Attn: Keith Dodgshon, EIT

Re: Preliminary Geotechnical Exploration Report
Kingsway Avenue Upgrades (File No. 2020-10)
Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

1.0 INTRODUCTION

As requested, Braun Geotechnical Ltd. has carried out a geotechnical exploration and assessment for the subject roadway improvement project.

The geotechnical work has been performed in general accordance with our Geotechnical Proposal dated April 17, 2020 (Braun Reference No. P20-6832). The scope of work included a desk study review, subsurface exploration and provision of geotechnical recommendations for proposed roadway improvement project.

The scope of services was limited to the evaluation of the geotechnical characteristics at the site and no consideration has been given to any environmental aspects.

2.0 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The subject roadway project includes Kingsway Avenue between Tyner Street and Kebet Way in the City of Port Coquitlam, BC (approximately 2,600m in length). The existing roadway generally comprised a single travel lane in each direction with additional turn lanes at select intersection and curbside/ gravel parking within select locations along the roadway alignment.

It is understood that the roadway project includes roadway widening (between Tyner Street and Coast Meridian Road), widening to accommodate additional right turn lanes at Mclean Avenue & Broadway Street intersections and concrete sidewalk within select areas along the alignment. Proposed roadway widening is generally limited to approximately 1 to 3m wide, except near the intersections of Mclean Avenue and Broadway Street where roadway widening of up to 7m is proposed. A 3m wide asphalt paved multi-use pathway is also proposed along the north side of the existing roadway between Tyner Street and Kebet Way. It is understood that rehabilitation of the existing roadway is beyond the current scope of work.

It is understood that Kingsway Avenue is classified as an Arterial road, and is used as a high-volume car and truck traffic route with an estimated 2019 Average Annual Daily Traffic (AADT) of 13,850 to 24,470 as provided on the ISL report "Kingsway Avenue Conceptual Design - Traffic Study and Planning Memorandum Final Draft", dated November 22, 2019. It is understood that the new roadway design would adopt the 2029 traffic data with AADT ranging from 15,830 to 31,300 (as provided on the ISL report).

Foundations, Excavation & Shoring Specialists

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Foundations

Excavation & Shoring

Slope Stability

Natural Hazards

Pavement Design and Management

Reinforced Soil Walls and Slopes

3.0 DESK STUDY INFORMATION

The desk study was non-intrusive in nature, and involved update and review of available geological and geotechnical information.

Review of available published geological information and in-house test hole data indicated that the study site area is underlain by recent Fraser River Sediments (Fc) comprising overbank silty to silt clay loam (see Figure 1).

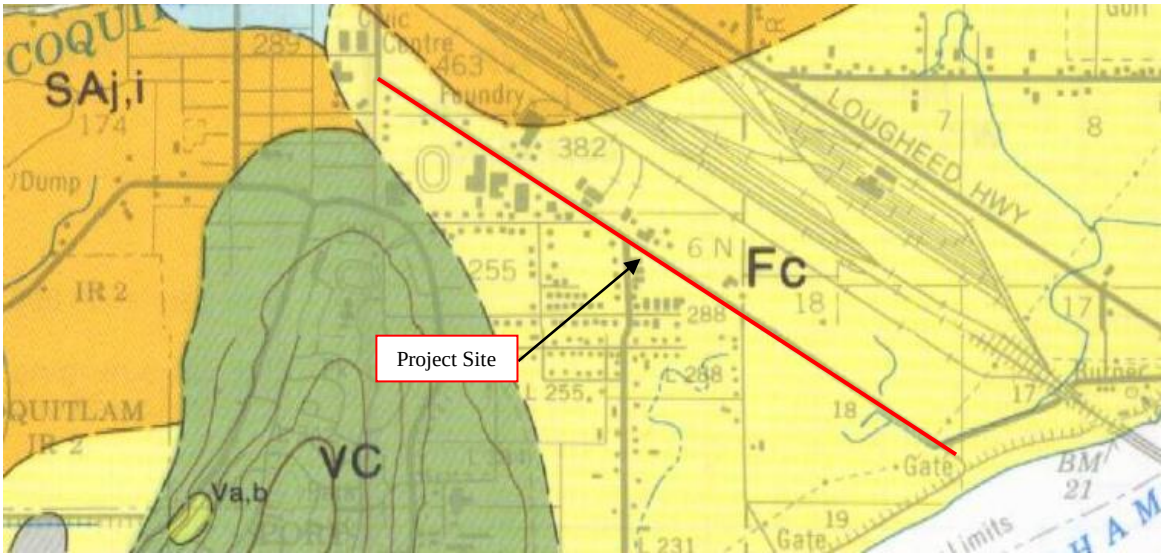


Figure 1 - Surficial Geology Map (GSC, 1980)

4.0 EXPLORATION & TESTING

Subsurface exploration included nine auger drilled test holes (TH21-01 to -09) advanced within the existing roadway/ widening areas to the depths of 1.5 to 4.6m. Thirteen shallow hand pits (HP21-01 to -13) were also excavated within the roadway widening/ multi-use pathway areas to the depths of 0.6 to 1.2m. Existing underground and overhead utilities restricted the test hole and hand pit locations.

The subsurface conditions were logged in the field by Braun Geotechnical and representative soil samples were returned for further classification and laboratory testing. Test hole and hand pit locations are shown on the attached location plans (Dwg. 20-8628-01 to -16).

5.0 SOIL AND GROUNDWATER CONDITIONS

The findings of the geotechnical exploration are detailed on the attached test hole/ hand pit logs and should be referred to for details of subsurface conditions encountered at each test location.

A subsoil profile based on the available test holes/ hand pits is summarized below.

Test Holes (TH21-01 to -09)

Asphalt Pavement:

Test holes advanced within the existing roadway encountered asphalt pavement with thickness varying from 100 to 180mm.

Roadway Fills:

19mm minus crushed granular BASE was encountered below asphalt pavement within TH21-02, -05, -06 & -07 with thickness varying from 90 to 125mm.

Roadway fills comprising SAND & GRAVEL/ SAND/ silty SAND was encountered below within the test holes with thickness varying from 815 to 1320mm. TH21-01 & -03 were terminated within this fill layer at 1.5m depth.

Fills/ Organics:

TH21-04, advanced within the shoulder area encountered 915mm of SAND & GRAVEL with trace to some silt (FILL).

TH21-08 & -09, advanced within the grass boulevard area encountered 150 to 305mm of organic rich SAND & SILT (ORGANICS) underlain by SAND with trace to some silt and trace gravel (FILL?) to 1.5m depth. TH21-08 & -09 were terminated within this SAND layer at 1.5m depth.

Natural Soils:

Brown, moist, firm SILT with variable amount of organics (none to some) to organic rich SILT was encountered below fills within TH21-02, -04, -05, -06 & -07 to the depths of 1.5 to 3.8m. TH21-06 & -07 were terminated within this SILT layer at depths of 1.5 & 3.0m, respectively.

Grey to brown, wet, loose, silty SAND was encountered below within TH21-04 & -05 extending to the depths of test hole exploration at 3.0 & 4.6m, respectively. The silty SAND layer at TH21-04 contained trace to some organics and fibers.

Grey to rust-brown, wet, compact SAND & GRAVEL with trace to some silt was encountered below silt layer within TH21-02 extending to the depth of test hole exploration at 4.6m.

Groundwater:

Groundwater was encountered within TH21-02, -04 & -05 below depths of 2.1 to 2.4m. Remaining test holes were generally dry at the time and to the depths of exploration.

Hand Pits (HP21-01 to -13)

Fills/ Organics:

Hand pits advanced within the roadway shoulder areas encountered existing surficial vegetation over 100 to 610mm of dark-brown, moist, soft to firm, organic rich SILT & SAND with trace roots/ rootlets (FILL/ ORGANICS).

Grey to dark-brown, damp to moist, loose to compact, silty SAND (FILL) with variable amount of organics (none to some) was encountered below within the test holes (except HP21-02, -05, -08, -11, -12 & -13) extending to the depths of 0.2 to 0.9m.

Natural Soils:

Grey to grey-brown, damp to moist, loose to compact SAND/ silty SAND was encountered below within HP21-01 to -07 to the depths of 0.4 to 1.2m. HP21-01, -02, -03, -06 & -07 were terminated within this layer at depths of 0.6 to 1.2m.

Brown to dark-brown, moist, firm SILT with trace to some organics and trace sand was encountered below fills within HP21-08, -10, -11 & -13 to the depths of hand pit exploration at 0.9m.

Grey to grey-brown, moist, firm, sandy SILT was encountered below fills within HP21-04, -05, -09 & -12 to the depths of hand exploration at 0.8 to 0.9m.

Groundwater:

Groundwater seepage was encountered within HP21-02, -04, -06, -08, -09, -10, -11 & -12 below depths of 0.4 to 1.0m. Remaining hand pits were generally dry at the time and to the depths of exploration.

It is noted that groundwater level/ seepage is expected to fluctuate seasonally, and with drainage conditions. The subsurface conditions described above were encountered at the test hole and hand pit locations only. Subsurface conditions at other locations and below the depths explored could vary.

6.0 GEOTECHNICAL RECOMMENDATIONS - ROADWORKS

6.1 General

Test holes and hand pits advanced along existing roadway and shoulder areas generally encountered existing pavement section/ surficial fills and organics over soft to firm silt (with trace to some organics) and underlain by loose to compact sand/ silty sand.

Subgrade conditions generally include soft to firm silt with trace to some organics that may be compressible under any significant increased vertical embankment loads that may occur to achieve a net grade increase. It is expected that the proposed road grades would closely match the existing such that settlement of the completed roadworks would be within tolerable limits. Braun Geotechnical should be provided the opportunity to review and comment on any fills placed more than 0.5m above existing grades. To achieve increased fill heights and for reduced post construction settlement the use of a lightweight granular (LWG) fill embankment may be warranted.

The following sections provide preliminary geotechnical recommendations for the project.

6.2 Stripping

Preparation below proposed roadway, pavement widening, multi-use pathway and sidewalk areas should include removal of vegetation, surficial topsoil, water softened soils, and other deleterious materials to reveal a natural mineral subgrade substantially free of organics.

Existing granular trench or embankment fill encountered at the design subgrade level should typically be re-compacted to at least 95% Modified Proctor Density (MPD). Existing fills that cannot achieve satisfactory compaction may require removal and replacement.

Required stripping depth for removal of deleterious materials should be based on actual conditions encountered during site preparation. The contractor should excavate to design subgrade levels necessary to accommodate the design pavement structure. Prior to placing roadway fills, stripped surface should be reviewed by Braun Geotechnical. Depth of stripping for removal of deleterious materials at shoulder test holes/ hand pits is provided as follows:

Test Hole #	Stripping Depth
TH21-04	1.1m
TH21-08	0.3m
TH21-09	0.5m

Hand Pit #	Stripping Depth
HP21-01	0.6m
HP21-02	0.6m
HP21-03	0.2m
HP21-04	0.3m
HP21-05	0.5m
HP21-06	0.2m
HP21-07	0.3m
HP21-08	> 0.3m
HP21-09	0.1m
HP21-10	> 0.5m
HP21-11	> 0.3m
HP21-12	0.6m
HP21-13	0.5m

6.3 Structural Fill/ Embankment fill

Subgrade restoration fills below proposed roadway, multi-use pathway and sidewalk areas should typically consist of clean, free draining well-graded sand and gravel with less than 5% fines (percent passing the #200 sieve). Structural fill should be placed and compacted in maximum 300mm loose lifts with each lift compacted to at least 95% MPD.

Density testing during site fill placement should be carried out by Braun Geotechnical on a regular basis to confirm adequacy of compaction. In addition, Braun Geotechnical should be contacted to review fill quality, and placement and compaction procedures.

Re-use of excavated soils as structural/ embankment fill would be subject to review and acceptance of the material and site conditions by Braun Geotechnical. Based on soil conditions encountered at test holes excavated natural soils are expected to comprise high fines and organics silt/ silty sand that would not be suitable for reuse as structural embankment fill.

For preliminary considerations, a lightweight fill embankment using LWG fill would likely be warranted within roadway widening/ embankment fill areas where a net grade increase of more than 0.5m is proposed. Specific lightweight fill requirements and settlement estimates should be provided by Braun Geotechnical with development of the detailed design. Preliminary roadworks drawings suggest the use of LWG would not be required.

If needed, LWG fill should comprise material that meets consistent unit weight and durability requirements specified by BCMoTI such as vesicular basalt ("Red Pumice"). The LWG should comprise nominal 25 to 50mm uniformly graded materials with less than 3% passing the 4.75mm sieve. The LWG should be covered with a non-woven geotextile, comprised of M288 Class 2 Survivability non-woven filter fabric (Nilex 4551 or approved equivalent).

The lightweight fill should be placed in maximum 300mm thick lifts, with each lift compacted using three passes with a 500lb plate compactor. Compaction effort that results in material breakdown with oversized equipment (e.g. heavy drum roller) should be avoided.

The LWG should typically be covered with non-woven geotextile prior to placement of a minimum 0.3m thick granular layer within embankment slope/ landscape areas.

6.4 Permanent Slopes

For geotechnical considerations permanent cuts may be sloped at gradients up to 2.0H:1V (Horizontal to Vertical). Fill slopes consisting of suitably compacted import granular soils should typically be constructed at gradients no steeper than 2.0H:1V for geotechnical considerations. Slopes should be vegetated as soon as is practical to reduce potential for surficial sloughing and/or erosion.

6.5 Asphalt Pavement – Design Traffic

Design traffic indicated below in equivalent single axle loads (ESALs) was estimated based on review of ISL report "Kingsway Avenue Conceptual Design - Traffic Study and Planning Memorandum Final Draft", dated November 22, 2019. It is understood that the new roadway design would adopt the 2029 traffic data with AADT ranging from 15,830 to 31,300 and Heavy Vehicles Percentage of 5% to 7% as indicated on the ISL report. It is assumed that Heavy Vehicles Percentage was estimated for the percentage of heavy trucks with 3 axles or more.

Project specific traffic distribution information was not available for review by Braun Geotechnical and an assumed truck distribution was adopted for design. Federal Highway Administration (FHWA) Truck factors provided for Western Canada were adopted and a distribution of Heavy Trucks was assumed for calculation of design ESALs.

Traffic Information and calculated ESALs for 1.5% growth (adopted from ISL report) are summarized as follows:

Roadway	*Roadway Section*	*Average Annual Daily Traffic (AADT) ISL Report – Projected 2029 Traffic*	*%T Heavy Trucks*		*FHWA Average Truck Factor*	*Design Lane ESALs*
			Percentage of Traffic	*Percentage in Design Lane*		
Kingsway Avenue	Broadway St to Langan Ave	31,300	7	50	1.0	9.2M [(1)]
	Coast Meridian to Mary Hill	15,830	7	50	1.0	4.7M

Note: [(1)] Adopted for design

6.6 Pavement Design Methodology & Analysis

Design methodology outlined in AASHTO '93 was used for the analysis for pavement design. Input values for the AASHTO method used in the current study are provided as follows:

- Design ESALs = 9.2M
- Initial Serviceability p_{ini} = 4.2
- Terminal Serviceability p_t = 2.5
- Reliability R = 85%
- Overall Standard Deviation S_o = 0.45
- Subgrade resilient modulus (M_R) = 30 MPa

Material performance assumptions for pavement design are provided as follows.

Pavement Material	***Structural Layer Coefficient (a_i)***	***Resilient Modulus M_R (MPa)***
Asphalt Pavement (PG Binder)	0.44	2750
Crushed Granular Base (CGB)	0.14	200
Crushed Granular Subbase (CGSB)	0.14	200
Select Granular Subbase (SGSB)	0.10	100

With reference to AASHTO design input, quality of drainage was assumed to be 'fair' with 5-25% time period where pavement section granular materials approach saturation. This equates to an AASHTO drainage coefficient m = 0.9.

The design AASHTO Structural Number, SN for effective Roadbed Resilient Modulus of 30 MPa was determined to be ~143mm.

6.7 Asphalt Pavement – Design Section

Design pavement structure information is provided as follows.

Roadway – ESALs	***Design Pavement Structure***			***Design Structural Number, SN***
	ASPHALT (mm)	***MMCD BASE (mm)***	***MMCD SUBBASE (mm)***	
Kingsway Avenue – 9.2M	150 [(1)]	150	500 CGSB	148mm

Note: [(1)] Asphalt surfacing should be placed in two lifts 100mm and 50mm for the base and surface course layers, respectively, and may comprise 19mm and 12.5mm Superpave as per MMCD Section 32 12 17.

To improve pavement strength specifications should include provision of performance grade asphalt oil (PG 64-22 binder). The granular structure should extend beyond the final edge of pavement by a distance equal to the road structure thickness. The road construction materials should be placed and compacted in compliance with the current MMCD specifications. It is also recommended that specification for new import subbase material on Kingsway Avenue provide for MMCD compliant Crushed Granular Subbase (CGSB – MMCD Section 31 05 17 2.9).

6.8 Multi-Use Pathway – Design Section

The minimum recommended structure for the proposed asphalt multi-use pathway is provided below.

Recommended Minimum Thickness	***Material***
50mm	Asphalt Surface Course (MMCD UC #2)
200mm	19mm minus Crushed Granular Base (CGB) (MMCD Section 31 05 17 2.10)

7.0 GEOTECHNICAL REVIEWS

Geotechnical construction field reviews and materials testing services should be arranged by the Contractor to address the following, as required:

- Review site stripping and subgrade confirmation;
- Review and density testing of subgrade and pavement section fills;
- Asphalt hot mix field sampling and Mix Design testing;
- Retrieval of asphalt cores for thickness and density.

8.0 CLOSURE

This report is prepared for the exclusive use of Aplin & Martin Consultants Ltd. and their designated representatives and may not be used by other parties without the written permission of Braun Geotechnical Ltd. The City of Port Coquitlam may rely on the findings of this geotechnical report.

If during construction soil conditions are noted to be different from those described in this report, Braun Geotechnical must be notified immediately in order that the geotechnical recommendations can be confirmed or modified, if required. Further, this report assumes that field reviews will be completed by Braun Geotechnical during construction.

The site contractor should make their own assessment of subsurface conditions and select the construction means and methods most appropriate to the site conditions. This report should not be included in the specifications without suitable qualifications approved by the geotechnical engineer.

The use of this report is subject to the Report Interpretation and Limitations, which is included with the report. The reader's attention is drawn specifically to those conditions, as it is considered essential that they be followed for proper use and interpretation of this report.

We hope the above meets with your requirements. Should any questions arise, please do not hesitate to contact the undersigned.

Yours truly,

Braun Geotechnical Ltd.

DRAFT

Euraj N Vivekanandan, EIT
Geotechnical Engineer

Braun Geotechnical Ltd.

DRAFT

Stuart Hrysio, P.Eng.
Geotechnical Engineer

Encl: Report Interpretation and Limitations
Test Hole Location Plans
Test Hole Logs

X:\2020 Projects\20-8628 File No. 2020-10 Kingsway Avenue Upgrades - Tyner Street to Kebet Way, Port Coquitlam, BC\Report\20-8628 Geotechnical Report 2021-02-25.doc

REPORT INTERPRETATION AND LIMITATIONS

1. STANDARD OF CARE

Braun Geotechnical Ltd. (Braun) has prepared this report in a manner consistent with generally accepted engineering consulting practices in this area, subject to the time and physical constraints applicable. No other warranty, expressed or implied, is made.

2. COMPLETENESS OF THIS REPORT

This Report represents a summary of paper, electronic and other documents, records, data and files and is not intended to stand alone without reference to the instructions given to Braun by the Client, communications between Braun and the Client, and/or to any other reports, writings, proposals or documents prepared by Braun for the Client relating to the specific site described herein.

This report is intended to be used and quoted in its entirety. Any references to this report must include the whole of the report and any appendices or supporting material. Braun cannot be responsible for use by any party of portions of this report without reference to the entire report.

3. BASIS OF THIS REPORT

This report has been prepared for the specific site, development, design objective, and purpose described to Braun by the Client or the Client's Representatives or Consultants. The applicability and reliability of any of the factual data, findings, recommendations or opinions expressed in this document pertain to a specific project at described in this report and are not applicable to any other project or site, and are valid only to the extent that there has been no material alteration to or variation from any of the descriptions provided to Braun. Braun cannot be responsible for use of this report, or portions thereof, unless we were specifically requested by the Client to review and revise the Report in light of any alterations or variations to the project description provided by the Client.

If the project does not commence within 18 months of the report date, the report may become invalid and further review may be required.

The recommendations of this report should only be used for design. The extent of exploration including number of test pits or test holes necessary to thoroughly investigate the site for conditions that may affect construction costs will generally be greater than that required for design purposes. Contractors should rely upon their own explorations and interpretation of the factual data provided for costing purposes, equipment requirements, construction techniques, or to establish project schedule.

The information provided in this report is based on limited exploration, for a specific project scope. Braun cannot accept responsibility for independent conclusions, interpretations, interpolations or decisions by the Client or others based on information contained in this Report. This restriction of liability includes decisions made to purchase or sell land.

4. USE OF THIS REPORT

The contents of this report, including plans, data, drawings and all other documents including electronic and hard copies remain the copyright property of Braun Geotechnical Ltd. However, we will consider any reasonable request by the Client to approve the use of this report by other parties as "Approved Users." With regard to the duplication and distribution of this Report or its contents, we authorize only the Client and Approved Users to make copies of the Report only in such quantities as are reasonably necessary for the use of this Report by those parties. The Client and "Approved Users" may not give, lend, sell or otherwise make this Report or any portion thereof available to any other party without express written permission from Braun. Any use which a third party makes of this Report – in its entirety or portions thereof – is the sole responsibility of such third parties. BRAUN GEOTECHNICAL LTD. ACCEPTS NO RESPONSIBILITY FOR DAMAGES SUFFERED BY ANY PARTY RESULTING FROM THE UNAUTHORIZED USE OF THIS REPORT.

Electronic media is susceptible to unauthorized modification or unintended alteration, and the Client should not rely on electronic versions of reports or other documents. All documents should be obtained directly from Braun.

5. INTERPRETATION OF THIS REPORT

Classification and identification of soils and rock and other geological units, including groundwater conditions have been based on exploration(s) performed in accordance with the standards set out in Paragraph 1. These tasks are judgemental in nature; despite comprehensive sampling and testing programs properly performed by experienced personnel with the appropriate equipment, some conditions may elude detection. As such, all explorations involve an inherent risk that some conditions will not be detected.

Further, all documents or records summarizing such exploration will be based on assumptions of what exists between the actual points sampled at the time of the site exploration. Actual conditions may vary

significantly between the points investigated and all persons making use of such documents or records should be aware of and accept this risk.
The Client and "Approved Users" accept that subsurface conditions may change with time and this report only represents the soil conditions encountered at the time of exploration and/or review. Soil and ground water conditions may change due to construction activity on the site or on adjacent sites, and also from other causes, including climactic conditions.
The exploration and review provided in this report were for geotechnical purposes only. Environmental aspects of soil and groundwater have not been included in the exploration or review, or addressed in any other way.
The exploration and Report is based on information provided by the Client or the Client's Consultants, and conditions observed at the time of our site reconnaissance or exploration. Braun has relied in good faith upon all information provided. Accordingly, Braun cannot accept responsibility for inaccuracies, misstatements, omissions, or deficiencies in this Report resulting from misstatements, omissions, misrepresentations or fraudulent acts of persons or sources providing this information.

6. DESIGN AND CONSTRUCTION REVIEW

This report assumes that Braun will be retained to work and coordinate design and construction with other Design Professionals and the Contractor. Further, it is assumed that Braun will be retained to provide field reviews during construction to confirm adherence to building code guidelines and generally accepted engineering practices, and the recommendations provided in this report. Field services recommended for the project represent the minimum necessary to confirm that the work is being carried out in general conformance with Braun's recommendations and generally accepted engineering standards. It is the Client's or the Client's Contractor's responsibility to provide timely notice to Braun to carry out site reviews. The Client acknowledges that unsatisfactory or unsafe conditions may be missed by intermittent site reviews by Braun. Accordingly, it is the Client's or Client's Contractor's responsibility to inform Braun of any such conditions.
Work that is covered prior to review by Braun may have to be re-exposed at considerable cost to the Client. Review of all Geotechnical aspects of the project are required for submittal of unconditional Letters of Assurance to regulatory authorities. The site reviews are not carried out for the benefit of the Contractor(s) and therefore do not in any way effect the Contractor(s) obligations to perform under the terms of his/her Contract.

7. SAMPLE DISPOSAL

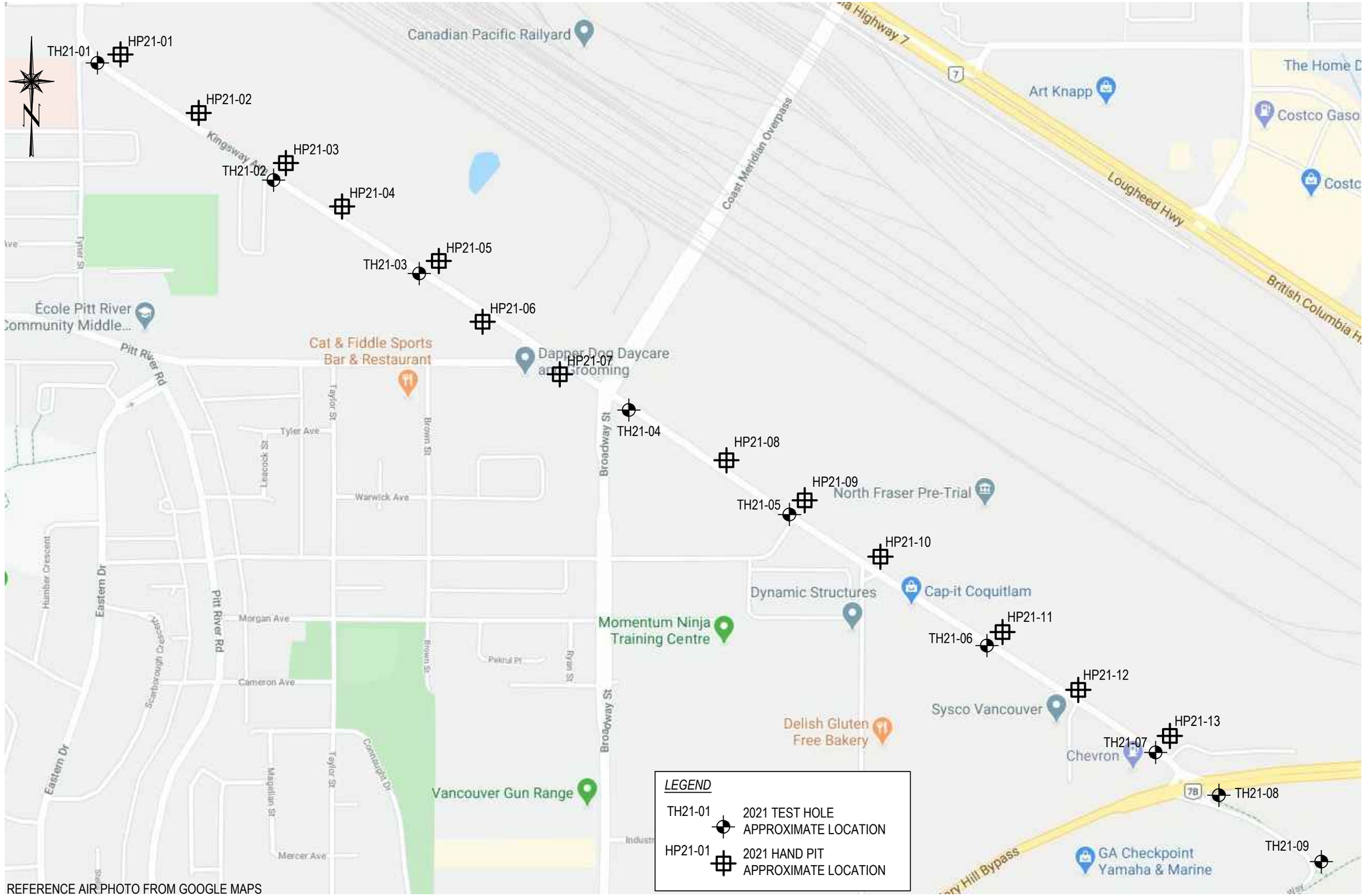
Braun will dispose of all samples 3 months after issuance of this report, or after a longer period of time at the Client's expense if requested by the Client. All contaminated samples remain the property of the Client and it will be the Client's responsibility to dispose of them properly.

8. SUBCONSULTANTS AND CONTRACTORS

Engineering studies frequently requires hiring the services of individuals and companies with special expertise and/or services which Braun Geotechnical Ltd. does not provide. These services are arranged as a convenience to our Clients, for the Client's benefit. Accordingly, the Client agrees to hold the Company harmless and to indemnify and defend Braun Geotechnical Ltd. from and against all claims arising through such Subconsultants or Contractors as though the Client had retained those services directly. This includes responsibility for payment of services rendered and the pursuit of damages for errors, omissions or negligence by those parties in carrying out their work. These conditions apply to specialized subconsultants and the use of drilling, excavation and laboratory testing services, and any other Subconsultant or Contractor.

9. SITE SAFETY

Braun Geotechnical Ltd. assumes responsibility for site safety solely for the activities of our employees on the jobsite. The Client or any Contractors on the site will be responsible for their own personnel. The Client or his representatives, Contractors or others retain control of the site. It is the Client's or the Client's Contractors responsibility to inform Braun of conditions pertaining to the safety and security of the site – hazardous or otherwise – of which the Client or Contractor is aware.
Exploration or construction activities could uncover previously unknown hazardous conditions, materials, or substances that may result in the necessity to undertake emergency procedures to protect workers, the public or the environment. Additional work may be required that is outside of any previously established budget(s). The Client agrees to reimburse Braun for fees and expenses resulting from such discoveries. The Client acknowledges that some discoveries require that certain regulatory bodies be informed. The Client agrees that notification to such bodies by Braun Geotechnical Ltd. will not be a cause for either action or dispute.



REFERENCE AIR PHOTO FROM GOOGLE MAPS

Rev.	Description	Date

BRAUN GEOTECHNICAL LTD.

Client	Aplin & Martin Consultants Ltd.
Project	Kingsway Avenue Upgrades Kingsway Ave: Tyner St to Kebet Way, Port Coquitlam, BC
Title	KEY PLAN

Project no.	Drawn	Design	Checked	Date	Scale	Drawing no.
20-8628	DD	EV	SH	November 17, 2020	NTS	20-8628-KEY

REFERENCE AIR PHOTO FROM POCO WEBMAP

BRAUN GEOTECHNICAL LTD.

Rev.	Description	Date

Client: Aplin & Martin Consultants Ltd.

Project: Kingsway Avenue Upgrades
Kingsway Ave: Tyner St to Kebet Way, Port Coquitlam, BC

Title: Location Plan
TH21-01 & HP21-01

Project no.	Drawn	Design	Checked	Date	Scale	Drawing no.
20-8628	DD	EV	SH	November 17, 2020	1:250	20-8628-01

BRAUN GEOTECHNICAL LTD.

Rev.	Description	Date

Client: Aplin & Martin Consultants Ltd.

Project: Kingsway Avenue Upgrades
Kingsway Ave: Tyner St to Kebet Way, Port Coquitlam, BC

Title: Location Plan
HP21-02

Project no.	Drawn	Design	Checked	Date	Scale	Drawing no.
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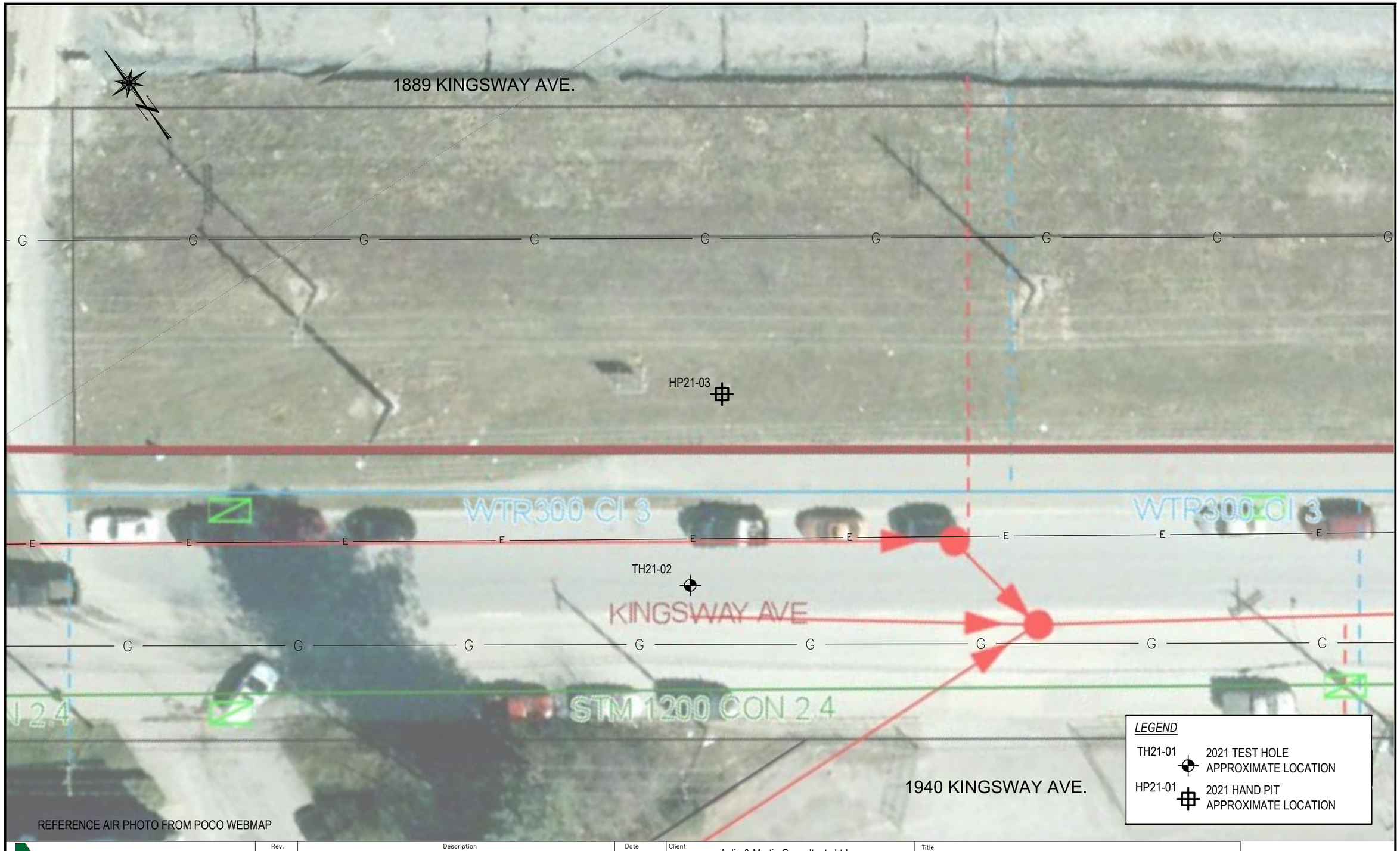

REFERENCE AIR PHOTO FROM POCO WEBMAP

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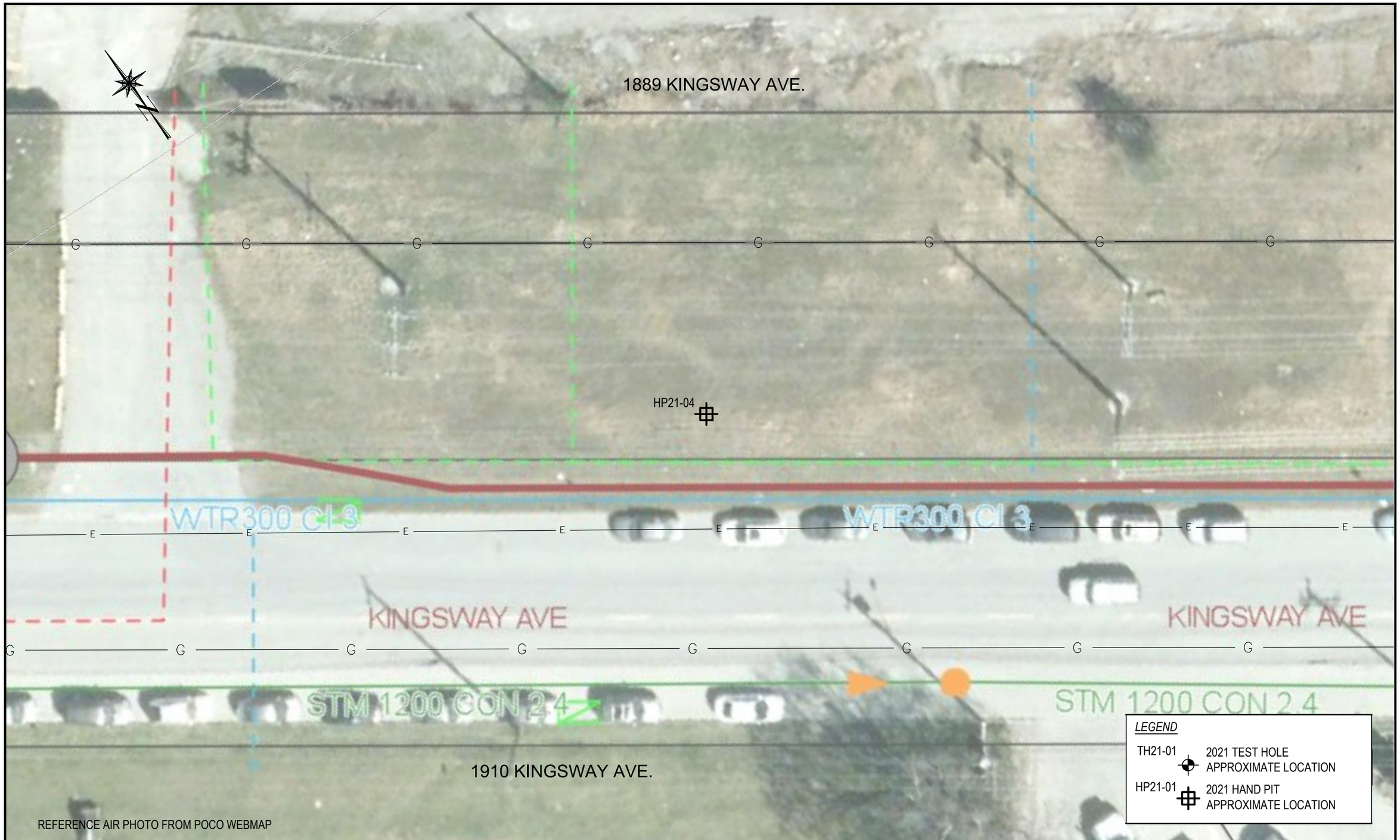
Rev.	Description	Date

Client: Aplin & Martin Consultants Ltd.

Project: Kingsway Avenue Upgrades
Kingsway Ave: Tyner St to Kebet Way, Port Coquitlam, BC

Title: Location Plan
TH21-02 & HP21-03

Project no.	Drawn	Design	Checked	Date	Scale	Drawing no.
20-8628	DD	EV	SH	November 17, 2020	1:250	20-8628-03



REFERENCE AIR PHOTO FROM POCO WEBMAP

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Rev.	Description	Date

Client: Aplin & Martin Consultants Ltd.

Project: Kingsway Avenue Upgrades
Kingsway Ave: Tyner St to Kebet Way, Port Coquitlam, BC

Title: Location Plan
HP21-04

Project no.	Drawn	Design	Checked	Date	Scale	Drawing no.
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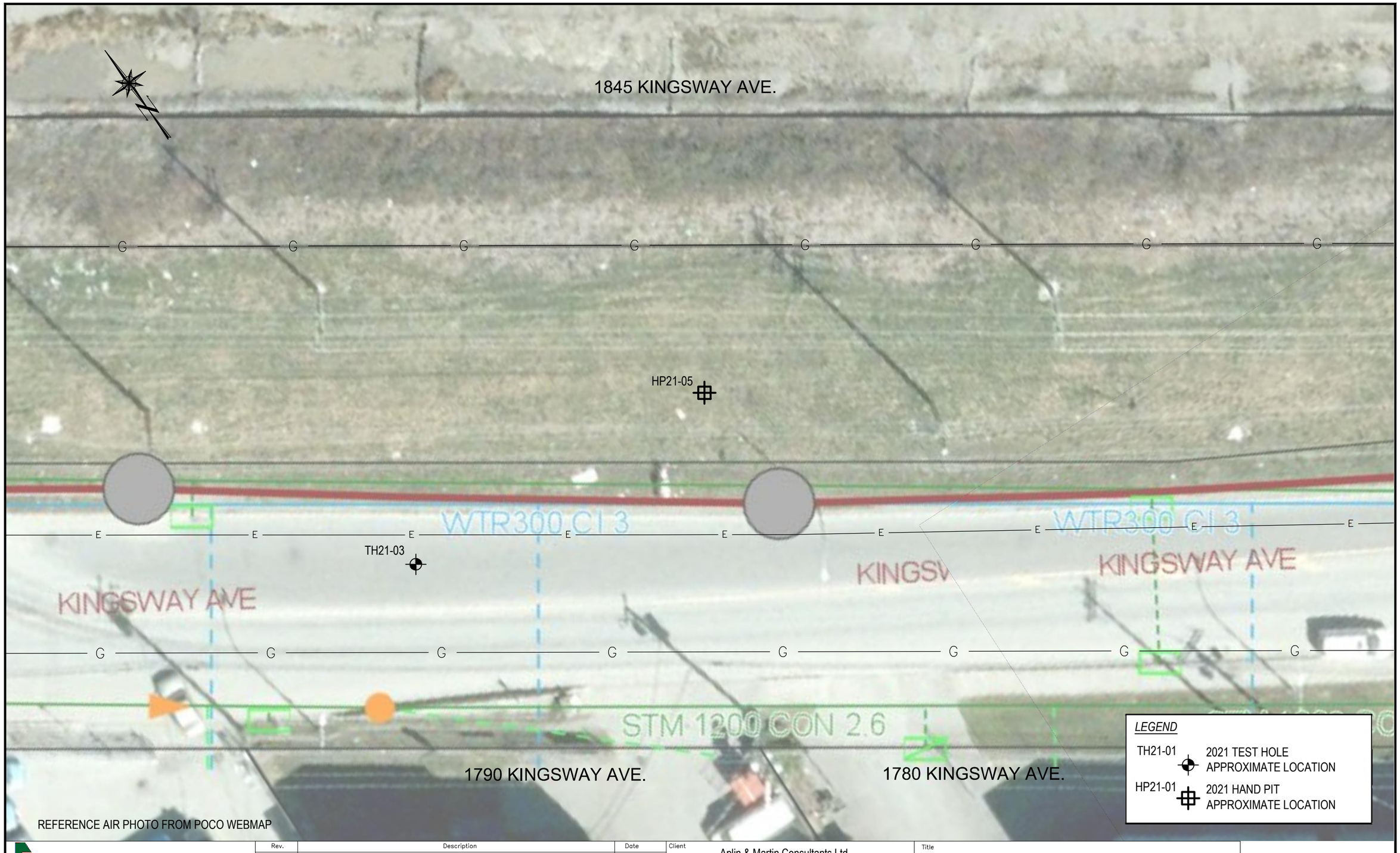

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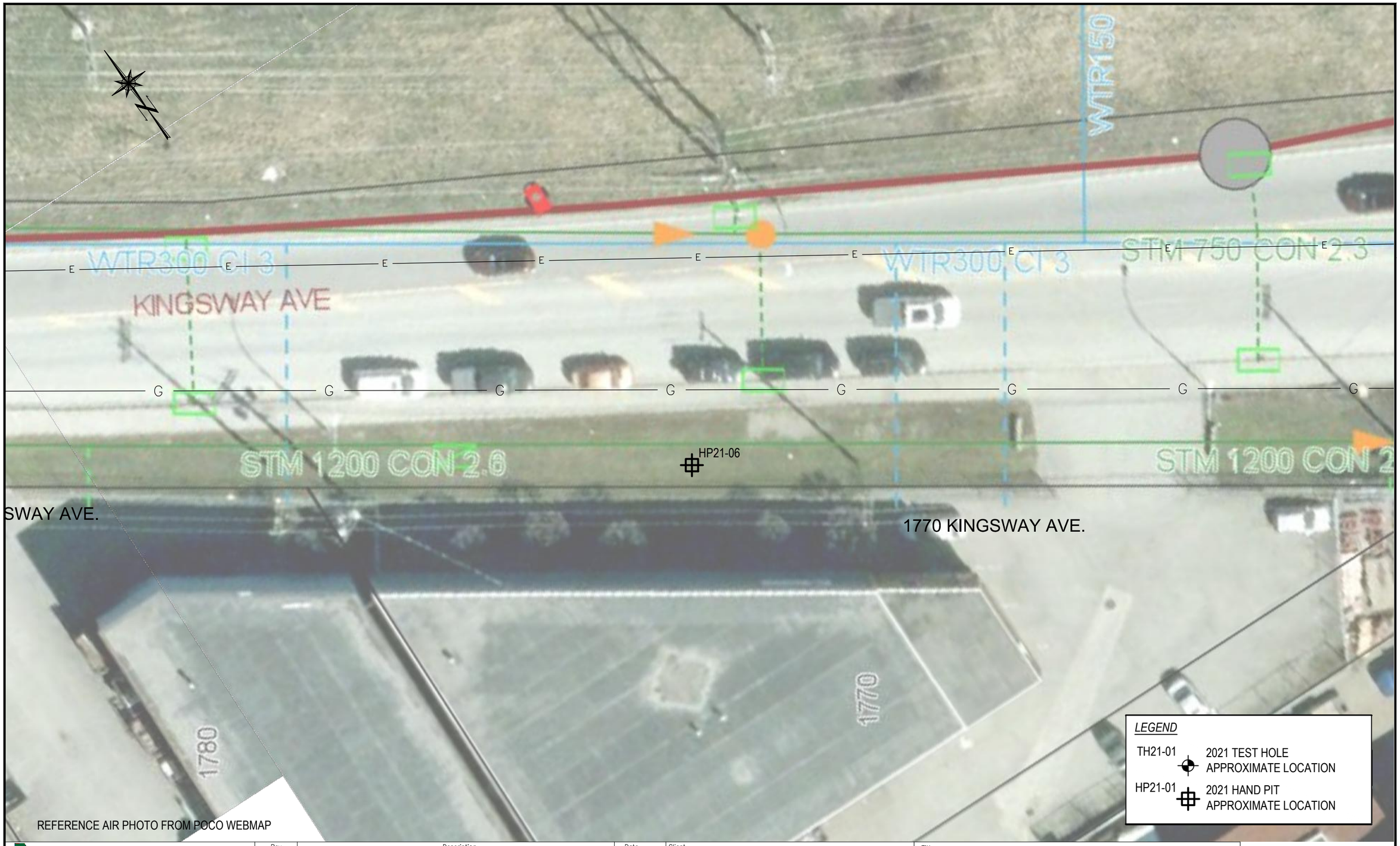
Project: Kingsway Avenue Upgrades
Kingsway Ave: Tyner St to Kebet Way, Port Coquitlam, BC

Title: Location Plan
TH21-03 & HP21-05

Project no.	Drawn	Design	Checked	Date	Scale	Drawing no.
20-8628	DD	EV	SH	November 17, 2020	1:250	20-8628-05



BRAUN GEOTECHNICAL LTD.

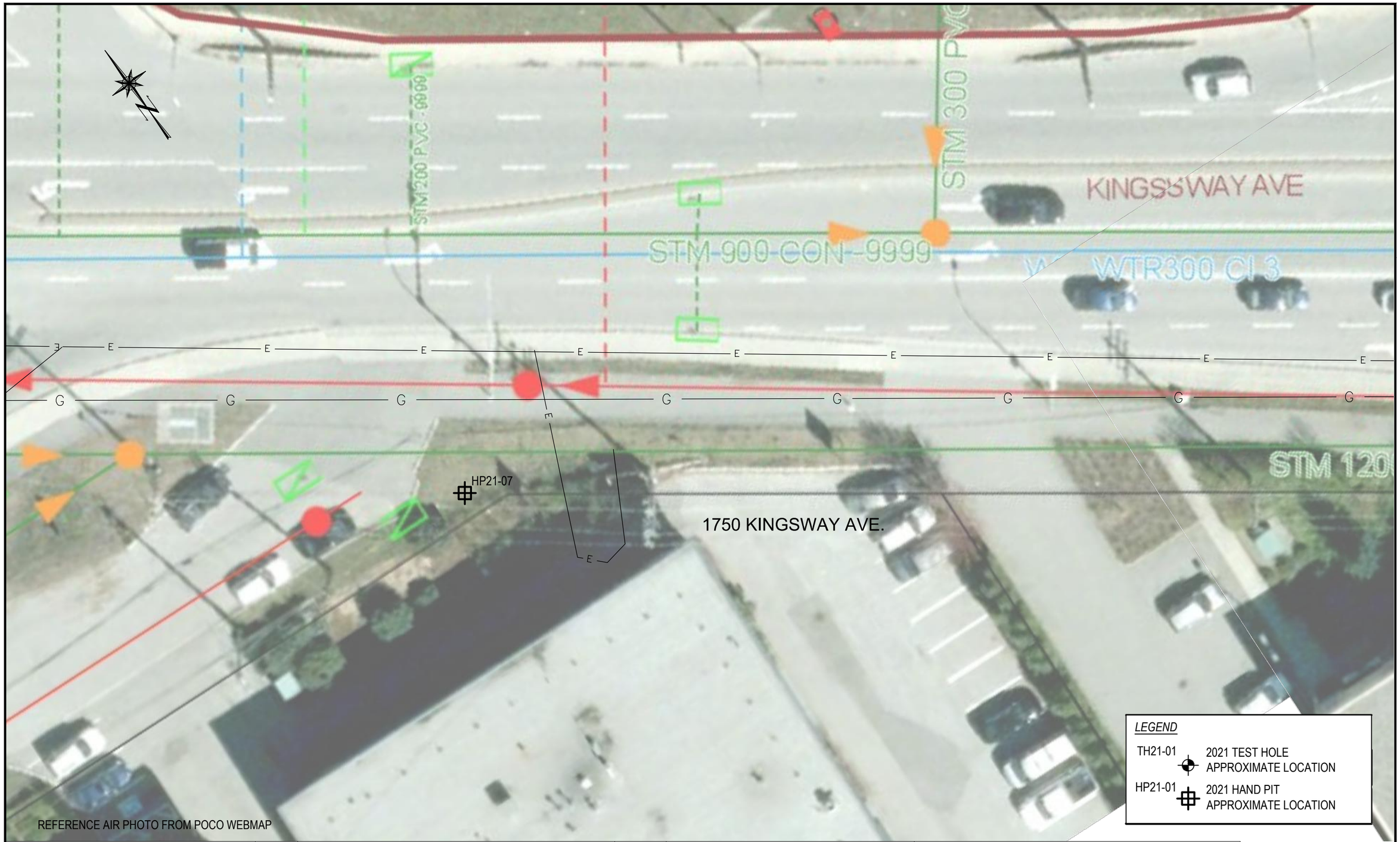
Rev.	Description	Date

Client: Aplin & Martin Consultants Ltd.

Project: Kingsway Avenue Upgrades
Kingsway Ave: Tyner St to Kebet Way, Port Coquitlam, BC

Title: Location Plan
HP21-06

Project no.	Drawn	Design	Checked	Date	Scale	Drawing no.
20-8628	DD	EV	SH	November 17, 2020	1:250	20-8628-06



BRAUN GEOTECHNICAL LTD.

Rev.	Description	Date

Client: Aplin & Martin Consultants Ltd.

Project: Kingsway Avenue Upgrades
Kingsway Ave: Tyner St to Kebet Way, Port Coquitlam, BC

Title: Location Plan
HP21-07

Project no.	Drawn	Design	Checked	Date	Scale	Drawing no.
20-8628	DD	EV	SH	November 17, 2020	1:250	20-8628-07

1731 KINGSWAY AVE.

BROADWAY ST.

1680 KINGSWAY AVE.

TH21-04

STM 750 CON - 9999

STM 200 PVC - 9999

WTR200 DI 6

WTR300 DI 10.3

WTR200 DI 6

G

E

LEGEND

TH21-01 2021 TEST HOLE APPROXIMATE LOCATION

HP21-01 2021 HAND PIT APPROXIMATE LOCATION

REFERENCE AIR PHOTO FROM POCO WEBMAP

BRAUN GEOTECHNICAL LTD.

Rev.	Description	Date

Client: Aplin & Martin Consultants Ltd.

Project: Kingsway Avenue Upgrades
Kingsway Ave: Tyner St to Kebet Way, Port Coquitlam, BC

Title: Location Plan
TH21-04

Project no.	Drawn	Design	Checked	Date	Scale	Drawing no.
20-8628	DD	EV	SH	November 17, 2020	1:250	20-8628-08

REFERENCE AIR PHOTO FROM POCO WEBMAP

BRAUN GEOTECHNICAL LTD.

Rev.	Description	Date

Client: Aplin & Martin Consultants Ltd.

Project: Kingsway Avenue Upgrades
Kingsway Ave: Tyner St to Kebet Way, Port Coquitlam, BC

Project no.	Drawn	Design	Checked
20-8628	DD	EV	SH

Title: Location Plan
HP21-08

Date	Scale	Drawing no.
November 17, 2020	1:250	20-8628-09

BRAUN GEOTECHNICAL LTD.

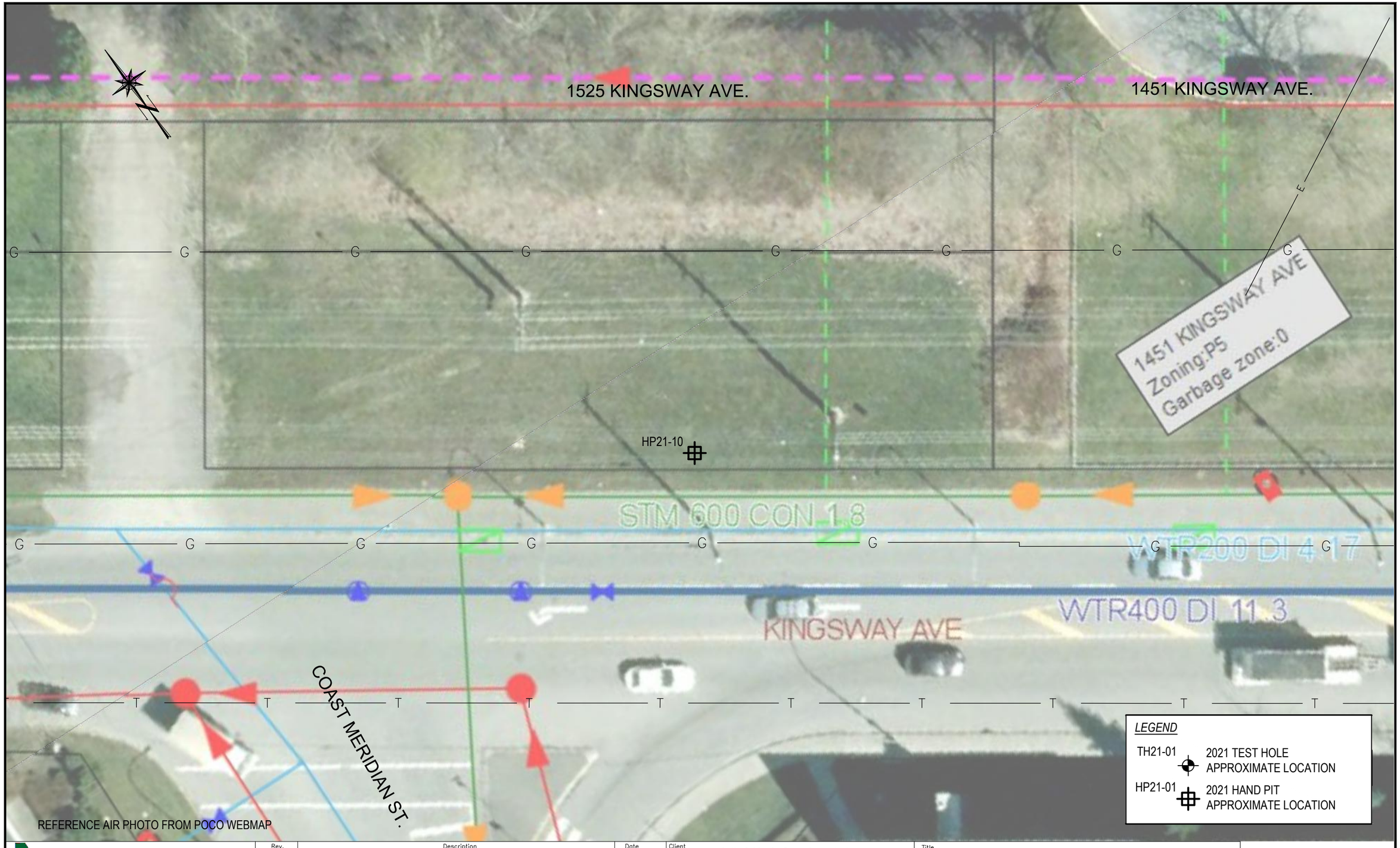
Rev.	Description	Date

Client: Aplin & Martin Consultants Ltd.

Project: Kingsway Avenue Upgrades
Kingsway Ave: Tyner St to Kebet Way, Port Coquitlam, BC

Title: Location Plan
TH21-05 & HP21-09

Project no.	Drawn	Design	Checked	Date	Scale	Drawing no.
20-8628	DD	EV	SH	November 17, 2020	1:250	20-8628-10



REFERENCE AIR PHOTO FROM POCO WEBMAP

BRAUN GEOTECHNICAL LTD.

Rev.	Description	Date

Client: Aplin & Martin Consultants Ltd.

Project: Kingsway Avenue Upgrades
Kingsway Ave: Tyner St to Kebet Way, Port Coquitlam, BC

Title: Location Plan
HP21-10

Project no.	Drawn	Design	Checked	Date	Scale	Drawing no.
20-8628	DD	EV	SH	November 17, 2020	1:250	20-8628-11

REFERENCE AIR PHOTO FROM POCO WEBMAP

BRAUN GEOTECHNICAL LTD.

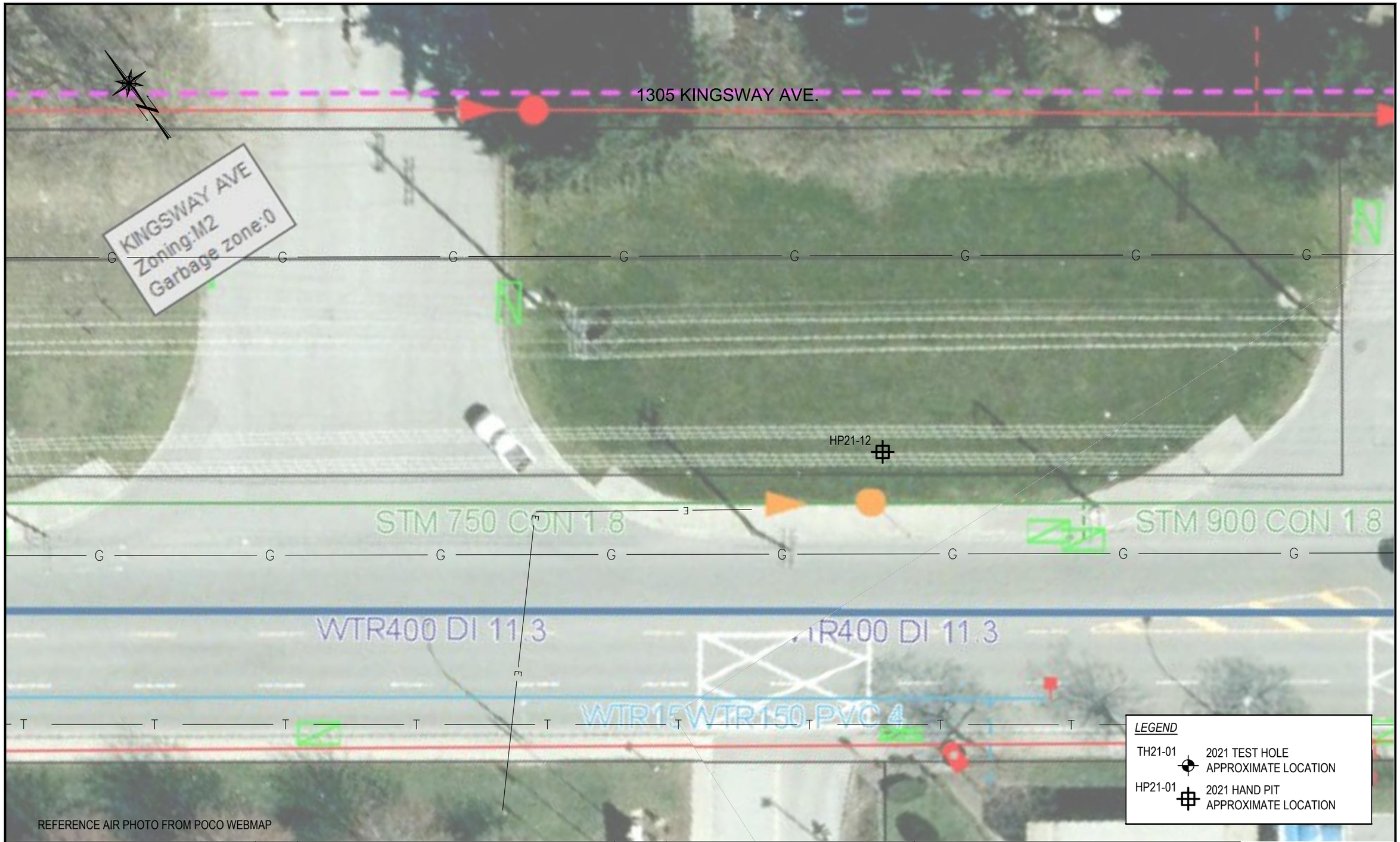
Rev.	Description	Date

Client: Aplin & Martin Consultants Ltd.

Project: Kingsway Avenue Upgrades
Kingsway Ave: Tyner St to Kebet Way, Port Coquitlam, BC

Title: Location Plan
TH21-06 & HP21-11

Project no.	Drawn	Design	Checked	Date	Scale	Drawing no.
20-8628	DD	EV	SH	November 17, 2020	1:250	20-8628-12



REFERENCE AIR PHOTO FROM POCO WEBMAP

LEGEND

TH21-01 — 2021 TEST HOLE APPROXIMATE LOCATION

HP21-01 — 2021 HAND PIT APPROXIMATE LOCATION

BRAUN GEOTECHNICAL LTD.

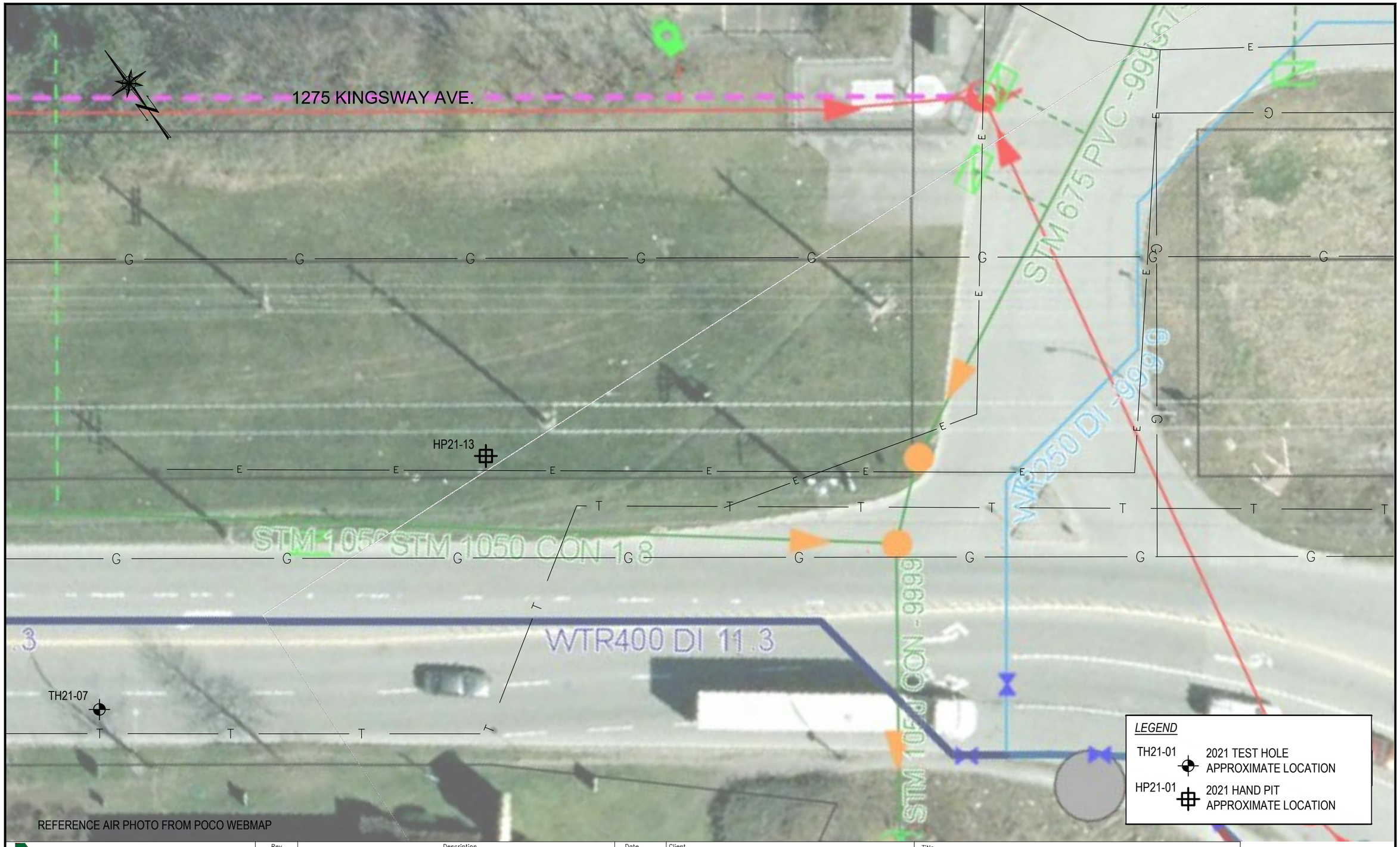
Rev.	Description	Date

Client: Aplin & Martin Consultants Ltd.

Project: Kingsway Avenue Upgrades
Kingsway Ave: Tyner St to Kebet Way, Port Coquitlam, BC

Title: Location Plan
HP21-12

Project no.	Drawn	Design	Checked	Date	Scale	Drawing no.
20-8628	DD	EV	SH	November 17, 2020	1:250	20-8628-13



REFERENCE AIR PHOTO FROM POCO WEBMAP

BRAUN GEOTECHNICAL LTD.

Rev.	Description	Date

Client: Aplin & Martin Consultants Ltd.

Project: Kingsway Avenue Upgrades
Kingsway Ave: Tyner St to Kebet Way, Port Coquitlam, BC

Title: Location Plan
TH21-07 & HP21-13

Project no.	Drawn	Design	Checked	Date	Scale	Drawing no.
20-8628	DD	EV	SH	November 17, 2020	1:250	20-8628-14

REFERENCE AIR PHOTO FROM POCO WEBMAP

BRAUN GEOTECHNICAL LTD.

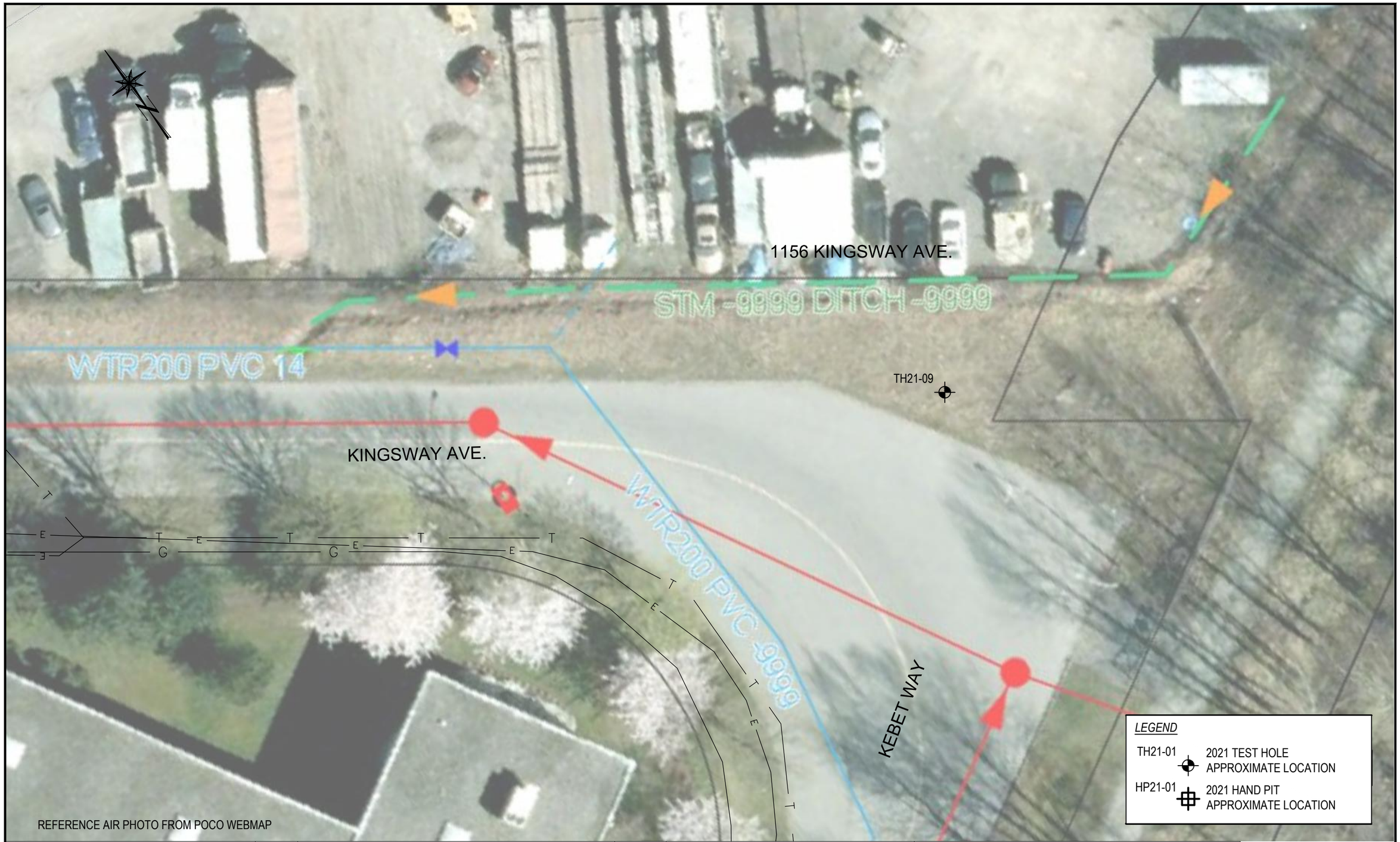
Rev.	Description	Date

Client: Aplin & Martin Consultants Ltd.

Project: Kingsway Avenue Upgrades
Kingsway Ave: Tyner St to Kebet Way, Port Coquitlam, BC

Title: Location Plan
TH21-08

Project no.	Drawn	Design	Checked	Date	Scale	Drawing no.
20-8628	DD	EV	SH	November 17, 2020	1:250	20-8628-15



REFERENCE AIR PHOTO FROM POCO WEBMAP

BRAUN GEOTECHNICAL LTD.

Rev.	Description	Date

Client: Aplin & Martin Consultants Ltd.

Project: Kingsway Avenue Upgrades
Kingsway Ave: Tyner St to Kebet Way, Port Coquitlam, BC

Title: Location Plan
TH21-09

Project no.	Drawn	Design	Checked	Date	Scale	Drawing no.
20-8628	DD	EV	SH	November 17, 2020	1:250	20-8628-16

Test Hole Log: TH21-01

File: 20-8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0	100		ASPHALT			
		255	○	grey-brown, damp, dense SAND & GRAVEL, trace to some silt, occasional cobbles (FILL)	S1		
		560	○	grey, damp, compact SAND, trace silt, trace gravel (FILL)	S2		
			○		S3		
	1	>610	○	grey, damp, compact, silty SAND, trace gravel (FILL)	S4		
5			○		S5		- refusal; inferred cobbles/boulder
				End of Test Hole, Refusal @ 1.5m			
	2						
10	3						
	4						
15	5						
	6						
20							

Equipment: Truck Mounted Auger Rig
Sampling Method: Grab Off Auger Flight

Datum: Ground Surface
Water Depth: Not Encountered
(at time of drilling)

Logged By: EV
Exploration Date: January 12, 2021
Dwg No.: 20-8628-TH01
Page: 1 of 1

Test Hole Log: TH21-02

File: 20–8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft / m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0 ft / 0 m	115		ASPHALT			
	90	○	grey-brown, damp, dense, 19mm minus crushed SAND & GRAVEL, trace silt (BASE)	S1		
		○	grey, damp, dense SAND & GRAVEL, trace to some silt, occasional cobbles (FILL)	S2		
	1320					
1 m		○		S3		
5 ft			brown, moist, firm SILT, some sand, some organics			
		○		S4	36%	
2 m						Water Level (at time of drilling)
			grey to rust-brown, wet, compact SAND & GRAVEL, trace silt			
		○		S5	14%	
10 ft / 3 m			- some silt below 3.0m			
4 m		○		S6	15%	
15 ft			End of Test Hole @ 4.6m			
5 m						
20 ft / 6 m						

Equipment: Truck Mounted Auger Rig
Sampling Method: Grab Off Auger Flight

Datum: Ground Surface
Water Depth: 2.1m
(at time of drilling)

Logged By: EV
Exploration Date: January 12, 2021
Dwg No.: 20-8628-TH02
Page: 1 of 1

Test Hole Log: TH21-03

File: 20–8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft / m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0 / 0	180		ASPHALT			
	280	○	grey-brown, damp, dense SAND & GRAVEL, some silt, occasional crushed cobbles (FILL)	S1		
	>1065	○	grey, damp, dense silty SAND, occasional cobbles (FILL)	S2		
1		○		S3		
5			End of Test Hole @ 1.5m			
2						
10						
3						
4						
15						
5						
20						
6						

Equipment: Truck Mounted Auger Rig
Sampling Method: Grab Off Auger Flight

Datum: Ground Surface
Water Depth: 1.5m
(at time of drilling)

Logged By: EV
Exploration Date: January 12, 2021
Dwg No.: 20-8628-TH03
Page: 1 of 1

Test Hole Log: TH21-04

File: 20–8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0 ft / 0 m	915	○	grey-brown, damp, dense to very dense SAND & GRAVEL, trace to some silt, occasional cobbles (FILL)	S1		
1			brown, moist, firm, organic rich SILT & SAND			
		○	grey-brown, moist, firm SILT, some fine sand	S2	38%	
5			grey, moist, firm, fine sandy SILT			
		○		S3	31%	Water Level (at time of drilling)
2			brown, wet, loose silty SAND, trace to some organics, trace fibers			
		○		S4	51%	
10 / 3			End of Test Hole @ 3.0m			
4						
15 / 5						
6						
20						

Equipment: Truck Mounted Auger Rig
Sampling Method: Grab Off Auger Flight

Datum: Ground Surface
Water Depth: 2.1m
(at time of drilling)

Logged By: EV
Exploration Date: January 13, 2021
Dwg No.: 20-8628-TH04
Page: 1 of 1

Test Hole Log: TH21-05

File: 20–8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft)	Depth (m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0	0	165		ASPHALT			
		90	○	grey-brown, damp, dense, 19mm minus crushed SAND & GRAVEL, trace silt (BASE)	S1	4%	
		815		grey-brown, damp, dense to very dense SAND & GRAVEL, trace to some silt, occasional cobbles (FILL)			
	1		○	grey-brown, moist, firm SILT, some sand, trace organics	S2	63%	
5							
	2		○		S3	62%	Water Level (at time of drilling)
			○	grey-brown, wet, soft organic rich SILT & SAND, trace fibers	S4	75%	
10	3						
			○	grey, wet, soft to firm SILT, trace sand, trace organics, trace fibers	S5	44%	
	4			grey, wet, loose, silty SAND			
			○		S6	35%	
15				End of Test Hole @ 4.6m			
	5						
	6						
20							

Equipment: Truck Mounted Auger Rig
Sampling Method: Grab Off Auger Flight

Datum: Ground Surface
Water Depth: 2.4m
(at time of drilling)

Logged By: EV
Exploration Date: January 13, 2021
Dwg No.: 20-8628-TH05
Page: 1 of 1

Test Hole Log: TH21-06

File: 20–8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0 ft / 0 m	180		ASPHALT			
	125	○	grey, damp, dense, 19mm minus crushed SAND & GRAVEL, trace silt (BASE)	S1		
	610		grey, damp, dense to very dense SAND & GRAVEL, some silt, occasional cobbles (FILL)			
1	305	○	grey, damp to moist, dense SAND & GRAVEL, some silt, occasional cobbles (FILL)	S2		
5		○	grey, damp, firm SILT, trace to some fine SAND	S3	39%	
			End of Test Hole @ 1.5m			
2						
10						
3						
4						
15						
5						
20						
6						

Equipment: Truck Mounted Auger Rig
Sampling Method: Grab Off Auger Flight

Datum: Ground Surface
Water Depth: Not Encountered
(at time of drilling)

Logged By: EV
Exploration Date: January 13, 2021
Dwg No.: 20-8628-TH06
Page: 1 of 1

Test Hole Log: TH21-07

File: 20–8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft / m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0 ft / 0 m	180		ASPHALT			
	125	○	grey-brown, damp, dense, 19mm minus crushed SAND & GRAVEL, trace silt (BASE)	S1		
	1065	○	grey, damp, dense to very dense SAND & GRAVEL, some silt, occasional cobbles (FILL)	S2		
1 m		○		S3		
5 ft		○	dark-brown, moist, soft to firm, organic rich SILT & SAND, trace fibers	S4	67%	
2 m		○		S5	63%	
		○	grey, moist, soft SILT, trace organics	S6	59%	
10 ft / 3 m			End of Test Hole @ 3.0m			
15 ft / 5 m						
20 ft / 6 m						

Equipment: Truck Mounted Auger Rig
Sampling Method: Grab Off Auger Flight

Datum: Ground Surface
Water Depth: Not Encountered
(at time of drilling)

Logged By: EV
Exploration Date: January 13, 2021
Dwg No.: 20-8628-TH07
Page: 1 of 1

Test Hole Log: TH21-08

File: 20–8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft / m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0 / 0			GRASS OVER			
	305	○	dark-brown, damp, loose, organic rich SAND & SILT, trace rootlets (FILL/ORGANICS)	S1		
		○	grey, damp to moist, loose to compact SAND, trace silt (FILL?)	S2	13%	
5 / 1			End of Test Hole @ 1.5m			
10 / 2						
15 / 3						
20 / 4						

Equipment: Truck Mounted Auger Rig
Sampling Method: Grab Off Auger Flight

Datum: Ground Surface
Water Depth: Not Encountered
(at time of drilling)

Logged By: EV
Exploration Date: January 13, 2021
Dwg No.: 20-8628-TH08
Page: 1 of 1

Test Hole Log: TH21-09

File: 20–8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft / m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0 / 0			GRASS OVER			
	150		dark-brown, damp, loose, organic rich SAND & SILT, trace rootlets (FILL/ORGANICS)			
	305	○	brown to grey-brown, damp, compact, silty SAND, trace gravel, trace organics (FILL)	S1		
			grey, moist, loose to compact SAND, some silt, trace gravel (FILL?)			
1		○		S2	16%	
5			End of Test Hole @ 1.5m			
2						
10						
3						
4						
15						
5						
20						
6						

Equipment: Truck Mounted Auger Rig
Sampling Method: Grab Off Auger Flight

Datum: Ground Surface
Water Depth: Not Encountered
(at time of drilling)

Logged By: EV
Exploration Date: January 13, 2021
Dwg No.: 20-8628-TH09
Page: 1 of 1

Hand Pit Log: HP21-01

File: 20–8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0 ft / 0 m			GRASS OVER			
	205	○	dark-brown, damp, firm, organic rich SILT & SAND, some roots/rootlets (FILL/ORGANICS)	S1	50%	
1 ft	405	○	dark-brown, damp, loose, silty SAND, some organics (FILL)	S2	51%	
0.5 m		○		S3	57%	
2 ft		○	grey-brown, damp, compact, silty SAND	S4	40%	
3 ft		○		S5	17%	
1 m			End of Hand Pit @ 1.1m			
4 ft						
1.5 m						
5 ft						

Equipment: Pick & Shovel
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered
(at time of drilling)

Logged By: RG
Exploration Date: January 12, 2021
Dwg No.: 20-8628-HP01
Page: 1 of 1

Hand Pit Log: HP21-02

File: 20–8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0 ft / 0 m			GRASS OVER			
	610	○	dark-brown, damp, firm, organic rich SILT, occasional rootlets (FILL/ORGANICS)	S1	32%	
0.5		○		S2	30%	
1		○	grey-brown, damp, compact, silty SAND	S3	28%	- Seepage @ 1.0m
			End of Hand Pit @ 1.1m			
1.5						

Equipment: Pick & Shovel
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Seepage @ 1.0m
(at time of drilling)

Logged By: RG
Exploration Date: January 12, 2021
Dwg No.: 20-8628-HP02
Page: 1 of 1

Hand Pit Log: HP21-03

File: 20–8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft / m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0 / 0			GRASS OVER			
	115	○	brown, damp, loose, organic rich SAND & SILT (FILL/ORGANICS)	S1	23%	
1 / 0.5	645	○	grey, damp, loose to compact, silty SAND, trace gravel (FILL)	S2	16%	
2		○		S3	23%	
3 / 1		○	grey-brown, damp, loose, silty SAND, trace gravel	S4	21%	
			End of Hand Pit @ 1.0m			
4 / 1.5						
5						

Equipment: Pick & Shovel
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered
(at time of drilling)

Logged By: RG
Exploration Date: January 12, 2021
Dwg No.: 20-8628-HP03
Page: 1 of 1

Hand Pit Log: HP21-04

File: 20–8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0 ft / 0 m			GRASS OVER			
	255	○	dark-brown, moist, firm, organic rich SILT & SAND, occasional rootlets (FILL/ORGANICS)	S1	24%	
	50	○	dark-brown, damp, loose, silty SAND, some organics (FILL)	S2	34%	
1		○	brown, moist, loose SAND, some silt	S3	24%	
			grey-brown, moist, firm, sandy SILT			
0.5						
2		○		S4	34%	
			End of Hand Pit @ 0.8m			- Seepage @ 0.8m
3						
1						
4						
1.5						
5						

Equipment: Pick & Shovel
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Seepage @ 0.8m
(at time of drilling)

Logged By: RG
Exploration Date: January 12, 2021
Dwg No.: 20-8628-HP04
Page: 1 of 1

Hand Pit Log: HP21-05

File: 20–8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0 ft / 0 m			GRASS OVER			
	305	○	dark-brown, damp, loose, organic rich SAND & SILT, occasional rootlets (FILL/ORGANICS)	S1	29%	
1		○	dark-brown, damp, loose, silty SAND, some organics	S2	32%	
0.5		○	grey-brown, damp, loose to compact, SAND, some silt	S3	40%	
2		○	grey-brown, moist, firm, sandy SILT	S4	39%	
3			End of Hand Pit @ 0.9m			
1						
4						
1.5						
5						

Equipment: Pick & Shovel
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered
(at time of drilling)

Logged By: RG
Exploration Date: January 12, 2021
Dwg No.: 20-8628-HP05
Page: 1 of 1

Hand Pit Log: HP21-06

File: 20–8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0 ft / 0 m			GRASS OVER			
	100	○	dark-brown, damp, firm, organic rich SILT & SAND, some roots/rootlets (FILL/ORGANICS)	S1	29%	
	125	○	grey-brown, damp, loose, silty SAND (FILL)	S2	15%	
1		○	brown, moist to wet, compact SAND, some silt, some gravel, occasional cobbles	S3	14%	- Seepage @ 0.8m
0.5						
2			End of Hand Pit, Refusal @ 0.6m			
3						
1						
4						
1.5						
5						

Equipment: Pick & Shovel
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Seepage @ 0.8m
(at time of drilling)

Logged By: RG
Exploration Date: January 12, 2021
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Hand Pit Log: HP21-07

File: 20–8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0 ft / 0 m			GRASS OVER			
	150	○	dark-brown, damp, firm, organic rich SILT & SAND, occasional rootlets (FILL/ORGANICS)	S1	64%	
	75	○	brown, damp, loose, silty SAND, trace organics (FILL)	S2	34%	
1 / 0.5		○	grey-brown, moist, compact, silty SAND, some gravel (FILL)	S3	17%	
2		○		S4	11%	
3 / 1		○	brown, damp, loose, silty SAND, trace organics	S5	34%	
4			End of Hand Pit @ 1.2m			
5 / 1.5						

Equipment: Pick & Shovel
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered
(at time of drilling)

Logged By: RG
Exploration Date: January 12, 2021
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Hand Pit Log: HP21-08

File: 20-8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0 ft / 0 m			GRASS OVER			
	305	○	dark-brown, moist, firm, organic rich SILT & SAND, trace roots/rootlets (FILL/ORGANICS)	S1	40%	
1			dark-brown, moist, firm SILT, some organics, trace sand, trace gravel			- Seepage @ 0.4m
0.5		○		S2	45%	
2						
3			End of Hand Pit @ 0.9m			
1						
4						
1.5						
5						

Equipment: Pick & Shovel
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Seepage @ 0.4m
(at time of drilling)

Logged By: RG
Exploration Date: January 13, 2021
Dwg No.: 20-8628-HP08
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Hand Pit Log: HP21-09

File: 20-8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth (ft / m)	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0 ft / 0 m	460	○	grey-brown, damp, loose to compact, silty SAND, trace gravel (FILL)	S1	21%	
0.5		○	grey to grey-brown, damp, firm, fine sandy SILT	S2	34%	
1		○	- wet, soft below 0.8m	S3	58%	- Seepage @ 0.9m
1.5			End of Hand Pit @ 0.9m			

Equipment: Pick & Shovel
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Seepage @ 0.9m
(at time of drilling)

Logged By: RG
Exploration Date: January 13, 2021
Dwg No.: 20-8628-HP09
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Hand Pit Log: HP21-10

File: 20–8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0 ft / 0 m			GRASS OVER			
	460	○	brown, damp, loose, silty SAND, trace gravel, trace organics (FILL)	S1	39%	
0.5			dark-brown, moist, firm SILT, some organics, trace sand			
		○		S2	80%	
1			End of Hand Pit @ 0.9m			- Seepage @ 0.9m
1.5						

Equipment: Pick & Shovel
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Seepage @ 0.9m
(at time of drilling)

Logged By: RG
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Hand Pit Log: HP21-11

File: 20-8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0 ft / 0 m			GRASS OVER			
	255	○	dark-brown, damp, firm, organic rich SILT & SAND, trace roots/rootlets (FILL/ORGANICS)	S1	38%	
1		○	dark-brown, moist, firm SILT, some organics, trace sand	S2	25%	
0.5						
2			- wet, soft below 0.6m			- Seepage @ 0.6m
		○		S3	52%	
3			End of Hand Pit @ 0.9m			
1						
4						
1.5						
5						

Equipment: Pick & Shovel
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Seepage @ 0.6m
(at time of drilling)

Logged By: RG
Exploration Date: January 13, 2021
Dwg No.: 20-8628-HP11
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Hand Pit Log: HP21-12

File: 20–8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0 ft / 0 m	460	○	dark-brown, damp, firm, organic rich SILT & SAND, trace roots/rootlets (FILL/ORGANICS)	S1	35%	
0.5	150	○	dark-brown, damp, loose, silty SAND, some organics (FILL)	S2	37%	
1		○	grey to grey-brown, damp, firm to stiff, fine sandy SILT	S3	28%	- Seepage @ 0.9m
			End of Hand Pit @ 0.9m			
1.5						

Equipment: Pick & Shovel
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Seepage @ 0.9m
(at time of drilling)

Logged By: RG
Exploration Date: January 13, 2021
Dwg No.: 20-8628-HP12
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Hand Pit Log: HP21-13

File: 20–8628
Project: Kingsway Avenue Upgrades
Client: Aplin & Martin Consultants Ltd.
Location: Kingsway Avenue: Tyner Street to Kebet Way, Port Coquitlam, BC

BRAUN GEOTECHNICAL LTD.

Depth	Thickness (mm)	Sample	Soil Description	Sample #	Water cont.	Remarks
0 ft / 0 m			GRASS OVER			
	460	○	dark-brown, damp, firm, organic rich SILT & SAND, trace roots/rootlets (FILL/ORGANICS)	S1	27%	
0.5		○	grey to grey-brown, damp, firm, fine sandy SILT	S2	32%	
2		○	- firm below 0.6m	S3	40%	
			brown, damp, firm SILT, trace organics			
		○		S4	63%	
3			End of Hand Pit @ 0.9m			
1						
4						
1.5						
5						

Equipment: Pick & Shovel
Sampling Method: Lump Sample

Datum: Ground Surface
Water Depth: Not Encountered
(at time of drilling)

Logged By: RG
Exploration Date: January 13, 2021
Dwg No.: 20-8628-HP13
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