



MEMO

TO: Chris Ollenberger, Managing Principal – QuantumPlace Developments Limited

FROM: James (Jim) Tod, Blake Brodland

DATE: 10 August 2023

cc: Paul Palmer, Dwayne Tannant (GeoPacific)

PROJECT NO.: CG09140

SUBJECT: Stewart Creek Phase 3: Undermining Assessment

1.0 INTRODUCTION

WSP E&I Canada Limited (WSP) was retained by QuantumPlace Developments Ltd. (QPD) for Three Sisters Mountain Village Properties Limited (TSMVPL) to prepare this memorandum in relation to the Stewart Creek Phase 3 development of Block 20: Lots 2, 3, and 4 and Block 21: Lot 27 and 28MR in Canmore, Alberta.

2.0 BACKGROUND

To address the risks associated with development in proximity to the historic surface and underground coal mining in and around Canmore, the Province of Alberta had previously approved Alberta Regulation 114/97, the Canmore Undermining Review Regulation. As part of the review of the Municipal Government Act undertaken by the Province of Alberta between 2012 and 2020, TSMVPL had requested that the 114/97 regulations and associated guidelines be updated to reflect over 20 years of experience accumulated within the regulated area, and to better align the regulations with the stages of planning approvals to provide improved clarity of process to TSMVPL and the public. QPD, the Town of Canmore and the Province of Alberta worked together to prepare new guidelines and regulations which led to the Province of Alberta publishing the new **Alberta Regulation 34/2020** dated **17 March 2020** (the Regulations) concerning development on undermined lands so that risks from surface and underground mines can properly be considered and mitigated as appropriate. In addition to the Regulations, a new set of guidelines titled **2020 Guidelines to Evaluate Proposed Development Over Designated Undermined Lands in the Town of Canmore, Alberta** dated **01 April 2020** (the Guidelines) was prepared that reflected current practice and modern risk considerations, which was also approved by the Province for use.

3.0 DISCUSSION

It is understood that these properties are covered within existing undermining reports as follows:

- Undermining Report Stewart Creek Phase 3; Blocks 20, 21, 22 and 23, Report # 1414285/2000, dated December 2015
- Undermining Report Stewart Creek Phase 3; Roads, Utilities and MR Lots, Report # 1414285.2000.2003, dated December 2015

WSP E&I Canada Limited
#401 – 1925 18th Street NE
Calgary, AB T2E 7T8

wsp.com



It is understood that these two reports were prepared in compliance with regulations which were in effect at that time, and that methodology outlined in the Guidelines was followed. As required in the Regulations, both reports were reviewed for technical content by an independent third party and ultimately certified as compliant by the Province of Alberta on 16 January 2016.

WSP has reviewed these two reports, along with the historical mine plans within our files and concludes that there are no known undermining risks associated with development on Block 20: Lots 2, 3, and 4 and Block 21: Lot 27 and 28MR. No further undermining study is recommended for these properties. These properties are shown on **Figure 1**.

WSP notes that while there are no coal mines within the proposed property footprints, there are underground and surface coal mines within the prescribed 500 m public safety assessment area to the southwest of the project area. It is understood that many of these features (portals, shafts, etc.) associated with these mines have been mitigated for other developments (e.g. Stewart Creek Phase 1 and 2, and others) or are monitored (e.g. within Stewart Creek Golf Course). The nearby mining extents are shown on **Figure 2**. The closest undermined area is approximately 200 m to the southwest of the properties discussed in this memorandum.

4.0 CONCLUSION

Based on the review of the existing reports and analyses, the previous work has been completed to a standard equivalent to the 2020 Guidelines and Regulations. In addition, based on the distance from the existing underground workings, WSP concludes that no further undermining studies are required for these properties.



5.0 CLOSURE

This memorandum has been prepared for the exclusive use of Three Sisters Mountain Village Properties Limited and QuantumPlace Developments Limited. This memorandum is based on, and limited by, the interpretation of data, circumstances, and conditions available at the time of completion of the work as referenced throughout the memorandum. It has been prepared in accordance with generally accepted engineering practices. No other warranty, express or implied, is made.

Per:



James (Jim) Tod, M.Sc.(Eng), P.Eng.
Associate Rock Mechanics Engineer
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Blake Brodland, P.Eng.
Senior Geological Engineer
Tel: 403-387-1981
Email: blake.brodland@wsp.com

Review by:

Paul Palmer, P.Eng.
Senior Principal Geological Engineer
Tel: 647-525-9763
Email: paul.palmer@wsp.com

PERMIT TO PRACTICE WSP E&I CANADA LIMITED	
RM SIGNATURE:	
RM APEGA ID #:	29016
DATE:	10 August 2023
PERMIT NUMBER: P004546 The Association of Professional Engineers and Geoscientists of Alberta (APEGA)	

Attachments:
Attachment A: Figures
Attachment B: Undermining Certificates
Attachment C: Limitations

“Effective September 21, 2022, Wood Environment & Infrastructure Solutions Canada Limited is now operating as WSP E&I Canada Limited. No other aspects of our legal entity, contractual terms or capabilities have changed in relation to this report submission.”

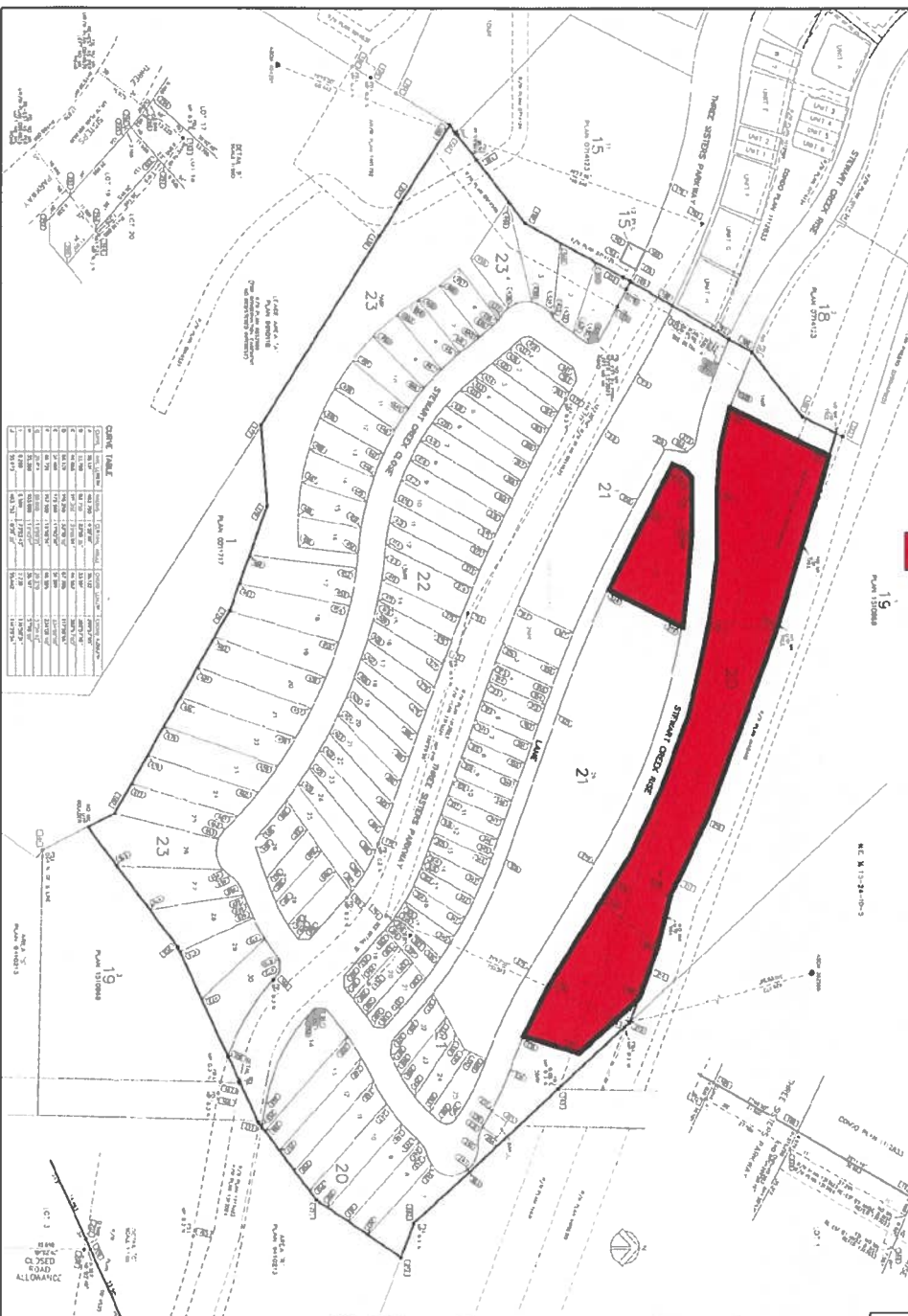


Attachment A

Figures

ASPECT 2018

Legend
 Development Area Discussed in this Memo



DATE TABLE

NO.	DATE	BY	DESCRIPTION
1	11/15/17	AS	PRELIMINARY PLAN
2	01/11/18	AS	REVISED PLAN
3	02/01/18	AS	REVISED PLAN
4	02/01/18	AS	REVISED PLAN
5	02/01/18	AS	REVISED PLAN
6	02/01/18	AS	REVISED PLAN
7	02/01/18	AS	REVISED PLAN
8	02/01/18	AS	REVISED PLAN
9	02/01/18	AS	REVISED PLAN
10	02/01/18	AS	REVISED PLAN
11	02/01/18	AS	REVISED PLAN
12	02/01/18	AS	REVISED PLAN
13	02/01/18	AS	REVISED PLAN
14	02/01/18	AS	REVISED PLAN
15	02/01/18	AS	REVISED PLAN
16	02/01/18	AS	REVISED PLAN
17	02/01/18	AS	REVISED PLAN
18	02/01/18	AS	REVISED PLAN
19	02/01/18	AS	REVISED PLAN
20	02/01/18	AS	REVISED PLAN
21	02/01/18	AS	REVISED PLAN
22	02/01/18	AS	REVISED PLAN
23	02/01/18	AS	REVISED PLAN
24	02/01/18	AS	REVISED PLAN

REGISTRAR
 PLAN TITLE OTHER
PLAN NO. 161.1360
 DIVISION AND REGISTERED
 REGISTERED NO. 161.1360
 REGISTRATION DATE 11/15/17
 ALL REGISTRAR

THREE SISTERS MOUNTAIN VILLAGE
 PHASE 3
 CANMORE, ALBERTA
 PLAN SHOWING SUBDIVISION OF
 LOT 11, BLOCK 15, PLAN 0714123, AND
 LOT 2, BLOCK 19, PLAN 1510968
 IN THE 1/4 SEC. 14 AND N.E. 1/4 SEC. 15,
 TWP. 24, RGE. 10, W.5M.

SCALE 1:1000
 2018
 NAME: C. CANADA, A.L.S.

NOTES

1. This plan shows the subdivision of the land shown on the attached plan.
2. The lot boundaries shown on this plan are based on the survey of the land shown on the attached plan.
3. The lot boundaries shown on this plan are based on the survey of the land shown on the attached plan.
4. The lot boundaries shown on this plan are based on the survey of the land shown on the attached plan.
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22. The lot boundaries shown on this plan are based on the survey of the land shown on the attached plan.
23. The lot boundaries shown on this plan are based on the survey of the land shown on the attached plan.
24. The lot boundaries shown on this plan are based on the survey of the land shown on the attached plan.

REGISTERED
 PLAN SHOWING SUBDIVISION OF
 LOT 11, BLOCK 15, PLAN 0714123, AND
 LOT 2, BLOCK 19, PLAN 1510968
 IN THE 1/4 SEC. 14 AND N.E. 1/4 SEC. 15,
 TWP. 24, RGE. 10, W.5M.

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 IN THE 1/4 SEC. 14 AND N.E. 1/4 SEC. 15,
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 IN THE 1/4 SEC. 14 AND N.E. 1/4 SEC. 15,
 TWP. 24, RGE. 10, W.5M.

THREE SISTERS Mountain Village

Client Logo
 Three Sisters Mountain Village Properties Limited

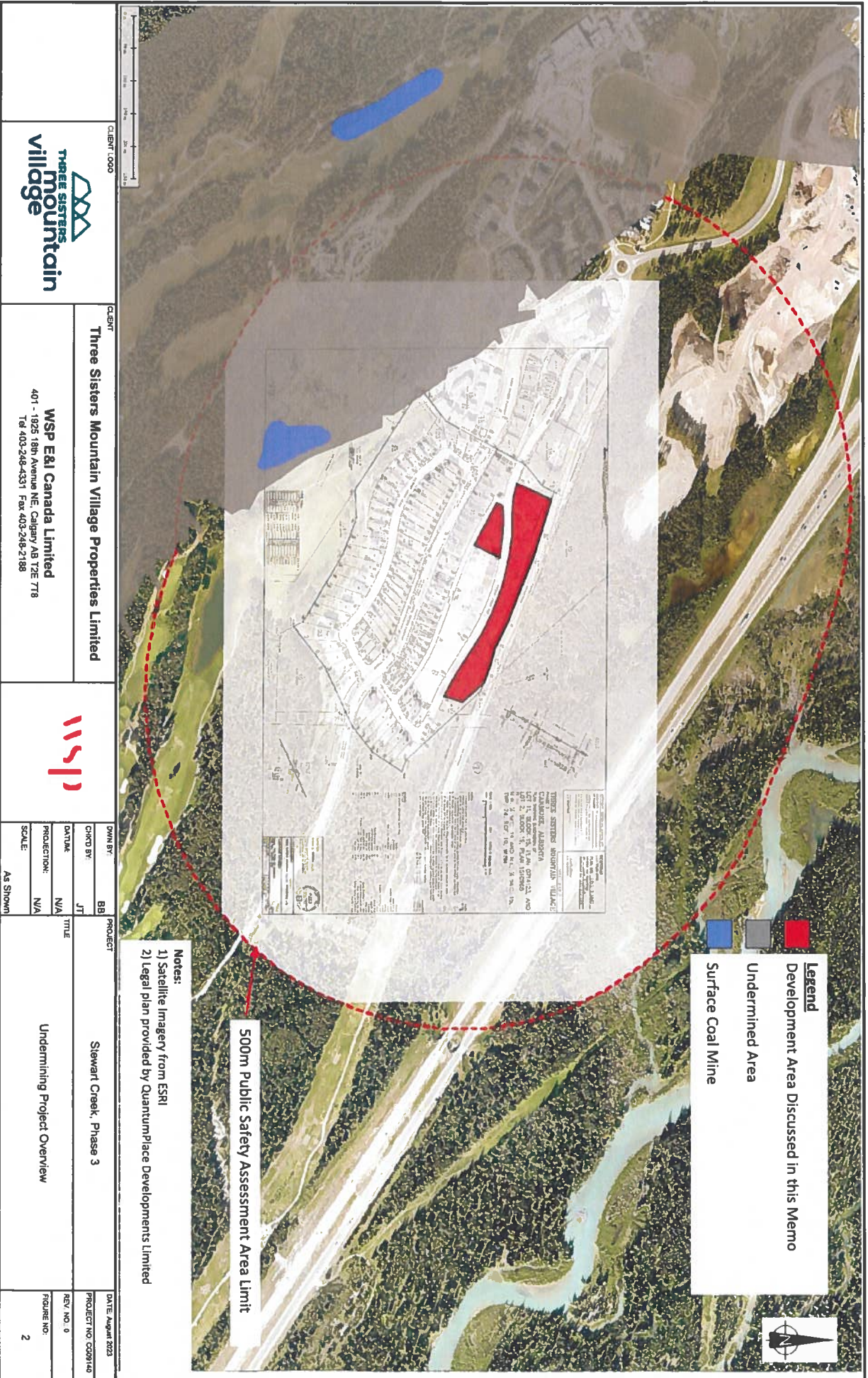
WSP E&I Canada Limited
 401 - 1925 16th Avenue NE, Calgary AB T2E 7T8
 Tel 403-248-4331 Fax 403-248-2188

WSP

OWN BY: BB
 CHWD BY: JT
 DATE: N/A
 PROJECTION: N/A
 SCALE: As Shown

PROJECT
 Stewart Creek, Phase 3
 Site Overview

DATE: August 2023
 PROJECT NO: C009140
 REV. NO. 0
 FIGURE NO. 1



Legend

- Development Area Discussed in this Memo
- Undetermined Area
- Surface Coal Mine

500m Public Safety Assessment Area Limit

- Notes:**
- 1) Satellite Imagery from ESRI
 - 2) Legal plan provided by QuantumPlace Developments Limited

THREE SISTERS MOUNTAIN VILLAGE
 CANADIAN ALBERTA
 LOT 1, BLOCK 15, PLAN 014-02-01 AND
 LOT 2, BLOCK 15, PLAN 157093
 TOWN OF STURGEON MOUNTAIN, ALBERTA
 PLAN 157093 FOR THE YEAR 2018

DATE: 2023-08-01
 TIME: 10:00 AM
 PROJECT: 2023-08-01

PROJECT NO: 2023-08-01
 DRAWING NO: 2023-08-01

CLIENT LOGO		CLIENT		DATE: August 2023	
		Three Sisters Mountain Village Properties Limited		PROJECT NO: C0209140	
		WSP E&I Canada Limited 401 - 1925 18th Avenue NE, Calgary AB T2E 7T8 Tel: 403-248-4331 Fax: 403-248-2188		REV. NO. 0	
		DRAWN BY: BB		PROJECT TITLE	
		CHECKED BY: JT		Stewart Creek, Phase 3	
DATE: N/A		PROJECT NO: N/A		REV. NO. 0	
SCALE: As Shown		PROJECT TITLE		FIGURE NO: 2	
		Undermining Project Overview			



Attachment B

Compliance Certificates

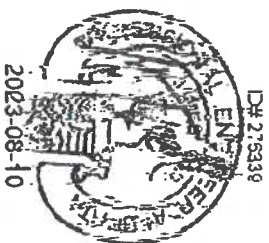


Form 1

Compliance Certificate

Pursuant to the Canmore Undermining Review Regulation (AR 34/2020), a review of the land described in **Stewart Creek Phase 3: Undermining Assessment Memorandum** dated **10 August 2023** was carried out to determine whether the area is suitable for the intended development, **Block 20: Lots 2, 3, and 4 and Block 21: Lot 27 and 28MR**, having regard to undermining and related conditions. The review was made in accordance with the guidelines established by order of the Minister and accepted professional practice and accordingly includes the investigations considered necessary in the circumstances.

In my opinion, the land described in the above report is considered suitable for the intended development, subject to any mitigative measures outlined in the **Stewart Creek Phase 3: Undermining Assessment Memorandum** with respect to the undermining and related conditions.



Professional Seal

Municipality: Oakville, Ontario

Date: 10 August 2023

PERMIT TO PRACTICE WSP E&I CANADA LIMITED
RM SIGNATURE: <u>[Signature]</u>
RM APEGA ID #: <u>29016</u>
DATE: <u>10 August 2023</u>
PERMIT NUMBER: P004546
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Form 2

Compliance Review Certificate

Pursuant to the Canmore Undermining Review Regulation (AR 34/2020), I have made a review of the *Stewart Creek Phase 3: Undermining Assessment Memorandum* dated **10 August 2023** to determine whether the report complies with the guidelines established by order of the Minister and whether the review of the land described in the report was made in accordance with accepted professional practice and accordingly included the investigations necessary in the circumstances.

In my opinion, the *Stewart Creek Phase 3: Undermining Assessment Memorandum* complies with the guidelines established by order of the Minister.

In my opinion, the review of the land described in the *Stewart Creek Phase 3: Undermining Assessment Memorandum* was made in accordance with accepted professional practice and accordingly included the investigations necessary in the circumstances.

I certify that I did not assist in the preparation of the *Stewart Creek Phase 3: Undermining Assessment Memorandum* and I am not associated with or employed by the individuals or firm that prepared the undermining report.

Municipality: Kelowna, British Columbia
Date: August 17, 2023



Professional Seal

PERMIT TO PRACTICE GEOPACIFIC CONSULTANTS LTD.
RM SIGNATURE: _____
RM APEGA ID # 186899
DATE Feb-27-2023
PERMIT NUMBER: P010023
<small>The Association of Professional Engineers and Geoscientists of Alberta (APEGA)</small>

AR112229

August 21, 2023

Mr. James Tod, M.Sc., P.Eng.
Associate Rock Mechanics Engineer
c/o Blake Brodland, P.Eng.
Senior Geological Engineer,
WSP E&I Canada Limited
401, 1925 – 18th Avenue N.E.
Calgary, AB T2E 7T8

Dear Mr. Tod:

In accordance with Section 9(2) of the Canmore Undermining Review Regulation, this letter is to notify you of the receipt of the *Undermining Report Stewart Creek Phase 3; Blocks 20, 21, 22 and 23*, and *Undermining Report Stewart Creek Phase 3; Road, Utilities and MR Lots*, both dated December 2015, together with the attendant compliance certificates as required by the Regulation. Further, receipt of the memorandum prepared by WSP E&I Canada Limited regarding the *Stewart Creek Phase 3: Undermining Assessment*.

Should you have any questions in this regard, email me at ryan.n.edwards@gov.ab.ca

Yours truly,



Ryan Edwards
Acting Executive Director
Municipal Policy and Engagement Branch

cc: Andy Esarte, Manager of Engineering, Town of Canmore
Chris Ollenberger, Quantum Place Developments, Calgary



Attachment C

Limitations



LIMITATIONS TO GEOTECHNICAL REPORTS

- 1 The work performed in the preparation of this report and the conclusions presented herein are subject to the following:
 - a) The contract between WSP and the Client, including any subsequent written amendment or Change Order duly signed by the parties (hereinafter together referred as the “Contract”);
 - b) Any and all time, budgetary, access and/or site disturbance, risk management preferences, constraints or restrictions as described in the contract, in this report, or in any subsequent communication sent by Wood to the Client in connection to the Contract; and
 - c) The limitations stated herein.
- 2 **Standard of care:** WSP has prepared this report in a manner consistent with the level of skill and care ordinarily exercised by reputable members of WSP’s profession, practicing in the same or similar locality at the time of performance, and subject to the time limits and physical constraints applicable to the scope of work, and terms and conditions for this assignment. No other warranty, guarantee, or representation, expressed or implied, is made or intended in this report, or in any other communication (oral or written) related to this project. The same are specifically disclaimed, including the implied warranties of merchantability and fitness for a particular purpose.
- 3 **Limited locations:** The information contained in this report is restricted to the site and structures evaluated by WSP and to the topics specifically discussed in it, and is not applicable to any other aspects, areas or locations.
- 4 **Information utilized:** The information, conclusions and estimates contained in this report are based exclusively on: i) information available at the time of preparation, ii) the accuracy and completeness of data supplied by the Client or by third parties as instructed by the Client, and iii) the assumptions, conditions and qualifications/limitations set forth in this report.
- 5 **Accuracy of information:** No attempt has been made to verify the accuracy of any information provided by the Client or third parties, except as specifically stated in this report (hereinafter “Supplied Data”). WSP cannot be held responsible for any loss or damage, of either contractual or extra-contractual nature, resulting from conclusions that are based upon reliance on the Supplied Data.
- 6 **Report interpretation:** This report must be read and interpreted in its entirety, as some sections could be inaccurately interpreted when taken individually or out-of-context. The contents of this report are based upon the conditions known and information provided as of the date of preparation. The text of the final version of this report supersedes any other previous versions produced by WSP.
- 7 **No legal representations:** WSP makes no representations whatsoever concerning the legal significance of its findings, or as to other legal matters touched on in this report, including but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and change. Such interpretations and regulatory changes should be reviewed with legal counsel.
- 8 **Decrease in property value:** WSP shall not be responsible for any decrease, real or perceived, of the property or site’s value or failure to complete a transaction, as a consequence of the information contained in this report.



- 9 No third-party reliance:** This report is for the sole use of the party to whom it is addressed unless expressly stated otherwise in the report or Contract. Any use or reproduction which any third party makes of the report, in whole or in part, or any reliance thereon or decisions made based on any information or conclusions in the report is the sole responsibility of such third party. WSP does not represent or warrant the accuracy, completeness, merchantability, fitness for purpose or usefulness of this document, or any information contained in this document, for use or consideration by any third party. WSP accepts no responsibility whatsoever for damages or loss of any nature or kind suffered by any such third party as a result of actions taken or not taken or decisions made in reliance on this report or anything set out therein. including without limitation, any indirect, special, incidental, punitive or consequential loss, liability or damage of any kind.
- 10 Assumptions:** Where design recommendations are given in this report, they apply only if the project contemplated by the Client is constructed substantially in accordance with the details stated in this report. It is the sole responsibility of the Client to provide to WSP changes made in the project, including but not limited to, details in the design, conditions, engineering or construction that could in any manner whatsoever impact the validity of the recommendations made in the report. WSP shall be entitled to additional compensation from Client to review and assess the effect of such changes to the project.
- 11 Time dependence:** If the project contemplated by the Client is not undertaken within a period of 18 months following the submission of this report, or within the time frame understood by WSP to be contemplated by the Client at the commencement of WSP's assignment, and/or, if any changes are made, for example, to the elevation, design or nature of any development on the site, its size and configuration, the location of any development on the site and its orientation, the use of the site, performance criteria and the location of any physical infrastructure, the conclusions and recommendations presented herein should not be considered valid unless the impact of the said changes is evaluated by WSP, and the conclusions of the report are amended or are validated in writing accordingly.

Advancements in the practice of geotechnical engineering, engineering geology and hydrogeology and changes in applicable regulations, standards, codes or criteria could impact the contents of the report, in which case, a supplementary report may be required. The requirements for such a review remain the sole responsibility of the Client or their agents.

WSP will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of the report.

- 12 Limitations of visual inspections:** Where conclusions and recommendations are given based on a visual inspection conducted by WSP, they relate only to the natural or man-made structures, slopes, etc. inspected at the time the site visit was performed. These conclusions cannot and are not extended to include those portions of the site or structures, which were not reasonably available, in WSP's opinion, for direct observation.
- 13 Limitations of site investigations:** Site exploration identifies specific subsurface conditions only at those points from which samples have been taken and only at the time of the site investigation. Site investigation programs are a professional estimate of the scope of investigation required to provide a general profile of subsurface conditions.

The data derived from the site investigation program and subsequent laboratory testing are interpreted by trained personnel and extrapolated across the site to form an inferred geological representation and an engineering opinion is rendered about overall subsurface conditions and their likely behaviour with regard to the proposed development. Despite this investigation, conditions between and beyond the borehole/test hole locations may differ from those encountered at the borehole/test hole locations and the actual conditions at the site might differ from those inferred to exist, since no subsurface exploration program, no matter how comprehensive, can reveal all subsurface details and anomalies.

Final sub-surface/bore/profile logs are developed by geotechnical engineers based upon their interpretation of field logs and laboratory evaluation of field samples. Customarily, only the final bore/profile logs are included in geotechnical engineering reports.



Bedrock, soil properties and groundwater conditions can be significantly altered by environmental remediation and/or construction activities such as the use of heavy equipment or machinery, excavation, blasting, pile-driving or draining or other activities conducted either directly on site or on adjacent terrain. These properties can also be indirectly affected by exposure to unfavorable natural events or weather conditions, including freezing, drought, precipitation and snowmelt.

During construction, excavation is frequently undertaken which exposes the actual subsurface and groundwater conditions between and beyond the test locations, which may differ from those encountered at the test locations. It is recommended practice that WSP be retained during construction to confirm that the subsurface conditions throughout the site do not deviate materially from those encountered at the test locations, that construction work has no negative impact on the geotechnical aspects of the design, to adjust recommendations in accordance with conditions as additional site information is gained and to deal quickly with geotechnical considerations if they arise.

Interpretations and recommendations presented herein may not be valid if an adequate level of review or inspection by WSP is not provided during construction.

- 14 Factors that may affect construction methods, costs and scheduling:** The performance of rock and soil materials during construction is greatly influenced by the means and methods of construction. Where comments are made relating to possible methods of construction, construction costs, construction techniques, sequencing, equipment or scheduling, they are intended only for the guidance of the project design professionals, and those responsible for construction monitoring. The number of test holes may not be sufficient to determine the local underground conditions between test locations that may affect construction costs, construction techniques, sequencing, equipment, scheduling, operational planning, etc.

Any contractors bidding on or undertaking the works should draw their own conclusions as to how the subsurface and groundwater conditions may affect their work, based on their own investigations and interpretations of the factual soil data, groundwater observations, and other factual information.

- 15 Groundwater and Dewatering:** WSP will accept no responsibility for the effects of drainage and/or dewatering measures if WSP has not been specifically consulted and involved in the design and monitoring of the drainage and/or dewatering system.
- 16 Environmental and Hazardous Materials Aspects:** Unless otherwise stated, the information contained in this report in no way reflects on the environmental aspects of this project, since this aspect is beyond the Scope of Work and the Contract. Unless expressly included in the Scope of Work, this report specifically excludes the identification or interpretation of environmental conditions such as contamination, hazardous materials, wildlife conditions, rare plants or archeology conditions that may affect use or design at the site. This report specifically excludes the investigation, detection, prevention or assessment of conditions that can contribute to moisture, mold or other microbial contaminant growth and/or other moisture related deterioration, such as corrosion, decay, rot in buildings or their surroundings. Any statements in this report or on the boring logs regarding odours, colours, and unusual or suspicious items or conditions are strictly for informational purposes
- 17 Sample Disposal:** WSP will dispose of all uncontaminated soil and rock samples after 30 days following the release of the final geotechnical report. Should the Client request that the samples be retained for a longer time, the Client will be billed for such storage at an agreed upon rate. Contaminated samples of soil, rock or groundwater are the property of the Client, and the Client will be responsible for the proper disposal of these samples, unless previously arranged for with WSP or a third party.