



September 5, 2014

Attn: Josh Bolderheij
CH2M Hill Canada Ltd.
540-12 Avenue SW
Calgary, AB T2R 0H4

INFORMATION ONLY

**Re: Southwest Calgary Ring Road (SWCRR) Functional Planning Review
(Community of Discovery Ridge) Rev1**

PAAE File: 2014-4155

DRAFT

Josh:

This letter report summarizes the noise analysis results for the community of Discovery Ridge (located in SW Calgary on the south side of the future Southwest Calgary Ring Road (SWCRR), also identified as Glenmore Trail) with and without existing barriers. The 'Current' and 'Revised R1' (CH2M internal designations) proposed road alignments in this area were also considered.

Layouts for the SWCRR, crossing roads and the surrounding area were modeled using drawings received from CH2M and previous projects using the Federal Highway Administration TNM 2.5 and SoundPlan 7.3 computer programs. These previous projects include:

- PAAE 2003-1557 Stoney Tr Ring Road (TransCanada Hwy Interchange) completed Dec. 2003
- PAAE 2005-1899 Southwest Calgary Ring Road completed Nov. 2006
- PAAE 2007-2343 West Calgary Ring Road completed Sep. 2009
- PAAE 2007-2343 South Calgary Ring Road completed Nov. 2009
- PAAE 2013-3901 Southwest Calgary Ring Road (SWCRR) Functional Planning Study Review completed Apr. 2014

The purpose of this additional study was to predict the Stage 1 design sound levels within the community of Discovery Ridge with and without the effects from the existing barriers.

Traffic volume projections for this study are based on Stage 1 traffic design provided by Stantec (PAAE File: 2013-3901) extended to the end of DBFO period (approx. year 2048-2050). Classifications and truck percentages were modelled ranging between 3% to 4% and 2% to 7% for the AM and PM peak periods respectively on the SWCRR and crossing roads. Twenty-four hour traffic volumes were calculated using the general rule that 10% of daily traffic occurs during the peak hours. The SWCRR mainline was modeled carrying a 1:1 medium to heavy truck ratio and crossing roads were modeled with a 2:1 medium to heavy truck ratio.



The modeled speeds were based on design speeds listed in the draft Functional Planning Study for the SWCRR. Vehicles were modeled traveling at 110 kph on the SWCRR and Highway 8. Ramps were modeled ranging between 40 kph and 90 kph. 69th St were modeled as 60 kph. Updated alignments provided by CH2M, designated as 'Current' and 'Revised R1' were assessed.

Environmental conditions used in the model were 20 degrees Celsius with 50% relative humidity.

Based on the projected traffic volumes, grades of roads, speeds and land topography, the predicted noise levels at given receiver points in the community of Discovery Ridge with and without existing barriers for the Current alignment of Glenmore Tr are listed in Table 1 and Figure 1, and noise contours for the predicted sound pressure levels expressed in dBA Leq (24 Hours) are also plotted in Figures 2 and 3. The predicted results with the Revised R1 road alignment are listed in Table 2 and Figures 4-6.

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**Table 1 - Predicted Sound Levels at the Community of Discovery Ridge
With and Without Existing Barriers (Current Design)**

Receiver Name	SPL without Existing Barrier (dBA)	SPL with Existing Barrier (dBA)	Receiver Name	SPL without Existing Barrier (dBA)	SPL with Existing Barrier (dBA)
Discovery Ridge 1	55.5	55.5	Discovery Ridge 24	63.0	57.4
Discovery Ridge 2	54.4	54.4	Discovery Ridge 25	64.2	59.7
Discovery Ridge 3	54.7	54.6	Discovery Ridge 26	63.3	58.2
Discovery Ridge 4	54.6	54.6	Discovery Ridge 27	62.2	58.3
Discovery Ridge 5	53.9	53.8	Discovery Ridge 28	60.3	59.0
Discovery Ridge 6	52.3	52.3	Discovery Ridge 29	66.0	64.3
Discovery Ridge 7	50.2	48.6	Discovery Ridge 30	69.2	62.2
Discovery Ridge 8	49.1	49.0	Discovery Ridge 31	68.7	63.6
Discovery Ridge 9	59.7	58.7	Discovery Ridge 32	67.6	61.8
Discovery Ridge 10	52.9	52.7	Discovery Ridge 33	70.2	62.1
Discovery Ridge 11	63.1	55.8	Discovery Ridge 34	67.1	61.7
Discovery Ridge 12	63.8	54.6	Discovery Ridge 35	66.6	60.8
Discovery Ridge 13	59.5	54.6	Discovery Ridge 36	65.3	60.9
Discovery Ridge 14	61.6	56.1	Discovery Ridge 37	62.3	57.7
Discovery Ridge 15	61.5	54.6	Discovery Ridge 38	60.9	57.8
Discovery Ridge 16	62.3	56.0	Discovery Ridge 39	57.6	57.1
Discovery Ridge 17	60.0	55.8	Discovery Ridge 40	56.2	55.6
Discovery Ridge 18	60.0	55.4	<i>Discovery Ridge 41</i>	54.9	54.5
Discovery Ridge 19	61.0	56.6	<i>Discovery Ridge 42</i>	57.0	57.0
Discovery Ridge 20	69.2	61.3	<i>Discovery Ridge 43</i>	60.7	60.7
Discovery Ridge 21	67.3	59.2	<i>Discovery Ridge 44</i>	61.6	61.6
Discovery Ridge 22	65.2	59.1	<i>Discovery Ridge 45</i>	61.7	61.7
Discovery Ridge 23	67.3	58.2	<i>Discovery Ridge 46</i>	66.5	66.5

* The listed receivers in italicized text indicate 'no existing barrier' at these locations.



**Table 2 - Predicted Sound Levels at the Community of Discovery Ridge
With and Without Existing Barriers (Revised R1 Design)**

Receiver Name	SPL without Existing Barrier (dBA)	SPL with Existing Barrier (dBA)	Receiver Name	SPL without Existing Barrier (dBA)	SPL with Existing Barrier (dBA)
Discovery Ridge 1	55.5	55.4	Discovery Ridge 24	57.8	53.5
Discovery Ridge 2	54.5	54.4	Discovery Ridge 25	58.5	54.7
Discovery Ridge 3	54.4	54.4	Discovery Ridge 26	57.2	53.1
Discovery Ridge 4	54.5	54.5	Discovery Ridge 27	56.1	54.1
Discovery Ridge 5	53.8	53.8	Discovery Ridge 28	57.8	56.4
Discovery Ridge 6	52.5	52.5	Discovery Ridge 29	61.5	60.3
Discovery Ridge 7	50.3	48.7	Discovery Ridge 30	62.9	57.6
Discovery Ridge 8	49.1	49.1	Discovery Ridge 31	62.5	58.1
Discovery Ridge 9	59.4	58.5	Discovery Ridge 32	61.5	56.7
Discovery Ridge 10	52.7	52.3	Discovery Ridge 33	63.8	57.9
Discovery Ridge 11	63.0	55.5	Discovery Ridge 34	61.7	56.8
Discovery Ridge 12	63.2	54.0	Discovery Ridge 35	61.2	56.6
Discovery Ridge 13	59.4	54.7	Discovery Ridge 36	60.3	56.1
Discovery Ridge 14	60.0	54.6	Discovery Ridge 37	59.7	54.0
Discovery Ridge 15	59.0	53.4	Discovery Ridge 38	58.5	54.9
Discovery Ridge 16	59.6	54.5	Discovery Ridge 39	56.7	56.1
Discovery Ridge 17	57.5	54.0	Discovery Ridge 40	55.5	55.2
Discovery Ridge 18	57.0	53.5	<i>Discovery Ridge 41</i>	54.3	53.9
Discovery Ridge 19	58.4	54.9	<i>Discovery Ridge 42</i>	55.9	55.9
Discovery Ridge 20	63.9	58.2	<i>Discovery Ridge 43</i>	58.8	58.7
Discovery Ridge 21	61.2	56.1	<i>Discovery Ridge 44</i>	59.9	59.9
Discovery Ridge 22	59.8	55.4	<i>Discovery Ridge 45</i>	59.3	59.3
Discovery Ridge 23	59.3	54.9	<i>Discovery Ridge 46</i>	63.9	63.9

* The listed receivers in italicized text indicate 'no existing barrier' at these locations.

The noise target is expected to be exceeded within the community of Discovery Ridge at several locations without the existing barriers based on the Current road design. However, all of the modelled locations with existing barriers installed are expected to meet the target level with the exception of receiver Discovery Ridge 46.

For the Revised R1 scenario, the modeled results indicate that the predicted sound levels will meet the 65 dBA Leq (24 Hours) noise target at all the modeled locations within the community of Discovery Ridge with and without the existing barriers.

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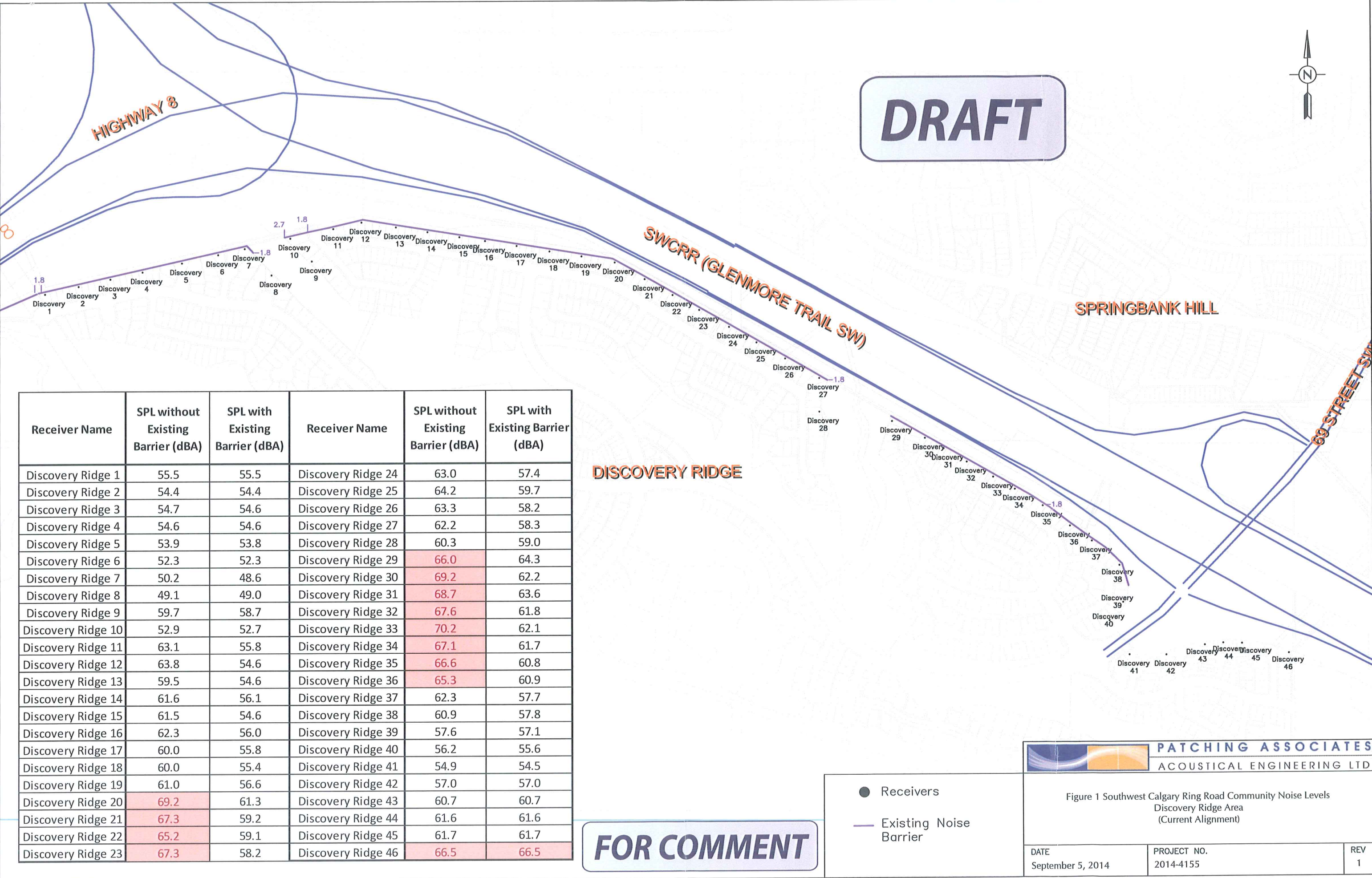
I trust that this is the information that you require at this time. Any questions may be directed to the undersigned at (403) 730-7294.

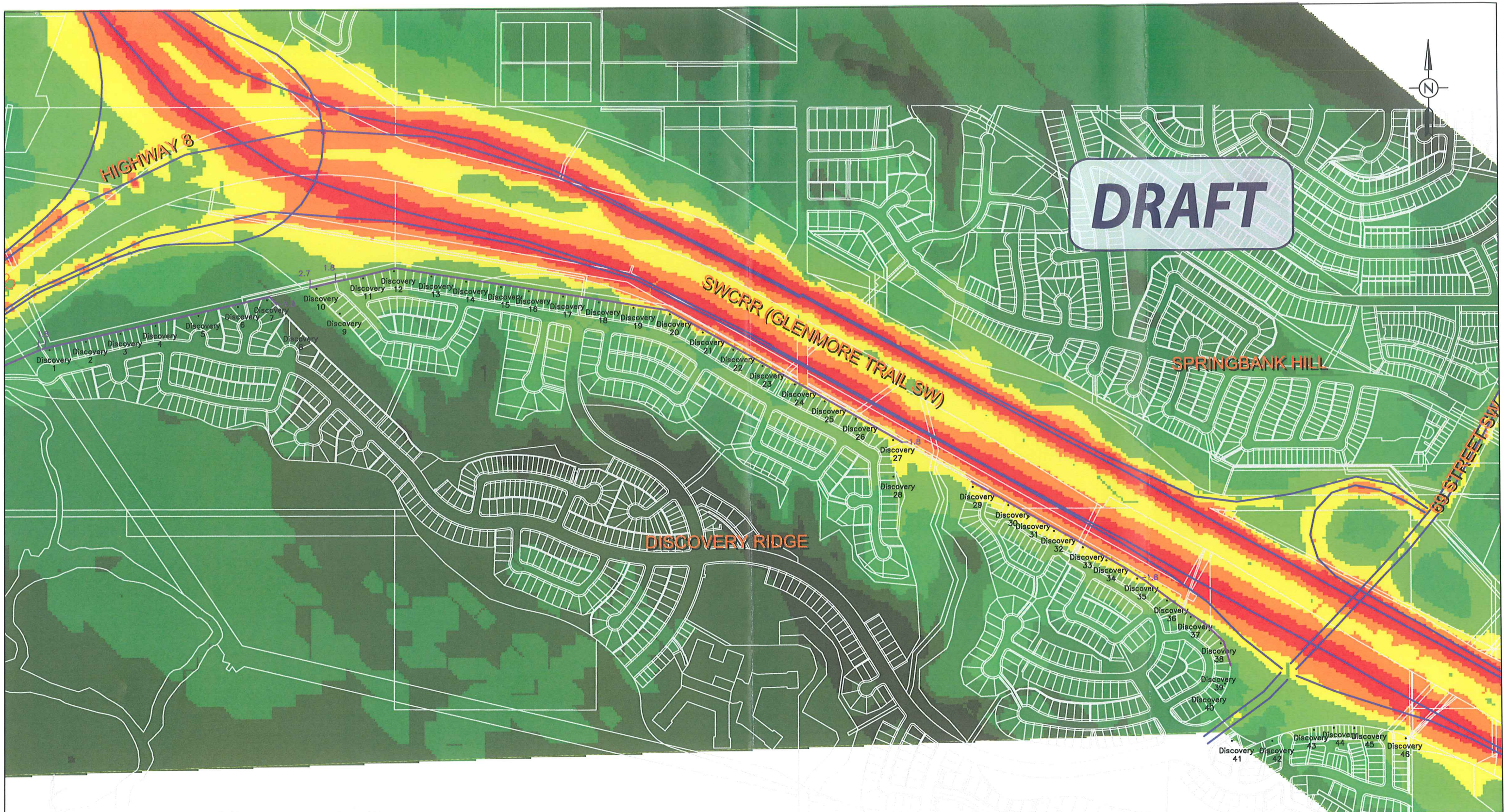
Yours truly,
Patching Associates Acoustical Engineering Ltd.

Neil Morozumi, P.Eng.

/attachments

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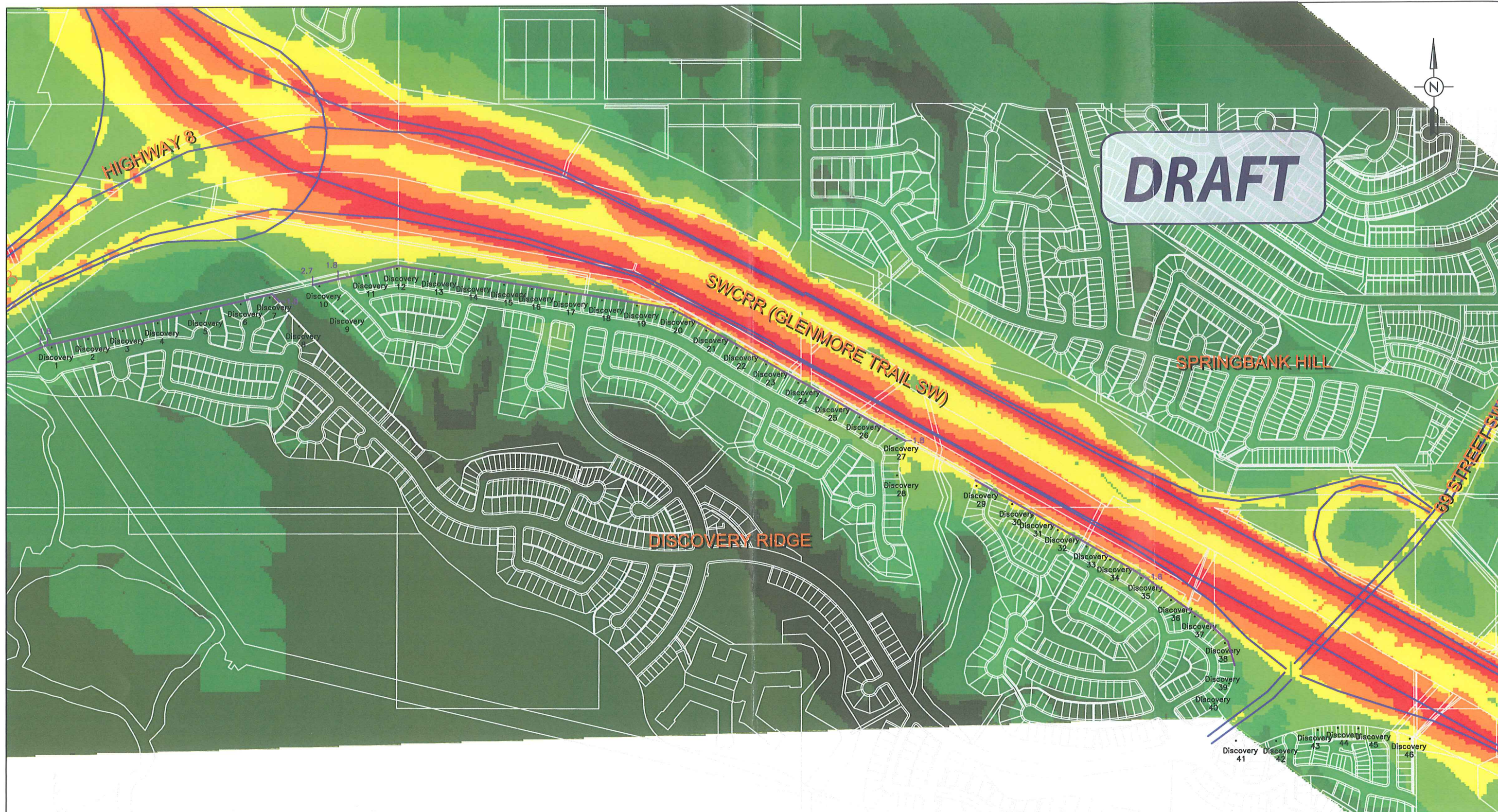
FOR COMMENT

< 45 dBA
45 - 50 dBA
50 - 55 dBA
55 - 60 dBA
60 - 65 dBA
65 - 70 dBA
70 - 75 dBA
> 75 dBA

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Figure 2 Southwest Calgary Ring Road Noise Contour map
Discovery Ridge Area (No Barriers)
(Current Alignment)

DATE September 5, 2014	PROJECT NO. 2014-4155	REV 1
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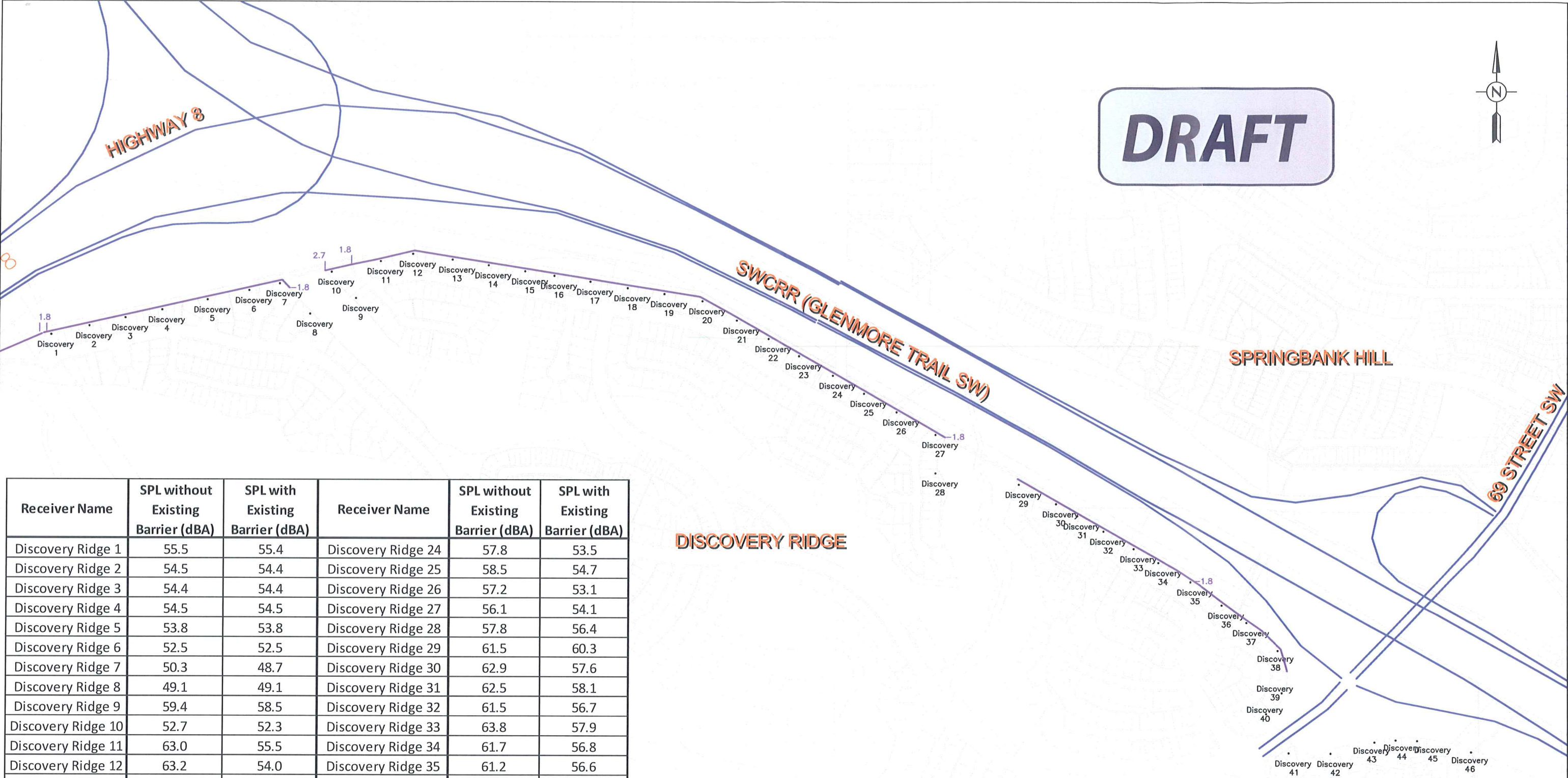


FOR COMMENT

< 45 dBA
45 - 50 dBA
50 - 55 dBA
55 - 60 dBA
60 - 65 dBA
65 - 70 dBA
70 - 75 dBA
> 75 dBA

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Figure 3 Southwest Calgary Ring Road Noise Contour map Discovery Ridge Area (With Existing Barriers) (Current Alignment)		
DATE	PROJECT NO.	REV
September 5, 2014	2014-4155	1



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Receiver Name	SPL without Existing Barrier (dBA)	SPL with Existing Barrier (dBA)	Receiver Name	SPL without Existing Barrier (dBA)	SPL with Existing Barrier (dBA)
Discovery Ridge 1	55.5	55.4	Discovery Ridge 24	57.8	53.5
Discovery Ridge 2	54.5	54.4	Discovery Ridge 25	58.5	54.7
Discovery Ridge 3	54.4	54.4	Discovery Ridge 26	57.2	53.1
Discovery Ridge 4	54.5	54.5	Discovery Ridge 27	56.1	54.1
Discovery Ridge 5	53.8	53.8	Discovery Ridge 28	57.8	56.4
Discovery Ridge 6	52.5	52.5	Discovery Ridge 29	61.5	60.3
Discovery Ridge 7	50.3	48.7	Discovery Ridge 30	62.9	57.6
Discovery Ridge 8	49.1	49.1	Discovery Ridge 31	62.5	58.1
Discovery Ridge 9	59.4	58.5	Discovery Ridge 32	61.5	56.7
Discovery Ridge 10	52.7	52.3	Discovery Ridge 33	63.8	57.9
Discovery Ridge 11	63.0	55.5	Discovery Ridge 34	61.7	56.8
Discovery Ridge 12	63.2	54.0	Discovery Ridge 35	61.2	56.6
Discovery Ridge 13	59.4	54.7	Discovery Ridge 36	60.3	56.1
Discovery Ridge 14	60.0	54.6	Discovery Ridge 37	59.7	54.0
Discovery Ridge 15	59.0	53.4	Discovery Ridge 38	58.5	54.9
Discovery Ridge 16	59.6	54.5	Discovery Ridge 39	56.7	56.1
Discovery Ridge 17	57.5	54.0	Discovery Ridge 40	55.5	55.2
Discovery Ridge 18	57.0	53.5	Discovery Ridge 41	54.3	53.9
Discovery Ridge 19	58.4	54.9	Discovery Ridge 42	55.9	55.9
Discovery Ridge 20	63.9	58.2	Discovery Ridge 43	58.8	58.7
Discovery Ridge 21	61.2	56.1	Discovery Ridge 44	59.9	59.9
Discovery Ridge 22	59.8	55.4	Discovery Ridge 45	59.3	59.3
Discovery Ridge 23	59.3	54.9	Discovery Ridge 46	63.9	63.9

DISCOVERY RIDGE

FOR COMMENT

- Receivers
- Existing Noise Barrier



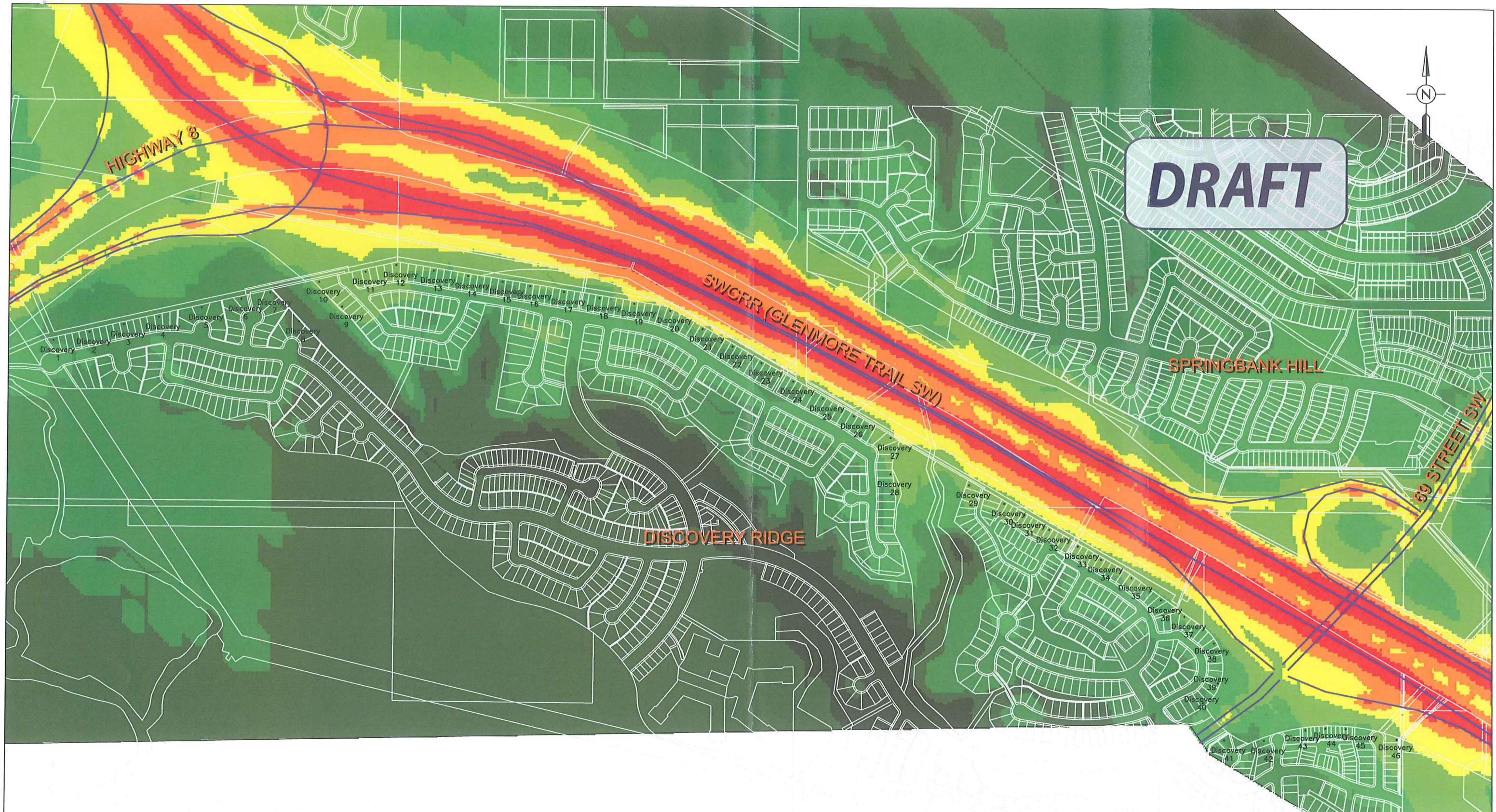
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Figure 4 Southwest Calgary Ring Road Community Noise Levels
Discovery Ridge Area
(Revised Alignment r1)


DATE
August 28, 2014

PROJECT NO.
2014-4155

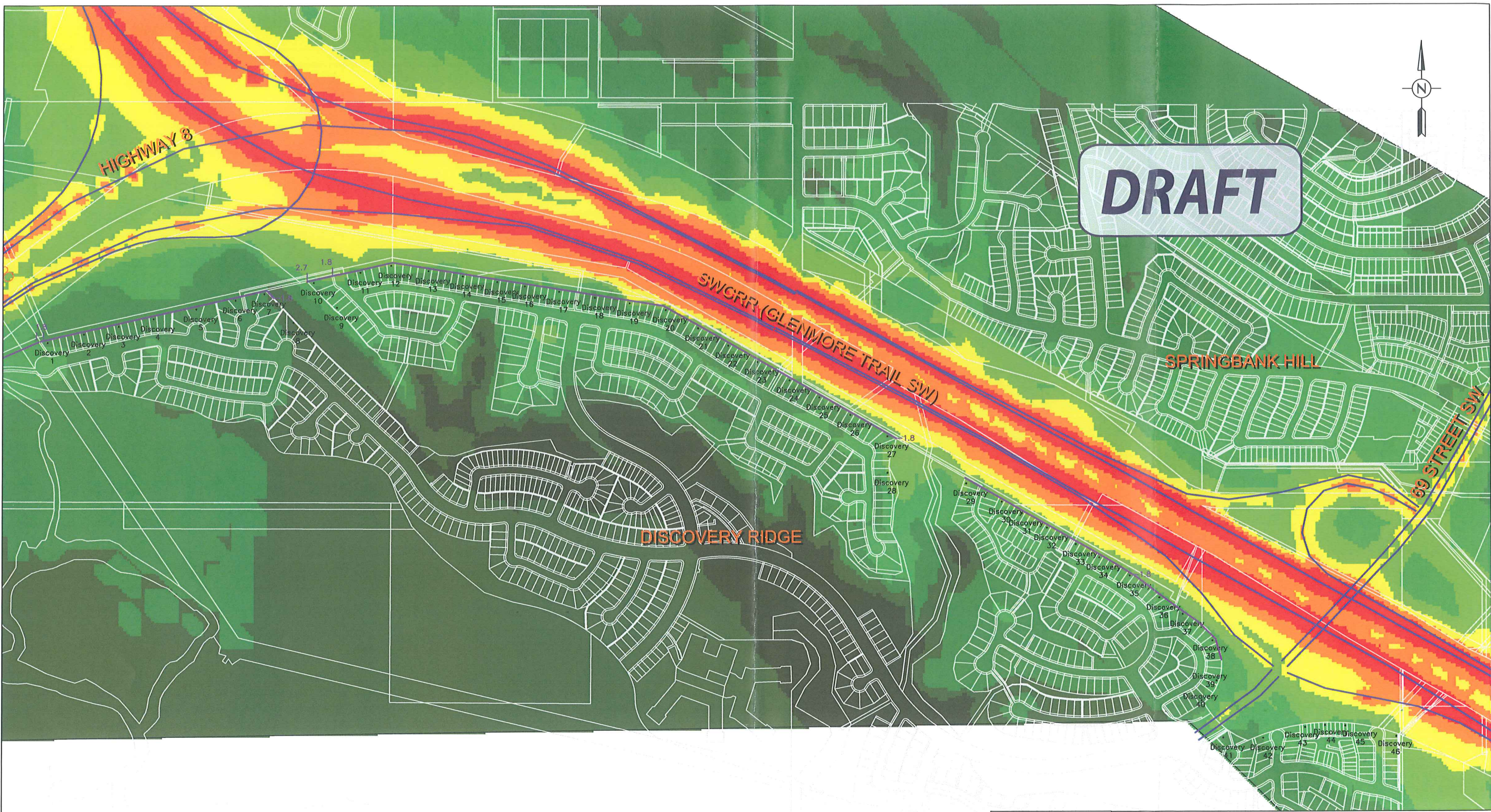
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FOR COMMENT

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Figure 5 Southwest Calgary Ring Road Noise Contour map Discovery Ridge Area (No Barriers) (Revised Alignment r1)		
DATE August 28, 2014	PROJECT NO. 2014-4155	REV 0

- < 45 dBA
- 45 - 50 dBA
- 50 - 55 dBA
- 55 - 60 dBA
- 60 - 65 dBA
- 65 - 70 dBA
- 70 - 75 dBA
- > 75 dBA



FOR COMMENT

	< 45 dBA
	45 - 50 dBA
	50 - 55 dBA
	55 - 60 dBA
	60 - 65 dBA
	65 - 70 dBA
	70 - 75 dBA
	> 75 dBA

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Figure 6 Southwest Calgary Ring Road Noise Contour map Discovery Ridge Area (With Existing Barriers) (Revised Alignment r1)		
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